**Dragages-Nishimatsu Joint Venture**

# Contract No. DC/2007/10
# Design and Construction of
# Hong Kong West Drainage Tunnel

Monthly EM&A Report

(version 1.0)

January 2010

Certified By

(Environmental Team Leader)

REMARKS:

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

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**CINOTECH CONSULTANTS LTD**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong
Tel: (852) 2151 2083 Fax: (852) 3107 1388
Email: info@cinotech.com.hk

# TABLE OF CONTENTS

**EXECUTIVE SUMMARY** ..... **1**

Introduction ..... 1
Environmental Monitoring Works ..... 1
Environmental Licenses and Permits ..... 4
Key Information in the Reporting Month ..... 4

**1. INTRODUCTION** ..... **6**

Background ..... 6
Project Organizations ..... 6
Construction Programme ..... 7
Summary of EM&A Requirements ..... 9

**2. AIR QUALITY** ..... **11**

Monitoring Requirements ..... 11
Monitoring Locations ..... 11
Monitoring Equipment ..... 11
Monitoring Parameters, Frequency and Duration ..... 11
Monitoring Methodology and QA/QC Procedure ..... 12
Results and Observations ..... 14

**3. NOISE** ..... **16**

Airborne Construction Noise Monitoring ..... 16
Monitoring Requirements ..... 16
Monitoring Locations ..... 16
Monitoring Equipment ..... 16
Monitoring Parameters, Frequency and Duration ..... 16
Monitoring Methodology and QA/QC Procedures ..... 17
Maintenance and Calibration ..... 18
Results and Observations ..... 18
Ground Borne Construction Noise Monitoring ..... 24
Monitoring Requirements ..... 24
Monitoring Locations ..... 24
Results and Observations ..... 25

**4. WATER QUALITY** ..... **26**

Monitoring Requirements ..... 26
Monitoring Locations ..... 26
Results and Observations ..... 26
Underground water level ..... 26

**5. ENVIRONMENTAL AUDIT** ..... **28**

Site Audits ..... 28
Review of Environmental Monitoring Procedures ..... 28
Status of Environmental Licensing and Permitting ..... 28
Status of Waste Management ..... 28
Implementation Status of Environmental Mitigation Measures ..... 30
Non-compliance Recorded during Site Inspections ..... 33
Summary of Mitigation Measures Implemented ..... 33

Implementation Status of Event Action Plans ..... 34
Summary of Complaint, Warning, Notification of any Summons and Successful Prosecution ..... 35

**6. FUTURE KEY ISSUES ..... 36**

Key Issues for the Coming Month ..... 36
Monitoring Schedule for the Next Month ..... 37
Construction Program for the Next Month ..... 37

**7. CONCLUSIONS AND RECOMMENDATIONS ..... 38**

Conclusions ..... 38
Recommendations ..... 38

## LIST OF TABLES

Table I Summary Table for Non-compliance Recorded in the Reporting Month
Table II Summary Table for Key Information in the Reporting Month
Table 1.1 Key Project Contacts
Table 1.2 Construction programme showing the inter-relationship with environmental protection/mitigation measures
Table 2.1 Locations for Air Quality Monitoring
Table 2.2 Air Quality Monitoring Equipment
Table 2.3 Impact Dust Monitoring Parameters, Frequency and Duration
Table 2.4 Summary Table of Air Quality Monitoring Results during the reporting month
Table 3.1 Noise Monitoring Stations
Table 3.2 Noise Monitoring Equipment
Table 3.3 Noise Monitoring Parameters, Frequency and Duration
Table 3.4 Baseline Noise Level and Noise Limit Level for Monitoring Stations
Table 3.5 Summary Table of Noise Monitoring Results during the reporting month
Table 3.6 Construction Ground Borne Noise Standards
Table 4.1 Locations for Water Quality Monitoring
Table 4.2 Ground Water Level Monitoring Data at Location ADH48
Table 5.1 Summary of Environmental Licensing and Permit Status
Table 5.2 Observations and Recommendations of Site Inspections

## LIST OF FIGURES


Figure 1.1 Layout Plan of the Project Site
Figure 2.1 ET's Organization Chart
Figure 3.1a Locations of Air Quality and Construction Noise Monitoring Stations at Eastern Portal
Figure 3.1b Locations of Air Quality and Construction Noise Monitoring Stations at Western Portal
Figure 3.1c Locations of Construction Noise Monitoring Stations at Intake E7
Figure 3.1d Locations of Construction Noise Monitoring Stations at Intake PFLR1
Figure 3.1e Locations of Construction Noise Monitoring Stations at Intake W0
Figure 3.1f Locations of Construction Noise Monitoring Stations at Intake RR1
Figure 3.1g Locations of Construction Noise Monitoring Stations at Intake W5
Figure 4.1a-b Locations of Water Quality Monitoring Stations
Figure 4.2 Location of Ground Water Level Monitoring Stations


## LIST OF APPENDICES


A Action and Limit Levels for Air Quality and Noise
B Copies of Calibration Certificates
C Wind Data
D Environmental Monitoring Schedules
E 1-hour TSP Monitoring Results, Graphical Presentations
F 24-hour TSP Monitoring Results, Graphical Presentations
G Noise Monitoring Results and Graphical Presentations
H Summary of Exceedance
I Site Audit Summary
J Environmental Mitigation Implementation Schedule (EMIS)
K Event Action Plans
L Complaint Logs
M Construction Programme
N Waste Generated Quantity

# EXECUTIVE SUMMARY

## Introduction

1. This is the 22nd Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants Limited for the "Drainage Improvement in Northern Hong Kong Island – Hong Kong West Drainage Tunnel" (the Project). This report documents the findings of EM&A Works conducted in January 2010.

2. The site activities undertaken in the reporting month included:

- TBM excavation, adit excavation and structural works for River Channel at Eastern Portal.
- TBM excavation and adit excavation at Western Portal.
- Excavation of intake structure /dropshaft at Intakes W0, SM1 and MB16.
- Cofferdam construction at Intakes HKU1, E7, PFLR1 and THR2.
- Pipelaying works and slopeworks at Intake MB16.
- Site preparation works at Intakes W10, TP4, MBD2, RR1, TP789, E5A, W5 and E5B.
- Slopeworks at Intake TP4.
- DDA submissions for Adit/Main Tunnel Intersection, Adits, Stilling Chambers and Turning Bays.
- AIP & DDA submissions for temporary works for Intake Structures.
- DDA submissions for slope works and permanent works for Intake Structures.
- AIP & DDA submissions for temporary and permanent works for Dropshafts.
- Environmental impact monitoring.
- Casting of tunnel segments.

## Environmental Monitoring Works

3. Environmental monitoring for the Project was performed in accordance with the updated EM&A Manual and the monitoring results were checked and reviewed. Site audits were conducted once per week. The implementation of the environmental mitigation measures, Event Action Plans and environmental complaint handling procedures were also checked.

4. Proposal for Temporary Suspension of Water Quality Monitoring Western Portal was submitted on 15th September 2009 and approved by EPD on 30th October 2009. Marine water quality monitoring was temporary suspended starting from 31st October 2009 until there is marine-based construction activities resumed at the Western Portal (i.e. March of 2011 tentatively.)

5. In order to assess the effectiveness of the implementation of water quality mitigation measures at Western Portal, site inspection was conducted at least twice per week starting from November 2009.

6. Summary of the non-compliance of the reporting month is tabulated in Table I.

**Table I Summary Table for Non-compliance Recorded in the Reporting Month**

| Parameter | No. of Exceedance | | No. of Exceedance Due to the Project | | Action Taken |
|---|---|---|---|---|---|
| | Action Level | Limit Level | Action Level | Limit Level | |
| Eastern Portal | | | | | |
| 1-hr TSP | 0 | 0 | 0 | 0 | N/A |
| 24-hr TSP | 0 | 0 | 0 | 0 | N/A |
| Noise | 0 | 0 | 0 | 0 | N/A |
| Western Portal | | | | | |
| 1-hr TSP | 0 | 0 | 0 | 0 | N/A |
| 24-hr TSP | 0 | 0 | 0 | 0 | N/A |
| Noise | 1 | 0 | 0 | 0 | N/A |
| Intake E7 | | | | | |
| Noise | 0 | 0 | 0 | 0 | N/A |
| Intake PFLR1 | | | | | |
| Noise | 0 | 0 | 0 | 0 | N/A |
| Intake W0 | | | | | |
| Noise | 0 | 0 | 0 | 0 | N/A |
| Intake RR1 | | | | | |
| Noise | 0 | 0 | 0 | 0 | N/A |
| Intake W5 | | | | | |
| Noise | 0 | 0 | 0 | 0 | N/A |

Eastern Portal

*1-hour TSP Monitoring*

7. All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

*24-hour TSP Monitoring*

8. All 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

*Construction Noise*

9. All construction noise monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Western Portal

*1-hour TSP Monitoring*

10. All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

*24-hour TSP Monitoring*

11. All 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

*Construction Noise*

12. All construction noise monitoring was conducted as scheduled in the reporting month. One Action Level exceedance was recorded due to the complaints raised by a resident of Bel-Air on 3rd January 2010.

*Water Quality*

13. Marine water quality monitoring was temporary suspended starting from 31st October 2009.

*Construction Ground Borne Noise*

14. No construction ground borne noise monitoring was conducted in the reporting month.

Intake E7

*Construction Noise*

15. All construction noise monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Intake PFLR1

*Construction Noise*

16. All construction noise monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Intake RR1

*Construction Noise*

17. All construction noise monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Intake W0

*Construction Noise*

18. All construction noise monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Intake W5

19. All construction noise monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

**Environmental Licenses and Permits**

20. Licenses/Permits granted to the Project include the Environmental Permit (EP) for the Project, An Environmental Permit No. EP-272/2007 was issued on 26 April 2007 and Environmental Permit No. EP-272/2007/A was issue on 26 October 2007. Later, the further Environmental Permit (FEP-01/272/2007/A) and (FEP-01/272/2007/B) was issued on 28 January 2008 and 25 June 2009 to Dragages-Nishimatsu Joint Venture.

21. Registration of Chemical Waste Producer (License: 5213-148-D2393-02 for Eastern Portal and No. 5213-172-D2393-01 for Western Portal), Water Discharge License (License No.: EP860/W10/XY0175 for Area of Mount Butler Office, EP860/W10/XY0177 for Eastern Portal, EP820/W9/XT086 and WT00005864-2010 for Western Portal, EP860/W10/XY0183 for Intake W0, WT00003372-2009 for Intake SM1, WT00003737-2009 for Intake MB16, WT00004126-2009 for Intake HKU1, WT00003738-2009 for THR2, WT00004270-2009 for PFLR1, WT00004806-2009 for Intake E7, WT00004808-2009 for MBD2, WT00004885-2009 for Intake RR1, WT00005135-2009 for Intake W10, WT00005357-2009 for Intake W5, WT00005374-2009 for Intake P5, WT00005376-2009 for Intake TP4, WT00005588-2009 for Intake TP5, WT00005643-2009 for Intake E5A and WT00005754-2010 for Intake W8) and Construction Noise Permit (License No.: GW-RS0962-09 for Eastern Portal, GW-RS0741-09 for Western Portal, GW-RS0877-09 for Intake W0, GW-RS0571-09 and GW-RS0075-10 for Intake MB16, GW-RS-0640-09 for Intake SM1 and GW-RS0035-10 for Intake W5).

**Key Information in the Reporting Month**

22. Summary of key information in the reporting month is tabulated in Table II.

## Table II Summary Table for Key Information in the Reporting Month

| Event | Event Details | | Action Taken | Status | Remark |
|---|---|---|---|---|---|
| | Number | Nature | | | |
| Complaint received | 2 | Construction Noise at Western Portal | Complaint of Construction Noise at Western Portal (Investigation report was submitted) | Investigation Report submitted to DNJV for further submission | --- |
| | | Construction Groundborne Noise at Intake MB16 | Under Investigation | N/A | |
| Changes to the assumptions and key construction / operation activities recorded | 0 | --- | N/A | N/A | --- |
| Status of submissions under EP | 1 | Monthly EM&A Report (December 2009) | Submitted to EPD on 18 January 2010 (EP condition 3.3) | Verified by IEC | --- |
| Notifications of any summons & prosecutions received | 0 | --- | N/A | N/A | --- |

**Future Key Issues:**

Major site activities for the coming month include:

- TBM excavation, adit excavation and structural works for River Channel at Eastern Portal.
- TBM excavation and adit excavation at Western Portal.
- Excavation of intake structure/dropshaft at Intakes SM1, MB16, TP789, E7 and TP4.
- Excavation of dropshaft at Intake RR1 by RCD method.
- Excavation of stilling chamber for Adit W0 by Drill-and-Blast method.
- Cofferdam construction at Intakes HKU1, E7, PFLR1, THR2, W10, MBD2 and E5A.
- Site preparation works for Intakes TP4, W5, P5, E5B, TP5 and M3.
- Pipelaying works along Mount Butler Road for Intake MB16.
- Slopeworks at TP4.
- Casting of tunnel segments in China.
- Site Handover of Site Portions TP5 and M3.

# 1. INTRODUCTION

## Background

1.1 Drainage Improvement in Northern Hong Kong Island – Hong Kong West Drainage Tunnel is a Designated Project (hereafter referred to as "the Project") under the Environmental Impact Assessment Ordinance (Cap. 449). A study of environmental impact assessment (EIA) was undertaken to consider the key issues of air quality, noise, water quality, ecological, construction waste, landscape and visual, land use, cultural impacts, and identify possible mitigation measures associated with the works. An EIA Report was approved by the Environmental Protection Department (EPD) on 7 April 2006.

1.2 The project comprises the construction of a drainage tunnel deep into the ground in Mid-levels of the Northern Hong Kong Island from Tai Hang to Pokfulam to intercept and convey the stormwater from the upper catchment directly to the sea near Cyberport. The Drainage tunnel alignment starts from the Eastern Portal near Haw Par Mansion in Tai Hang and ends at the Western Portal located to the north of Cyberport running underneath the Pok Fu Lam, Tai Tam, Aberdeen and Lung Fu Shan Country Parks. The underground main drainage tunnel is 6.25m-7.25m in diameter and about 11km long. Two portals and a series of connecting adits and drop shafts are also been constructed. The general layout of the Project is shown in **Figure 1.1**.

1.3 An Environmental Permit (EP) No. EP-272/2007 was issued on 26 April 2007 for Drainage Improvement in Northern Hong Kong Island – Hong Kong West Drainage Tunnel to Drainage Services Department as the Permit Holder. Later, the further Environmental Permit (FEP-01/272/2007/A) and (FEP-01/272/2007/B) was issued on 28 January 2008 and 25 June 2009 to Dragages-Nishimatsu Joint Venture.

1.4 Cinotech Consultants Limited was commissioned by the Dragages-Nishimatsu Joint Venture (the Contractor) to undertake the Environmental Monitoring and Audit (EM&A) works for the Project. The Updated EM&A Manual was prepared by Cinotech to fulfill the requirements of the EP. The construction commencement of this Contract at Eastern Portal was on 17th April 2008 and 2nd May 2008 at Western Portal (land-based). The marine construction works was commenced on 30 May 2008. This is the 22nd monthly EM&A report summarizing the EM&A works for the Project in January 2010.

## Project Organizations

1.5 Different parties with different levels of involvement in the project organization include:

- Project Proponent – Drainage Services Department (DSD).
- The Supervising Officer or Supervising Officer's Representative (SO or SOR) – Ove Arup & Partners (ARUP).
- Environmental Team (ET) – Cinotech Consultants Limited (CCL).
- Independent Environmental Checker (IEC) – Allied Environmental Consultants Limited (AEC).
- Contractor - Dragages-Nishimatsu Joint Venture (DNJV).

1.6 The responsibilities of respective parties are detailed in Sections 1.14 to 1.28 of the updated EM&A Manual of the Project.

1.7 The key contacts of the Project are shown in Table 1.1 and the organization chart of ET is shown in **Figure 2.1**.

**Table 1.1 Key Project Contacts**

| Party | Role | Name | Position | Phone No. | Fax No. |
|---|---|---|---|---|---|
| DNJV | Permit Holder | Mr. ALTIER Daniel | Project Manager | 2671 7333 | 2671 9300 |
| | | Mr. UETAKE H. | Deputy Project Manager | | |
| ARUP | Supervising Officer | Mr. Ted Tang | CRE | 6117 6639 | 2436 1012 |
| | | Mr. Jackson Wong | SRE | 6117 6636 | |
| | | Ms. Angela Yan | RE | 3961 5206 | |
| | | Mr. Bernard Cheng | RE | 98614939 | |
| Cinotech | Environmental Team | Dr. Priscilla Choy | ET Leader | 2151 2089 | 3107 1388 |
| | | Ms. Ivy Tam | Project Coordinator and Audit Team Leader | 2151 2090 | |
| | | Mr. Henry Leung | Monitoring Team Leader | 2151 2087 | |
| AEC | Independent Environmental Checker | Ms. Grace Kwok | Independent Environmental Checker | 2815 7028 | 2815 5399 |
| DNJV | Contractor | Mr. Sing Chu | Environmental Officer | 2671 7333 | 2671 9300 |

**Construction Programme**

1.8 The site activities undertaken in the reporting month included:

- TBM excavation, adit excavation and structural works for River Channel at Eastern Portal.
- TBM excavation and adit excavation at Western Portal.
- Excavation of intake structure /dropshaft at Intakes W0, SM1 and MB16.
- Cofferdam construction at Intakes HKU1, E7, PFLR1 and THR2.
- Pipelaying works and slopeworks at Intake MB16.
- Site preparation works at Intakes W10, TP4, MBD2, RR1, TP789, E5A, W5 and E5B.
- Slopeworks at Intake TP4.
- DDA submissions for Adit/Main Tunnel Intersection, Adits, Stilling Chambers and Turning Bays.

- AIP & DDA submissions for temporary works for Intake Structures.
- DDA submissions for slope works and permanent works for Intake Structures.
- AIP & DDA submissions for temporary and permanent works for Dropshafts.
- Environmental impact monitoring.
- Casting of tunnel segments.

**Table 1.2 Construction Programme Showing the Inter-Relationship with Environmental Protection/Mitigation Measures**

| Construction Works | Major Environmental Impact | Control Measures |
|---|---|---|
| TBM excavation, adit excavation and structural works for River Channel at Eastern Portal | Noise, dust impact, water quality and waste generation | Provided water spraying during dust generation works<br>On-site waste sorting and implementation of trip ticket system<br>Appropriate desilting/sedimentation devices provided on site for treatment before discharge<br>Provide sufficient mitigation measures as recommended in Approved EIA Report |
| TBM excavation and adit excavation at Western Portal | | |
| Excavation of intake structure /dropshaft at Intakes W0, SM1 and MB16 | | |
| Cofferdam construction at Intakes HKU1, E7, PFLR1 and THR2 | | |
| Pipelaying works and slopeworks at Intake MB16 | | |
| Site preparation works at Intakes W10, TP4, MBD2, RR1, TP789, E5A, W5 and E5B | | |
| Slopeworks at Intake TP4 | | |
| DDA submissions for Adit/Main Tunnel Intersection, Adits, Stilling Chambers and Turning Bays. | Nil | Nil |
| AIP & DDA submissions for temporary works for Intake Structures | Nil | Nil |
| DDA submissions for slope works and permanent works for Intake Structures | Nil | Nil |
| AIP & DDA submissions for temporary and permanent works for Dropshafts | | |
| Environmental impact monitoring | Nil | Nil |
| Casting of tunnel segments | Nil | Nil |

**Summary of EM&A Requirements**

1.9 The EM&A programme requires construction phase monitoring construction noise, air quality and water quality and environmental site audit. The EM&A requirements for each parameter are described in the following sections, including:

- All monitoring parameters;
- Action and Limit levels for all environmental parameters;
- Event Action Plans;
- Environmental mitigation measures, as recommended in the project EIA study final report; and
- Environmental requirements in contract documents.

1.10 The advice on the implementation status of environmental protection and pollution control/mitigation measures is summarized in Section 5 of this report.

1.11 This report presents the monitoring results, observations, locations, equipment, period, methodology and QA/QC procedures of the required monitoring parameters, namely air quality, water quality and noise levels and audit works for the Project in January 2010.

## 2. AIR QUALITY

### Monitoring Requirements

2.1 1-hour and 24-hour TSP monitoring were conducted to monitor the air quality at Eastern and Western Portals. **Appendix A** shows the established Action/Limit Levels for the environmental monitoring works.

### Monitoring Locations

2.2 Three designated monitoring stations, AQ1, AQ2 and AQ3 were selected for impact dust monitoring. Table 2.1 describes the air quality monitoring locations, which are also depicted in **Figure 3.1a-b.**

**Table 2.1 Locations for Air Quality Monitoring**

| Monitoring Stations | Locations |
|---|---|
| AQ1 | True Light Middle School of Hong Kong |
| AQ2 | Outside Aegean Terrace |
| AQ3 | Outside The Site Office at Western Portal |

### Monitoring Equipment

2.3 Table 2.2 summarizes the equipment used in the impact air monitoring programme. Copies of calibration certificates are attached in **Appendix B**.

**Table 2.2 Air Quality Monitoring Equipment**

| Equipment | Model and Make | Quantity |
|---|---|---|
| Calibrator | G25A; S/N: 1536 | 1 |
| 1-hour TSP Dust Meter | Laser Dust Monitor – Model LD3 | 2 |
| HVS Sampler | GMWS 2310 c/w of TSP sampling inlet | 2 |

### Monitoring Parameters, Frequency and Duration

2.4 Table 2.3 summarizes the monitoring parameters and frequencies of impact dust monitoring for the whole construction period. The air quality monitoring schedule for the reporting month is shown in **Appendix D**.

**Table 2.3 Impact Dust Monitoring Parameters, Frequency and Duration**

| Parameters | Frequency |
|---|---|
| 1-hr TSP | Three times / 6 days |
| 24-hr TSP | Once / 6 days |

**Monitoring Methodology and QA/QC Procedure**

*1-hour TSP Monitoring*

Measuring Procedures

2.5 The measuring procedures of the 1-hour dust meters were in accordance with the Manufacturer's Instruction Manual as follows:

- Pull up the air sampling inlet cover
- Change the Mode 0 to BG with once
- Push Start/Stop switch once
- Turn the knob to SENSI.ADJ and press it
- Push Start/Stop switch once
- Return the knob to the position MEASURE slowly
- Push the timer set switch to set measuring time
- Remove the cap and make a measurement

Maintenance/Calibration

2.6 The following maintenance/calibration was required for the direct dust meters:

- Check the meter at a 3-month interval and calibrate the meter at a 1-year interval throughout all stages of the air quality monitoring.

*24-hour TSP Monitoring*

Instrumentation

2.7 High volume (HVS) samplers (Model GMWS-2310 Accu-Vol) completed with appropriate sampling inlets were employed for 24-hour TSP monitoring. The sampler was composed of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complied with that required by USEPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50). Moreover, the HVS also met all the requirements in section 2.5 of the updated EM&A Manual.

Operating/Analytical Procedures

2.8 Operating/analytical procedures for the operation of HVS were as follows:

- A horizontal platform was provided with appropriate support to secure the samplers against gusty wind.
- No two samplers were placed less than 2 meters apart.
- The distance between the sampler and an obstacle, such as buildings, was at least twice the height that the obstacle protrudes above the sampler.
- A minimum of 2 meters of separation from walls, parapets and penthouses was required for rooftop samples.
- A minimum of 2 meters separation from any supporting structure, measured horizontally was required.
- No furnaces or incineration flues were nearby.

- Airflow around the sampler was unrestricted.
- The sampler was more than 20 meters from the drip line.
- Any wire fence and gate, to protect the sampler, should not cause any obstruction during monitoring.

2.9 Prior to the commencement of the dust sampling, the flow rate of the high volume sampler was properly set (between 1.1 $m^3$/min. and 1.4 $m^3$/min.) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard Title 40, CFR Part 50.

2.10 For TSP sampling, fiberglass filters (G810) were used [Note: these filters have a collection efficiency of > 99% for particles of 0.3 mm diameter].

2.11 The power supply was checked to ensure the sampler worked properly. On sampling, the sampler was operated for 5 minutes to establish thermal equilibrium before placing any filter media at the designated air monitoring station.

2.12 The filter holding frame was then removed by loosening the four nuts and a weighted and conditioned filter was carefully centered with the stamped number upwards, on a supporting screen.

2.13 The filter was aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter. Then the filter holding frame was tightened to the filter holder with swing bolts. The applied pressure should be sufficient to avoid air leakage at the edges.

2.14 The shelter lid was closed and secured with the aluminum strip.

2.15 The timer was then programmed. Information was recorded on the record sheet, which included the starting time, the weather condition and the filter number (the initial weight of the filter paper can be found out by using the filter number).

2.16 After sampling, the filter was removed and sent to the HOKLAS laboratory (Wellab Ltd.) for weighing. The elapsed time was also recorded.

2.17 Before weighing, all filters were equilibrated in a conditioning environment for 24 hours. The conditioning environment temperature should be between 25°C and 30°C and not vary by more than ±3°C; the relative humidity (RH) should be < 50% and not vary by more than ±5%. A convenient working RH is 40%.

Maintenance/Calibration

2.18 The following maintenance/calibration was required for the HVS:

- The high volume motors and their accessories were properly maintained. Appropriate maintenance such as routine motor brushes replacement and electrical wiring checking were made to ensure that the equipment and necessary power supply are in good working condition.
- High volume samplers were calibrated at bi-monthly intervals using GMW-25 Calibration Kit throughout all stages of the air quality monitoring.

**Results and Observations**

Eastern Portal (AQ1)

2.19 All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

2.20 All 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Western Portal (AQ2)

2.21 All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Western Portal (AQ3)

2.22 All 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

2.23 Wind data was obtained from the Meteorological Observations for King's Park Automatic Weather Station for Eastern Portal and Wong Chuk Hang Automatic Weather Station for Western Portal. These wind data for the reporting period is summarized in **Appendix C.**

2.24 The monitoring data and graphical presentations of 1-hour and 24-hour TSP monitoring results are shown in **Appendices E and F** respectively.

2.25 The summary of exceedance record in reporting month is shown in **Appendix H**.

2.26 In accordance with Condition 4.2 of the EP, all environmental monitoring data was made available to the public via internet access at the website http://www.cinotech.com.hk/projects/WestDrainageTunnel/.

2.27 According to our field observations, the major dust source identified at the designated air quality monitoring stations are as follows:

| Area | Station | Major Noise Source |
|---|---|---|
| Eastern Portal | AQ1 – True Light Middle School of Hong Kong | Road Traffic Dust<br>Loading/unloading activities<br>Excavation/breaking works |
| Western Portal | AQ2 – Outside Aegean Terrace | Road Traffic Dust<br>Loading/unloading activities |
| | AQ3 – Outside The Site Office at Western Portal | |

## Table 2.4 Summary Table of Air Quality Monitoring Results during the reporting month

| Parameter | Date | Concentration (µg/m3) | Action Level, µg/m3 | Limit Level, µg/m3 |
|---|---|---|---|---|
| Eastern Portal | | | | |
| 1-hr TSP (AQ1) | 4-Jan-10 | 159.5 | 345 | 500 |
| | 5-Jan-10 | 138.1 | | |
| | 7-Jan-10 | 81.8 | | |
| | 11-Jan-10 | 101.5 | | |
| | 12-Jan-10 | 126.5 | | |
| | 15-Jan-10 | 162.8 | | |
| | 19-Jan-10 | 85.2 | | |
| | 20-Jan-10 | 92.9 | | |
| | 21-Jan-10 | 43.1 | | |
| | 25-Jan-10 | 108.5 | | |
| | 26-Jan-10 | 78.1 | | |
| | 27-Jan-10 | 103.5 | | |
| 24-hr TSP (AQ1) | 2-Jan-10 | 100.5 | 201 | 260 |
| | 8-Jan-10 | 73.3 | | |
| | 14-Jan-10 | 87.5 | | |
| | 20-Jan-10 | 118.6 | | |
| | 26-Jan-10 | 76.4 | | |
| Western Portal | | | | |
| 1-hr TSP (AQ2) | 4-Jan-10 | 93.4 | 321 | 500 |
| | 5-Jan-10 | 97.3 | | |
| | 7-Jan-10 | 87.7 | | |
| | 11-Jan-10 | 68.0 | | |
| | 12-Jan-10 | 83.2 | | |
| | 15-Jan-10 | 88.7 | | |
| | 19-Jan-10 | 83.6 | | |
| | 20-Jan-10 | 91.5 | | |
| | 21-Jan-10 | 87.9 | | |
| | 25-Jan-10 | 93.5 | | |
| | 26-Jan-10 | 93.5 | | |
| | 27-Jan-10 | 99.3 | | |
| 24-hr TSP (AQ3) | 2-Jan-10 | 130.9 | 156 | 260 |
| | 8-Jan-10 | 131.5 | | |
| | 14-Jan-10 | 121.3 | | |
| | 20-Jan-10 | 132.7 | | |
| | 26-Jan-10 | 141.3 | | |

# 3. NOISE

## Airborne Construction Noise Monitoring

### Monitoring Requirements

3.1 Ten noise monitoring stations, namely NC1, NC2, NC3, NC8, NC9, NC11, NC12, NC13, NC15 and NC16 were selected for impact monitoring in the reporting month. **Appendix A** shows the established Action and Limit Levels for the environmental monitoring works.

### Monitoring Locations

3.2 Noise monitoring was conducted at ten designated monitoring stations as listed in Table 3.1. **Figure 3.1a-g** shows the locations of these stations.

**Table 3.1 Noise Monitoring Stations**

| Monitoring Stations | Locations |
|---|---|
| NC1/NC1a | True Light Middle School of Hong Kong/Outside True Light Middle School of Hong Kong |
| NC2 | The Legend |
| NC3 | Outside Aegean Terrace |
| NC8 | Marymount Secondary School |
| NC9 | 117 Blue Pool Road |
| NC11 | Honey Court |
| NC12 | Ying Wa Girl's School |
| NC13 | Peaksville Court |
| NC15 | Hong Kong Academy |
| NC16 | Raimondi College |

### Monitoring Equipment

3.3 Table 3.2 summarizes the noise monitoring equipment. Copies of calibration certificates are provided in **Appendix B**.

**Table 3.2 Noise Monitoring Equipment**

| Equipment | Model and Make | Qty. |
|---|---|---|
| Integrating Sound Level Meter | B&K Model 2238 and SVAN 955 | 4 |
| Calibrator | B&K 4231 and SVAN 30A | 3 |

### Monitoring Parameters, Frequency and Duration

3.4 Table 3.3 summarizes the monitoring parameters, frequency and total duration of monitoring. The noise monitoring schedule is shown in **Appendix D**.

**Table 3.3 Noise Monitoring Parameters, Frequency and Duration**

| Monitoring Stations | Parameter | Period | Frequency | Measurement |
|---|---|---|---|---|
| NC1<br>NC2<br>NC3<br>NC8<br>NC9<br>*NC11<br>NC12<br>NC13<br>*NC15<br>NC16 | $L_{10}$(30 min.) dB(A)<br>$L_{90}$(30 min.) dB(A)<br>$L_{eq}$(30 min.) dB(A) | 0700-1900 hrs on normal weekdays | Once per week | Façade |
| NC1a<br>NC2<br>NC3 | $L_{10}$(5 min.) dB(A)<br>$L_{90}$(5 min.) dB(A)<br>$L_{eq}$(5 min.) dB(A) | 1900 - 2300 hrs on all other days<br>0700 - 2300 hrs holidays & 2300 – 0700 hrs of next day | | |

*Free Field Measurement

**Monitoring Methodology and QA/QC Procedures**

- The Sound Level Meter was set on a tripod at a height of 1.2 m above the ground.
- For free field measurement, the meter was positioned away from any nearby reflective surfaces. All records for free field noise levels were adjusted with a correction of +3 dB(A).
- The battery condition was checked to ensure the correct functioning of the meter.
- Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
  - frequency weighting : A
  - time weighting : Fast
  - time measurement : 30 minutes / 5 minutes
- Prior to and after each noise measurement, the meter was calibrated using a Calibrator for 94.0 dB at 1000 Hz. If the difference in the calibration level before and after measurement was more than 1.0 dB, the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.
- The wind speed was frequently checked with the portable wind meter.
- At the end of the monitoring period, the $L_{eq}$, $L_{90}$ and $L_{10}$ were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.
- Noise measurement was paused temporarily during periods of high intrusive noise if possible and observation was recorded when intrusive noise was not avoided.
- Noise monitoring was cancelled in the presence of fog, rain, and wind with a steady speed exceeding 5 m/s, or wind with gusts exceeding 10 m/s.

**Maintenance and Calibration**

3.5 The microphone head of the sound level meter and calibrator were cleaned with a soft cloth at quarterly intervals.

3.6 The sound level meter and calibrator were checked and calibrated at yearly intervals.

3.7 Immediately prior to and following each noise measurement the accuracy of the sound level meter shall be checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements may be accepted as valid only if the calibration levels from before and after the noise measurement agree to within 1.0 dB.

**Results and Observations**

3.8 Noise monitoring (0700-1900 hrs on normal weekdays, 1900-2300 hrs on all other days, 2300-0700 hrs of next day and 0700-1900 hrs on holidays) at the three designated locations (NC1/NC1a (for restricted hours), NC2 and NC3) was conducted as scheduled in the reporting month for Eastern and Western Portal.

3.9 As the noise monitoring for restricted hours inside the True Light Middle School of Hong Kong (NC1) throughout the construction period will cause disturbance to them. Thus, the noise monitoring for evening time will be conducted at outside the school (NC1a) at the nearest of the staff accommodation. As no baseline noise monitoring has been conducted at NC1a and the major noise source was the traffic noise along Tai Hang Road. The noise monitoring results will be adjusted with the reference baseline noise level at NC1 (1900-2300 on all other days and 0700 - 2300 hrs holidays & 2300 – 0700 hrs of next day) and will be used as reference only.

3.10 Noise monitoring (0700-1900 hrs on normal weekdays) at NC8, NC9, NC11, NC12, NC13, NC15 and NC16 were conducted as scheduled in the reporting month for Intake E7, PFLR1, RR1, W0 and W5 respectively.

Eastern Portal (NC1 & NC2) - 0700-1900 hrs on normal weekdays

3.11 No Action/Limit Level exceedance was recorded.

Eastern Portal (NC1a & NC2) - 1900-2300 hrs on all other days and 0700-2300 hrs on holidays

3.12 No Action/Limit Level exceedance was recorded.

Eastern Portal (NC1a & NC2) - 2300-0700 hrs of next day

3.13 No Action/Limit Level exceedance was recorded.

Western Portal (NC3) - 0700-1900 hrs on normal weekdays

3.14 No Action/Limit Level exceedance was recorded.

Western Portal (NC3) - 1900-2300 hrs on all other days and 0700-2300 hrs on holidays

3.15 No Action/Limit Level exceedance was recorded.

Western Portal (NC3) – 2300-0700 hrs of next day

3.16 One Action Level exceedance was recorded due to the complaints raised by a resident of Bel-Air on 3rd January 2010.

Intake E7 (NC8) - 0700-1900 hrs on normal weekdays

3.17 No Action/Limit Level exceedance was recorded.

Intake E7 (NC9) - 0700-1900 hrs on normal weekdays

3.18 No Action/Limit Level exceedance was recorded.

Intake PFLR1 (NC11) - 0700-1900 hrs on normal weekdays

3.19 No Action/Limit Level exceedance was recorded.

Intake RR1 (NC12) - 0700-1900 hrs on normal weekdays

3.20 No Action/Limit Level exceedance was recorded.

Intake RR1 (NC13) - 0700-1900 hrs on normal weekdays

3.21 No Action/Limit Level exceedance was recorded.

Intake W0 (NC15) - 0700-1900 hrs on normal weekdays

3.22 No Action/Limit Level exceedance was recorded.

Intake W5 (NC16) - 0700-1900 hrs on normal weekdays

3.23 No Action/Limit Level exceedance was recorded.

3.24 The summary of exceedance record in reporting month is shown in **Appendix H**.

3.25 All the Construction Noise Levels (CNLs) reported in this report were adjusted with the corresponding baseline level (i.e. Measured Leq – Baseline Leq = Measured CNL), in order to facilitate the interpretation of the noise exceedance. The baseline noise level and the Noise Limit Level at each designated noise monitoring station are presented at Table 3.4.

3.26 Noise monitoring results and graphical presentations are shown in **Appendix G**. In accordance with Condition 4.2 of the EP, all environmental monitoring data was made available to the public via internet access at the website http://www.cinotech.com.hk/projects/WestDrainageTunnel/.

3.27 The major noise source identified at the designated noise monitoring stations are as follows:

| Area | Station | Major Noise Source |
|---|---|---|
| Eastern Portal | NC1 – True Light Middle School of Hong Kong | Traffic Noise<br>Loading/unloading activities<br>Excavation/breaking works |
| | NC2 – The Legend | |
| Western Portal | NC3 – Outside Aegean Terrace | Traffic Noise<br>Loading/unloading activities |
| Intake E7 | NC8 - Marymount Secondary School<br>NC9 - 117 Blue Pool Road | Traffic Noise<br>Excavation works<br>Piling works |
| Intake PFLR1 | NC11 - Honey Court | |
| Intake RR1 | NC12 - Ying Wa Girl's School<br>NC13 - Peaksville Court | Traffic Noise<br>Excavation works<br>Piling works |
| Intake W0 | NC15 – Hong Kong Academy | Traffic Noise<br>Excavation works |
| Intake W5 | NC16 - Raimondi College | Traffic Noise<br>Excavation works |

**Table 3.4 Baseline Noise Level and Noise Limit Level for Monitoring Stations**

| Station | Baseline Noise Level, dB (A) | Noise Limit Level, dB (A) |
|---|---|---|
| NC1 – True Light Middle School of Hong Kong | 70.2 (at 0700 – 1900 hrs on normal weekdays) | 70* (at 0700 – 1900 hrs on normal weekdays) |
| NC1a – Outside True Light Middle School of Hong Kong (the nearest of staff accommodation) | 65.8 (at 0700 - 2300 hrs holidays & 1900 - 2300 hrs on all other days )<br>60.7 (at 2300 – 0700 hrs of next day) **(reference)** | 65 (at 0700 - 2300 hrs holidays & 1900 - 2300 hrs on all other days )<br><br>50 (at 2300 – 0700 hrs of next day) |
| NC2 – The Legend | 64.8 (at 0700 – 1900 hrs on normal weekdays)<br>59.1 (at 0700 - 2300 hrs holidays & 1900 - 2300 hrs on all other days )<br>53.9 (at 2300 – 0700 hrs of next day) | 75 (at 0700 – 1900 hrs on normal weekdays)<br><br>65 (at 0700 - 2300 hrs holidays & 1900 - 2300 hrs on all other days )<br><br>50 (at 2300 – 0700 hrs of next day) |
| NC3 – Outside Aegean Terrace | 57.7 (at 0700 – 1900 hrs on normal weekdays)<br>53.8 (at 0700 - 2300 hrs holidays & 1900 - 2300 hrs on all other days )<br>52.0 (at 2300 – 0700 hrs of next day) | |
| NC8 - Marymount Secondary School | 63.5 (at 0700 – 1900 hrs on normal weekdays) | 70* (at 0700 – 1900 hrs on normal weekdays) |
| NC9 - 117 Blue Pool Road | 63.3 (at 0700 – 1900 hrs on normal weekdays) | 75 (at 0700 – 1900 hrs on normal weekdays) |
| NC11 - Honey Court | 63.2 (at 0700 – 1900 hrs on normal weekdays) | 75 (at 0700 – 1900 hrs on normal weekdays) |
| NC12 - Ying Wa Girl's School | 67.1 (at 0700 – 1900 hrs on normal weekdays) | 70* (at 0700 – 1900 hrs on normal weekdays) |
| NC13 - Peaksville Court | 65.2 (at 0700 – 1900 hrs on normal weekdays) | 75 (at 0700 – 1900 hrs on normal weekdays) |
| NC15 – Hong Kong Academy | 63.5 (at 0700 – 1900 hrs on normal weekdays) | 70* (at 0700 – 1900 hrs on normal weekdays) |
| NC16 - Raimondi College | 70.4 (at 0700 – 1900 hrs on normal weekdays) | 70* (at 0700 – 1900 hrs on normal weekdays) |

(*) reduce to 65 dB(A) during school examination periods.

**Table 3.5 Summary Table of Noise Monitoring Results during the Reporting Month**

| Parameter | Date | Construction Noise Level : Leq(30min) dB (A) | Action Level | Limit Level, |
|---|---|---|---|---|
| Eastern Portal | | | | |
| NC1 | 5-Jan-10 | 65.8 Measured ≦ Baseline | When one documented complaint is received | 70*dB(A) |
| | 12-Jan-10 | 66.2 Measured ≦ Baseline | | |
| | 19-Jan-10 | 66.1 Measured ≦ Baseline | | |
| | 26-Jan-10 | 66.8 Measured ≦ Baseline | | |
| NC2 | 5-Jan-10 | 62.5 | | 75dB(A) |
| | 12-Jan-10 | 63.9 | | |
| | 19-Jan-10 | 63.5 | | |
| | 26-Jan-10 | 66.3 | | |
| Western Portal | | | | |
| NC3 | 5-Jan-10 | 54.2 Measured ≦ Baseline | When one documented complaint is received | 75dB(A) |
| | 12-Jan-10 | 54.1 Measured ≦ Baseline | | |
| | 19-Jan-10 | 54.2 Measured ≦ Baseline | | |
| | 26-Jan-10 | 54.8 Measured ≦ Baseline | | |
| Intake E7 | | | | |
| NC8 | 5-Jan-10 | 61.9 | When one documented complaint is received | 70*dB(A) |
| | 12-Jan-10 | 61.9 | | |
| | 19-Jan-10 | 62.2 | | |
| | 26-Jan-10 | 64.2 | | |
| NC9 | 5-Jan-10 | 66.1 | | 75dB(A) |
| | 12-Jan-10 | 67.2 | | |
| | 19-Jan-10 | 68.6 | | |
| | 26-Jan-10 | 74.6 | | |
| Intake PFLR1 | | | | |
| NC11 | 5-Jan-10 | 63.4 | When one documented complaint is received | 75dB(A) |
| | 12-Jan-10 | 62.1 | | |
| | 19-Jan-10 | 66.2 Measured ≦ Baseline | | |
| | 26-Jan-10 | 65.2 | | |
| Intake RR1 | | | | |
| NC12 | 5-Jan-10 | 66.9 Measured ≦ Baseline | When one documented complaint is received | 70*dB(A) |
| | 12-Jan-10 | 59.5 | | |
| | 19-Jan-10 | 53.8 | | |
| | 26-Jan-10 | 62.1 | | |
| NC13 | 5-Jan-10 | 67.8 | | 75dB(A) |
| | 12-Jan-10 | 67.0 | | |
| | 19-Jan-10 | 67.5 | | |
| | 26-Jan-10 | 66.1 | | |
| Intake W0 | | | | |
| NC15 | 5-Jan-10 | 61.7 | When one documented complaint is received | 70*dB(A) |
| | 12-Jan-10 | 63.7 | | |
| | 19-Jan-10 | 63.9 | | |
| | 26-Jan-10 | 68.5 | | |
| Intake W5 | | | | |
| NC16 | 5-Jan-10 | 69.2 Measured ≦ Baseline | When one | 70*dB(A) |

| | | | | |
|---|---|---|---|---|
| | 12-Jan-10 | 69.5 Measured ≦ Baseline | documented complaint is received | |
| | 19-Jan-10 | 69.8 Measured ≦ Baseline | | |
| | 26-Jan-10 | 69.2 Measured ≦ Baseline | | |
| **(Restricted Hours - 07:00 - 23:00 hrs holidays & 19:00 - 23:00 hrs on all other days )** | | | | |
| **Parameter** | **Date** | **Construction Noise Level : Leq(5min) dB (A)** | **Action Level** | **Limit Level,** |
| Eastern Portal | | | | |
| NC1a (Reference) | 3-Jan-10 | 32.0 | When one documented complaint is received | 65dB(A) |
| | 5-Jan-10 | 61.6 | | |
| | 10-Jan-10 | 61.6 | | |
| | 12-Jan-10 | 62.9 | | |
| | 17-Jan-10 | 61.6 | | |
| | 19-Jan-10 | 49.5 | | |
| | 24-Jan-10 | 60.8 | | |
| | 26-Jan-10 | 62.0 | | |
| | 31-Jan-10 | 61.2 | | |
| NC2 | 3-Jan-10 | 60.9 | | |
| | 5-Jan-10 | 62.4 | | |
| | 10-Jan-10 | 62.2 | | |
| | 12-Jan-10 | 61.4 | | |
| | 17-Jan-10 | 62.2 | | |
| | 19-Jan-10 | 61.2 | | |
| | 24-Jan-10 | 60.9 | | |
| | 26-Jan-10 | 64.0 | | |
| | 31-Jan-10 | 61.7 | | |
| Western Portal | | | | |
| NC3 | 3-Jan-10 | 50.5 Measured ≦ Baseline | When one documented complaint is received | 65dB(A) |
| | 5-Jan-10 | 49.6 Measured ≦ Baseline | | |
| | 10-Jan-10 | 50.4 Measured ≦ Baseline | | |
| | 12-Jan-10 | 48.7 Measured ≦ Baseline | | |
| | 17-Jan-10 | 50.8 Measured ≦ Baseline | | |
| | 19-Jan-10 | 50.1 Measured ≦ Baseline | | |
| | 24-Jan-10 | 50.2 Measured ≦ Baseline | | |
| | 26-Jan-10 | 50.7 Measured ≦ Baseline | | |
| | 31-Jan-10 | 50.3 Measured ≦ Baseline | | |
| **(Restricted Hours – 23:00 – 07:00 hrs of next day )** | | | | |
| Eastern Portal | | | | |
| NC1a (Reference) | 5-Jan-10 | 59.2 Measured ≦ Baseline | When one documented complaint is received | 50dB(A) |
| | 12-Jan-10 | 59.8 Measured ≦ Baseline | | |
| | 19-Jan-10 | 59.4 Measured ≦ Baseline | | |
| | 26-Jan-10 | 44.4 | | |
| NC2 | 5-Jan-10 | 53.6 Measured ≦ Baseline | | |
| | 12-Jan-10 | 52.8 Measured ≦ Baseline | | |
| | 19-Jan-10 | 53.1 Measured ≦ Baseline | | |
| | 26-Jan-10 | 52.2 Measured ≦ Baseline | | |
| Western Portal | | | | |
| NC3 | 6-Jan-10 | 49.4 Measured ≦ Baseline | When one documented | 50dB(A) |
| | 13-Jan-10 | 51.1 Measured ≦ Baseline | | |

| | | | | |
|---|---|---|---|---|
| | 20-Jan-10 | 49.9 Measured ≦ Baseline | complaint is received | |
| | 27-Jan-10 | 50.0 Measured ≦ Baseline | | |

(*) reduce to 65 dB(A) during school examination periods.

## Ground Borne Construction Noise Monitoring

### Monitoring Requirements

3.28 In accordance with the recommendations of the EIA study, ground borne noise monitoring is required to carry out during the TBM operation. Eight designated monitoring stations (GNC1 to GNC8) are designated for construction groundborne noise monitoring to check for compliance.

### Monitoring Locations

3.29 Construction Ground Borne Noise Monitoring at GNC3 was temporary suspended since 7 May 2009 as the ISS EastPoint Property Management Ltd. received an instruction from the Incorporated Owners of Aegean Terrace that we are not permitted to conduct any noise monitoring inside Aegean Terrace for the Project.

3.30 According to the approved EIA report, noise monitoring should be performed at NSR1a (i.e. Crane Court) when TBM is operating through the tunnel section between points A and B). Therefore, Ground borne noise monitoring has been conducted at Crane Court (GNC4) since 3 June 2009 during the TBM operated.

3.31 Ground borne noise monitoring at GNC1 – True Light Middle School, GNC2 – The Legend and GNC4 - Crane Court were completed by end of August 2009 accordingly.

3.32 Ground borne noise monitoring at GNC5 was completed by end of November 2009.

**Results and Observations**

3.33 No construction ground borne noise monitoring was conducted in the reporting month. The construction ground borne noise standards are presented at Table 3.6.

**Table 3.6 Construction Ground Borne Noise Standards**

| | **Ground Borne Noise Criteria, dB(A) (Leq 30 min)** | | |
|---|---|---|---|
| Uses | Daytime (except General Holidays and Sundays)* | Daytime during general holidays and Sundays and all days during Evening (1900 to 2300 hrs)** | Night time (2300 to 0700 hrs) |
| Domestic Premises | 65 | 55 | 40 |
| Educational Institutions (normal periods) | 60 | 55 | (1) |
| Education Institutions (during examination periods) | 55 | 55 | (1) |

*10dB(A) below the noise criteria stipulated in EIAO-TM
**10dB(A) below the noise criteria stipulated in GW-TM
(1) No sensitive uses usually present during these periods

# 4. WATER QUALITY

## Monitoring Requirements

4.1 Dissolved oxygen (DO concentration in mg/L and DO saturation in percentage), Turbidity (Tby in NTU), Suspended Solid (SS in mg/L), pH, salinity and both water and ambient temperature monitoring were conducted to monitor the water quality. **Appendix A** shows the established Action/Limit Levels for the environmental monitoring works.

4.2 Proposal for Temporary Suspension of Water Quality Monitoring Western Portal was submitted on 15th September 2009 and approved by EPD on 30th October 2009. Marine water quality monitoring was temporary suspended starting from 31st October 2009 until there is marine-based construction activities resumed at the Western Portal (i.e. March of 2011 tentatively.)

## Monitoring Locations

4.3 Locations of designated Water Quality Monitoring Stations are shown in **Figure 4.1a-b** and described in Table 4.1. Samples shall be taken at all designated Monitoring and Control Stations.

**Table 4.1 Locations for Water Quality Monitoring**

| Monitoring Stations | Coordinates | |
|---|---|---|
| | Northing | Easting |
| ***Control Stations*** | | |
| CE (Ebb) | 814956 | 830026 |
| CF (Flood) | 812420 | 831778 |
| ***Impact Stations*** | | |
| I1 | 813654 | 831088 |
| I2 | 813582 | 831105 |
| Intake A | 813044 | 831603 |
| Intake B | 814583 | 830606 |

## Results and Observations

4.4 No marine water quality monitoring was conducted during the reporting month.

## Underground water level

4.5 Ground water levels were measured once per month during the construction phase in order to ensure the water levels at those intakes near to the natural stream courses and thus on the surrounding habitats will not be significantly affected.

4.6 Locations of designated ground water level (borehole with piezometer) monitoring station UC1 at Eastern Portal has been changed to ADH48 which was verified by IEC on 5th June 2008. Ground water level monitoring location is shown in **Figure 4.2** and the Monitoring data are shown in Table 4.2.

**Table 4.2 Ground Water Level Monitoring Data at Location ADH48**

| Date | Water Level (from ground)/m |
|---|---|
| 18 January 2010 | 9.0 |

# 5. ENVIRONMENTAL AUDIT

## Site Audits

5.1 Site audits were carried out on a weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site. The summaries of site audits are attached in **Appendix I.**

5.2 Site audits were conducted on 7th, 14th, 21st and 28th January 2010. IEC site inspections were conducted on 28th January 2010. No non-compliance was observed during the site audits.

5.3 In order to assess the effectiveness of the implementation of water quality mitigation measures at Western Portal, additional site inspection was conducted on 4th, 11th, 18th and 27th January 2010. No non-compliance was observed during the site audits.

## Review of Environmental Monitoring Procedures

5.4 The monitoring works conducted by the monitoring team were inspected regularly. The following observations have been recorded for the monitoring works:

*Air Quality Monitoring*

- The monitoring team recorded all observations around the monitoring stations within and outside the construction site.
- The monitoring team recorded the temperature and weather conditions on the monitoring days.

*Noise Monitoring*

- The monitoring team recorded all observations around the monitoring stations, which might affect the monitoring result.
- Major noise sources were identified and recorded. Other intrusive noise attributing to the result was trimmed off by pausing the monitoring temporarily.

## Status of Environmental Licensing and Permitting

5.5 All permits/licenses obtained for the Project are summarized in Table 5.1.

## Status of Waste Management

5.6 The waste management of the Project has to follow the requirements and procedures stated in the Waste Management Plan which was prepared by the Contractor.

5.7 During this reporting period, a total 21 nos. of dump trucks of waste were delivered to SENT landfill and 243 nos. of dump trucks of C&D waste was delivered to Public Fill Reception

Facilities. Both the trip ticket system and chit accounting system for disposal of waste were operating smoothly to date. No overloading case was recorded during this reporting period. No disposal of inert C&D material to public sorting facilities and no dump truck without cover were reported from CEDD. In respect of the dump truck cover, DNJV keeps on take record photos and inspection to ensure that all dump trucks have fully covered the skip before leaving the site.

5.8 Two alternative disposal sites for receiving the rock materials from the Eastern Portal, a Gammon site at HK University, Leighton site at Ocean Park, Central Reclamation III and Zhuhai.

5.9 The amount of wastes generated by the activities of the Project during the reporting month is shown in **Appendix N**.

**Table 5.1 Summary of Environmental Licensing and Permit Status**

| Permit No. | Valid Period | | Details | Status |
|---|---|---|---|---|
| | From | To | | |
| **Environmental Permit (EP)** | | | | |
| FEP-01/272/2007/B | 25/6/09 | N/A | Construction of a 6.25m-7.25m in diameter and about 11 km long underground main drainage tunnel, 2 portals and a series of connecting adits and drop shafts. | Valid |
| **Effluent Discharge License** | | | | |
| EP860/W10/XY0175 | 23/06/08 | 30/06/13 | Industrial discharge (Area of Mount Butler Office) | Valid |
| EP860/W10/XY0177 | 23/06/08 | 30/06/13 | Industrial discharge (Eastern Portal Site) | Valid |
| EP820/W9/XT086 | 22/07/08 | 31/07/13 | Industrial discharge (Western Portal Site) | Valid |
| WT00005864-2010 | 20/01/10 | 31/01/15 | Industrial discharge (Western Portal Site) | Valid |
| EP860/W10/XY0183 | 19/11/08 | 30/11/13 | Industrial discharge (Intake W0, Stubbs Road, Wan Chai, HK) | Valid |
| WT00003372-2009 | - | 30/4/14 | Industrial discharge (Intake SM1) | Valid |
| WT00003737-2009 | - | 31/5/14 | Industrial discharge (Intake MB16) | Valid |
| WT00004126-2009 | | 31/5/14 | Industrial discharge (Intake HKU1) | Valid |
| WT00003738-2009 | - | 31/5/14 | Industrial discharge (Intake THR2) | Valid |
| WT00004270-2009 | - | 31/7/14 | Industrial discharge (Intake PFLR1) | Valid |
| WT00004806-2009 | - | 30/09/14 | Industrial discharge (Intake E7) | Valid |
| WT00004808-2009 | - | 30/09/14 | Industrial discharge (Intake MBD2) | Valid |
| WT00004885-2009 | - | 30/09/14 | Industrial discharge (Intake RR1) | Valid |
| WT00005135-2009 | - | 31/10/14 | Industrial discharge (Intake W10) | Valid |
| WT00005374-2009 | - | 30/11/14 | Industrial discharge (Intake P5) | Valid |
| WT00005376-2009 | - | 30/11/14 | Industrial discharge (Intake TP4) | Valid |
| WT00005357-2009 | - | 30/11/14 | Industrial discharge (Intake W5) | Valid |
| WT00005588-2009 | - | 31/12/14 | Industrial discharge (Intake TP5) | Valid |
| WT00005643-2009 | - | 31/12/14 | Industrial discharge (Intake E5A) | Valid |
| WT00005754-2010 | - | 31/01/15 | Industrial discharge (Intake W8) | Valid |
| **Registration of Chemical Waste Producer** | | | | |
| 5213-148-D2393-02 | --- | N/A | Chemical waste types:<br>Spent oil | Valid |
| 5213-172-D2393-01 | --- | N/A | Chemical waste types:<br>Spent oil | Valid |
| **Construction Noise Permit (CNP)** | | | | |

| Permit No. | Valid Period | | Details | Status |
|---|---|---|---|---|
| | From | To | | |
| GW-RS0962-09 | 23/12/09 | 22/06/10 | Construction Noise Permit for the use of powered mechanical equipment for carrying out construction work at Hong Kong West Drainage Tunnel (Eastern Portal) (DSD Contract No. DC/2007/10), Tai Hang Road, Causeway Bay, Hong Kong. | Valid |
| GW-RS0741-09 | 1/10/09 | 31/03/10 | Construction Noise Permit for the use of powered mechanical equipment for carrying out construction work and performing prescribed construction work at Hong Kong West Drainage Tunnel (Western Portal), Cyberport Road, Cyberport, Hong Kong (DSD Contract No. Dc/2007/10). | Valid |
| GW-RS0877-09 | 24/11/09 | 23/05/10 | Construction Noise Permit for the use of powered mechanical equipment for carrying out construction work at a construction site of "Hong Kong West Drainage Tunnel" near Stubbs Road Garden, Wan Chai, Hong Kong | Valid |
| GW-RS0571-09 | 30/07/09 | 29/01/10 | Construction Noise Permit for the use of powered mechanical equipment for carrying out construction work at a site near the junction of Mount Butler Road and Henderson Road, Hong Kong. | Valid |
| GW-RS0075-10 | 29/01/10 | 28/07/10 | Construction Noise Permit for the use of powered mechanical equipment for carrying out construction work at a site near the junction of Mount Butler Road and Henderson Road, Hong Kong. | Valid |
| GW-RS0640-09 | 25/08/09 | 21/02/10 | Construction Noise Permit for the use of powered mechanical equipment for carrying out construction work at Smithfield Road outside Mei Wah Mansion, Kennedy Town, Hong Kong. | Valid |
| GW-RS0035-10 | 25/01/10 | 27/02/10 | Construction Noise Permit for the use of powered mechanical equipment for carrying out construction work at Glenealy outside Raimondi College, Hong Kong | Valid |

### Implementation Status of Environmental Mitigation Measures

5.10 During site inspections in the reporting month, no non-conformance was identified. ET weekly site inspections were carried out during the reporting month and the observations and recommendations are summarized in Table 5.2.

## Table 5.2 Observations and Recommendations of Site Inspections

| Parameters | Date | Observations and Recommendations | Follow-up |
|---|---|---|---|
| ***Water Quality*** | 14/01/2010 | Surface runoff from site was observed discharging to the public road at Intake TP789. The Contractor was reminded to provide sand bags to direct the wastewater for treatment. | Rectification/improvement was observed during the follow-up audit session. |
| | 14/01/2010 | Oily water was observed discharging out at Intake SM1. The Contractor was reminded to provide mitigation measures to ensure the site discharge was treated prior to disposal. | Follow-up action was needed for the item. |
| | 21/01/2010 | Silty water was observed overflow and discharging to the stream at Intake THR2. The contractor was reminded to provide desilting facilities for settling the muddy water prior to disposal. | This item was not observed during the follow-up audit session. |
| | 21/01/2010 | Oily water due to the oil leakage at the drip tray was observed discharging to the channel at Intake SM1. The contractor was reminded to ensure the site discharge was treated and comply with the WPCO license. | Follow-up action was needed for the item. |
| | 28/01/2010 | Chemical waste container was observed mixed with the general refuse at the material skip at Western Portal. The Contractor was reminded to provide sorting for all the wastes on site. | Rectification/improvement was observed during the follow-up audit session. |
| ***Air Quality*** | 07/01/2010 | Sand and silt were observed deposited at the water diversion channel at Intake MB16. The Contractor was reminded to clear them. | Rectification/improvement was observed during the follow-up audit session. |
| ***Reminders*** | 07/01/2010 | The Contractor was reminded of the followings:<br>- Clear the mud trail and oil stains at the exits of Intake MB16. | Follow-up action was needed for the item. |
| | 07/01/2010 | The Contractor was reminded of the followings:<br>- Properly maintain the piling rig at Intake E7 to prevent dust emission. | Follow-up action was needed for the item. |
| | 07/01/2010 | The Contractor was reminded of the followings:<br>- Clear the stagnant water at the drip tray at Intake TP4 and SM1. | Follow-up action was needed for the item. |
| | 07/01/2010 | The Contractor was reminded of the followings:<br>- Regular clear the construction wastes at Intake MBD2. | Rectification/improvement was observed during the follow-up audit session. |
| | 14/01/2010 | The Contractor was reminded of the followings:<br>- Clear the oil stains at exists of Intake MB16. | Rectification/improvement was observed during the follow-up audit session. |
| | 14/01/2010 | The Contractor was reminded of the followings:<br>- Properly clear the discarded cement bags at Eastern Portal. | Follow-up action was needed for the item. |
| | 14/01/2010 | The Contractor was reminded of the followings: | Follow-up action was needed for the item. |

| Parameters | Date | Observations and Recommendations | Follow-up |
|---|---|---|---|
| | | - Clear the stagnant water at the drip tray at Intake W0, SM1 and E7. | |
| | 14/01/2010 | The Contractor was reminded of the followings:<br>- Regular clear the deposited silt at the channels at Intake HKU1. | Follow-up action was needed for the item. |
| | 14/01/2010 | The Contractor was reminded of the followings:<br>- Provide noise emission label for the hand-held percussive breaker at Intake SM1. | Follow-up action was needed for the item. |
| | 14/01/2010 | The Contractor was reminded of the followings:<br>- Clear the oil leakage at the workshop at Western Portal. | Rectification/improvement was observed during the follow-up audit session. |
| | 21/01/2010 | The Contractor was reminded of the followings:<br>- To improve the noise mitigation measures for the noise generation works at Intake MB16. | This item was not observed during the follow-up audit session. |
| | 21/01/2010 | The Contractor was reminded of the followings:<br>- Properly clear the discarded cement bags at Eastern Portal. | This item was not observed during the follow-up audit session. |
| | 21/01/2010 | The Contractor was reminded of the followings:<br>- Clear the C&D wastes at the existing stream at Eastern Portal. | This item was not observed during the follow-up audit session. |
| | 21/01/2010 | The Contractor was reminded of the followings:<br>- Provide noise emission label for the hard, held percussive breaker at Intake SM1. | Rectification/improvement was observed during the follow-up audit session. |
| | 21/01/2010 | The Contractor was reminded of the followings:<br>- To seal the bottom of the hoarding at intake E5A. | This item was not observed during the follow-up audit session. |
| | 28/01/2010 | The Contractor was reminded of the followings:<br>- Clear the drainage Channels at Intake PFLR1 and Western Portal at near spoil basin. | Rectification/improvement was observed during the follow-up audit session. |
| | 28/01/2010 | The Contractor was reminded of the followings:<br>- Clear the oil stains at the platform at Intake HKU1. | Rectification/improvement was observed during the follow-up audit session. |
| | 28/01/2010 | The Contractor was reminded of the followings:<br>- Clear the chemical container at Intake HKU1. | Rectification/improvement was observed during the follow-up audit session. |

5.11 The monthly IEC audit was carried out on 28th January 2010, the observations were recorded and they are presented as follows:

5.12 The last observations were recorded by IEC on 31st December 2009.

*Follow Up Observation:*

- Drainage was observed blocked by sand and cement water at Western Portal. The Contractor was reminded to maintain drainage in good condition (outstanding).
- Exposed slope and unpaved surface at MB16 without tarpaulin sheet cover will be followed up in next site audit (outstanding).
- Oil stains observed at MB16 site entrance will be followed up in next audit (outstanding).
- Stagnant water observed in folder tarpaulin sheet at Eastern Portal will be followed up in next audit (outstanding).
- Provision of drip tray for oil drum at Eastern Portal will be followed up in next audit.

*28th January 2010*

Observations

*Western Portal*

- Chemicals used for waste water treatment plant were stored improperly. The Contractor was requested to store chemicals properly.
- Oil stains were observed on ground near site entrance at PFLR1. The Contractor was requested to clear oil stains.

*Reminder*

- The Contractor was reminded to maintain equipments at good condition to ensure no dark smoke emitted from equipment operation.
- The Contractor was reminded to enhance house keeping work such as used/unused chemicals should be placed properly.
- The Contractor was reminded to carry out groundborne noise monitoring in accordance with the approved construction noise permit condition.

**Non-compliance Recorded during Site Inspections**

5.13 No non-compliance was recorded in the reporting month.

**Summary of Mitigation Measures Implemented**

5.14 The Contractor has implemented the mitigation measures as recommended in the EIA and the updated EM&A Manual in the reporting period except those mitigation measures not applicable at this stage. Status of the implementation of mitigation measures is presented in Table 1.2 and **Appendix J**.

5.15 According to the updated EM&A Manual and EP condition, mitigation measures such as noise enclosure and use of quiet PME are required to be implemented.

5.16 The actual implementation status of major mitigation measures required under the EP is as follows:

- Installation of silt curtain during the course of marine works.
- Provide noise enclosure at Eastern Portal.
- Submitted the Alternative Plant Inventory (EP condition 2.8(c)).

5.17 An updated summary of the EMIS is provided in **Appendix J**.

**Implementation Status of Event Action Plans**

5.18 The Event Action Plans for air quality and noise are presented in **Appendix K.**

*Eastern Portal*

1-hr TSP Monitoring

5.19 No Action/Limit Level exceedance was recorded in the reporting month.

24-hr TSP Monitoring

5.20 No Action/Limit Level exceedance was recorded in the reporting month.

Construction Noise

5.21 No Action/Limit Level exceedance was recorded for construction noise.

*Western Portal*

1-hr TSP Monitoring

5.22 No Action/Limit Level exceedance was recorded in the reporting month.

24-hr TSP Monitoring

5.23 No Action/Limit Level exceedance was recorded in the reporting month.

Construction Noise

5.24 One Action Level exceedance was recorded due to the complaints raised by a resident of Bel-Air on 3rd January 2010.

Water Quality

5.25 Marine water quality monitoring was temporary suspended starting from 31st October 2009.

Construction Ground Borne Noise

5.26 No construction ground borne noise monitoring was conducted in the reporting month.

*Intake E7*

Construction Noise

5.27 No Action/Limit Level exceedance was recorded in the reporting month.

*Intake PFLR1*

Construction Noise

5.28 No Action/Limit Level exceedance was recorded in the reporting month.

*Intake RR1*

Construction Noise

5.29 No Action/Limit Level exceedance was recorded in the reporting month.

*Intake W0*

Construction Noise

5.30 No Action/Limit Level exceedance was recorded in the reporting month.

*Intake W5*

Construction Noise

5.31 No Action/Limit Level exceedance was recorded in the reporting month.

**Summary of Complaint, Warning, Notification of any Summons and Successful Prosecution**

5.32 Two environmental complaints were received and investigated in the reporting month. The details are as follow:-

(1) The 1st public complaint was received from the resident of Bel-Air through the project hotline on 3rd January 2010 about "wooing" sound heard after midnight, and he suspected that the sound was coming the construction sites at Cyberport.
(2) The 2nd complaint was received from Clement Court, a short distance downhill from MB16 on 20th January 2010 about the suspected groundborne noise. (Under investigation)

5.33 No warning, summon and notification of successful prosecution was received in the reporting month.

5.34 There were a total of 37 project related environmental complaints (with investigation report), no warning, summons and successful prosecution received since the commencement of the Project. The Complaint Log is attached in **Appendix L**.

# 6. FUTURE KEY ISSUES

## Key Issues for the Coming Month

6.1 Key environmental issues at Eastern and Western Portals, Intake E7, PFLR1, RR1, W0 and Intake W5 in the coming month include:

*Both Eastern and Western Portals*
*Intake E7, PFLR1, RR1, W0 and W5*

- Noise from operation of the equipment, especially for rock-breaking activities and machinery on-site;
- Dust generation from stockpiles of dusty materials, excavation works and rock breaking activities;
- Runoff from exposed slope;
- Wastewater and runoff discharge from site;
- Regular removal of silt, mud and sand along u-channels and sedimentation tanks;
- Review and implementation of temporary drainage system for the surface runoff;
- Proper storage of construction materials on site;
- Storage of chemicals/fuel and chemical waste/waste oil on site;
- Watering for rock breaking activity, soil nailing and on haul road;
- Accumulation of general and construction waste on site.

6.2 The tentative program of major site activities and the impact prediction and control measures for the coming two month, i.e. March 2010 to May 2010 are summarized as follows:

| Construction Works | Major Impact Prediction | Control Measures |
|---|---|---|
| - TBM excavation, adit excavation and structural works for River Channel at Eastern Portal.<br>- TBM excavation and adit excavation at Western Portal.<br>- Excavation of intake structure/dropshaft at Intakes SM1, MB16, TP789, E7 and TP4. | Air impact (dust) | a) Frequent watering of haul road and unpaved/exposed areas;<br>b) Frequent watering or covering stockpiles with tarpaulin or similar means; and<br>c) Watering of any earth moving activities. |
| | Water quality impact (surface run-off) | d) Diversion of the collected effluent to de-silting facilities for treatment prior to discharge to public storm water drains;<br>e) Provision of adequate de-silting facilities for treating surface run-off and other collected effluents prior to discharge;<br>f) Provision of perimeter protection such as sealing of hoarding footings to avoid run-off from entering the existing storm water drainage system via public road; and<br>g) Provision of measures to prevent discharge into the stream. |

| Construction Works | Major Impact Prediction | Control Measures |
|---|---|---|
| - Excavation of dropshaft at Intake RR1 by RCD method.<br>- Excavation of stilling chamber for Adit W0 by Drill-and-Blast method.<br>- Cofferdam construction at Intakes HKU1, E7, PFLR1, THR2, W10, MBD2 and E5A.<br>- Site preparation works for Intakes TP4, W5, P5, E5B, TP5 and M3.<br>- Pipelaying works along Mount Butler Road for Intake MB16.<br>- Slopeworks at TP4.<br>- Casting of tunnel segments in China.<br>- Site Handover of Site Portions TP5 and M3. | Noise Impact | h) Scheduling of noisy construction activities if necessary to avoid persistent noisy operation;<br>i) Controlling the number of plants use on site;<br>j) Regular maintenance of machines; and<br>k) Use of acoustic barriers if necessary. |

**Monitoring Schedule for the Next Month**

6.3 The tentative environmental monitoring schedules for the next month are shown in **Appendix D**.

**Construction Program for the Next Month**

6.4 The tentative construction program for the Project is provided in **Appendix M**.

# 7. CONCLUSIONS AND RECOMMENDATIONS

## Conclusions

7.1 Environmental monitoring works were performed in the reporting month and all monitoring results were checked and reviewed.

1-hr TSP Monitoring

7.2 All 1-hr TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

24-hr TSP Monitoring

7.3 All 24-hr TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Construction Noise Monitoring

7.4 All construction noise monitoring was conducted as scheduled in the reporting month. One Action Level exceedance was recorded due to the complaints raised by a resident of Bel-Air on 3rd January 2010.

Construction Ground Borne Noise Monitoring

7.5 No construction groundborne noise monitoring was conducted in the reporting month.

Water Quality

7.6 Marine water quality monitoring was temporary suspended starting from 31st October 2009.

Complaint and Prosecution

7.7 Two environmental complaints were received and investigated in the reporting month.

7.8 No environmental prosecution was received in the reporting month.

## Recommendations

7.9 According to the environmental audit performed in the reporting period, the following recommendations were made:

*Air Quality Impact*

- To prohibit any open burning on site.
- To regularly maintain the machinery and vehicles on site.
- To implement dust suppression measures on all haul roads, stockpiles, dry surfaces and excavation works.
- To provide hoarding

*Noise Impact*

- To inspect the noise sources inside the site.
- To space out noisy equipment and position the equipment as far away as possible from sensitive receivers.
- To provide temporary noise barriers for operations of noisy equipment near the noise sensitive receivers in an appropriate location.

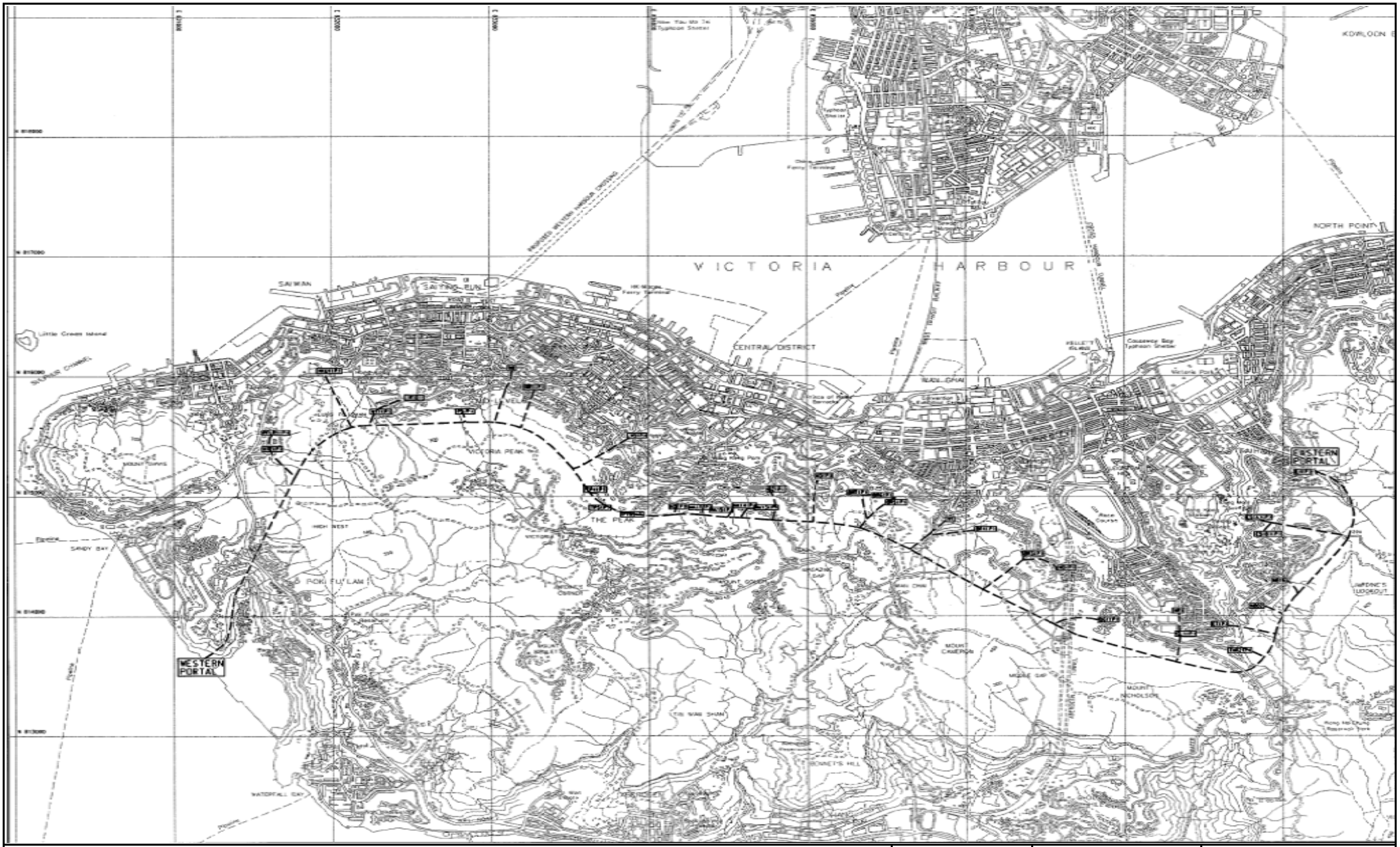
*Water Impact*

- To prevent any surface runoff discharge into any stream course.
- To review and implement temporary drainage system.
- To identify any wastewater discharges from site.
- To ensure properly maintenance for de-silting facilities.
- To clear the silt and sediment in the sedimentation tanks.
- To review the capacity of de-silting facilities for discharge.
- To divert all the water generated from construction site to de-silting facilities with enough handling capacity before discharge.
- To avoid accumulation of stagnant and ponding water on site.

*Waste/Chemical Management*

- To check for any accumulation of waste materials or rubbish on site.
- To ensure the performance of sorting of C&D materials at source (during generation);
- To carry out inspection of dump truck at site exit to ensure inert and non-inert C&D materials are properly segregated before removing off site.
- To avoid any discharge or accidental spillage of chemical waste or oil directly from the site.
- To avoid improper handling or storage of oil drum on site.

**FIGURES**



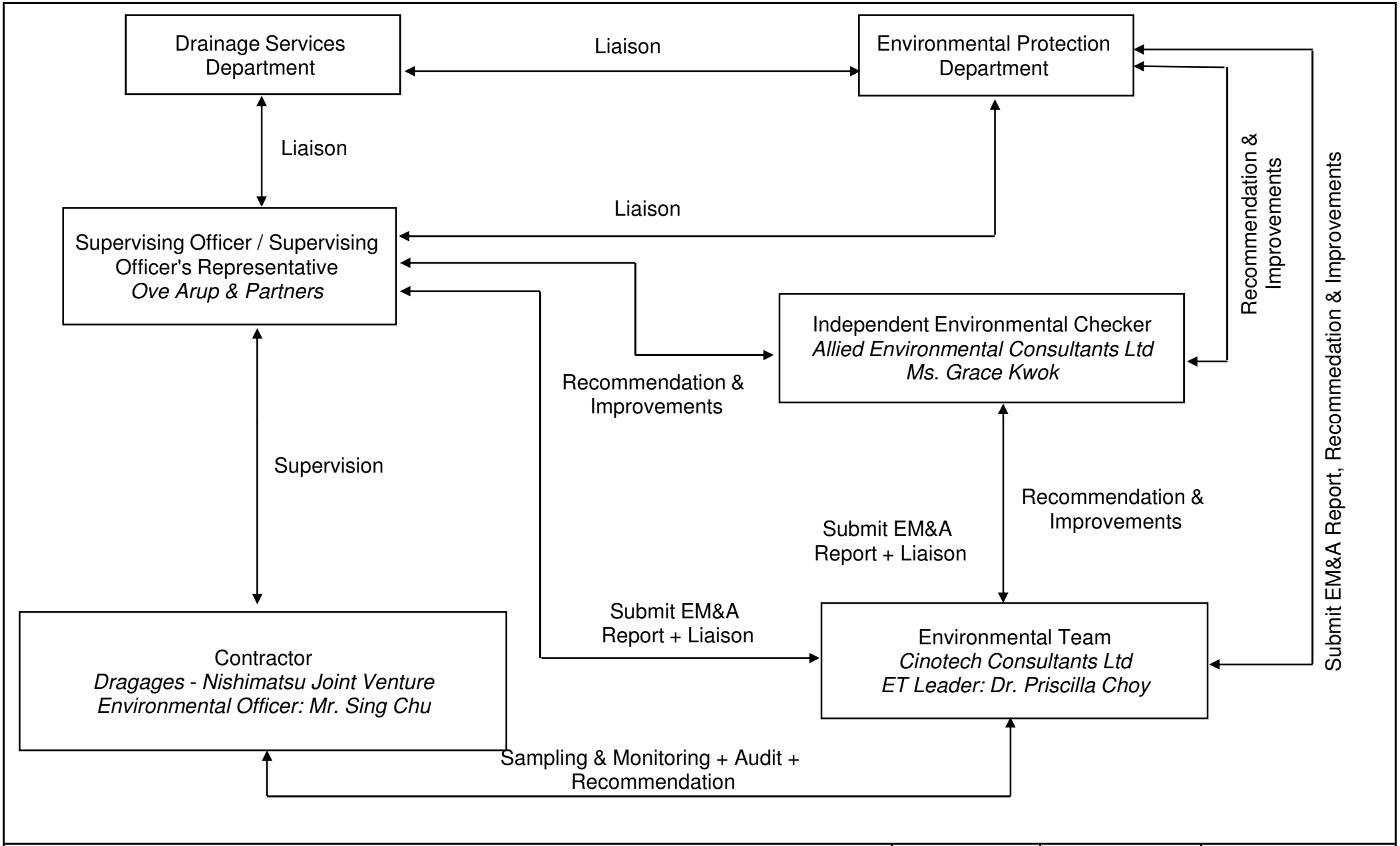

Title

Contract No. DC/2007/10
Design and Construction of Hong Kong West Drainage Tunnel

Site Layout Plan

| | |
|---|---|
| Scale | N.T.S |
| Project No. | MA8001 |
| Date | Apr-08 |
| Figure | 1.1 |

CINOTECH




| | | | |
|---|---|---|---|
| Title: Contract No. DC/2007/10<br>Design and Construction of Hong Kong West Drainage Tunnel<br>Organization Chart | Scale: N.T.S | Project No.: MA8001 | CINOTECH |
| | Date: Nov-09 | Figure: 2.1 | |


AQ1- True Light Middle School of Hong Kong (Canopy)

NC1- True Light Middle School of Hong Kong (2/F floor)

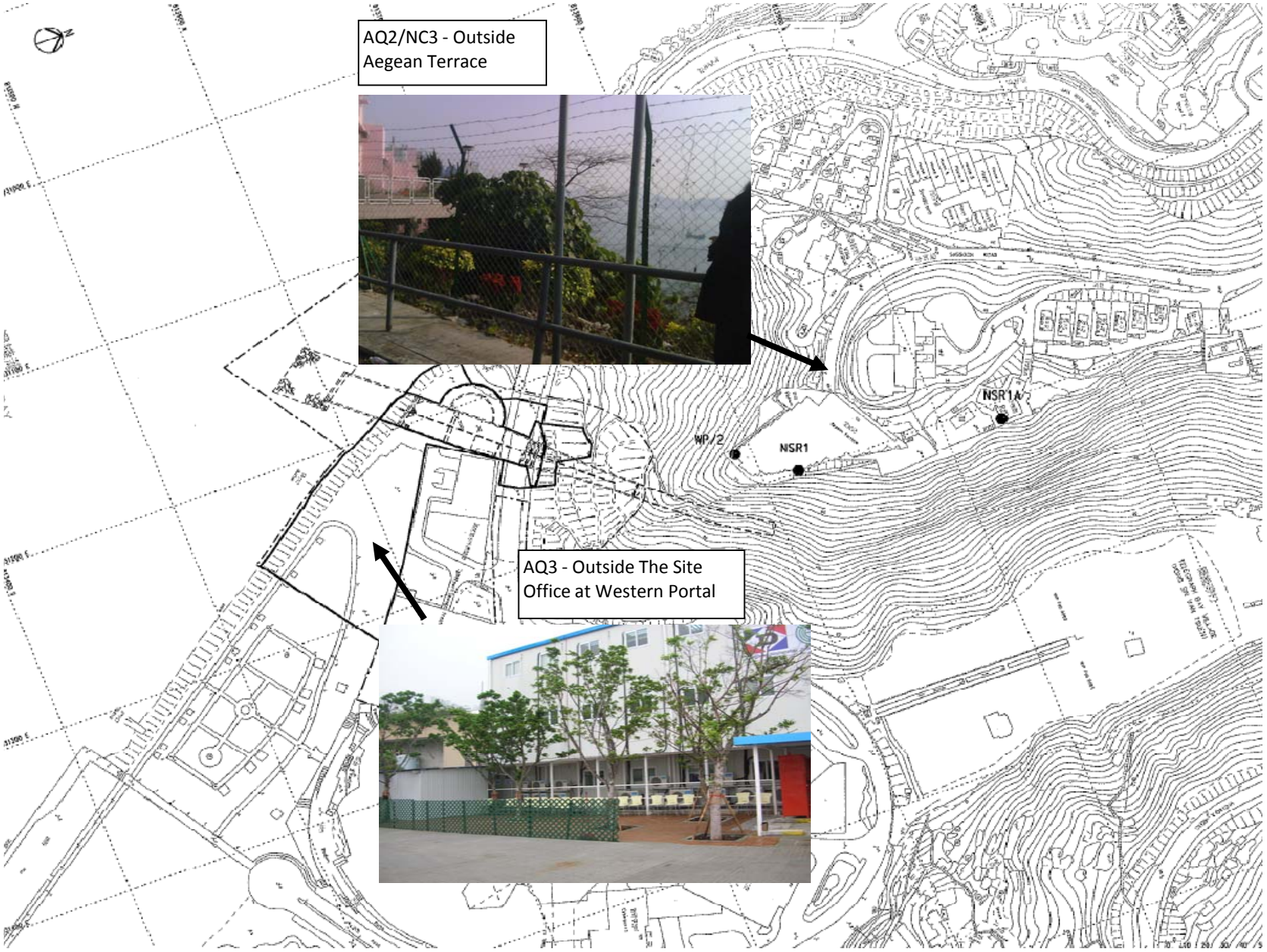
NC1a - Outside True Light Middle School of Hong Kong

NC2- The Legend (16/F Podium)

EASTERN PORTAL

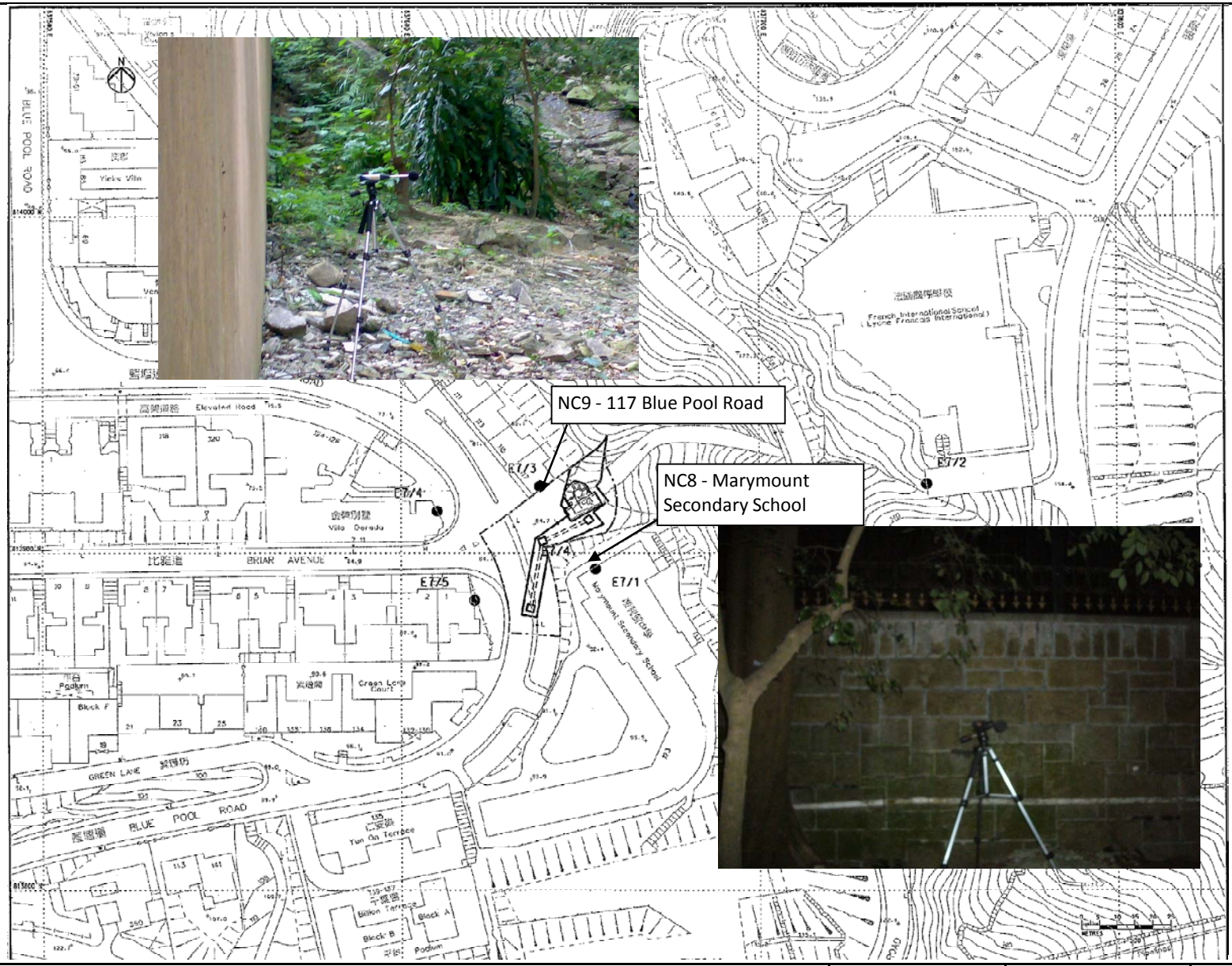
| | | | |
|---|---|---|---|
| Title | Contract No. DC/2007/10<br>Design and Construction of Hong Kong West Drainage Tunnel<br>(Eastern Portal)<br>Locations of Air Quality and Noise Monitoring Station | Scale: N.T.S<br>Date: Sep-09 | Project No.: MA 8001<br>Figure: 3.1a |

CINOTECH




| | | | |
|---|---|---|---|
| Title | Contract No. DC/2007/10<br>Design and Construction of Hong Kong West Drainage Tunnel<br>(Western Portal)<br>Locations of Air Quality and Noise Monitoring Station | Scale: N.T.S<br>Date: Sep-09 | Project No.: MA 8001<br>Figure: 3.1b |

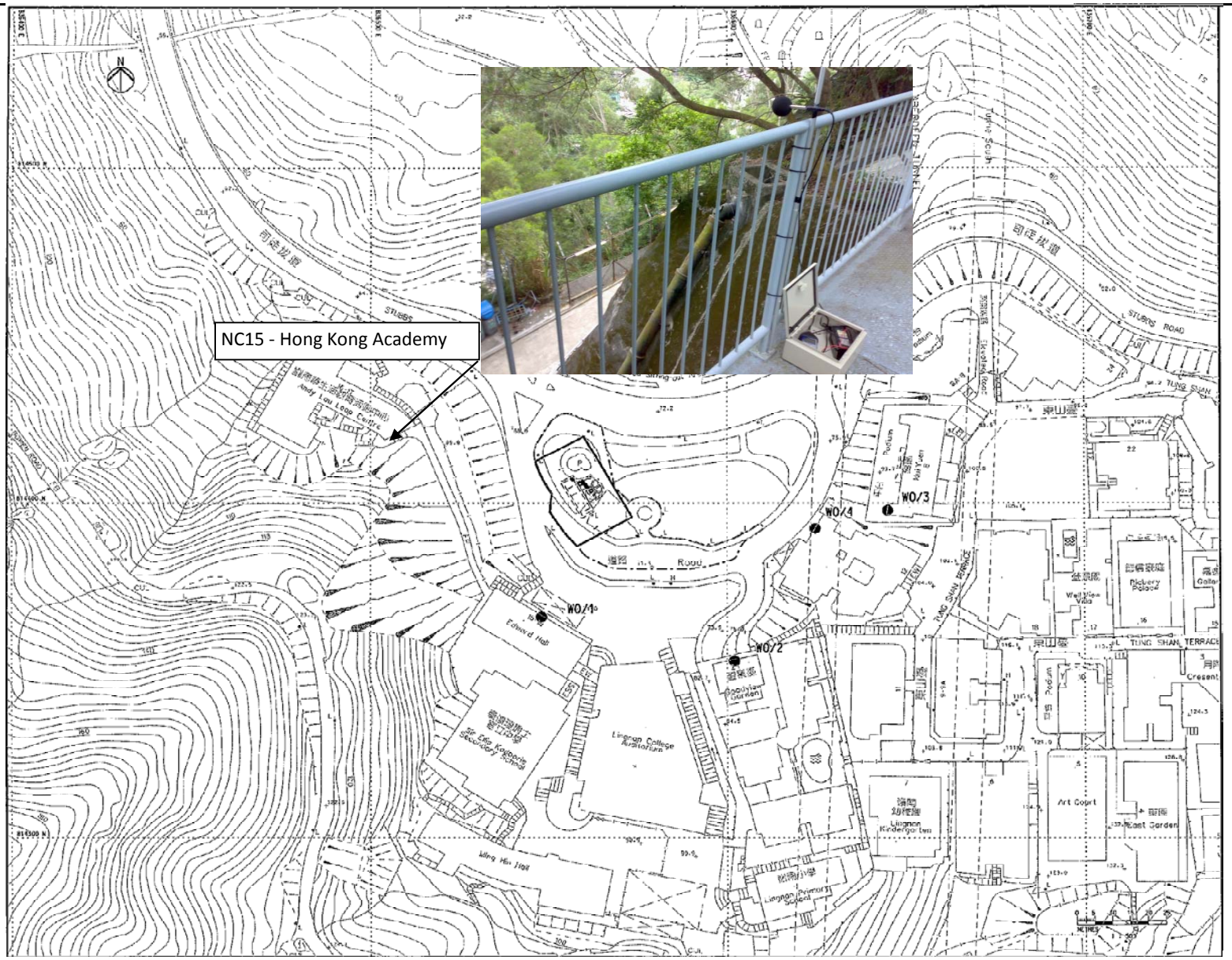
CINOTECH




| | | | |
|---|---|---|---|
| Title | Contract No. DC/2007/10<br>Design and Construction of Hong Kong West Drainage Tunnel<br>(Intake E7)<br>Locations of Noise Monitoring Stations | Scale: N.T.S<br>Date: Sep-09 | Project No.: MA 8001<br>Figure: 3.1c |

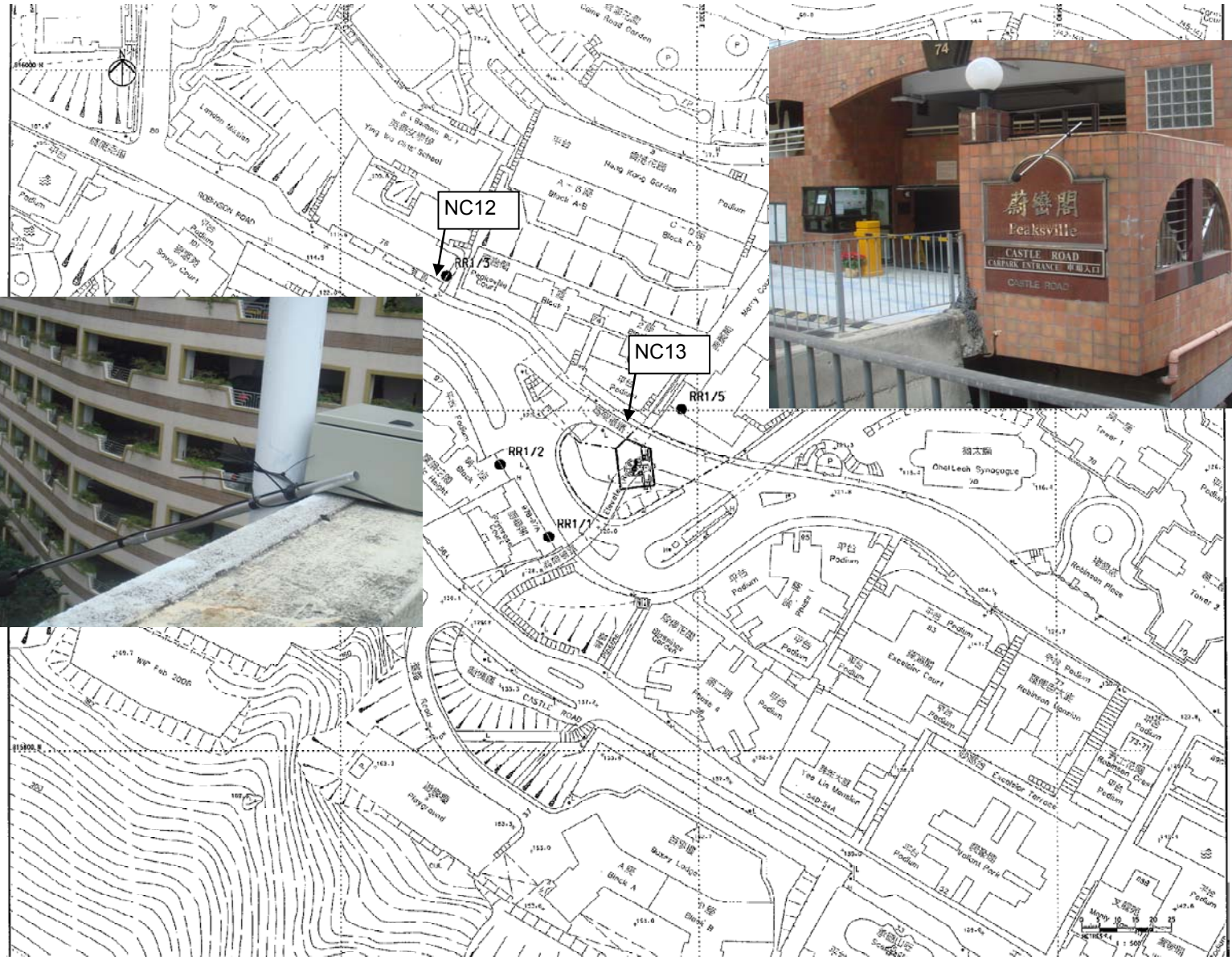
CINOTECH


| | | | |
|---|---|---|---|
| Title | | Scale | Project |
| Contract No. DC/2007/10<br>Design and Construction of Hong Kong West Drainage Tunnel<br>(Intake PFLR1)<br>Locations of Noise Monitoring Stations | | N.T.S | No. MA 8001 |
| | | Date<br>Sep-09 | Figure<br>3.1d |
| | | | CINOTECH |



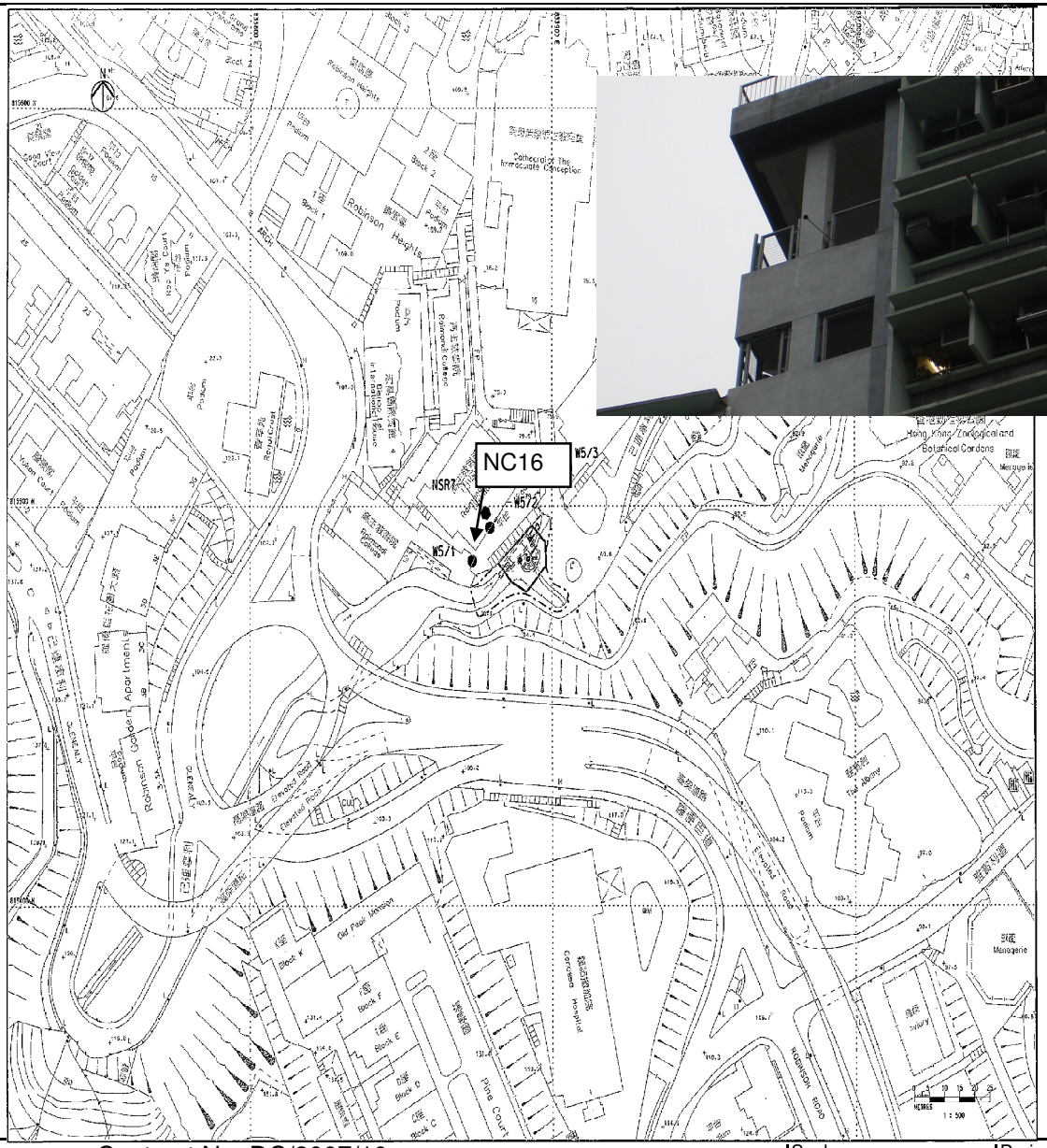

| | | | |
|---|---|---|---|
| Title | Scale | Project | |
| Contract No. DC/2007/10<br>Design and Construction of Hong Kong West Drainage Tunnel<br>(Intake W0)<br>Locations of Noise Monitoring Stations | N.T.S | No. | MA 8001 |
| | Date | Figure | |
| | Sep-09 | | 3.1e |

CINOTECH



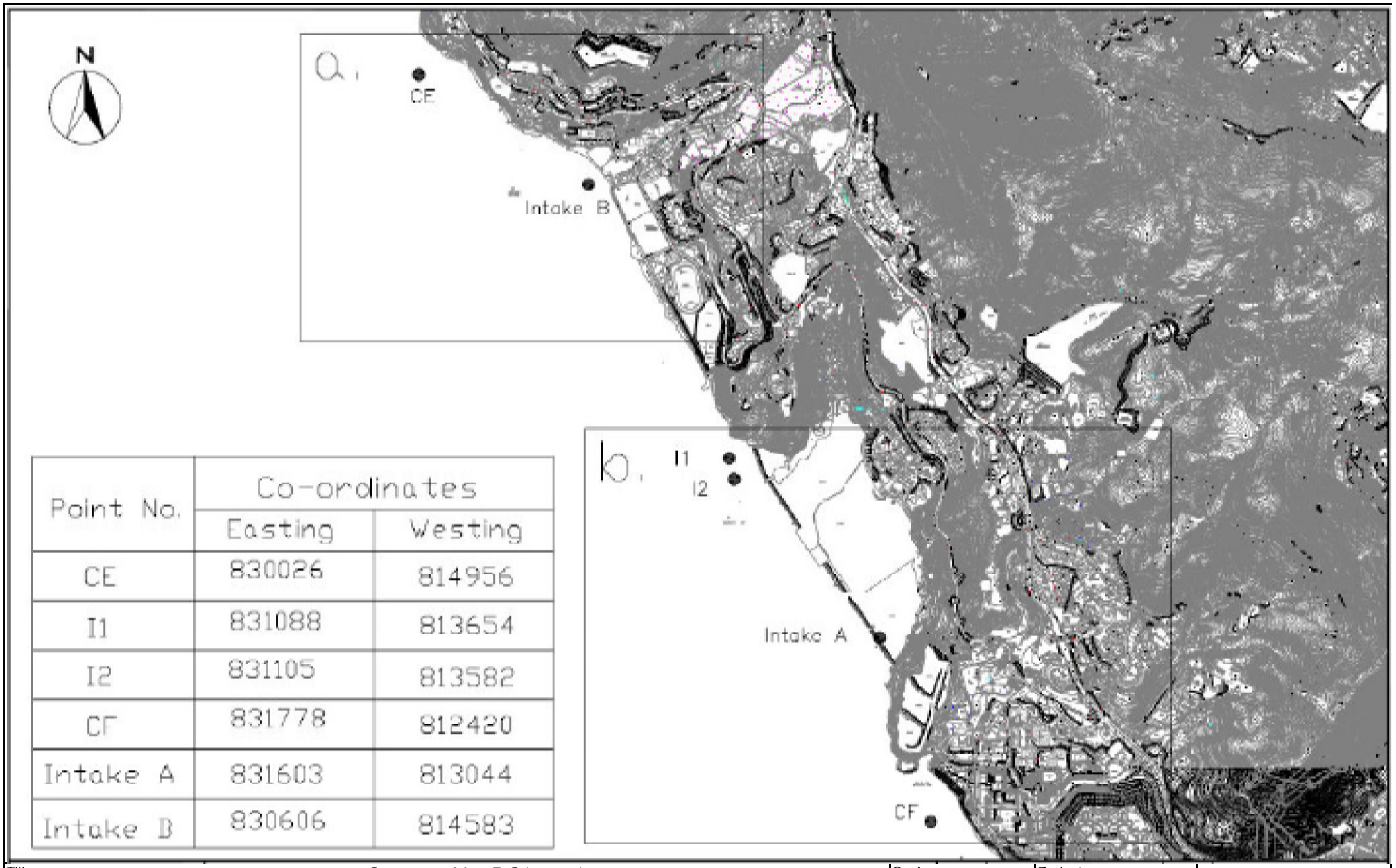

| | | | |
|---|---|---|---|
| Title | Contract No. DC/2007/10<br>Design and Construction of Hong Kong West Drainage Tunnel<br>(Intakes RR1)<br>Locations of Noise Monitoring Stations | Scale: N.T.S<br>Date: Jan-10 | Project No.: MA8001<br>Figure: 3.1f |

CINOTECH




| | | | |
|---|---|---|---|
| Title | Contract No. DC/2007/10<br>Design and Construction of Hong Kong West Drainage Tunnel<br>(Intakes W5)<br>Locations of Noise Monitoring Stations | Scale: N.T.S<br>Date: Jan-10 | Project No.: MA8001<br>Figure: 3.1g |

CINOTECH




| Point No. | Co-ordinates | |
|---|---|---|
| | Easting | Westing |
| CE | 830026 | 814956 |
| I1 | 831088 | 813654 |
| I2 | 831105 | 813582 |
| CF | 831778 | 812420 |
| Intake A | 831603 | 813044 |
| Intake B | 830606 | 814583 |

Title

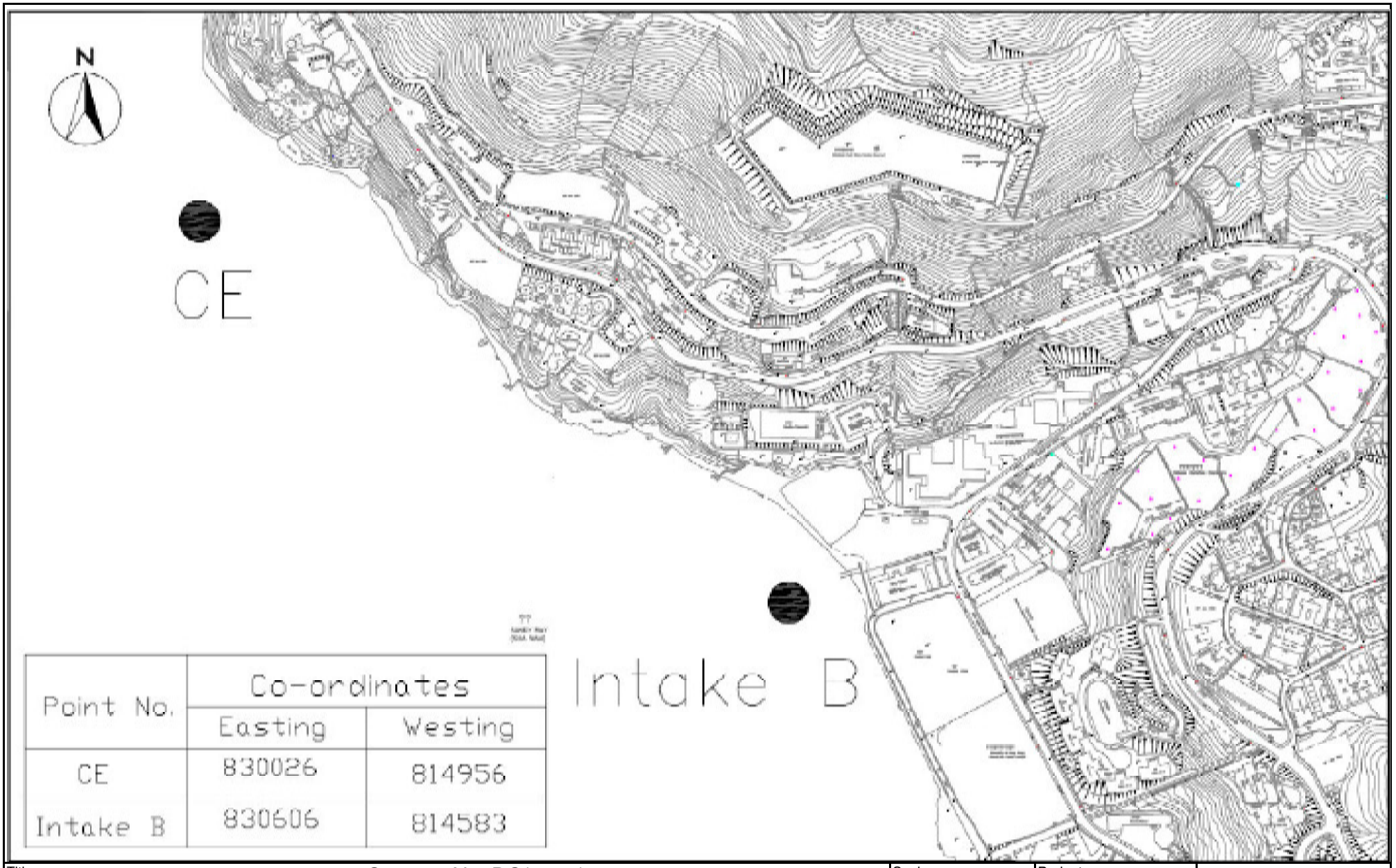
Contract No. DC/2007/10

Design and Construction of Hong Kong West Drainage Tunnel

Locations of Water Quality Monitoring Stations

| Scale | N.T.S | Project No. | MA8001 |
|---|---|---|---|
| Date | Jun-08 | Figure | 4.1 |

CINOTECH




| Point No. | Co-ordinates | |
|---|---|---|
| | Easting | Westing |
| CE | 830026 | 814956 |
| Intake B | 830606 | 814583 |

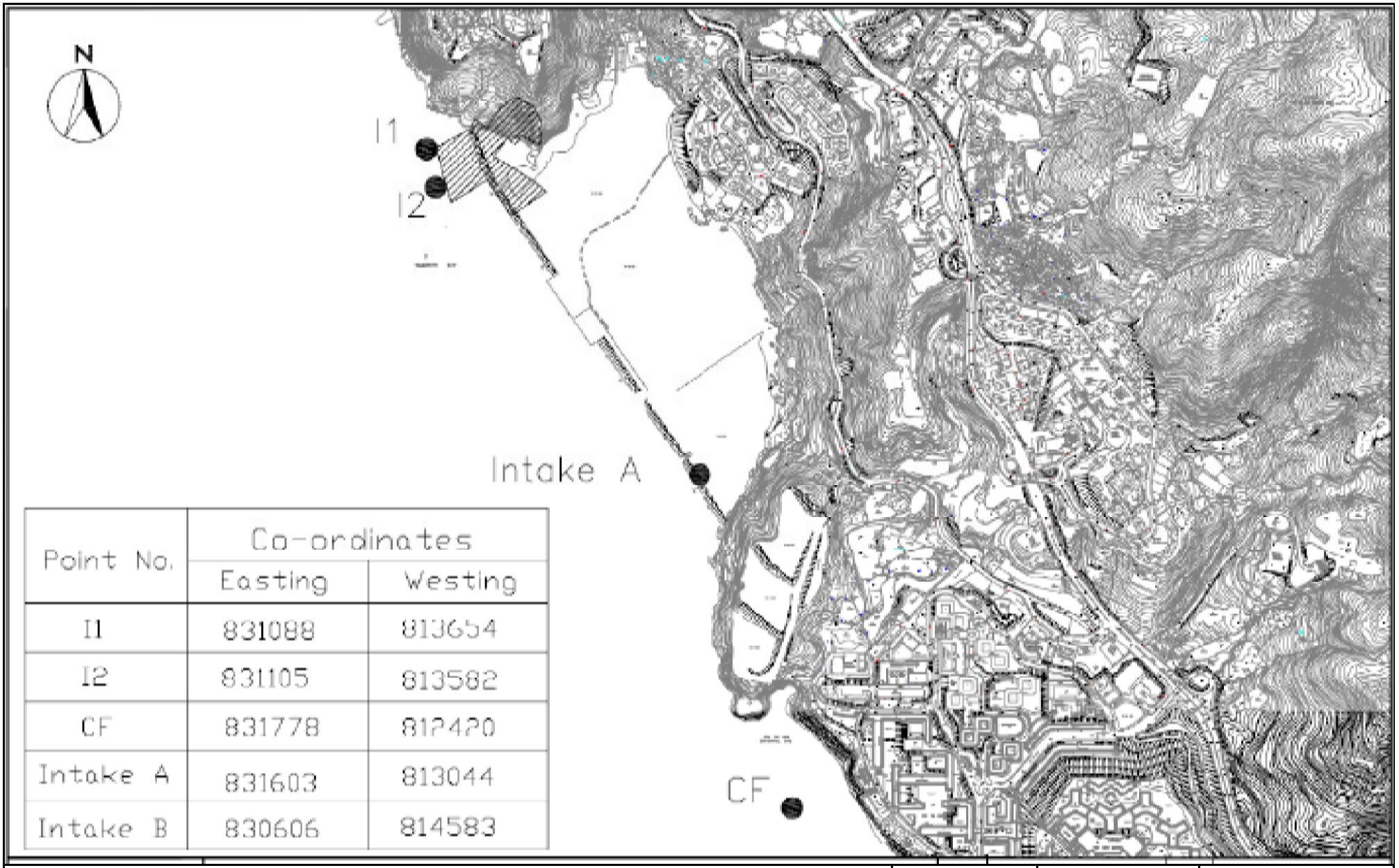
Title

Contract No. DC/2007/10
Design and Construction of Hong Kong West Drainage Tunnel

Locations of Water Quality Monitoring Stations

| Scale | N.T.S | Project No. | MA8001 |
|---|---|---|---|
| Date | Jun-08 | Figure | 4.1a |

CINOTECH




| Point No. | Co-ordinates | |
|---|---|---|
| | Easting | Westing |
| I1 | 831088 | 813654 |
| I2 | 831105 | 813582 |
| CF | 831778 | 812420 |
| Intake A | 831603 | 813044 |
| Intake B | 830606 | 814583 |

Title

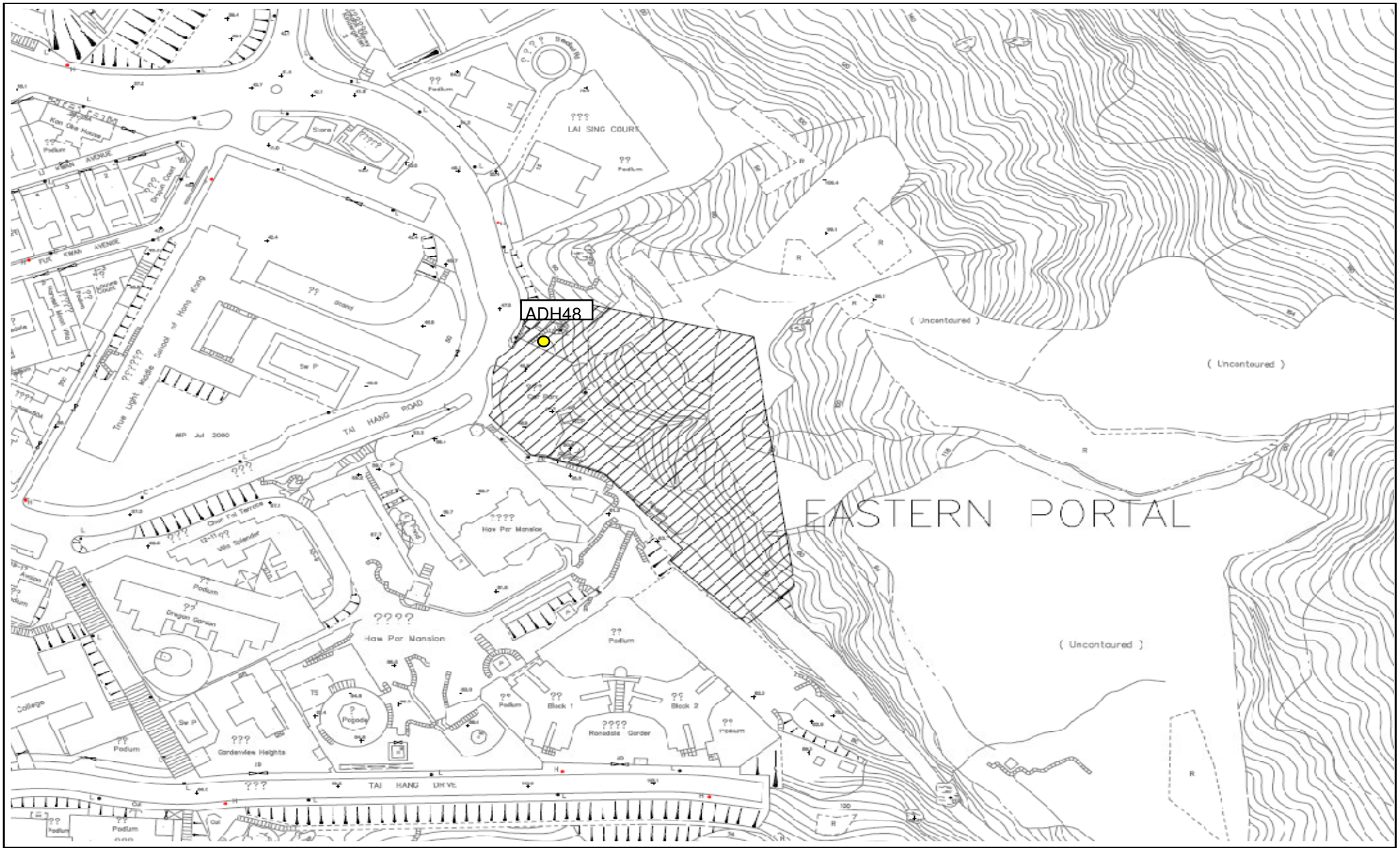
Contract No. DC/2007/10

Design and Construction of Hong Kong West Drainage Tunnel

Locations of Water Quality Monitoring Stations

| Scale | N.T.S | Project No. | MA8001 |
|---|---|---|---|
| Date | Jun-08 | Figure | 4.1b |

CINOTECH




| | | | |
|---|---|---|---|
| Title | | Scale | Project |
| Contract No. DC/2007/10<br>Design and Construction of Hong Kong West Drainage Tunnel<br>(Eastern Portal)<br>Location of ground water level Monitoring Station | | N.T.S | No. MA8001 |
| | | Date | Figure |
| | | Jun-08 | 4.2 |

CINOTECH

# APPENDIX A
# ACTION AND LIMIT LEVELS

# Appendix A - Action and Limit Levels

**Table A-1 Action and Limit Levels for 1-Hour TSP**

| Location | Action Level, μg/m$^3$ | Limit Level, μg/m$^3$ |
|---|---|---|
| AQ1 | 345 | 500 |
| AQ2 | 321 | |

**Table A-2 Action and Limit Levels for 24-Hour TSP**

| Location | Action Level, μg/m$^3$ | Limit Level, μg/m$^3$ |
|---|---|---|
| AQ1 | 201 | 260 |
| AQ3 | 156 | |

**Table A-3 Action and Limit Levels for Construction Noise**

| Time Period | Action Level | Limit Level |
|---|---|---|
| 0700-1900 hrs on normal weekdays | When one documented complaint is received | 75* dB(A) |
| 0700-2300 hrs on holidays; and 1900-2300 hrs on all other days | | 60/65/70** dB(A) |
| 2300-0700 hrs of next day | | 45/50/55** dB(A) |

(*) reduce to 70 dB(A) for schools and 65 dB(A) during school examination periods.
(**) to be selected based on Area Sensitivity Rating.

**Table A-4 Action and Limit Levels for Water Quality**

| Parameter | | Action | Limit |
|---|---|---|---|
| DO, mg/L | Surface and Middle | 6.3 | 6.2 |
| | Bottom | 6.0 | 5.8 |
| SS, mg/L | | 15.7 or 120% of upstream control station's SS at the same tide of the same day | 16.4 or 130% of SS readings at the upstream control station at the same tide of same day and specific sensitive receiver water quality requirements |
| Turbidity, NTU | | 10.2 or 120% of upstream control station's turbidity at the same tide of the same day | 11.1 or 130% of turbidity at the upstream control station at the same tide of same day |

**APPENDIX B**
**COPIES OF CALIBRATION CERTIFCATES**

# High-Volume TSP Sampler
## 5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA8001/44/0012

Station: AQ1 - True Light Middle School of Hong Kong  Operator: WK

Date: 3-Dec-09  Next Due Date: 2-Feb-10

Equipment No.: A-01-44  Serial No. 1316

| Ambient Condition | | | |
|---|---|---|---|
| Temperature, Ta (K) | 289.3 | Pressure, Pa (mmHg) | 769.8 |

| Orifice Transfer Standard Information | | | | | |
|---|---|---|---|---|---|
| Equipment No.: | A-04-06 | Slope, mc | 0.0575 | Intercept, bc | 0.0395 |
| Last Calibration Date: | 6-Mar-09 | $mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$ | | | |
| Next Calibration Date: | 5-Mar-10 | $Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$ | | | |

**Calibration of TSP Sampler**

| Calibration Point | Orfice | | | HVS | |
|---|---|---|---|---|---|
| | ΔH (orifice), in. of water | $[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$ | Qstd (CFM) X - axis | ΔW (HVS), in. of oil | $[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis |
| 1 | 11.6 | 3.48 | 59.82 | 7.7 | 2.83 |
| 2 | 9.8 | 3.20 | 54.92 | 6.5 | 2.60 |
| 3 | 7.5 | 2.80 | 47.96 | 4.9 | 2.26 |
| 4 | 5.1 | 2.31 | 39.43 | 3.2 | 1.83 |
| 5 | 3.3 | 1.86 | 31.58 | 1.7 | 1.33 |

**By Linear Regression of Y on X**

**Slope , mw =** 0.0527  **Intercept, bw :** -0.2935

**Correlation coefficient* =** 0.9984

*If Correlation Coefficient < 0.990, check and recalibrate.

**Set Point Calculation**

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; $W = ( mw \times Qstd + bw )^2 \times ( 760 / Pa ) \times ( Ta / 298 ) =$ 3.74

Remarks:

Conducted by: WK Tang  Signature:  Date: 3/12/09

Checked by: bw  Signature:  Date: 3 December 2009

# High-Volume TSP Sampler
## 5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA8001/18/0011

Station: AQ3 - Outside Site Office (Western Portal) Operator: WK

Date: 3-Dec-09 Next Due Date: 2-Feb-10

Equipment No.: A-01-18 Serial No. 0723

| Ambient Condition | | | |
|---|---|---|---|
| Temperature, Ta (K) | 289.3 | Pressure, Pa (mmHg) | 769.8 |

| Orifice Transfer Standard Information | | | | | |
|---|---|---|---|---|---|
| Equipment No.: | A-04-06 | Slope, mc | 0.0575 | Intercept, bc | 0.0395 |
| Last Calibration Date: | 6-Mar-09 | $mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$ | | | |
| Next Calibration Date: | 5-Mar-10 | $Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$ | | | |

**Calibration of TSP Sampler**

| Calibration Point | Orfice | | | HVS | |
|---|---|---|---|---|---|
| | ΔH (orifice), in. of water | $[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$ | Qstd (CFM) X - axis | ΔW (HVS), in. of oil | $[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis |
| 1 | 11.8 | 3.51 | 60.34 | 7.8 | 2.85 |
| 2 | 10.0 | 3.23 | 55.49 | 6.6 | 2.62 |
| 3 | 7.5 | 2.80 | 47.96 | 5.2 | 2.33 |
| 4 | 5.1 | 2.31 | 39.43 | 3.3 | 1.86 |
| 5 | 3.2 | 1.83 | 31.09 | 1.8 | 1.37 |

**By Linear Regression of Y on X**

**Slope , mw =** 0.0503 **Intercept, bw =** -0.1520

**Correlation coefficient* =** 0.9971

*If Correlation Coefficient < 0.990, check and recalibrate.

**Set Point Calculation**

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; $W = ( mw \times Qstd + bw )^2 \times ( 760 / Pa ) \times ( Ta / 298 ) =$ 3.88

Remarks:

Conducted by: wk. Tang Signature: Kwai Date: 3/12/09

Checked by: HK Signature: Date: 3 December 2009

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Rms 816, 1516 & 1701, Technology Park
18 On Lai Street, Shatin, N.T., Hong Kong
Tel: 2898 7388 Fax: 2898 7676
Website: http://www.wellab.com.hk
E-mail: wellab@wellab.com.hk

# TEST REPORT

| | | | |
|---|---|---|---|
| **APPLICANT:** | **Cinotech Consultants Limited**<br>**Room 1710, Technology Park,**<br>**18 On Lai Street,**<br>**Shatin, NT, Hong Kong** | Test Report No.:<br>Date of Issue:<br>Date Received:<br>Date Tested:<br>Date Completed:<br>Next Due Date: | C/09/90430<br>2009-05-02<br>2009-04-30<br>2009-04-30<br>2009-05-01<br>2010-05-01 |
| **ATTN:** | **Mr. Henry Leung** | Page: | 1 of 1 |

## Certificate of Calibration

**Item for calibration:**

| | |
|---|---|
| Description | : RS232 Integral Vane Digital Anemometer |
| Manufacturer | : AZ Instrument |
| Model No. | : 451104 |
| Serial No. | : 9020746 |
| Equipment No. | : A-03-01 |

**Test conditions:**

| | |
|---|---|
| Room Temperature | : 21 degree Celsius |
| Relative Humidity | : 67% |
| Pressure | : 101.5 kPa |

**Methodology:**

The anemometer has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

**Results:**

| | Reference Set Point | Instrument Readings |
|---|---|---|
| Measuring Air Velocity, m/s | 2.00 | 2.00 |
| Temperature, °C | 21.0 | 21.0 |

*PREPARED AND CHECKED BY:*
For and On Behalf of **WELLAB Ltd.**

Patrick Tse

**PATRICK TSE**
*Laboratory Manager*

TISCH ENVIRONMENTAL, INC.
145 SOUTH MIAMI AVE.
VILLAGE OF CLEVES, OH 45002
513.467.9000
877.263.7010 TOLL FREE
513.467.9009 FAX
WWW.TISCH-ENV.COM

AIR POLLUTION MONITORING EQUIPMENT

# ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Mar 06, 2009 Rootsmeter S/N 9833640 Ta (K) - 296
Operator Tisch Orifice I.D. - 0999 Pa (mm) - 747.20

| PLATE OR Run # | VOLUME START (m3) | VOLUME STOP (m3) | DIFF VOLUME (m3) | DIFF TIME (min) | METER DIFF Hg (mm) | ORFICE DIFF H2O (in.) |
|---|---|---|---|---|---|---|
| 1 | NA | NA | 1.00 | 1.3890 | 3.2 | 2.00 |
| 2 | NA | NA | 1.00 | 0.9850 | 6.3 | 4.00 |
| 3 | NA | NA | 1.00 | 0.8810 | 7.8 | 5.00 |
| 4 | NA | NA | 1.00 | 0.8410 | 8.6 | 5.50 |
| 5 | NA | NA | 1.00 | 0.6950 | 12.5 | 8.00 |

## DATA TABULATION

| Vstd | (x axis) Qstd | (y axis) | | Va | (x axis) Qa | (y axis) |
|---|---|---|---|---|---|---|
| 0.9917 | 0.7139 | 1.4113 | | 0.9957 | 0.7168 | 0.8874 |
| 0.9876 | 1.0026 | 1.9959 | | 0.9916 | 1.0067 | 1.2549 |
| 0.9854 | 1.1185 | 2.2315 | | 0.9894 | 1.1231 | 1.4030 |
| 0.9844 | 1.1706 | 2.3405 | | 0.9884 | 1.1753 | 1.4715 |
| 0.9792 | 1.4090 | 2.8227 | | 0.9832 | 1.4147 | 1.7747 |
| Qstd slope (m) = | | 2.03154 | | Qa slope (m) = | | 1.27212 |
| intercept (b) = | | -0.03970 | | intercept (b) = | | -0.02496 |
| coefficient (r) = | | 0.99999 | | coefficient (r) = | | 0.99999 |
| y axis = SQRT[H2O(Pa/760)(298/Ta)] | | | | y axis = SQRT[H2O(Ta/Pa)] | | |

## CALCULATIONS

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

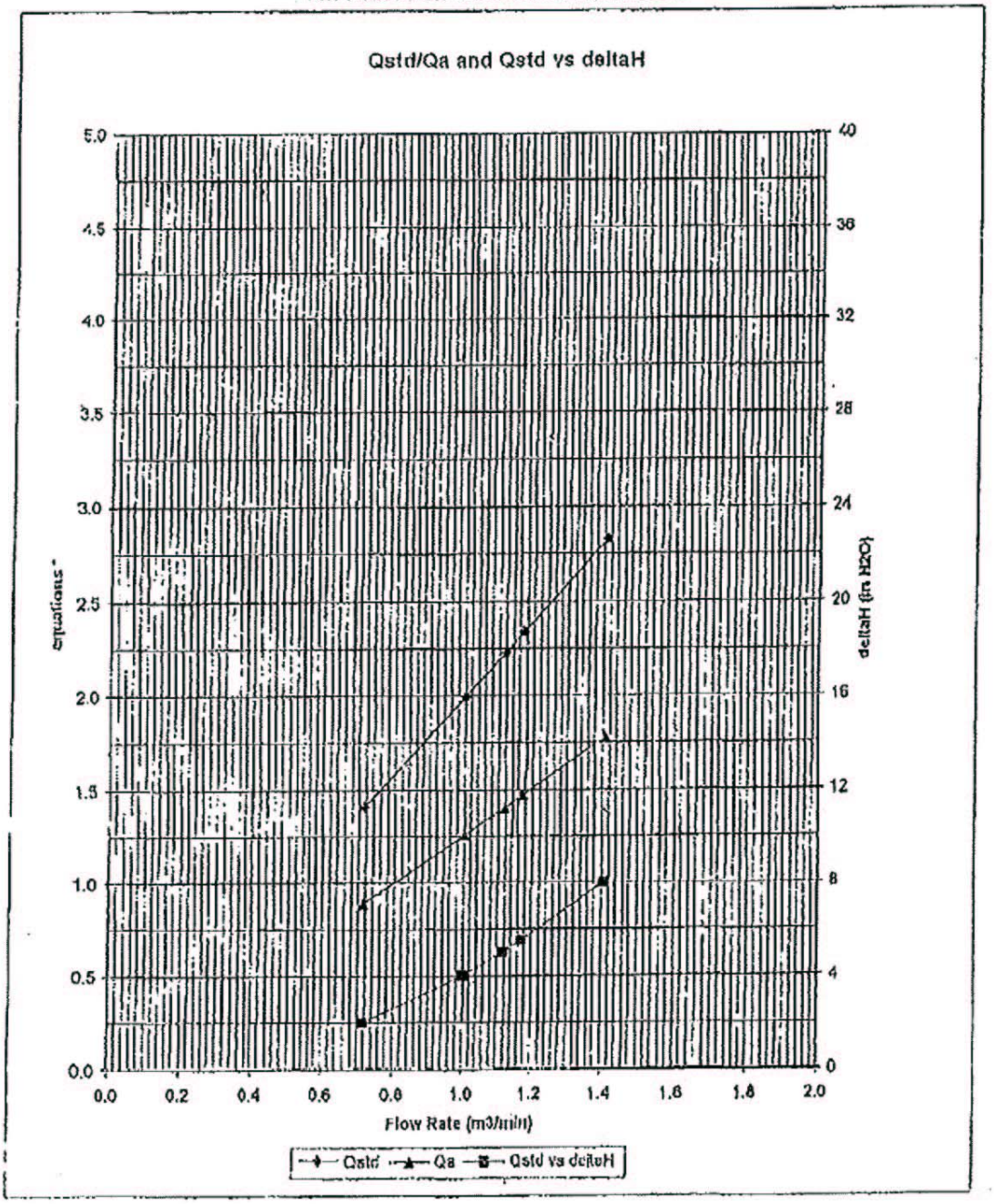
Va = Diff Vol [(Pa-Diff Hg)/Pa]
Qa = Va/Time

For subsequent flow rate calculations:

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

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

AIR POLLUTION MONITORING EQUIPMENT




* y-axis equations:

Qstd series: $\sqrt{\Delta H \left(\frac{P a}{P std}\right)\left(\frac{T std}{T a}\right)}$

Qa series: $\sqrt{(\Delta H\ (T a\ /\ P a))}$

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WELLAB LIMITED
Rms 816, 1516 & 1701, Technology Park,
18 On Lai Street, Shatin, N.T, Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

# TEST REPORT

**APPLICANT:** **Cinotech Consultants Limited**
**Room 1710, Technology Park,**
**18 On Lai Street,**
**Shatin, NT, Hong Kong**

**ATTN:** **Mr. Henry Leung**

| | |
|---|---|
| Test Report No.: | C/091215/1A |
| Date of Issue: | 2009-12-16 |
| Date Received: | 2009-12-15 |
| Date Tested: | 2009-12-15 |
| Date Completed: | 2009-12-16 |
| Next Due Date: | 2010-02-15 |
| Page: | 1 of 1 |

## Certificate of Calibration

**Item for Calibration:**

| | |
|---|---|
| Description | : Laser Dust Monitor |
| Manufacturer | : Sibata |
| Model No. | : LD-3 |
| Serial No. | : 251634 |
| Sensitivity (K) 1 CPM | : 0.001 mg/m$^3$ |
| Sen. Adjustment Scale Setting | : 550 CPM |
| Equipment No. | : A-02-01 |

**Test Conditions:**

| | |
|---|---|
| Room Temperature | : 20 degree Celsius |
| Relative Humidity | : 66% |

**Test Specifications & Methodology:**

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Laser Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Laser Dust Monitor and High Volume Sampler.

**Results:**

| | |
|---|---|
| Correlation Factor (CF) | 0.0031 |

**********

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For and On Behalf of **WELLAB Ltd.**

**PATRICK TSE**
*Laboratory Manager*

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18 On Lai Street, Shatin, N.T, Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
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**18 On Lai Street,**
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| | |
|---|---|
| Test Report No.: | C/091110/1 |
| Date of Issue: | 2009-11-11 |
| Date Received: | 2009-11-10 |
| Date Tested: | 2009-11-10 |
| Date Completed: | 2009-11-11 |
| Next Due Date: | 2010-01-10 |

**ATTN:** **Mr. Henry Leung** Page: 1 of 1

## Certificate of Calibration

**Item for Calibration:**

| | |
|---|---|
| Description | : Laser Dust Monitor |
| Manufacturer | : Sibata |
| Model No. | : LD-3B |
| Serial No. | : 853944 |
| Sensitivity (K) 1 CPM | : 0.001 mg/m$^3$ |
| Sen. Adjustment Scale Setting | : 685 CPM |
| Equipment No. | : A-02-04 |

**Test Conditions:**

| | |
|---|---|
| Room Temperature | : 23 degree Celsius |
| Relative Humidity | : 64% |

**Test Specifications & Methodology:**

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Laser Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Laser Dust Monitor and High Volume Sampler.

**Results:**

| | |
|---|---|
| Correlation Factor (CF) | 0.0034 |

**********

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Patrick Tse

**PATRICK TSE**
*Laboratory Manager*

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WELLAB LIMITED
Rms 816, 1516 & 1701, Technology Park,
18 On Lai Street, Shatin, N.T, Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

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**APPLICANT:** **Cinotech Consultants Limited**
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**18 On Lai Street,**
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| | |
|---|---|
| Test Report No.: | C/100108/1 |
| Date of Issue: | 2010-01-09 |
| Date Received: | 2010-01-08 |
| Date Tested: | 2010-01-08 |
| Date Completed: | 2010-01-09 |
| Next Due Date: | 2010-03-08 |
| Page: | 1 of 1 |

## Certificate of Calibration

**Item for Calibration:**

| | |
|---|---|
| Description | : Laser Dust Monitor |
| Manufacturer | : Sibata |
| Model No. | : LD-3B |
| Serial No. | : 853944 |
| Sensitivity (K) 1 CPM | : 0.001 mg/m$^3$ |
| Sen. Adjustment Scale Setting | : 685 CPM |
| Equipment No. | : A-02-04 |

**Test Conditions:**

| | |
|---|---|
| Room Temperature | : 22 degree Celsius |
| Relative Humidity | : 65% |

**Test Specifications & Methodology:**

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Laser Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Laser Dust Monitor and High Volume Sampler.

**Results:**

| | |
|---|---|
| Correlation Factor (CF) | 0.0033 |

**********

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For and On Behalf of **WELLAB Ltd.**

Patrick Tse
**PATRICK TSE**
*Laboratory Manager*

**WELLAB** 匯力
Testing and Research

Room 1516 & 816, Technology Park
18 On Lai Street, Shatin, N.T. Hong Kong
Tel: 2898 7388 Fax: 2898 7076
Website: http://www.wellab.com.hk
E-mail: wellab@wellab.com.hk

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| | |
|---|---|
| Test Report No.: | C/N/90903-1 |
| Date of Issue: | 2009-09-03 |
| Date Received: | 2009-09-02 |
| Date Tested: | 2009-09-02 |
| Date Completed: | 2009-09-03 |
| Next Due Date: | 2010-09-02 |

**ATTN:** **Mr. Henry Leung**

Page: 1 of 1

## Certificate of Calibration

**Item for calibration:**

| | |
|---|---|
| Description | : Integrating Sound Level Meter |
| Manufacturer | : Brüel & Kjær |
| Model No. | : B&K 2238 |
| Serial No. | : 2359311 |
| Microphone No. | : 2346382 |
| Equipment No. | : N-01-03 |

**Test conditions:**

| | |
|---|---|
| Room Temperatre | : 22 degree Celsius |
| Relative Humidity | : 64% |

**Test Specifications:**

Performance checking at 94 and 114 dB

**Methodology:**

In-house method, according to manufacturer instruction manual

**Results:**

| Reference Set Point, dB | Instrument Readings, dB |
|---|---|
| 94 | 94.0 |
| 114 | 114.0 |

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*Laboratory Manager*

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Room 1516 & 816, Technology Park
18 On Lai Street, Shatin, N.T., Hong Kong
Tel: 2898 7388 Fax: 2898 7076
Website: http://www.wellab.com.hk
E-mail: wellab@wellab.com.hk

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| | |
|---|---|
| Test Report No.: | C/N/90903-2 |
| Date of Issue: | 2009-09-03 |
| Date Received: | 2009-09-02 |
| Date Tested: | 2009-09-02 |
| Date Completed: | 2009-09-03 |
| Next Due Date: | 2010-09-02 |

**ATTN:** **Mr. Henry Leung**

Page: 1 of 1

## Certificate of Calibration

**Item for calibration:**

| | |
|---|---|
| Description | : Integrating Sound Level Meter |
| Manufacturer | : Brüel & Kjær |
| Model No. | : B&K 2238 |
| Serial No. | : 2359303 |
| Equipment No. | : N-01-04 |

**Test conditions:**

| | |
|---|---|
| Room Temperatre | : 22 degree Celsius |
| Relative Humidity | : 64% |

**Test Specifications:**

Performance checking at 94 and 114 dB

**Methodology:**

In-house method, according to manufacturer instruction manual

**Results:**

| Reference Set Point, dB | Instrument Readings, dB |
|---|---|
| 94 | 94.0 |
| 114 | 114.0 |

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*Laboratory Manager*

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Room 1516 & 816, Technology Park
18 On Lai Street, Shatin, N.T., Hong Kong
Tel: 2898 7388 Fax: 2898 7076
Website: http://www.wellab.com.hk
E-mail: wellab@wellab.com.hk

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**Room 1710, Technology Park,**
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**Shatin, NT, Hong Kong**

**ATTN:** **Mr. Henry Leung**

| | |
|---|---|
| Test Report No.: | C/N/90925/4 |
| Date of Issue: | 2009-09-25 |
| Date Received: | 2009-09-24 |
| Date Tested: | 2009-09-24 |
| Date Completed: | 2009-09-25 |
| Next Due Date: | 2010-09-24 |
| Page: | 1 of 1 |

## Certificate of Calibration

**Item for calibration:**

| | |
|---|---|
| Description | : 'SVANTEK' Integrating Sound Level Meter |
| Manufacturer | : SVANTEK |
| Model No. | : SVAN 955 |
| Serial No. | : 12553 |
| Microphone No. | : 35222 |
| Equipment No. | : N-08-02 |

**Test conditions:**

| | |
|---|---|
| Room Temperatre | : 23 degree Celsius |
| Relative Humidity | : 58% |

**Test Specifications:**

Performance checking at 94 and 114 dB

**Methodology:**

In-house method, according to manufacturer instruction manual

**Results:**

| Reference Set Point, dB | Instrument Readings, dB |
|---|---|
| 94 | 94.0 |
| 114 | 114.0 |

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Patrick Tse

**PATRICK TSE**
*Laboratory Manager*

**WELLAB** 匯力
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Room 1516 & 816, Technology Park
18 On Lai Street, Shatin, N.T., Hong Kong
Tel: 2898 7388 Fax: 2898 7076
Website: http://www.wellab.com.hk
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# TEST REPORT

| | | | |
|---|---|---|---|
| **APPLICANT:** | **Cinotech Consultants Limited**<br>**Room 1710, Technology Park,**<br>**18 On Lai Street,**<br>**Shatin, NT, Hong Kong** | Test Report No.:<br>Date of Issue:<br>Date Received:<br>Date Tested:<br>Date Completed:<br>Next Due Date: | C/N/90925/3<br>2009-09-25<br>2009-09-24<br>2009-09-24<br>2009-09-25<br>2010-09-24 |
| **ATTN:** | **Mr. Henry Leung** | Page: | 1 of 1 |

## Certificate of Calibration

**Item for calibration:**

| | |
|---|---|
| Description | : 'SVANTEK' Integrating Sound Level Meter |
| Manufacturer | : SVANTEK |
| Model No. | : SVAN 955 |
| Serial No. | : 12563 |
| Microphone No. | : 34377 |
| Equipment No. | : N-08-03 |

**Test conditions:**

| | |
|---|---|
| Room Temperatre | : 23 degree Celsius |
| Relative Humidity | : 58% |

**Test Specifications:**

Performance checking at 94 and 114 dB

**Methodology:**

In-house method, according to manufacturer instruction manual

**Results:**

| Reference Set Point, dB | Instrument Readings, dB |
|---|---|
| 94 | 94.0 |
| 114 | 114.0 |

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*Laboratory Manager*

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18 On Lai Street, Shatin, N.T, Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
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**Shatin, NT, Hong Kong**

| | |
|---|---|
| Test Report No.: | C/N/91114/1 |
| Date of Issue: | 2009-11-14 |
| Date Received: | 2009-11-13 |
| Date Tested: | 2009-11-13 |
| Date Completed: | 2009-11-14 |
| Next Due Date: | 2010-11-13 |

**ATTN:** **Mr. Henry Leung**

Page: 1 of 1

**Item for calibration:**

| | |
|---|---|
| Description | : Acoustical Calibrator |
| Manufacturer | : Brüel & Kjær |
| Model No. | : 4231 |
| Serial No. | : 2326353 |
| Project No. | : C13 |
| Equipment No. | : N-02-01 |

**Test conditions:**

| | |
|---|---|
| Room Temperatre | : 21 degree Celsius |
| Relative Humidity | : 60% |
| Pressure | : 1015.2 hPa |

**Methodology:**

The sound calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

**Results:**

| Sound Pressure Level | Measured SPL | Tolerance |
|---|---|---|
| At 94 dB SPL | 94.0 | 94.0 ± 0.1 dB |

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**PATRICK TSE**
*Laboratory Manager*

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Room 1516 & 816, Technology Park
18 On Lai Street, Shatin, N.T., Hong Kong
Tel: 2898 7388 Fax: 2898 7076
Website: http://www.wellab.com.hk
E-mail: wellab@wellab.com.hk

# TEST REPORT

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**18 On Lai Street,**
**Shatin, NT, Hong Kong**

| | |
|---|---|
| Test Report No.: | C/N/90903-3 |
| Date of Issue: | 2009-09-03 |
| Date Received: | 2009-09-02 |
| Date Tested: | 2009-09-02 |
| Date Completed: | 2009-09-03 |
| Next Due Date: | 2010-09-02 |

**ATTN:** **Mr. Henry Leung** Page: 1 of 1

**Item for calibration:**

| | |
|---|---|
| Description | : Acoustical Calibrator |
| Manufacturer | : Brüel & Kjær |
| Model No. | : 4231 |
| Serial No. | : 2412367 |
| Equipment No. | : N-02-03 |

**Test conditions:**

| | |
|---|---|
| Room Temperatre | : 22 degree Celsius |
| Relative Humidity | : 64% |

**Methodology:**

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

**Results:**

| Sound Pressure Level (1kHz) | Measured SPL | Tolerance |
|---|---|---|
| At 94 dB SPL | 94.0 | 94.0 ± 0.1 dB |
| At 114 dB SPL | 114.0 | 114.0 ± 0.1 dB |

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Patrick Tse

**PATRICK TSE**
*Laboratory Manager*

**WELLAB** 匯力
Testing and Research

Room 1516 & 816, Technology Park
18 On Lai Street, Shatin, N.T., Hong Kong
Tel 2898 7388 Fax 2898 7076
Website: http://www.wellab.com.hk
E-mail: wellab@wellab.com.hk

# TEST REPORT

**APPLICANT:** **Cinotech Consultants Limited**
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**18 On Lai Street,**
**Shatin, NT, Hong Kong**

| | |
|---|---|
| Test Report No.: | C/N/90925/2 |
| Date of Issue: | 2009-09-25 |
| Date Received: | 2009-09-24 |
| Date Tested: | 2009-09-24 |
| Date Completed: | 2009-09-25 |
| Next Due Date: | 2010-09-24 |
| Page: | 1 of 1 |

**ATTN:** **Mr. Henry Leung**

**Item for calibration:**

| | |
|---|---|
| Description | : Acoustical Calibrator |
| Manufacturer | : SVANTEK |
| Model No. | : SV30A |
| Serial No. | : 10929 |
| Equipment No. | : N-09-01 |

**Test conditions:**

| | |
|---|---|
| Room Temperatre | : 23 degree Celsius |
| Relative Humidity | : 58% |

**Methodology:**

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

**Results:**

| Sound Pressure Level (1kHz) | Measured SPL | Tolerance |
|---|---|---|
| At 94 dB SPL | 94.0 | 94.0 ± 0.1 dB |
| At 114 dB SPL | 114.0 | 114.0 ± 0.1 dB |

*PREPARED AND CHECKED BY:*
For and On Behalf of **WELLAB Ltd.**

Patrick Tse
**PATRICK TSE**
*Laboratory Manager*

# APPENDIX C
# WIND DATA

# Appendix C - Wind Data (Eastern Portal)

| Date | Time | Wind Speed m/s | Direction |
|---|---|---|---|
| 1-Jan-2010 | 00:00 | 0.7 | NE |
| 1-Jan-2010 | 01:00 | 0.7 | NE |
| 1-Jan-2010 | 02:00 | 0.6 | NE |
| 1-Jan-2010 | 03:00 | 0.5 | NNE |
| 1-Jan-2010 | 04:00 | 0.5 | NNE |
| 1-Jan-2010 | 05:00 | 0.5 | NE |
| 1-Jan-2010 | 06:00 | 0.4 | NE |
| 1-Jan-2010 | 07:00 | 0.5 | ENE |
| 1-Jan-2010 | 08:00 | 0.5 | NE |
| 1-Jan-2010 | 09:00 | 0.7 | NE |
| 1-Jan-2010 | 10:00 | 1.3 | NE |
| 1-Jan-2010 | 11:00 | 1.5 | ENE |
| 1-Jan-2010 | 12:00 | 1.8 | ENE |
| 1-Jan-2010 | 13:00 | 2 | NE |
| 1-Jan-2010 | 14:00 | 1.7 | NE |
| 1-Jan-2010 | 15:00 | 1.9 | NNE |
| 1-Jan-2010 | 16:00 | 1.7 | ENE |
| 1-Jan-2010 | 17:00 | 1.3 | ESE |
| 1-Jan-2010 | 18:00 | 1 | NNE |
| 1-Jan-2010 | 19:00 | 0.8 | NNE |
| 1-Jan-2010 | 20:00 | 0.8 | NNE |
| 1-Jan-2010 | 21:00 | 0.9 | NE |
| 1-Jan-2010 | 22:00 | 1 | NNE |
| 1-Jan-2010 | 23:00 | 0.8 | NNE |
| 2-Jan-2010 | 00:00 | 1 | NNE |
| 2-Jan-2010 | 01:00 | 1 | NNE |
| 2-Jan-2010 | 02:00 | 0.8 | NE |
| 2-Jan-2010 | 03:00 | 0.7 | NNE |
| 2-Jan-2010 | 04:00 | 0.8 | NNE |
| 2-Jan-2010 | 05:00 | 0.7 | NNE |
| 2-Jan-2010 | 06:00 | 0.7 | NE |
| 2-Jan-2010 | 07:00 | 1 | ENE |
| 2-Jan-2010 | 08:00 | 1.1 | ENE |
| 2-Jan-2010 | 09:00 | 1.2 | ENE |
| 2-Jan-2010 | 10:00 | 1.7 | ENE |
| 2-Jan-2010 | 11:00 | 2.2 | NE |
| 2-Jan-2010 | 12:00 | 2.2 | NE |
| 2-Jan-2010 | 13:00 | 2.2 | NE |
| 2-Jan-2010 | 14:00 | 2.2 | NNE |
| 2-Jan-2010 | 15:00 | 2.6 | NE |
| 2-Jan-2010 | 16:00 | 2 | SE |
| 2-Jan-2010 | 17:00 | 1.8 | SE |
| 2-Jan-2010 | 18:00 | 1.9 | SE |
| 2-Jan-2010 | 19:00 | 1.3 | S |
| 2-Jan-2010 | 20:00 | 1.2 | S |
| 2-Jan-2010 | 21:00 | 1.3 | SSE |
| 2-Jan-2010 | 22:00 | 1.4 | SSE |
| 2-Jan-2010 | 23:00 | 1.5 | SE |
| 3-Jan-2010 | 00:00 | 1.7 | SSE |
| 3-Jan-2010 | 01:00 | 1.7 | SE |
| 3-Jan-2010 | 02:00 | 1.4 | SE |
| 3-Jan-2010 | 03:00 | 1.2 | S |
| 3-Jan-2010 | 04:00 | 1.3 | SSE |
| 3-Jan-2010 | 05:00 | 1.3 | SSE |

## Appendix C - Wind Data (Eastern Portal)

| Date | Time | Wind Speed m/s | Direction |
|---|---|---|---|
| 3-Jan-2010 | 06:00 | 1 | ENE |
| 3-Jan-2010 | 07:00 | 1.2 | ENE |
| 3-Jan-2010 | 08:00 | 1.6 | ENE |
| 3-Jan-2010 | 09:00 | 2 | ENE |
| 3-Jan-2010 | 10:00 | 1.8 | SE |
| 3-Jan-2010 | 11:00 | 1.7 | SE |
| 3-Jan-2010 | 12:00 | 2.2 | NE |
| 3-Jan-2010 | 13:00 | 1.8 | NE |
| 3-Jan-2010 | 14:00 | 1.8 | ENE |
| 3-Jan-2010 | 15:00 | 2 | ENE |
| 3-Jan-2010 | 16:00 | 2 | ENE |
| 3-Jan-2010 | 17:00 | 1.7 | ENE |
| 3-Jan-2010 | 18:00 | 1.5 | NE |
| 3-Jan-2010 | 19:00 | 1.2 | SSE |
| 3-Jan-2010 | 20:00 | 1 | SSE |
| 3-Jan-2010 | 21:00 | 1.1 | ENE |
| 3-Jan-2010 | 22:00 | 1.1 | NE |
| 3-Jan-2010 | 23:00 | 1.5 | ENE |
| 4-Jan-2010 | 00:00 | 1.4 | E |
| 4-Jan-2010 | 01:00 | 1.5 | E |
| 4-Jan-2010 | 02:00 | 1.2 | ENE |
| 4-Jan-2010 | 03:00 | 1.3 | ENE |
| 4-Jan-2010 | 04:00 | 1 | ENE |
| 4-Jan-2010 | 05:00 | 1.4 | ENE |
| 4-Jan-2010 | 06:00 | 1.2 | E |
| 4-Jan-2010 | 07:00 | 1.2 | E |
| 4-Jan-2010 | 08:00 | 1.4 | E |
| 4-Jan-2010 | 09:00 | 1.6 | SE |
| 4-Jan-2010 | 10:00 | 1.8 | SE |
| 4-Jan-2010 | 11:00 | 2.2 | SE |
| 4-Jan-2010 | 12:00 | 2.5 | NE |
| 4-Jan-2010 | 13:00 | 2.3 | NE |
| 4-Jan-2010 | 14:00 | 2.1 | NE |
| 4-Jan-2010 | 15:00 | 2.2 | NNE |
| 4-Jan-2010 | 16:00 | 2.1 | NNE |
| 4-Jan-2010 | 17:00 | 2.1 | NNE |
| 4-Jan-2010 | 18:00 | 1.6 | NE |
| 4-Jan-2010 | 19:00 | 1.3 | NNE |
| 4-Jan-2010 | 20:00 | 1.2 | NNE |
| 4-Jan-2010 | 21:00 | 1 | NNE |
| 4-Jan-2010 | 22:00 | 1.2 | NNE |
| 4-Jan-2010 | 23:00 | 1.5 | NE |
| 5-Jan-2010 | 00:00 | 1.5 | NNE |
| 5-Jan-2010 | 01:00 | 1.6 | ENE |
| 5-Jan-2010 | 02:00 | 1.7 | NE |
| 5-Jan-2010 | 03:00 | 1.2 | NE |
| 5-Jan-2010 | 04:00 | 1.1 | ENE |
| 5-Jan-2010 | 05:00 | 0.8 | NE |
| 5-Jan-2010 | 06:00 | 0.8 | ENE |
| 5-Jan-2010 | 07:00 | 0.6 | ENE |
| 5-Jan-2010 | 08:00 | 0.7 | ENE |
| 5-Jan-2010 | 09:00 | 1.1 | ENE |
| 5-Jan-2010 | 10:00 | 1.1 | ENE |
| 5-Jan-2010 | 11:00 | 1.5 | NNE |

## Appendix C - Wind Data (Eastern Portal)

| Date | Time | Wind Speed m/s | Direction |
|---|---|---|---|
| 5-Jan-2010 | 12:00 | 1.7 | ENE |
| 5-Jan-2010 | 13:00 | 2.2 | ENE |
| 5-Jan-2010 | 14:00 | 2.2 | ESE |
| 5-Jan-2010 | 15:00 | 1.9 | ENE |
| 5-Jan-2010 | 16:00 | 1.6 | ENE |
| 5-Jan-2010 | 17:00 | 1.7 | E |
| 5-Jan-2010 | 18:00 | 1.2 | ESE |
| 5-Jan-2010 | 19:00 | 0.9 | ENE |
| 5-Jan-2010 | 20:00 | 0.7 | ENE |
| 5-Jan-2010 | 21:00 | 0.7 | ENE |
| 5-Jan-2010 | 22:00 | 0.6 | NE |
| 5-Jan-2010 | 23:00 | 0.6 | NE |
| 6-Jan-2010 | 00:00 | 0.4 | NE |
| 6-Jan-2010 | 01:00 | 0.5 | NE |
| 6-Jan-2010 | 02:00 | 0.3 | ENE |
| 6-Jan-2010 | 03:00 | 0.5 | ENE |
| 6-Jan-2010 | 04:00 | 0.8 | ENE |
| 6-Jan-2010 | 05:00 | 0.6 | ENE |
| 6-Jan-2010 | 06:00 | 0.6 | SE |
| 6-Jan-2010 | 07:00 | 0.8 | SE |
| 6-Jan-2010 | 08:00 | 0.9 | NNE |
| 6-Jan-2010 | 09:00 | 0.9 | NNE |
| 6-Jan-2010 | 10:00 | 1.5 | NNE |
| 6-Jan-2010 | 11:00 | 1.6 | NNE |
| 6-Jan-2010 | 12:00 | 1.9 | ENE |
| 6-Jan-2010 | 13:00 | 1.9 | NE |
| 6-Jan-2010 | 14:00 | 1.7 | ENE |
| 6-Jan-2010 | 15:00 | 2.1 | ENE |
| 6-Jan-2010 | 16:00 | 1.5 | ESE |
| 6-Jan-2010 | 17:00 | 1.6 | NNE |
| 6-Jan-2010 | 18:00 | 1.1 | N |
| 6-Jan-2010 | 19:00 | 1.6 | NNE |
| 6-Jan-2010 | 20:00 | 1.3 | NE |
| 6-Jan-2010 | 21:00 | 0.9 | ENE |
| 6-Jan-2010 | 22:00 | 0.9 | ESE |
| 6-Jan-2010 | 23:00 | 0.9 | NE |
| 7-Jan-2010 | 00:00 | 0.9 | ENE |
| 7-Jan-2010 | 01:00 | 0.7 | ENE |
| 7-Jan-2010 | 02:00 | 0.7 | ENE |
| 7-Jan-2010 | 03:00 | 0.8 | ENE |
| 7-Jan-2010 | 04:00 | 0.8 | ENE |
| 7-Jan-2010 | 05:00 | 0.8 | ENE |
| 7-Jan-2010 | 06:00 | 0.9 | ENE |
| 7-Jan-2010 | 07:00 | 0.8 | ENE |
| 7-Jan-2010 | 08:00 | 0.9 | ENE |
| 7-Jan-2010 | 09:00 | 1.1 | ENE |
| 7-Jan-2010 | 10:00 | 1.2 | ENE |
| 7-Jan-2010 | 11:00 | 1.3 | ENE |
| 7-Jan-2010 | 12:00 | 1.5 | ENE |
| 7-Jan-2010 | 13:00 | 1.5 | ENE |
| 7-Jan-2010 | 14:00 | 1.4 | SE |
| 7-Jan-2010 | 15:00 | 0.5 | ENE |
| 7-Jan-2010 | 16:00 | 0.6 | ENE |
| 7-Jan-2010 | 17:00 | 0.6 | ENE |

## Appendix C - Wind Data (Eastern Portal)

| Date | Time | Wind Speed m/s | Direction |
|---|---|---|---|
| 7-Jan-2010 | 18:00 | 1.1 | NE |
| 7-Jan-2010 | 19:00 | 0.6 | NE |
| 7-Jan-2010 | 20:00 | 0.4 | NE |
| 7-Jan-2010 | 21:00 | 0.5 | NE |
| 7-Jan-2010 | 22:00 | 0.5 | ENE |
| 7-Jan-2010 | 23:00 | 0.7 | ENE |
| 8-Jan-2010 | 00:00 | 0.6 | ENE |
| 8-Jan-2010 | 01:00 | 0.5 | NE |
| 8-Jan-2010 | 02:00 | 0.5 | NE |
| 8-Jan-2010 | 03:00 | 0.7 | NE |
| 8-Jan-2010 | 04:00 | 0.4 | NE |
| 8-Jan-2010 | 05:00 | 0.7 | NE |
| 8-Jan-2010 | 06:00 | 0.7 | NE |
| 8-Jan-2010 | 07:00 | 1.2 | ENE |
| 8-Jan-2010 | 08:00 | 1.5 | NE |
| 8-Jan-2010 | 09:00 | 1.6 | NE |
| 8-Jan-2010 | 10:00 | 1.4 | NE |
| 8-Jan-2010 | 11:00 | 1.6 | NE |
| 8-Jan-2010 | 12:00 | 1.6 | NE |
| 8-Jan-2010 | 13:00 | 1.7 | ENE |
| 8-Jan-2010 | 14:00 | 1.9 | NE |
| 8-Jan-2010 | 15:00 | 2 | NE |
| 8-Jan-2010 | 16:00 | 1.8 | NE |
| 8-Jan-2010 | 17:00 | 1.7 | NE |
| 8-Jan-2010 | 18:00 | 1.5 | ENE |
| 8-Jan-2010 | 19:00 | 1.2 | ENE |
| 8-Jan-2010 | 20:00 | 1 | ENE |
| 8-Jan-2010 | 21:00 | 0.8 | ENE |
| 8-Jan-2010 | 22:00 | 0.9 | N |
| 8-Jan-2010 | 23:00 | 1 | NE |
| 9-Jan-2010 | 00:00 | 0.7 | NE |
| 9-Jan-2010 | 01:00 | 0.6 | NE |
| 9-Jan-2010 | 02:00 | 0.7 | ENE |
| 9-Jan-2010 | 03:00 | 0.9 | ENE |
| 9-Jan-2010 | 04:00 | 1.2 | ENE |
| 9-Jan-2010 | 05:00 | 1.2 | ENE |
| 9-Jan-2010 | 06:00 | 1.1 | NE |
| 9-Jan-2010 | 07:00 | 1.1 | NE |
| 9-Jan-2010 | 08:00 | 1.1 | ENE |
| 9-Jan-2010 | 09:00 | 1.3 | ENE |
| 9-Jan-2010 | 10:00 | 1.5 | ENE |
| 9-Jan-2010 | 11:00 | 1.4 | ENE |
| 9-Jan-2010 | 12:00 | 1.2 | ENE |
| 9-Jan-2010 | 13:00 | 1.4 | ENE |
| 9-Jan-2010 | 14:00 | 1.3 | SE |
| 9-Jan-2010 | 15:00 | 1.2 | E |
| 9-Jan-2010 | 16:00 | 1.4 | E |
| 9-Jan-2010 | 17:00 | 1 | E |
| 9-Jan-2010 | 18:00 | 0.8 | E |
| 9-Jan-2010 | 19:00 | 0.6 | NNE |
| 9-Jan-2010 | 20:00 | 0.2 | NE |
| 9-Jan-2010 | 21:00 | 0.4 | ENE |
| 9-Jan-2010 | 22:00 | 0.4 | ENE |
| 9-Jan-2010 | 23:00 | 0.4 | ESE |

## Appendix C - Wind Data (Eastern Portal)

| Date | Time | Wind Speed m/s | Direction |
|---|---|---|---|
| 10-Jan-2010 | 00:00 | 0.4 | ESE |
| 10-Jan-2010 | 01:00 | 0.8 | ESE |
| 10-Jan-2010 | 02:00 | 0.3 | NE |
| 10-Jan-2010 | 03:00 | 0.4 | ENE |
| 10-Jan-2010 | 04:00 | 0.4 | ENE |
| 10-Jan-2010 | 05:00 | 0.3 | NE |
| 10-Jan-2010 | 06:00 | 0.1 | ENE |
| 10-Jan-2010 | 07:00 | 0.4 | SSE |
| 10-Jan-2010 | 08:00 | 0.7 | SE |
| 10-Jan-2010 | 09:00 | 1.1 | NE |
| 10-Jan-2010 | 10:00 | 1.6 | ENE |
| 10-Jan-2010 | 11:00 | 1.8 | ENE |
| 10-Jan-2010 | 12:00 | 2.2 | NNE |
| 10-Jan-2010 | 13:00 | 2.3 | NNE |
| 10-Jan-2010 | 14:00 | 2.3 | ESE |
| 10-Jan-2010 | 15:00 | 2.2 | SSE |
| 10-Jan-2010 | 16:00 | 2.2 | NE |
| 10-Jan-2010 | 17:00 | 2 | NE |
| 10-Jan-2010 | 18:00 | 1.8 | NNE |
| 10-Jan-2010 | 19:00 | 1.5 | NE |
| 10-Jan-2010 | 20:00 | 1.3 | ENE |
| 10-Jan-2010 | 21:00 | 1.3 | NE |
| 10-Jan-2010 | 22:00 | 1.6 | ENE |
| 10-Jan-2010 | 23:00 | 1.3 | E |
| 11-Jan-2010 | 00:00 | 1.2 | NE |
| 11-Jan-2010 | 01:00 | 1.4 | ENE |
| 11-Jan-2010 | 02:00 | 1.3 | ENE |
| 11-Jan-2010 | 03:00 | 1.3 | NE |
| 11-Jan-2010 | 04:00 | 0.9 | NE |
| 11-Jan-2010 | 05:00 | 1.1 | NE |
| 11-Jan-2010 | 06:00 | 1.2 | NE |
| 11-Jan-2010 | 07:00 | 1.2 | NE |
| 11-Jan-2010 | 08:00 | 1 | ENE |
| 11-Jan-2010 | 09:00 | 1.2 | NE |
| 11-Jan-2010 | 10:00 | 1.6 | ESE |
| 11-Jan-2010 | 11:00 | 1.6 | ENE |
| 11-Jan-2010 | 12:00 | 2 | ENE |
| 11-Jan-2010 | 13:00 | 2 | ENE |
| 11-Jan-2010 | 14:00 | 1.6 | NNE |
| 11-Jan-2010 | 15:00 | 1.6 | NNE |
| 11-Jan-2010 | 16:00 | 1.4 | SSE |
| 11-Jan-2010 | 17:00 | 1.3 | NNE |
| 11-Jan-2010 | 18:00 | 1.1 | ENE |
| 11-Jan-2010 | 19:00 | 1.2 | E |
| 11-Jan-2010 | 20:00 | 1 | ESE |
| 11-Jan-2010 | 21:00 | 1.1 | SSE |
| 11-Jan-2010 | 22:00 | 1 | ENE |
| 11-Jan-2010 | 23:00 | 1 | NE |
| 12-Jan-2010 | 00:00 | 1.4 | NE |
| 12-Jan-2010 | 01:00 | 1.2 | NE |
| 12-Jan-2010 | 02:00 | 1.1 | NE |
| 12-Jan-2010 | 03:00 | 0.9 | ENE |
| 12-Jan-2010 | 04:00 | 1.2 | NE |
| 12-Jan-2010 | 05:00 | 0.9 | NE |

## Appendix C - Wind Data (Eastern Portal)

| Date | Time | Wind Speed m/s | Direction |
|---|---|---|---|
| 12-Jan-2010 | 06:00 | 1 | NE |
| 12-Jan-2010 | 07:00 | 1.2 | NE |
| 12-Jan-2010 | 08:00 | 1.4 | NE |
| 12-Jan-2010 | 09:00 | 1.7 | NE |
| 12-Jan-2010 | 10:00 | 1.6 | NE |
| 12-Jan-2010 | 11:00 | 2.1 | NE |
| 12-Jan-2010 | 12:00 | 2.1 | ENE |
| 12-Jan-2010 | 13:00 | 1.9 | ENE |
| 12-Jan-2010 | 14:00 | 1.8 | ENE |
| 12-Jan-2010 | 15:00 | 1.9 | NE |
| 12-Jan-2010 | 16:00 | 1.7 | NE |
| 12-Jan-2010 | 17:00 | 1.6 | NE |
| 12-Jan-2010 | 18:00 | 1.3 | ENE |
| 12-Jan-2010 | 19:00 | 1.5 | NE |
| 12-Jan-2010 | 20:00 | 1 | NE |
| 12-Jan-2010 | 21:00 | 1.2 | ENE |
| 12-Jan-2010 | 22:00 | 1.4 | ENE |
| 12-Jan-2010 | 23:00 | 1.3 | ENE |
| 13-Jan-2010 | 00:00 | 1.2 | E |
| 13-Jan-2010 | 01:00 | 1.6 | ENE |
| 13-Jan-2010 | 02:00 | 0.8 | ENE |
| 13-Jan-2010 | 03:00 | 0.8 | ENE |
| 13-Jan-2010 | 04:00 | 0.9 | ENE |
| 13-Jan-2010 | 05:00 | 0.9 | ENE |
| 13-Jan-2010 | 06:00 | 0.7 | NE |
| 13-Jan-2010 | 07:00 | 0.7 | ENE |
| 13-Jan-2010 | 08:00 | 1.7 | ENE |
| 13-Jan-2010 | 09:00 | 2.2 | NE |
| 13-Jan-2010 | 10:00 | 2.2 | NE |
| 13-Jan-2010 | 11:00 | 1.5 | NE |
| 13-Jan-2010 | 12:00 | 1.5 | NE |
| 13-Jan-2010 | 13:00 | 1.5 | E |
| 13-Jan-2010 | 14:00 | 1.3 | ESE |
| 13-Jan-2010 | 15:00 | 1.8 | ENE |
| 13-Jan-2010 | 16:00 | 2 | ENE |
| 13-Jan-2010 | 17:00 | 2.7 | ENE |
| 13-Jan-2010 | 18:00 | 1.3 | ESE |
| 13-Jan-2010 | 19:00 | 0.9 | NNE |
| 13-Jan-2010 | 20:00 | 1.8 | NNE |
| 13-Jan-2010 | 21:00 | 0.5 | NNE |
| 13-Jan-2010 | 22:00 | 0.3 | ENE |
| 13-Jan-2010 | 23:00 | 0.5 | ENE |
| 14-Jan-2010 | 00:00 | 0.4 | NNE |
| 14-Jan-2010 | 01:00 | 1 | ENE |
| 14-Jan-2010 | 02:00 | 1.2 | ENE |
| 14-Jan-2010 | 03:00 | 1.4 | ENE |
| 14-Jan-2010 | 04:00 | 0.4 | NNE |
| 14-Jan-2010 | 05:00 | 0.5 | NE |
| 14-Jan-2010 | 06:00 | 0.2 | ENE |
| 14-Jan-2010 | 07:00 | 0.3 | ENE |
| 14-Jan-2010 | 08:00 | 1.1 | ENE |
| 14-Jan-2010 | 09:00 | 1.9 | ENE |
| 14-Jan-2010 | 10:00 | 2.6 | E |
| 14-Jan-2010 | 11:00 | 1.4 | E |

## Appendix C - Wind Data (Eastern Portal)

| Date | Time | Wind Speed m/s | Direction |
|---|---|---|---|
| 14-Jan-2010 | 12:00 | 0.9 | NE |
| 14-Jan-2010 | 13:00 | 2 | NE |
| 14-Jan-2010 | 14:00 | 0.8 | NNE |
| 14-Jan-2010 | 15:00 | 1.2 | NNE |
| 14-Jan-2010 | 16:00 | 1.4 | ENE |
| 14-Jan-2010 | 17:00 | 0.6 | ENE |
| 14-Jan-2010 | 18:00 | 1.1 | ENE |
| 14-Jan-2010 | 19:00 | 2.1 | NNE |
| 14-Jan-2010 | 20:00 | 1.3 | NE |
| 14-Jan-2010 | 21:00 | 1.3 | NNE |
| 14-Jan-2010 | 22:00 | 1.5 | NE |
| 14-Jan-2010 | 23:00 | 1 | NE |
| 15-Jan-2010 | 00:00 | 1.5 | NE |
| 15-Jan-2010 | 01:00 | 1.6 | NE |
| 15-Jan-2010 | 02:00 | 1.2 | NE |
| 15-Jan-2010 | 03:00 | 1.1 | N |
| 15-Jan-2010 | 04:00 | 0.8 | NE |
| 15-Jan-2010 | 05:00 | 0.5 | NE |
| 15-Jan-2010 | 06:00 | 1.1 | NNE |
| 15-Jan-2010 | 07:00 | 1.2 | NE |
| 15-Jan-2010 | 08:00 | 0.8 | NE |
| 15-Jan-2010 | 09:00 | 0.9 | NNE |
| 15-Jan-2010 | 10:00 | 0.8 | NE |
| 15-Jan-2010 | 11:00 | 1.7 | ENE |
| 15-Jan-2010 | 12:00 | 1.2 | ESE |
| 15-Jan-2010 | 13:00 | 1.3 | ESE |
| 15-Jan-2010 | 14:00 | 1.5 | ESE |
| 15-Jan-2010 | 15:00 | 1.1 | ENE |
| 15-Jan-2010 | 16:00 | 1.1 | ENE |
| 15-Jan-2010 | 17:00 | 1.6 | ENE |
| 15-Jan-2010 | 18:00 | 1.4 | NE |
| 15-Jan-2010 | 19:00 | 1.1 | NE |
| 15-Jan-2010 | 20:00 | 1.6 | NNE |
| 15-Jan-2010 | 21:00 | 1.4 | NNE |
| 15-Jan-2010 | 22:00 | 1.4 | NE |
| 15-Jan-2010 | 23:00 | 1.2 | E |
| 16-Jan-2010 | 00:00 | 1.9 | ENE |
| 16-Jan-2010 | 01:00 | 1.2 | ENE |
| 16-Jan-2010 | 02:00 | 1.6 | ENE |
| 16-Jan-2010 | 03:00 | 1.1 | NNE |
| 16-Jan-2010 | 04:00 | 1.1 | NNE |
| 16-Jan-2010 | 05:00 | 1.2 | ENE |
| 16-Jan-2010 | 06:00 | 0.9 | NE |
| 16-Jan-2010 | 07:00 | 0.7 | NE |
| 16-Jan-2010 | 08:00 | 0.9 | NE |
| 16-Jan-2010 | 09:00 | 0.8 | NNE |
| 16-Jan-2010 | 10:00 | 1.4 | ESE |
| 16-Jan-2010 | 11:00 | 1.5 | ENE |
| 16-Jan-2010 | 12:00 | 1.3 | ENE |
| 16-Jan-2010 | 13:00 | 1.5 | ENE |
| 16-Jan-2010 | 14:00 | 1.1 | E |
| 16-Jan-2010 | 15:00 | 1.6 | E |
| 16-Jan-2010 | 16:00 | 1.9 | E |
| 16-Jan-2010 | 17:00 | 1.8 | NNE |

## Appendix C - Wind Data (Eastern Portal)

| Date | Time | Wind Speed m/s | Direction |
|---|---|---|---|
| 16-Jan-2010 | 18:00 | 2.5 | ENE |
| 16-Jan-2010 | 19:00 | 1.9 | ENE |
| 16-Jan-2010 | 20:00 | 1.2 | ENE |
| 16-Jan-2010 | 21:00 | 1.5 | ENE |
| 16-Jan-2010 | 22:00 | 1.3 | ENE |
| 16-Jan-2010 | 23:00 | 0.8 | NNE |
| 17-Jan-2010 | 00:00 | 1.3 | NE |
| 17-Jan-2010 | 01:00 | 1.3 | NE |
| 17-Jan-2010 | 02:00 | 2.1 | NE |
| 17-Jan-2010 | 03:00 | 1.5 | E |
| 17-Jan-2010 | 04:00 | 0.4 | E |
| 17-Jan-2010 | 05:00 | 0.9 | ENE |
| 17-Jan-2010 | 06:00 | 0.5 | NE |
| 17-Jan-2010 | 07:00 | 0.8 | NE |
| 17-Jan-2010 | 08:00 | 1 | E |
| 17-Jan-2010 | 09:00 | 1.1 | E |
| 17-Jan-2010 | 10:00 | 1.3 | ENE |
| 17-Jan-2010 | 11:00 | 1.9 | ESE |
| 17-Jan-2010 | 12:00 | 1.9 | ESE |
| 17-Jan-2010 | 13:00 | 1.6 | ESE |
| 17-Jan-2010 | 14:00 | 3 | NE |
| 17-Jan-2010 | 15:00 | 1.5 | ESE |
| 17-Jan-2010 | 16:00 | 2 | NNE |
| 17-Jan-2010 | 17:00 | 1.7 | ENE |
| 17-Jan-2010 | 18:00 | 1.4 | ENE |
| 17-Jan-2010 | 19:00 | 1.4 | ENE |
| 17-Jan-2010 | 20:00 | 1.3 | ENE |
| 17-Jan-2010 | 21:00 | 0.8 | ENE |
| 17-Jan-2010 | 22:00 | 0.9 | SSE |
| 17-Jan-2010 | 23:00 | 1.6 | SSE |
| 18-Jan-2010 | 00:00 | 0.6 | NNE |
| 18-Jan-2010 | 01:00 | 0.5 | ESE |
| 18-Jan-2010 | 02:00 | 1.4 | NE |
| 18-Jan-2010 | 03:00 | 1.3 | NE |
| 18-Jan-2010 | 04:00 | 2 | ENE |
| 18-Jan-2010 | 05:00 | 1.3 | ENE |
| 18-Jan-2010 | 06:00 | 1.3 | S |
| 18-Jan-2010 | 07:00 | 1.2 | E |
| 18-Jan-2010 | 08:00 | 1.5 | ESE |
| 18-Jan-2010 | 09:00 | 1.9 | NNE |
| 18-Jan-2010 | 10:00 | 2.7 | SSE |
| 18-Jan-2010 | 11:00 | 3.1 | SSE |
| 18-Jan-2010 | 12:00 | 3.1 | ENE |
| 18-Jan-2010 | 13:00 | 3.4 | NE |
| 18-Jan-2010 | 14:00 | 3.1 | NE |
| 18-Jan-2010 | 15:00 | 3.4 | ENE |
| 18-Jan-2010 | 16:00 | 3.6 | ENE |
| 18-Jan-2010 | 17:00 | 3.4 | NNE |
| 18-Jan-2010 | 18:00 | 3.1 | NE |
| 18-Jan-2010 | 19:00 | 2.4 | ENE |
| 18-Jan-2010 | 20:00 | 2.1 | ENE |
| 18-Jan-2010 | 21:00 | 2.2 | N |
| 18-Jan-2010 | 22:00 | 3.5 | ENE |
| 18-Jan-2010 | 23:00 | 2.8 | NE |

## Appendix C - Wind Data (Eastern Portal)

| Date | Time | Wind Speed m/s | Direction |
|---|---|---|---|
| 19-Jan-2010 | 00:00 | 2.3 | NE |
| 19-Jan-2010 | 01:00 | 3.3 | ENE |
| 19-Jan-2010 | 02:00 | 3.5 | N |
| 19-Jan-2010 | 03:00 | 2.6 | ENE |
| 19-Jan-2010 | 04:00 | 1.8 | ENE |
| 19-Jan-2010 | 05:00 | 2.6 | E |
| 19-Jan-2010 | 06:00 | 2.5 | ENE |
| 19-Jan-2010 | 07:00 | 2.1 | ENE |
| 19-Jan-2010 | 08:00 | 2.2 | ESE |
| 19-Jan-2010 | 09:00 | 2.1 | NE |
| 19-Jan-2010 | 10:00 | 2 | NE |
| 19-Jan-2010 | 11:00 | 1.6 | NE |
| 19-Jan-2010 | 12:00 | 2.3 | NE |
| 19-Jan-2010 | 13:00 | 1.8 | NE |
| 19-Jan-2010 | 14:00 | 1.7 | NE |
| 19-Jan-2010 | 15:00 | 1.7 | ENE |
| 19-Jan-2010 | 16:00 | 1.8 | NE |
| 19-Jan-2010 | 17:00 | 1.5 | NNE |
| 19-Jan-2010 | 18:00 | 1.9 | NNE |
| 19-Jan-2010 | 19:00 | 1.1 | NE |
| 19-Jan-2010 | 20:00 | 1.2 | NNE |
| 19-Jan-2010 | 21:00 | 1.3 | NNE |
| 19-Jan-2010 | 22:00 | 1.4 | NNE |
| 19-Jan-2010 | 23:00 | 1.1 | NE |
| 20-Jan-2010 | 00:00 | 1.4 | NNE |
| 20-Jan-2010 | 01:00 | 1.7 | NNE |
| 20-Jan-2010 | 02:00 | 2 | NNE |
| 20-Jan-2010 | 03:00 | 1 | NE |
| 20-Jan-2010 | 04:00 | 0.8 | NNE |
| 20-Jan-2010 | 05:00 | 1 | NNE |
| 20-Jan-2010 | 06:00 | 1.3 | NNE |
| 20-Jan-2010 | 07:00 | 1.2 | NNE |
| 20-Jan-2010 | 08:00 | 0.9 | NNE |
| 20-Jan-2010 | 09:00 | 1.5 | NNE |
| 20-Jan-2010 | 10:00 | 2.1 | NNE |
| 20-Jan-2010 | 11:00 | 1.7 | ESE |
| 20-Jan-2010 | 12:00 | 2.7 | ENE |
| 20-Jan-2010 | 13:00 | 2.4 | NE |
| 20-Jan-2010 | 14:00 | 2 | ENE |
| 20-Jan-2010 | 15:00 | 2.7 | NE |
| 20-Jan-2010 | 16:00 | 1.9 | ENE |
| 20-Jan-2010 | 17:00 | 1.4 | E |
| 20-Jan-2010 | 18:00 | 1.2 | NNE |
| 20-Jan-2010 | 19:00 | 1.8 | ENE |
| 20-Jan-2010 | 20:00 | 1.8 | NE |
| 20-Jan-2010 | 21:00 | 1.8 | ENE |
| 20-Jan-2010 | 22:00 | 1.3 | NE |
| 20-Jan-2010 | 23:00 | 1.9 | ESE |
| 21-Jan-2010 | 00:00 | 1.1 | ENE |
| 21-Jan-2010 | 01:00 | 1 | ENE |
| 21-Jan-2010 | 02:00 | 1.1 | ENE |
| 21-Jan-2010 | 03:00 | 1 | NNE |
| 21-Jan-2010 | 04:00 | 0.6 | ESE |
| 21-Jan-2010 | 05:00 | 0.7 | ENE |

## Appendix C - Wind Data (Eastern Portal)

| Date | Time | Wind Speed m/s | Direction |
|---|---|---|---|
| 21-Jan-2010 | 06:00 | 0.6 | ENE |
| 21-Jan-2010 | 07:00 | 0.7 | SSE |
| 21-Jan-2010 | 08:00 | 0.6 | ESE |
| 21-Jan-2010 | 09:00 | 1 | ENE |
| 21-Jan-2010 | 10:00 | 0.7 | SSE |
| 21-Jan-2010 | 11:00 | 1.6 | SSW |
| 21-Jan-2010 | 12:00 | 1.4 | SSE |
| 21-Jan-2010 | 13:00 | 1.8 | SSE |
| 21-Jan-2010 | 14:00 | 2.6 | ENE |
| 21-Jan-2010 | 15:00 | 1.6 | ENE |
| 21-Jan-2010 | 16:00 | 1.4 | NE |
| 21-Jan-2010 | 17:00 | 2.2 | ENE |
| 21-Jan-2010 | 18:00 | 1.8 | NE |
| 21-Jan-2010 | 19:00 | 1.7 | ENE |
| 21-Jan-2010 | 20:00 | 1.9 | ENE |
| 21-Jan-2010 | 21:00 | 2.4 | NNE |
| 21-Jan-2010 | 22:00 | 1.8 | ESE |
| 21-Jan-2010 | 23:00 | 2 | ESE |
| 22-Jan-2010 | 00:00 | 1.1 | SE |
| 22-Jan-2010 | 01:00 | 1.1 | SSE |
| 22-Jan-2010 | 02:00 | 0.9 | SSE |
| 22-Jan-2010 | 03:00 | 0.8 | SSE |
| 22-Jan-2010 | 04:00 | 1.2 | SSE |
| 22-Jan-2010 | 05:00 | 0.6 | ENE |
| 22-Jan-2010 | 06:00 | 1.9 | ENE |
| 22-Jan-2010 | 07:00 | 0.8 | NNE |
| 22-Jan-2010 | 08:00 | 1.5 | NNE |
| 22-Jan-2010 | 09:00 | 2.5 | NNE |
| 22-Jan-2010 | 10:00 | 2.2 | NE |
| 22-Jan-2010 | 11:00 | 2.1 | NE |
| 22-Jan-2010 | 12:00 | 2.7 | E |
| 22-Jan-2010 | 13:00 | 1.8 | ENE |
| 22-Jan-2010 | 14:00 | 1.5 | SSE |
| 22-Jan-2010 | 15:00 | 1.5 | S |
| 22-Jan-2010 | 16:00 | 1.7 | SSE |
| 22-Jan-2010 | 17:00 | 1.5 | SSE |
| 22-Jan-2010 | 18:00 | 1.3 | NE |
| 22-Jan-2010 | 19:00 | 1.5 | NNE |
| 22-Jan-2010 | 20:00 | 1.1 | NE |
| 22-Jan-2010 | 21:00 | 2.2 | NE |
| 22-Jan-2010 | 22:00 | 1.5 | NE |
| 22-Jan-2010 | 23:00 | 1.6 | NNE |
| 23-Jan-2010 | 00:00 | 1.8 | NE |
| 23-Jan-2010 | 01:00 | 1.6 | ESE |
| 23-Jan-2010 | 02:00 | 1.8 | ENE |
| 23-Jan-2010 | 03:00 | 1.9 | NNE |
| 23-Jan-2010 | 04:00 | 0.9 | NNE |
| 23-Jan-2010 | 05:00 | 0.9 | NNE |
| 23-Jan-2010 | 06:00 | 0.8 | NE |
| 23-Jan-2010 | 07:00 | 0.7 | NNE |
| 23-Jan-2010 | 08:00 | 1.6 | ESE |
| 23-Jan-2010 | 09:00 | 0.9 | ENE |
| 23-Jan-2010 | 10:00 | 2.2 | E |
| 23-Jan-2010 | 11:00 | 2.1 | ESE |

## Appendix C - Wind Data (Eastern Portal)

| Date | Time | Wind Speed m/s | Direction |
|---|---|---|---|
| 23-Jan-2010 | 12:00 | 2 | ENE |
| 23-Jan-2010 | 13:00 | 1.9 | SSE |
| 23-Jan-2010 | 14:00 | 2.2 | SE |
| 23-Jan-2010 | 15:00 | 2.4 | SSE |
| 23-Jan-2010 | 16:00 | 2.3 | SSE |
| 23-Jan-2010 | 17:00 | 1.8 | NE |
| 23-Jan-2010 | 18:00 | 1.7 | NE |
| 23-Jan-2010 | 19:00 | 1.9 | NE |
| 23-Jan-2010 | 20:00 | 1.8 | NE |
| 23-Jan-2010 | 21:00 | 1.2 | ENE |
| 23-Jan-2010 | 22:00 | 0.9 | ENE |
| 23-Jan-2010 | 23:00 | 0.8 | WSW |
| 24-Jan-2010 | 00:00 | 0.8 | N |
| 24-Jan-2010 | 01:00 | 1.8 | NE |
| 24-Jan-2010 | 02:00 | 1.7 | ENE |
| 24-Jan-2010 | 03:00 | 1.9 | ENE |
| 24-Jan-2010 | 04:00 | 2.4 | W |
| 24-Jan-2010 | 05:00 | 2.2 | SW |
| 24-Jan-2010 | 06:00 | 1.9 | WSW |
| 24-Jan-2010 | 07:00 | 1.3 | SW |
| 24-Jan-2010 | 08:00 | 1.3 | NNE |
| 24-Jan-2010 | 09:00 | 1.5 | N |
| 24-Jan-2010 | 10:00 | 1.8 | NW |
| 24-Jan-2010 | 11:00 | 2.1 | NE |
| 24-Jan-2010 | 12:00 | 2.4 | ENE |
| 24-Jan-2010 | 13:00 | 2.6 | SSE |
| 24-Jan-2010 | 14:00 | 2.6 | SE |
| 24-Jan-2010 | 15:00 | 2.2 | WSW |
| 24-Jan-2010 | 16:00 | 2.5 | SSE |
| 24-Jan-2010 | 17:00 | 2.1 | SSE |
| 24-Jan-2010 | 18:00 | 2 | SSE |
| 24-Jan-2010 | 19:00 | 1.7 | ENE |
| 24-Jan-2010 | 20:00 | 1.4 | ENE |
| 24-Jan-2010 | 21:00 | 3.4 | ENE |
| 24-Jan-2010 | 22:00 | 2.5 | W |
| 24-Jan-2010 | 23:00 | 2 | WNW |
| 25-Jan-2010 | 00:00 | 2.9 | W |
| 25-Jan-2010 | 01:00 | 2.4 | W |
| 25-Jan-2010 | 02:00 | 2 | SSW |
| 25-Jan-2010 | 03:00 | 3.9 | S |
| 25-Jan-2010 | 04:00 | 2.9 | WNW |
| 25-Jan-2010 | 05:00 | 2.1 | WSW |
| 25-Jan-2010 | 06:00 | 2.9 | NE |
| 25-Jan-2010 | 07:00 | 2.9 | NE |
| 25-Jan-2010 | 08:00 | 2.1 | NE |
| 25-Jan-2010 | 09:00 | 2.2 | NNE |
| 25-Jan-2010 | 10:00 | 2.6 | NE |
| 25-Jan-2010 | 11:00 | 2.9 | ENE |
| 25-Jan-2010 | 12:00 | 2.3 | ENE |
| 25-Jan-2010 | 13:00 | 2.5 | N |
| 25-Jan-2010 | 14:00 | 2.4 | NE |
| 25-Jan-2010 | 15:00 | 2.3 | NE |
| 25-Jan-2010 | 16:00 | 2.7 | E |
| 25-Jan-2010 | 17:00 | 1.5 | E |

## Appendix C - Wind Data (Eastern Portal)

| Date | Time | Wind Speed m/s | Direction |
|---|---|---|---|
| 25-Jan-2010 | 18:00 | 1.7 | NNE |
| 25-Jan-2010 | 19:00 | 2.5 | NE |
| 25-Jan-2010 | 20:00 | 1.2 | ESE |
| 25-Jan-2010 | 21:00 | 1.9 | SSE |
| 25-Jan-2010 | 22:00 | 1.7 | NNE |
| 25-Jan-2010 | 23:00 | 1.4 | NNE |
| 26-Jan-2010 | 00:00 | 0.9 | NNE |
| 26-Jan-2010 | 01:00 | 0.9 | SSW |
| 26-Jan-2010 | 02:00 | 1.6 | W |
| 26-Jan-2010 | 03:00 | 1.9 | ENE |
| 26-Jan-2010 | 04:00 | 1.7 | NE |
| 26-Jan-2010 | 05:00 | 1.5 | SSW |
| 26-Jan-2010 | 06:00 | 1.7 | WSW |
| 26-Jan-2010 | 07:00 | 1.3 | SW |
| 26-Jan-2010 | 08:00 | 1.7 | SSW |
| 26-Jan-2010 | 09:00 | 2.3 | NE |
| 26-Jan-2010 | 10:00 | 2 | SW |
| 26-Jan-2010 | 11:00 | 2.3 | SW |
| 26-Jan-2010 | 12:00 | 2.1 | SW |
| 26-Jan-2010 | 13:00 | 2.3 | SW |
| 26-Jan-2010 | 14:00 | 2.4 | SW |
| 26-Jan-2010 | 15:00 | 2 | SW |
| 26-Jan-2010 | 16:00 | 1.9 | ENE |
| 26-Jan-2010 | 17:00 | 2.1 | E |
| 26-Jan-2010 | 18:00 | 1.6 | E |
| 26-Jan-2010 | 19:00 | 1.2 | E |
| 26-Jan-2010 | 20:00 | 1.1 | E |
| 26-Jan-2010 | 21:00 | 0.9 | NW |
| 26-Jan-2010 | 22:00 | 0.7 | NE |
| 26-Jan-2010 | 23:00 | 0.7 | NE |
| 27-Jan-2010 | 00:00 | 1 | ENE |
| 27-Jan-2010 | 01:00 | 0.9 | ENE |
| 27-Jan-2010 | 02:00 | 1.2 | ENE |
| 27-Jan-2010 | 03:00 | 1.1 | E |
| 27-Jan-2010 | 04:00 | 1.1 | NE |
| 27-Jan-2010 | 05:00 | 0.9 | NNE |
| 27-Jan-2010 | 06:00 | 0.7 | E |
| 27-Jan-2010 | 07:00 | 0.8 | E |
| 27-Jan-2010 | 08:00 | 0.9 | E |
| 27-Jan-2010 | 09:00 | 1.4 | E |
| 27-Jan-2010 | 10:00 | 1.5 | ENE |
| 27-Jan-2010 | 11:00 | 1.5 | ENE |
| 27-Jan-2010 | 12:00 | 1.6 | ENE |
| 27-Jan-2010 | 13:00 | 1.8 | ENE |
| 27-Jan-2010 | 14:00 | 1.9 | ENE |
| 27-Jan-2010 | 15:00 | 1.8 | ENE |
| 27-Jan-2010 | 16:00 | 1.5 | NNE |
| 27-Jan-2010 | 17:00 | 1.4 | NE |
| 27-Jan-2010 | 18:00 | 1.3 | NE |
| 27-Jan-2010 | 19:00 | 1.2 | NNE |
| 27-Jan-2010 | 20:00 | 1 | NNE |
| 27-Jan-2010 | 21:00 | 0.7 | NE |
| 27-Jan-2010 | 22:00 | 0.5 | NNE |
| 27-Jan-2010 | 23:00 | 0.5 | NNE |

## Appendix C - Wind Data (Eastern Portal)

| Date | Time | Wind Speed m/s | Direction |
|---|---|---|---|
| 28-Jan-2010 | 00:00 | 0.6 | NNE |
| 28-Jan-2010 | 01:00 | 0.5 | NNE |
| 28-Jan-2010 | 02:00 | 0.3 | NNE |
| 28-Jan-2010 | 03:00 | 0.3 | NNE |
| 28-Jan-2010 | 04:00 | 0.3 | NNE |
| 28-Jan-2010 | 05:00 | 0.5 | NNE |
| 28-Jan-2010 | 06:00 | 0.6 | NE |
| 28-Jan-2010 | 07:00 | 0.6 | NNE |
| 28-Jan-2010 | 08:00 | 0.7 | E |
| 28-Jan-2010 | 09:00 | 1 | E |
| 28-Jan-2010 | 10:00 | 1 | E |
| 28-Jan-2010 | 11:00 | 1.3 | E |
| 28-Jan-2010 | 12:00 | 1.2 | SE |
| 28-Jan-2010 | 13:00 | 1.3 | E |
| 28-Jan-2010 | 14:00 | 1.7 | ENE |
| 28-Jan-2010 | 15:00 | 1.7 | ESE |
| 28-Jan-2010 | 16:00 | 1.7 | E |
| 28-Jan-2010 | 17:00 | 1.3 | N |
| 28-Jan-2010 | 18:00 | 1 | W |
| 28-Jan-2010 | 19:00 | 0.8 | SW |
| 28-Jan-2010 | 20:00 | 0.4 | SSE |
| 28-Jan-2010 | 21:00 | 0.6 | SSE |
| 28-Jan-2010 | 22:00 | 0.7 | SE |
| 28-Jan-2010 | 23:00 | 0.8 | NE |
| 29-Jan-2010 | 00:00 | 1 | WNW |
| 29-Jan-2010 | 01:00 | 0.9 | WNW |
| 29-Jan-2010 | 02:00 | 1 | WNW |
| 29-Jan-2010 | 03:00 | 0.9 | ENE |
| 29-Jan-2010 | 04:00 | 0.9 | N |
| 29-Jan-2010 | 05:00 | 1 | SE |
| 29-Jan-2010 | 06:00 | 0.9 | SE |
| 29-Jan-2010 | 07:00 | 0.9 | SE |
| 29-Jan-2010 | 08:00 | 0.9 | WNW |
| 29-Jan-2010 | 09:00 | 1.1 | WNW |
| 29-Jan-2010 | 10:00 | 1.6 | WNW |
| 29-Jan-2010 | 11:00 | 1.7 | W |
| 29-Jan-2010 | 12:00 | 1.7 | SW |
| 29-Jan-2010 | 13:00 | 1.5 | SW |
| 29-Jan-2010 | 14:00 | 1.5 | W |
| 29-Jan-2010 | 15:00 | 1.6 | W |
| 29-Jan-2010 | 16:00 | 1.6 | WNW |
| 29-Jan-2010 | 17:00 | 1.6 | W |
| 29-Jan-2010 | 18:00 | 1.5 | W |
| 29-Jan-2010 | 19:00 | 1.3 | W |
| 29-Jan-2010 | 20:00 | 1 | W |
| 29-Jan-2010 | 21:00 | 0.9 | W |
| 29-Jan-2010 | 22:00 | 0.9 | W |
| 29-Jan-2010 | 23:00 | 0.7 | SSE |
| 30-Jan-2010 | 00:00 | 0.8 | E |
| 30-Jan-2010 | 01:00 | 0.7 | E |
| 30-Jan-2010 | 02:00 | 0.4 | SE |
| 30-Jan-2010 | 03:00 | 0.7 | SE |
| 30-Jan-2010 | 04:00 | 0.6 | SE |
| 30-Jan-2010 | 05:00 | 0.8 | SE |

## Appendix C - Wind Data (Eastern Portal)

| Date | Time | Wind Speed m/s | Direction |
|---|---|---|---|
| 30-Jan-2010 | 06:00 | 0.7 | ESE |
| 30-Jan-2010 | 07:00 | 0.9 | SSE |
| 30-Jan-2010 | 08:00 | 0.9 | SSE |
| 30-Jan-2010 | 09:00 | 4.2 | E |
| 30-Jan-2010 | 10:00 | 1.4 | SE |
| 30-Jan-2010 | 11:00 | 2 | SE |
| 30-Jan-2010 | 12:00 | 2 | ESE |
| 30-Jan-2010 | 13:00 | 1.8 | SSE |
| 30-Jan-2010 | 14:00 | 2.1 | SE |
| 30-Jan-2010 | 15:00 | 2 | SE |
| 30-Jan-2010 | 16:00 | 1.6 | ENE |
| 30-Jan-2010 | 17:00 | 1.5 | SE |
| 30-Jan-2010 | 18:00 | 1.6 | SSE |
| 30-Jan-2010 | 19:00 | 1.5 | SE |
| 30-Jan-2010 | 20:00 | 1.2 | SE |
| 30-Jan-2010 | 21:00 | 1.2 | ESE |
| 30-Jan-2010 | 22:00 | 1.5 | E |
| 30-Jan-2010 | 23:00 | 1.4 | SSE |
| 31-Jan-2010 | 00:00 | 1.7 | SSE |
| 31-Jan-2010 | 01:00 | 1.6 | SSE |
| 31-Jan-2010 | 02:00 | 1.3 | SE |
| 31-Jan-2010 | 03:00 | 1.3 | SE |
| 31-Jan-2010 | 04:00 | 1.2 | NE |
| 31-Jan-2010 | 05:00 | 0.8 | E |
| 31-Jan-2010 | 06:00 | 1.2 | SSE |
| 31-Jan-2010 | 07:00 | 1.3 | E |
| 31-Jan-2010 | 08:00 | 1.3 | NE |
| 31-Jan-2010 | 09:00 | 1.3 | ESE |
| 31-Jan-2010 | 10:00 | 1.8 | ESE |
| 31-Jan-2010 | 11:00 | 1.5 | ESE |
| 31-Jan-2010 | 12:00 | 2.1 | SSE |
| 31-Jan-2010 | 13:00 | 2.3 | SSE |
| 31-Jan-2010 | 14:00 | 1.8 | SSE |
| 31-Jan-2010 | 15:00 | 1.8 | SSE |
| 31-Jan-2010 | 16:00 | 1.9 | SSE |
| 31-Jan-2010 | 17:00 | 1.8 | SSE |
| 31-Jan-2010 | 18:00 | 1.6 | SSE |
| 31-Jan-2010 | 19:00 | 1.6 | WNW |
| 31-Jan-2010 | 20:00 | 1.4 | WNW |
| 31-Jan-2010 | 21:00 | 1.8 | SSW |
| 31-Jan-2010 | 22:00 | 1.7 | SW |
| 31-Jan-2010 | 23:00 | 1.5 | WSW |

# APPENDIX D
# ENVIRONMENTAL MONITORING SCHEDULES

**Drainage Improvement in Northern Hong Kong Island - Hong Kong West Drainage Tunnel**
**Impact Air and Noise Monitoring Schedule for January 2010 (Eastern Portal)**

| **Sunday** | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|
| | | | | | **1-Jan** | 2-Jan |
| | | | | | | 24 hrs TSP |
| **3-Jan** | 4-Jan | 5-Jan | 6-Jan | 7-Jan | 8-Jan | 9-Jan |
| Noise<br>Daytime (07:00-19:00) | 1 hr TSP | 1 hr TSP<br>Noise<br>Daytime (07:00-19:00) ,<br>Evening time (19:00-23:00)<br>& Night-time (23:00-07:00) | | 1 hr TSP | 24 hrs TSP | |
| **10-Jan** | 11-Jan | 12-Jan | 13-Jan | 14-Jan | 15-Jan | 16-Jan |
| Noise<br>Daytime (07:00-19:00) | 1 hr TSP | 1 hr TSP<br>Noise<br>Daytime (07:00-19:00) ,<br>Evening time (19:00-23:00)<br>& Night-time (23:00-07:00) | | 24 hrs TSP | 1 hr TSP | |
| **17-Jan** | 18-Jan | 19-Jan | 20-Jan | 21-Jan | 22-Jan | 23-Jan |
| Noise<br>Daytime (07:00-19:00) | | 1 hr TSP<br>Noise<br>Daytime (07:00-19:00) ,<br>Evening time (19:00-23:00)<br>& Night-time (23:00-07:00) | 1 hr TSP<br>24 hrs TSP | 1 hr TSP | | |
| **24-Jan** | 25-Jan | 26-Jan | 27-Jan | 28-Jan | 29-Jan | 30-Jan |
| Noise<br>Daytime (07:00-19:00) | 1 hr TSP | 1 hr TSP<br>Noise<br>Daytime (07:00-19:00) ,<br>Evening time (19:00-23:00)<br>& Night-time (23:00-07:00)<br>24 hrs TSP | 1 hr TSP | | | |
| **31-Jan** | | | | | | |
| Noise<br>Daytime (07:00-19:00) | | | | | | |

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)

**Air Quality Monitoring Station**

AQ1 - True Light Middle School of HK

**Noise Monitoring Station**

NC1 - True Light Middle School of HK
NC2 - The Legend
NC1a - Outside True Light Middle School of HK
(for restricted hours)

**Drainage Improvement in Northern Hong Kong Island - Hong Kong West Drainage Tunnel**
**Impact Air and Noise Monitoring Schedule for January 2010 (Western Portal)**

| **Sunday** | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|
| | | | | | **1-Jan** | 2-Jan |
| | | | | | | 24 hrs TSP |
| **3-Jan** | 4-Jan | 5-Jan | 6-Jan | 7-Jan | 8-Jan | 9-Jan |
| Noise<br>Daytime (07:00-19:00) | 1 hr TSP | 1 hr TSP<br>Noise<br>Daytime (07:00-19:00) ,<br>Evening time (19:00-23:00)<br>& Night-time (23:00-07:00) | | 1 hr TSP | 24 hrs TSP | |
| **10-Jan** | 11-Jan | 12-Jan | 13-Jan | 14-Jan | 15-Jan | 16-Jan |
| Noise<br>Daytime (07:00-19:00) | 1 hr TSP | 1 hr TSP<br>Noise<br>Daytime (07:00-19:00) ,<br>Evening time (19:00-23:00)<br>& Night-time (23:00-07:00) | | 24 hrs TSP | 1 hr TSP | |
| **17-Jan** | 18-Jan | 19-Jan | 20-Jan | 21-Jan | 22-Jan | 23-Jan |
| Noise<br>Daytime (07:00-19:00) | | 1 hr TSP<br>Noise<br>Daytime (07:00-19:00) ,<br>Evening time (19:00-23:00)<br>& Night-time (23:00-07:00) | 1 hr TSP<br>24 hrs TSP | 1 hr TSP | | |
| **24-Jan** | 25-Jan | 26-Jan | 27-Jan | 28-Jan | 29-Jan | 30-Jan |
| Noise<br>Daytime (07:00-19:00) | 1 hr TSP | 1 hr TSP<br>Noise<br>Daytime (07:00-19:00) ,<br>Evening time (19:00-23:00)<br>& Night-time (23:00-07:00)<br>24 hrs TSP | 1 hr TSP | | | |
| **31-Jan** | | | | | | |
| Noise<br>Daytime (07:00-19:00) | | | | | | |

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)

**Air Quality Monitoring Station**

AQ2 - Outside Aegean Terrace (1 hour TSP)
AQ3 - Outside Site Office at Western Portal (24 hours TSP)

**Noise Monitoring Station**

NC3 - Outside Aegean Terrace

**Drainage Improvement in Northern Hong Kong Island - Hong Kong West Drainage Tunnel**
**Impact Noise Monitoring Schedule for January 2010 (Intake W0, PFLR1, E7, RR1 and W5)**

| **Sunday** | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|
| | | | | | **1-Jan** | 2-Jan |
| | | | | | | |
| **3-Jan** | 4-Jan | 5-Jan | 6-Jan | 7-Jan | 8-Jan | 9-Jan |
| | | Noise<br>Daytime (07:00-19:00) | | | | |
| **10-Jan** | 11-Jan | 12-Jan | 13-Jan | 14-Jan | 15-Jan | 16-Jan |
| | | Noise<br>Daytime (07:00-19:00) | | | | |
| **17-Jan** | 18-Jan | 19-Jan | 20-Jan | 21-Jan | 22-Jan | 23-Jan |
| | | Noise<br>Daytime (07:00-19:00) | | | | |
| **24-Jan** | 25-Jan | 26-Jan | 27-Jan | 28-Jan | 29-Jan | 30-Jan |
| | | Noise<br>Daytime (07:00-19:00) | | | | |
| **31-Jan** | | | | | | |
| | | | | | | |

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)

**Noise Monitoring Station**

Intake W0 - Hong Kong Academy (NC15)
Intake PFLR1 - Honey Court (NC11)
Intake E7 - Marymount Secondary School (NC8) and 117 Blue Pool Road (NC9)
Intake RR1 - Ying Wa Girl's School (NC12) and Peaksville Court (NC13)
Intake W5 - Raimondi College (NC16)

**Drainage Improvement in Northern Hong Kong Island - Hong Kong West Drainage Tunnel**
**Tentative Impact Air and Noise Monitoring Schedule for February 2010 (Eastern Portal)**

| **Sunday** | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|
| | 1-Feb | 2-Feb | 3-Feb | 4-Feb | 5-Feb | 6-Feb |
| | 24 hrs TSP | 1 hr TSP X 3<br>Noise<br>Daytime (07:00-19:00) ,<br>Evening time (19:00-23:00)<br>& Night-time (23:00-07:00) | | | | 24 hrs TSP |
| **7-Feb** | 8-Feb | 9-Feb | 10-Feb | 11-Feb | 12-Feb | **13-Feb** |
| Noise<br>Daytime (07:00-19:00) | 1 hr TSP X 3 | Noise<br>Daytime (07:00-19:00) ,<br>Evening time (19:00-23:00)<br>& Night-time (23:00-07:00) | | | 1 hr TSP X 3<br>24 hrs TSP | |
| **14-Feb** | **15-Feb** | **16-Feb** | 17-Feb | 18-Feb | 19-Feb | 20-Feb |
| Noise<br>Daytime (07:00-19:00) | | | Noise<br>Daytime (07:00-19:00) ,<br>Evening time (19:00-23:00)<br>& Night-time (23:00-07:00) | 1 hr TSP X 3<br>24 hrs TSP | | |
| **21-Feb** | 22-Feb | 23-Feb | 24-Feb | 25-Feb | 26-Feb | 27-Feb |
| Noise<br>Daytime (07:00-19:00) | | | 1 hr TSP X 3<br>24 hrs TSP | Noise<br>Daytime (07:00-19:00) ,<br>Evening time (19:00-23:00)<br>& Night-time (23:00-07:00) | | |
| **28-Feb** | | | | | | |
| Noise<br>Daytime (07:00-19:00) | | | | | | |

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)

**Air Quality Monitoring Station**

AQ1 - True Light Middle School of HK

**Noise Monitoring Station**

NC1 - True Light Middle School of HK
NC2 - The Legend
NC1a - Outside True Light Middle School of HK
(for restricted hours)

**Drainage Improvement in Northern Hong Kong Island - Hong Kong West Drainage Tunnel**
**Tentative Impact Air and Noise Monitoring Schedule for February 2010 (Western Portal)**

| **Sunday** | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|
| | 1-Feb | 2-Feb | 3-Feb | 4-Feb | 5-Feb | 6-Feb |
| | 24 hrs TSP | 1 hr TSP X 3<br>Noise<br>Daytime (07:00-19:00) ,<br>Evening time (19:00-23:00)<br>& Night-time (23:00-07:00) | | | | 24 hrs TSP |
| **7-Feb** | 8-Feb | 9-Feb | 10-Feb | 11-Feb | 12-Feb | **13-Feb** |
| Noise<br>Daytime (07:00-19:00) | 1 hr TSP X 3 | Noise<br>Daytime (07:00-19:00) ,<br>Evening time (19:00-23:00)<br>& Night-time (23:00-07:00) | | | 1 hr TSP X 3<br>24 hrs TSP | |
| **14-Feb** | **15-Feb** | **16-Feb** | 17-Feb | 18-Feb | 19-Feb | 20-Feb |
| Noise<br>Daytime (07:00-19:00) | | | Noise<br>Daytime (07:00-19:00) ,<br>Evening time (19:00-23:00)<br>& Night-time (23:00-07:00) | 1 hr TSP X 3<br>24 hrs TSP | | |
| **21-Feb** | 22-Feb | 23-Feb | 24-Feb | 25-Feb | 26-Feb | 27-Feb |
| Noise<br>Daytime (07:00-19:00) | | | 1 hr TSP X 3<br>24 hrs TSP | Noise<br>Daytime (07:00-19:00) ,<br>Evening time (19:00-23:00)<br>& Night-time (23:00-07:00) | | |
| **28-Feb** | | | | | | |
| Noise<br>Daytime (07:00-19:00) | | | | | | |

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)

**Air Quality Monitoring Station**

AQ2 - Outside Aegean Terrace (1 hour TSP)
AQ3 - Outside Site Office at Western Portal (24 hours TSP)

**Noise Monitoring Station**

NC3 - Outside Aegean Terrace

**Drainage Improvement in Northern Hong Kong Island - Hong Kong West Drainage Tunnel**
**Tentative Impact Noise Monitoring Schedule for February 2010 (Intake W0, PFLR1, E7, RR1, W5, THR2, E5A and P5)**

| **Sunday** | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|
| | 1-Feb | 2-Feb | 3-Feb | 4-Feb | 5-Feb | 6-Feb |
| | | Noise<br>Daytime (07:00-19:00) | | | | |
| **7-Feb** | 8-Feb | 9-Feb | 10-Feb | 11-Feb | 12-Feb | **13-Feb** |
| | | Noise<br>Daytime (07:00-19:00) | | | | |
| **14-Feb** | **15-Feb** | **16-Feb** | 17-Feb | 18-Feb | 19-Feb | 20-Feb |
| | | | Noise<br>Daytime (07:00-19:00) | | | |
| **21-Feb** | 22-Feb | 23-Feb | 24-Feb | 25-Feb | 26-Feb | 27-Feb |
| | | | | Noise<br>Daytime (07:00-19:00) | | |
| **28-Feb** | | | | | | |
| | | | | | | |

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)

**Noise Monitoring Station**

Intake W0 - Hong Kong Academy (NC15)
Intake PFLR1 - Honey Court (NC11)
Intake E7 - Marymount Secondary School (NC8) and 117 Blue Pool Road (NC9)
Intake RR1 - Ying Wa Girl's School (NC12) and Peaksville Court (NC13)
Intake W5 - Raimondi College (NC16)
Intake E5A - Buddist Li Ka Shing Care & Attention Home for the Elderly (NC7)
Intake THR2 - Hong Kong Japanese School (NC14)
Intake P5 - Villa Veneto (NC19)

**APPENDIX E**
**1-HOUR TSP MONITORING RESULTS AND GRAPHICAL PRESENTATION**

## Appendix E - 1-hour TSP Monitoring Results

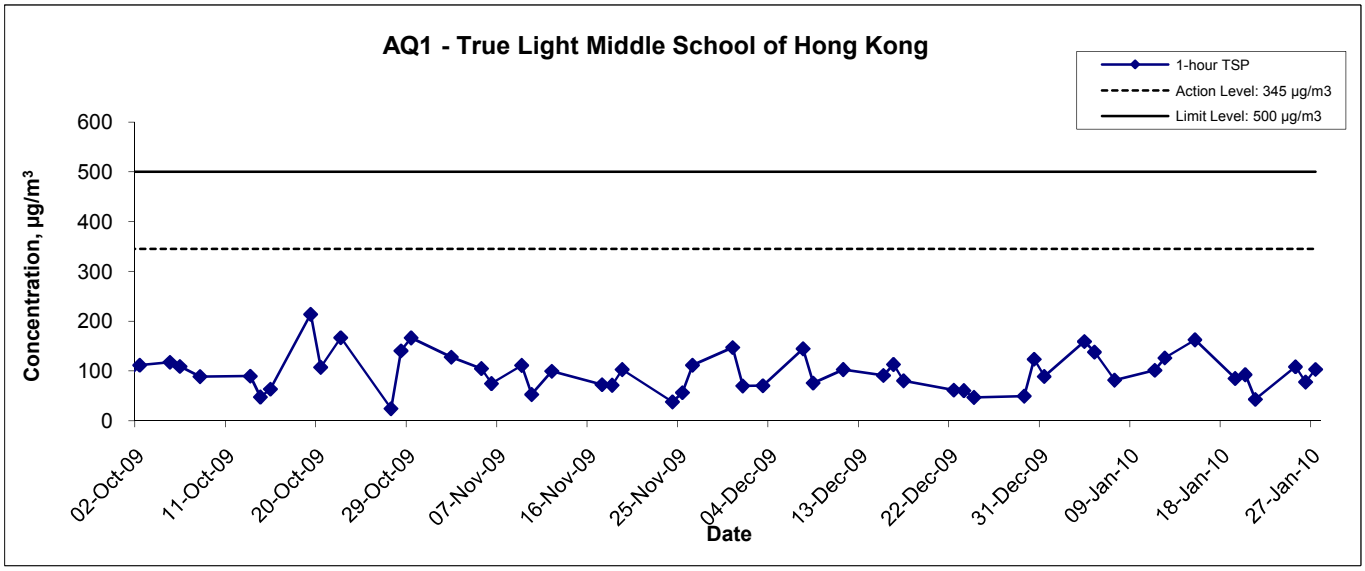
### Station AQ1 (True Light Middle School of Hong Kong)

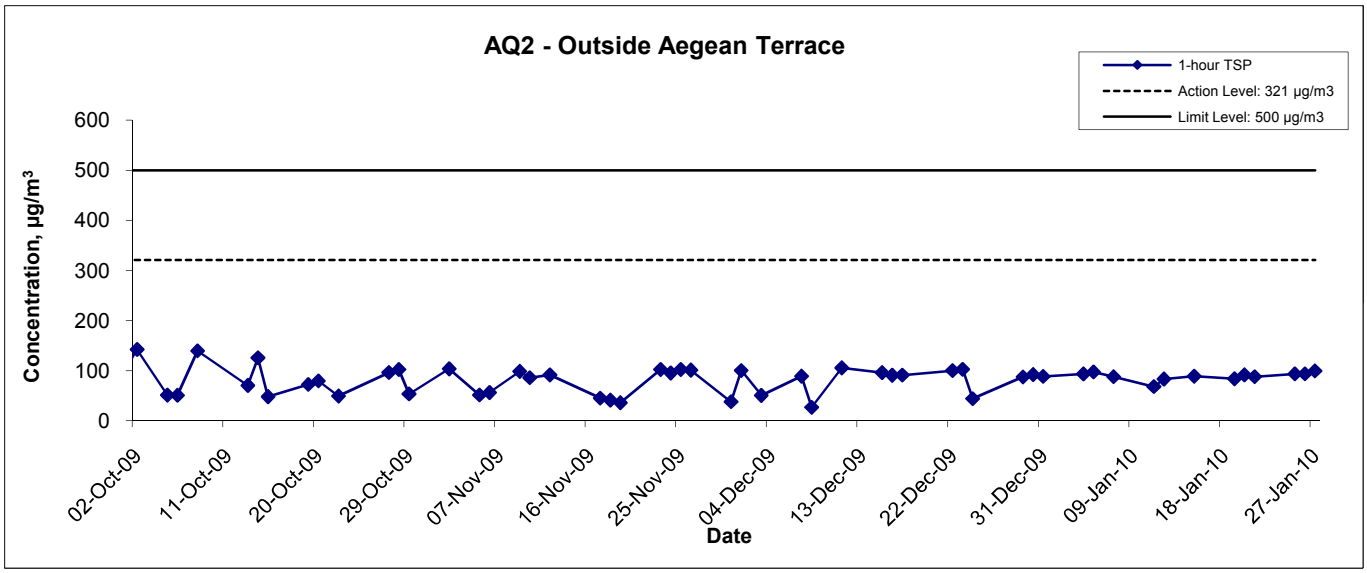
| Date | Sampling Time | Weather Condition | Air Temp. (K) | Atmospheric Pressure (Pa) | Filter Weight (g) | | Particulate weight (g) | Elapse Time | | Sampling Time(hrs.) | Flow Rate ($m^3$/min.) | | Av. flow ($m^3$/min) | Total vol. ($m^3$) | Conc. ($\mu g/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Initial | Final | | Initial | Final | | Initial | Final | | | |
| 4-Jan-10 | 14:00 | Sunny | 292.6 | 762.7 | 3.3478 | 3.3593 | 0.0115 | 4108.3 | 4109.3 | 1.0 | 1.20 | 1.20 | 1.20 | 72.1 | 159.5 |
| 5-Jan-10 | 09:00 | Cloudy | 290.9 | 765.5 | 3.4285 | 3.4385 | 0.0100 | 4109.3 | 4110.3 | 1.0 | 1.21 | 1.21 | 1.21 | 72.4 | 138.1 |
| 7-Jan-10 | 09:00 | Cloudy | 284.0 | 770.2 | 3.4135 | 3.4195 | 0.0060 | 4110.3 | 4111.3 | 1.0 | 1.22 | 1.22 | 1.22 | 73.4 | 81.8 |
| 11-Jan-10 | 15:00 | Rainy | 286.5 | 765.8 | 3.3327 | 3.3401 | 0.0074 | 4135.3 | 4136.3 | 1.0 | 1.22 | 1.21 | 1.22 | 72.9 | 101.5 |
| 12-Jan-10 | 09:00 | Cloudy | 283.1 | 771.7 | 3.3659 | 3.3752 | 0.0093 | 4136.3 | 4137.3 | 1.0 | 1.23 | 1.23 | 1.23 | 73.5 | 126.5 |
| 15-Jan-10 | 15:00 | Sunny | 292.1 | 770.1 | 3.2951 | 3.3069 | 0.0118 | 4161.3 | 4162.3 | 1.0 | 1.21 | 1.21 | 1.21 | 72.5 | 162.8 |
| 19-Jan-10 | 09:00 | Sunny | 289.5 | 769.9 | 3.2424 | 3.2486 | 0.0062 | 4162.3 | 4163.3 | 1.0 | 1.21 | 1.21 | 1.21 | 72.7 | 85.2 |
| 20-Jan-10 | 09:00 | Sunny | 294.4 | 768.5 | 3.2642 | 3.2709 | 0.0067 | 4163.3 | 4164.3 | 1.0 | 1.20 | 1.20 | 1.20 | 72.2 | 92.9 |
| 21-Jan-10 | 13:00 | Sunny | 295.8 | 765.8 | 3.3313 | 3.3344 | 0.0031 | 4188.3 | 4189.3 | 1.0 | 1.20 | 1.20 | 1.20 | 71.9 | 43.1 |
| 25-Jan-10 | 09:00 | Cloudy | 289.1 | 769.8 | 3.4235 | 3.4314 | 0.0079 | 4189.3 | 4190.3 | 1.0 | 1.21 | 1.21 | 1.21 | 72.8 | 108.5 |
| 26-Jan-10 | 09:00 | Cloudy | 287.8 | 772.0 | 3.3133 | 3.3190 | 0.0057 | 4190.3 | 4191.3 | 1.0 | 1.22 | 1.22 | 1.22 | 73.0 | 78.1 |
| 27-Jan-10 | 13:00 | Cloudy | 290.5 | 766.1 | 3.2237 | 3.2312 | 0.0075 | 4215.3 | 4216.3 | 1.0 | 1.21 | 1.21 | 1.21 | 72.5 | 103.5 |
| | | | | | | | | | | | | | | Min | 43.1 |
| | | | | | | | | | | | | | | Max | 162.8 |
| | | | | | | | | | | | | | | Average | 106.8 |

# Appendix E - 1-hour TSP Monitoring Results

| **Station AQ2 (Outside Aegean Terrace)** | | | |
|---|---|---|---|
| Date | Time | Weather | Particulate Concentration ( $\mu g/m^3$) |
| 4-Jan-10 | 15:25 | Sunny | 93.4 |
| 5-Jan-10 | 14:10 | Cloudy | 97.3 |
| 7-Jan-10 | 14:30 | Cloudy | 87.7 |
| 11-Jan-10 | 13:25 | Cloudy | 68.0 |
| 12-Jan-10 | 11:00 | Sunny | 83.2 |
| 15-Jan-10 | 14:00 | Sunny | 88.7 |
| 19-Jan-10 | 11:00 | Sunny | 83.6 |
| 20-Jan-10 | 13:45 | Cloudy | 91.5 |
| 21-Jan-10 | 13:50 | Sunny | 87.9 |
| 25-Jan-10 | 14:00 | Cloudy | 93.5 |
| 26-Jan-10 | 11:00 | Cloudy | 93.5 |
| 27-Jan-10 | 15:25 | Cloudy | 99.3 |
| | | Average | 89.0 |
| | | Maximum | 99.3 |
| | | Minimum | 68.0 |

## 1-hr TSP Concentration Levels




| | | | |
|---|---|---|---|
| Title: Contract No. DC/2007/10<br>Design and Construction of Hong Kong West Drainage Tunnel<br>Graphical Presentation of 1-hour TSP Monitoring Results | Scale: N.T.S<br>Date: Jan 10 | Project No.: MA8001<br>Appendix: E | CINOTECH |

**APPENDIX F**
**24-HOUR TSP MONITORING RESULTS AND GRAPHICAL PRESENTATION**

# Appendix F - 24-hour TSP Monitoring Results

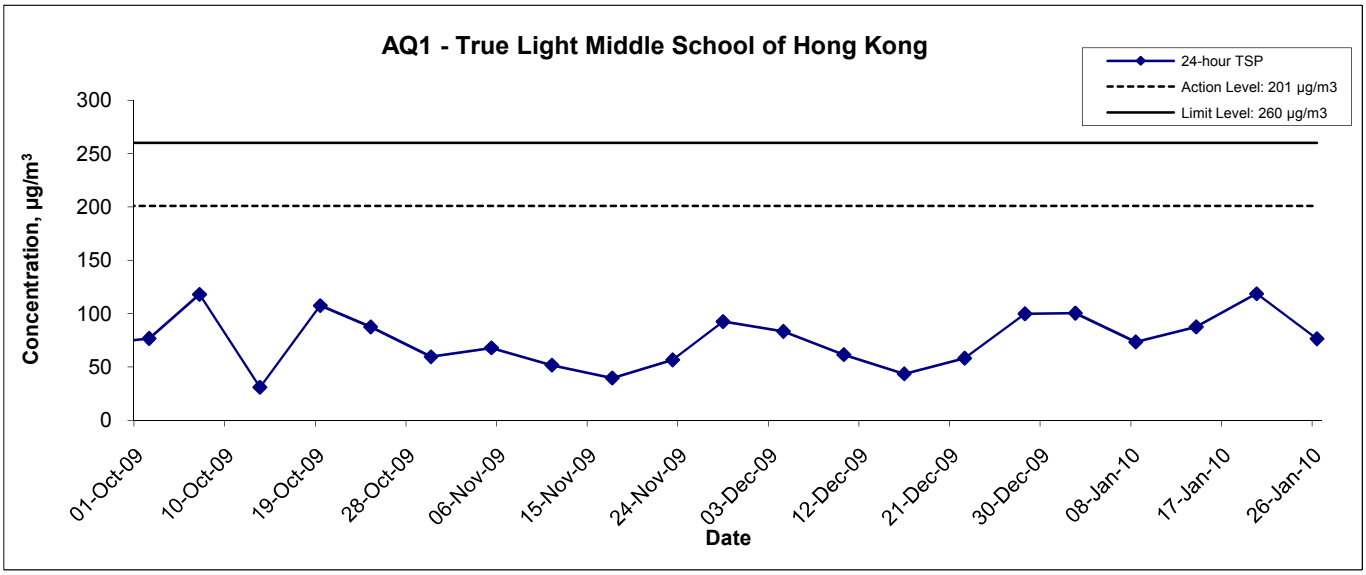
## Station AQ1 - True Light Middle School of Hong Kong

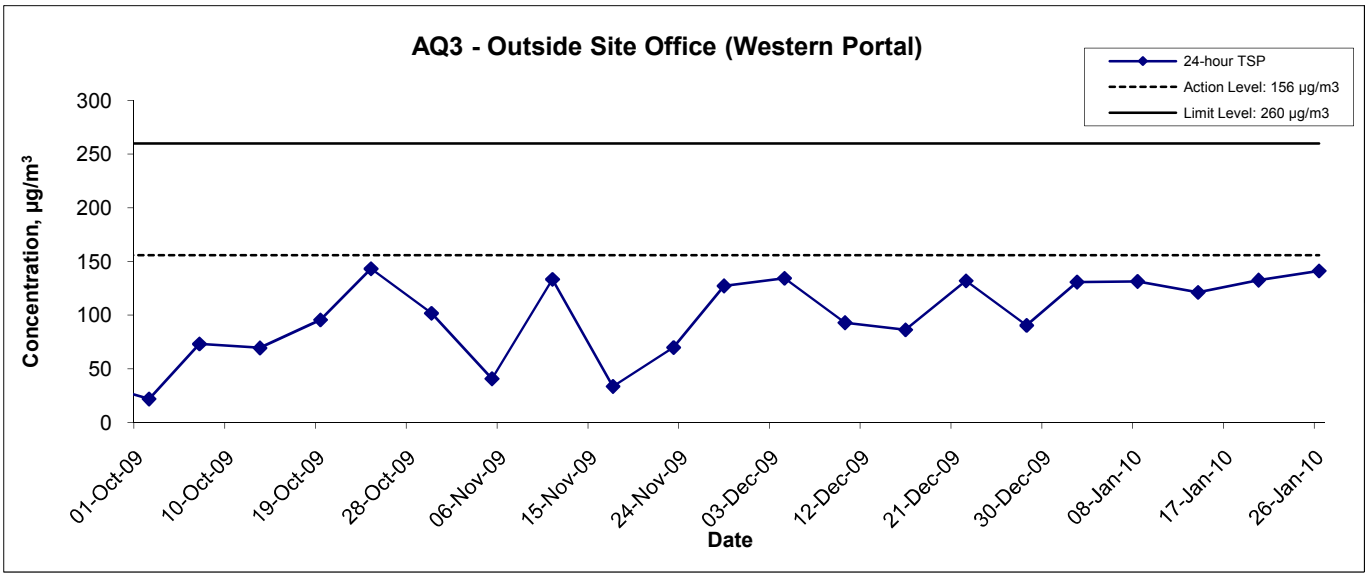
| Start Date | Weather Condition | Air Temp. (K) | Atmospheric Pressure (Pa) | Filter Weight (g) | | Particulate weight (g) | Elapse Time | | Sampling Time(hrs.) | Flow Rate ($m^3$/min.) | | Av. flow ($m^3$/min) | Total vol. ($m^3$) | Conc. (μg/$m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Initial | Final | | Initial | Final | | Initial | Final | | | |
| 2-Jan-10 | Sunny | 290.2 | 764.9 | 3.4106 | 3.5853 | 0.1747 | 4084.3 | 4108.3 | 24.0 | 1.21 | 1.21 | 1.21 | 1739.1 | 100.5 |
| 8-Jan-10 | Cloudy | 283.9 | 769.9 | 3.3598 | 3.4889 | 0.1291 | 4111.3 | 4135.3 | 24.0 | 1.22 | 1.22 | 1.22 | 1760.7 | 73.3 |
| 14-Jan-10 | Sunny | 287.3 | 774.2 | 3.3108 | 3.4645 | 0.1537 | 4137.3 | 4161.3 | 24.0 | 1.22 | 1.22 | 1.22 | 1755.9 | 87.5 |
| 20-Jan-10 | Sunny | 294.4 | 768.5 | 3.2538 | 3.4592 | 0.2054 | 4164.3 | 4188.3 | 24.0 | 1.20 | 1.20 | 1.20 | 1731.8 | 118.6 |
| 26-Jan-10 | Cloudy | 288.4 | 771.6 | 3.2593 | 3.3930 | 0.1337 | 4191.3 | 4215.3 | 24.0 | 1.22 | 1.22 | 1.22 | 1750.4 | 76.4 |
| | | | | | | | | | | | | | Min | 73.3 |
| | | | | | | | | | | | | | Max | 118.6 |
| | | | | | | | | | | | | | Average | 91.3 |

## Station AQ3 - Outside Site Office (Western Portal)

| Start Date | Weather Condition | Air Temp. (K) | Atmospheric Pressure (Pa) | Filter Weight (g) | | Particulate weight (g) | Elapse Time | | Sampling Time(hrs.) | Flow Rate ($m^3$/min.) | | Av. flow ($m^3$/min) | Total vol. ($m^3$) | Conc. (μg/$m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Initial | Final | | Initial | Final | | Initial | Final | | | |
| 2-Jan-10 | Sunny | 290.2 | 764.9 | 3.4068 | 3.6359 | 0.2291 | 8099.1 | 8123.1 | 24.0 | 1.22 | 1.21 | 1.22 | 1749.7 | 130.9 |
| 8-Jan-10 | Cloudy | 283.9 | 769.9 | 3.3996 | 3.6328 | 0.2332 | 8123.1 | 8147.1 | 24.0 | 1.23 | 1.23 | 1.23 | 1773.0 | 131.5 |
| 14-Jan-10 | Sunny | 287.3 | 774.2 | 3.2890 | 3.5034 | 0.2144 | 8147.1 | 8171.1 | 24.0 | 1.23 | 1.23 | 1.23 | 1767.8 | 121.3 |
| 20-Jan-10 | Sunny | 294.4 | 768.5 | 3.2905 | 3.5217 | 0.2312 | 8171.1 | 8195.1 | 24.0 | 1.21 | 1.21 | 1.21 | 1741.9 | 132.7 |
| 26-Jan-10 | Cloudy | 287.8 | 772.0 | 3.3678 | 3.6170 | 0.2492 | 8195.1 | 8219.1 | 24.0 | 1.23 | 1.22 | 1.22 | 1764.0 | 141.3 |
| | | | | | | | | | | | | | Min | 121.3 |
| | | | | | | | | | | | | | Max | 141.3 |
| | | | | | | | | | | | | | Average | 131.6 |

## 24-hr TSP Concentration Levels




| | | | |
|---|---|---|---|
| Title: Contract No. DC/2007/10<br>Design and Construction of Hong Kong West Drainage Tunnel<br>Graphical Presentation of 24-hour TSP Monitoring Results | Scale: N.T.S<br>Date: Jan 10 | Project No.: MA8001<br>Appendix: F | CINOTECH |

**APPENDIX G**
**NOISE MONITORING RESULTS AND GRAPHICAL PRESENTATION**

## Appendix G - Noise Monitoring Results

| Location NC1 - True Light Middle School of Hong Kong | | | | | | | |
|---|---|---|---|---|---|---|---|
| Date | Time | Weather | Unit: dB (A) (30-min) | | | | |
| | | | Measured Noise Level | | | Baseline Level | Construction Noise Level |
| | | | $L_{eq}$ | $L_{10}$ | $L_{90}$ | $L_{eq}$ | $L_{eq}$ |
| 5-Jan-10 | 9:25 | Cloudy | 65.8 | 67.9 | 61.2 | 70.2 | 65.8 Measured ≦ Baseline |
| 12-Jan-10 | 9:25 | Sunny | 66.2 | 68.7 | 62.0 | | 66.2 Measured ≦ Baseline |
| 19-Jan-10 | 9:20 | Sunny | 66.1 | 68.2 | 62.7 | | 66.1 Measured ≦ Baseline |
| 26-Jan-10 | 9:25 | Cloudy | 66.8 | 70.0 | 63.7 | | 66.8 Measured ≦ Baseline |

| Location NC2 - The Legend | | | | | | | |
|---|---|---|---|---|---|---|---|
| Date | Time | Weather | Unit: dB (A) (30-min) | | | | |
| | | | Measured Noise Level | | | Baseline Level | Construction Noise Level |
| | | | $L_{eq}$ | $L_{10}$ | $L_{90}$ | $L_{eq}$ | $L_{eq}$ |
| 5-Jan-10 | 10:15 | Cloudy | 66.8 | 69.4 | 60.8 | 64.8 | 62.5 |
| 12-Jan-10 | 10:10 | Sunny | 67.4 | 69.8 | 62.9 | | 63.9 |
| 19-Jan-10 | 10:05 | Sunny | 67.2 | 69.9 | 63.4 | | 63.5 |
| 26-Jan-10 | 10:10 | Cloudy | 68.6 | 71.3 | 63.9 | | 66.3 |

| Location NC3 - Outside Aegean Terrace | | | | | | | |
|---|---|---|---|---|---|---|---|
| Date | Time | Weather | Unit: dB (A) (30-min) | | | | |
| | | | Measured Noise Level | | | Baseline Level | Construction Noise Level |
| | | | $L_{eq}$ | $L_{10}$ | $L_{90}$ | $L_{eq}$ | $L_{eq}$ |
| 5-Jan-10 | 14:15 | Cloudy | 54.2 | 56.8 | 48.7 | 57.7 | 54.2 Measured ≦ Baseline |
| 12-Jan-10 | 11:00 | Sunny | 54.1 | 56.7 | 49.9 | | 54.1 Measured ≦ Baseline |
| 19-Jan-10 | 11:10 | Sunny | 54.2 | 56.7 | 50.8 | | 54.2 Measured ≦ Baseline |
| 26-Jan-10 | 11:10 | Cloudy | 54.8 | 57.1 | 50.2 | | 54.8 Measured ≦ Baseline |

| Location NC8 - Marymount Secondary School | | | | | | | |
|---|---|---|---|---|---|---|---|
| Date | Time | Weather | Unit: dB (A) (30-min) | | | | |
| | | | Measured Noise Level | | | Baseline Level | Construction Noise Level |
| | | | $L_{eq}$ | $L_{10}$ | $L_{90}$ | $L_{eq}$ | $L_{eq}$ |
| 5-Jan-10 | 16:20 | Cloudy | 65.8 | 69.0 | 61.5 | 63.5 | 61.9 |
| 12-Jan-10 | 15:50 | Sunny | 65.8 | 68.1 | 60.8 | | 61.9 |
| 19-Jan-10 | 15:45 | Sunny | 65.9 | 68.4 | 60.6 | | 62.2 |
| 26-Jan-10 | 15:10 | Cloudy | 66.9 | 71.9 | 65.6 | | 64.2 |

| Location NC9 - 117 Blue Pool Road | | | | | | | |
|---|---|---|---|---|---|---|---|
| Date | Time | Weather | Unit: dB (A) (30-min) | | | | |
| | | | Measured Noise Level | | | Baseline Level | Construction Noise Level |
| | | | $L_{eq}$ | $L_{10}$ | $L_{90}$ | $L_{eq}$ | $L_{eq}$ |
| 5-Jan-10 | 15:10 | Cloudy | 67.9 | 69.5 | 63.0 | 63.3 | 66.1 |
| 12-Jan-10 | 15:10 | Sunny | 68.7 | 70.8 | 64.1 | | 67.2 |
| 19-Jan-10 | 15:05 | Sunny | 69.7 | 72.1 | 63.8 | | 68.6 |
| 26-Jan-10 | 15:50 | Cloudy | 74.9 | 78.2 | 70.7 | | 74.6 |

| Location NC11 - Honey Court | | | | | | | |
|---|---|---|---|---|---|---|---|
| Date | Time | Weather | Unit: dB (A) (30-min) | | | | |
| | | | Measured Noise Level | | | Baseline Level | Construction Noise Level |
| | | | $L_{eq}$ | $L_{10}$ | $L_{90}$ | $L_{eq}$ | $L_{eq}$ |
| 5-Jan-10 | 11:15 | Cloudy | 66.3 | 68.7 | 57.6 | 63.2 | 63.4 |
| 12-Jan-10 | 13:15 | Sunny | 65.7 | 67.9 | 60.7 | | 62.1 |
| 19-Jan-10 | 14:00 | Sunny | 66.2 | 68.4 | 60.9 | | 66.2 Measured ≦ Baseline |
| 26-Jan-10 | 14:05 | Cloudy | 67.3 | 69.7 | 62.3 | | 65.2 |

## Appendix G - Noise Monitoring Results

| Location NC12 - Ying Wa Girl's School | | | | | | | |
|---|---|---|---|---|---|---|---|
| Date | Time | Weather | Unit: dB (A) (30-min) | | | | |
| | | | Measured Noise Level | | | Baseline Level | Construction Noise Level |
| | | | $L_{eq}$ | $L_{10}$ | $L_{90}$ | $L_{eq}$ | $L_{eq}$ |
| 5-Jan-10 | 11:00 | Cloudy | 66.9 | 70.1 | 58.9 | 67.1 | 66.9 Measured ≦ Baseline |
| 12-Jan-10 | 9:30 | Cloudy | 67.8 | 70.5 | 61.0 | | 59.5 |
| 19-Jan-10 | 9:15 | Sunny | 67.3 | 70.5 | 60.0 | | 53.8 |
| 26-Jan-10 | 9:30 | Cloudy | 68.3 | 73.0 | 64.0 | | 62.1 |

| Location NC13 - Peaksville Court | | | | | | | |
|---|---|---|---|---|---|---|---|
| Date | Time | Weather | Unit: dB (A) (30-min) | | | | |
| | | | Measured Noise Level | | | Baseline Level | Construction Noise Level |
| | | | $L_{eq}$ | $L_{10}$ | $L_{90}$ | $L_{eq}$ | $L_{eq}$ |
| 5-Jan-10 | 13:00 | Cloudy | 69.7 | 72.4 | 65.8 | 65.2 | 67.8 |
| 12-Jan-10 | 10:25 | Cloudy | 69.2 | 71.5 | 65.5 | | 67.0 |
| 19-Jan-10 | 10:00 | Sunny | 69.5 | 72.0 | 65.5 | | 67.5 |
| 26-Jan-10 | 10:30 | Cloudy | 68.7 | 73.5 | 64.0 | | 66.1 |

| Location NC15 - Hong Kong Academy | | | | | | | |
|---|---|---|---|---|---|---|---|
| Date | Time | Weather | Unit: dB (A) (30-min) | | | | |
| | | | Measured Noise Level | | | Baseline Level | Construction Noise Level |
| | | | $L_{eq}$ | $L_{10}$ | $L_{90}$ | $L_{eq}$ | $L_{eq}$ |
| 5-Jan-10 | 13:10 | Cloudy | 65.7 | 71.4 | 63.2 | 63.5 | 61.7 |
| 12-Jan-10 | 14:10 | Sunny | 66.6 | 71.3 | 62.4 | | 63.7 |
| 19-Jan-10 | 13:10 | Sunny | 66.7 | 70.9 | 63.2 | | 63.9 |
| 26-Jan-10 | 13:10 | Cloudy | 69.7 | 72.4 | 63.9 | | 68.5 |

| Location NC16 - Raimondi College | | | | | | | |
|---|---|---|---|---|---|---|---|
| Date | Time | Weather | Unit: dB (A) (30-min) | | | | |
| | | | Measured Noise Level | | | Baseline Level | Construction Noise Level |
| | | | $L_{eq}$ | $L_{10}$ | $L_{90}$ | $L_{eq}$ | $L_{eq}$ |
| 5-Jan-10 | 10:00 | Cloudy | 69.2 | 71.6 | 65.5 | 70.4 | 69.2 Measured ≦ Baseline |
| 12-Jan-10 | 13:00 | Sunny | 69.5 | 71.5 | 66.0 | | 69.5 Measured ≦ Baseline |
| 19-Jan-10 | 11:15 | Sunny | 69.8 | 71.5 | 65.5 | | 69.8 Measured ≦ Baseline |
| 26-Jan-10 | 13:00 | Cloudy | 69.2 | 72.0 | 65.5 | | 69.2 Measured ≦ Baseline |

## Appendix G - Noise Monitoring Results

**(Restricted Hours - 07:00 to 23:00 holidays & 19:00 to 23:00 on all other days )**

| Location NC1a - Outside True Light Middle School of Hong Kong | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Date | Time | Weather | dB (A) (5-min) | | | | (Reference) Baseline Level | (Reference) Construction Noise Level, $L_{eq}$ |
| | | | $L_{eq}$ | $L_{10}$ | $L_{90}$ | Average $L_{eq}$ | $L_{eq}$ | |
| 3-Jan-10 | 9:50 | Cloudy | 66.7 | 68.5 | 63.5 | 67.3 | 65.8 | 62.0 |
| | 9:55 | | 67.6 | 69.0 | 63.5 | | | |
| | 10:00 | | 67.4 | 69.0 | 63.5 | | | |
| 5-Jan-10 | 19:00 | Cloudy | 67.2 | 69.6 | 62.1 | 67.2 | | 61.6 |
| | 19:05 | | 67.4 | 69.7 | 62.3 | | | |
| | 19:10 | | 67.1 | 69.6 | 62.0 | | | |
| 10-Jan-10 | 9:20 | Cloudy | 67.1 | 69.0 | 63.5 | 67.2 | | 61.6 |
| | 9:25 | | 67.1 | 69.0 | 63.5 | | | |
| | 9:30 | | 67.3 | 69.0 | 63.5 | | | |
| 12-Jan-10 | 19:55 | Cloudy | 67.6 | 69.9 | 60.5 | 67.6 | | 62.9 |
| | 20:00 | | 67.7 | 70.1 | 60.6 | | | |
| | 20:05 | | 67.4 | 69.6 | 60.4 | | | |
| 17-Jan-10 | 9:05 | Sunny | 66.8 | 68.5 | 63.0 | 67.2 | | 61.6 |
| | 9:10 | | 67.2 | 69.0 | 63.0 | | | |
| | 9:15 | | 67.5 | 69.0 | 63.0 | | | |
| 19-Jan-10 | 20:00 | Cloudy | 66.1 | 68.7 | 60.8 | 65.9 | | 49.5 |
| | 20:05 | | 65.9 | 68.4 | 60.6 | | | |
| | 20:10 | | 65.7 | 68.3 | 60.4 | | | |
| 24-Jan-10 | 9:05 | Cloudy | 67.2 | 69.0 | 63.5 | 67.0 | | 60.8 |
| | 9:10 | | 66.5 | 68.5 | 63.5 | | | |
| | 9:15 | | 67.3 | 69.0 | 63.5 | | | |
| 26-Jan-10 | 19:00 | Cloudy | 67.2 | 69.8 | 62.3 | 67.3 | | 62.0 |
| | 19:05 | | 67.3 | 69.9 | 62.3 | | | |
| | 19:10 | | 67.5 | 70.1 | 62.5 | | | |
| 31-Jan-10 | 9:50 | Sunny | 66.7 | 68.0 | 63.0 | 67.1 | | 61.2 |
| | 9:55 | | 67.2 | 68.5 | 63.5 | | | |
| | 10:00 | | 67.3 | 68.5 | 63.5 | | | |

**(Restricted Hours - 07:00 to 23:00 holidays & 19:00 to 23:00 on all other days )**

| Location NC2 - The Legend | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Date | Time | Weather | dB (A) (5-min) | | | | Baseline Level | Construction Noise Level |
| | | | $L_{eq}$ | $L_{10}$ | $L_{90}$ | Average $L_{eq}$ | $L_{eq}$ | $L_{eq}$ |
| 3-Jan-10 | 9:15 | Cloudy | 62.9 | 64.0 | 60.5 | 63.1 | 59.1 | 60.9 |
| | 9:20 | | 63.2 | 64.5 | 60.5 | | | |
| | 9:25 | | 63.1 | 64.5 | 60.5 | | | |
| 5-Jan-10 | 19:30 | Cloudy | 64.1 | 66.8 | 60.1 | 64.1 | | 62.4 |
| | 19:35 | | 64.3 | 66.9 | 60.3 | | | |
| | 19:40 | | 63.9 | 66.6 | 59.8 | | | |
| 10-Jan-10 | 9:55 | Cloudy | 63.8 | 65.0 | 62.5 | 63.9 | | 62.2 |
| | 10:00 | | 64.1 | 65.0 | 62.5 | | | |
| | 10:05 | | 63.8 | 65.0 | 62.0 | | | |
| 12-Jan-10 | 20:25 | Cloudy | 63.2 | 65.7 | 58.1 | 63.4 | | 61.4 |
| | 20:30 | | 63.4 | 65.7 | 58.3 | | | |
| | 20:35 | | 63.5 | 65.9 | 58.2 | | | |
| 17-Jan-10 | 9:35 | Sunny | 64.1 | 65.5 | 62.5 | 63.9 | | 62.2 |
| | 9:40 | | 63.8 | 65.5 | 62.5 | | | |
| | 9:45 | | 63.8 | 65.5 | 62.5 | | | |
| 19-Jan-10 | 20:30 | Cloudy | 63.4 | 65.7 | 59.2 | 63.3 | | 61.2 |
| | 20:35 | | 63.2 | 65.6 | 59.1 | | | |
| | 20:40 | | 63.4 | 65.7 | 59.1 | | | |
| 24-Jan-10 | 09:35 | Cloudy | 63.2 | 64.5 | 60.5 | 63.1 | | 60.9 |
| | 09:40 | | 63.1 | 64.5 | 59.5 | | | |
| | 09:45 | | 63.1 | 64.5 | 60.0 | | | |
| 26-Jan-10 | 19:20 | Cloudy | 65.1 | 67.9 | 62.1 | 65.2 | | 64.0 |
| | 19:25 | | 65.4 | 70.1 | 62.3 | | | |
| | 19:30 | | 65.1 | 67.8 | 62.2 | | | |
| 31-Jan-10 | 09:05 | Sunny | 63.8 | 64.5 | 62.0 | 63.6 | | 61.7 |
| | 09:10 | | 63.4 | 64.5 | 62.0 | | | |
| | 09:15 | | 63.7 | 64.5 | 62.0 | | | |

**(Restricted Hours - 07:00 to 23:00 holidays & 19:00 to 23:00 on all other days )**

| Location NC3 - Outside Aegean Terrace | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Date | Time | Weather | dB (A) (5-min) | | | | Baseline Level | Construction Noise Level |
| | | | $L_{eq}$ | $L_{10}$ | $L_{90}$ | Average $L_{eq}$ | $L_{eq}$ | $L_{eq}$ |
| 3-Jan-10 | 11:15 | Cloudy | 50.3 | 51.5 | 49.5 | 50.5 | 53.8 | 50.5 Measured ≦ Baseline |
| | 11:20 | | 50.6 | 51.5 | 49.5 | | | |
| | 11:25 | | 50.6 | 51.5 | 49.5 | | | |
| 5-Jan-10 | 20:30 | Cloudy | 48.9 | 52.2 | 46.3 | 49.6 | | 49.6 Measured ≦ Baseline |
| | 20:35 | | 50.1 | 52.8 | 46.8 | | | |
| | 20:40 | | 49.8 | 52.6 | 46.6 | | | |
| 10-Jan-10 | 10:55 | Cloudy | 50.8 | 51.5 | 49.5 | 50.4 | | 50.4 Measured ≦ Baseline |
| | 11:00 | | 50.3 | 51.5 | 49.5 | | | |
| | 11:05 | | 50.2 | 51.5 | 49.5 | | | |
| 12-Jan-10 | 21:20 | Cloudy | 48.9 | 51.2 | 46.2 | 48.7 | | 48.7 Measured ≦ Baseline |
| | 21:25 | | 48.6 | 50.9 | 46.0 | | | |
| | 21:30 | | 48.7 | 50.9 | 46.1 | | | |
| 17-Jan-10 | 10:30 | Sunny | 51.0 | 52.5 | 49.5 | 50.8 | | 50.8 Measured ≦ Baseline |
| | 10:35 | | 50.8 | 52.5 | 49.5 | | | |
| | 10:40 | | 50.7 | 52.5 | 49.5 | | | |
| 19-Jan-10 | 21:30 | Cloudy | 49.9 | 52.6 | 47.4 | 50.1 | | 50.1 Measured ≦ Baseline |
| | 21:35 | | 50.1 | 52.9 | 47.8 | | | |
| | 21:40 | | 50.2 | 52.9 | 47.9 | | | |
| 24-Jan-10 | 10:45 | Cloudy | 50.2 | 52.0 | 49.5 | 50.2 | | 50.2 Measured ≦ Baseline |
| | 10:50 | | 50.3 | 51.5 | 49.5 | | | |
| | 10:55 | | 50.2 | 51.5 | 49.5 | | | |
| 26-Jan-10 | 20:35 | Cloudy | 50.9 | 53.5 | 47.8 | 50.7 | | 50.7 Measured ≦ Baseline |
| | 20:40 | | 50.6 | 53.3 | 47.6 | | | |
| | 20:45 | | 50.7 | 53.4 | 47.6 | | | |
| 31-Jan-10 | 10:55 | Sunny | 50.4 | 51.5 | 49.5 | 50.3 | | 50.3 Measured ≦ Baseline |
| | 11:00 | | 50.3 | 51.5 | 49.5 | | | |
| | 11:05 | | 50.3 | 51.5 | 49.5 | | | |

## Appendix G - Noise Monitoring Results

**(Restricted Hours - 23:00 to 07:00 on all days )**

| Location NC1a - Outside True Light Middle School of Hong Kong | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Date | Time | Weather | dB (A) (5-min) | | | | (Reference) Baseline Level | (Reference) Construction Noise Level, $L_{eq}$ |
| | | | $L_{eq}$ | $L_{10}$ | $L_{90}$ | Average $L_{eq}$ | $L_{eq}$ | |
| 5-Jan-10 | 23:35 | Fine | 58.7 | 63.2 | 54.9 | 59.2 | 60.7 | 59.2 Measured ≦ Baseline |
| | 23:40 | | 59.3 | 64.0 | 55.3 | | | |
| | 23:45 | | 59.6 | 64.2 | 55.5 | | | |
| 12-Jan-10 | 23:25 | Cloudy | 59.8 | 61.0 | 56.0 | 59.8 | | 59.8 Measured ≦ Baseline |
| | 23:30 | | 59.9 | 61.0 | 56.0 | | | |
| | 23:35 | | 59.7 | 61.0 | 56.0 | | | |
| 19-Jan-10 | 23:25 | Cloudy | 59.2 | 61.5 | 55.5 | 59.4 | | 59.4 Measured ≦ Baseline |
| | 23:30 | | 59.7 | 61.5 | 56.0 | | | |
| | 23:35 | | 59.3 | 62.0 | 55.5 | | | |
| 26-Jan-10 | 23:25 | Cloudy | 60.8 | 61.5 | 57.5 | 60.8 | | 44.4 |
| | 23:30 | | 60.7 | 61.5 | 58.0 | | | |
| | 23:35 | | 61.0 | 62.0 | 57.5 | | | |

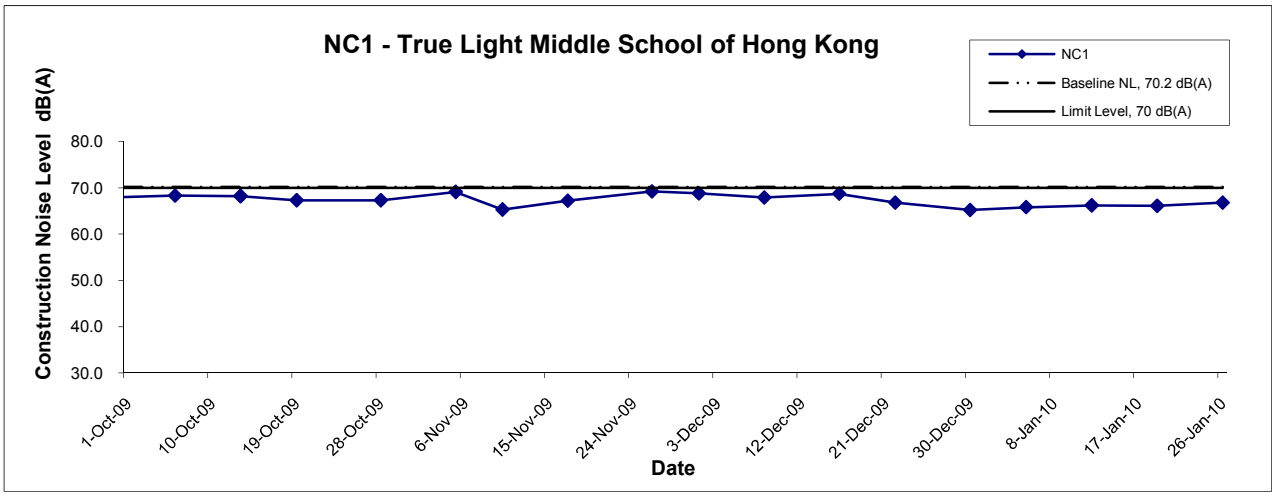
**(Restricted Hours - 23:00 to 07:00 on all days )**

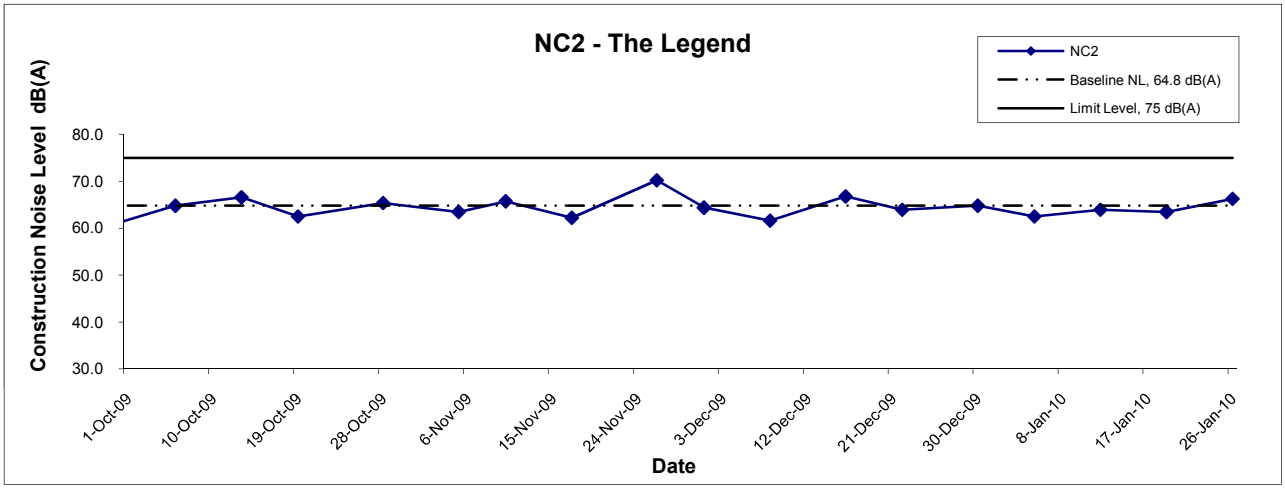
| Location NC2 - The Legend | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Date | Time | Weather | dB (A) (5-min) | | | | Baseline Level | Construction Noise Level |
| | | | $L_{eq}$ | $L_{10}$ | $L_{90}$ | Average $L_{eq}$ | $L_{eq}$ | $L_{eq}$ |
| 5-Jan-10 | 23:00 | Fine | 53.3 | 56.2 | 50.0 | 53.6 | 53.9 | 53.6 Measured ≦ Baseline |
| | 23:05 | | 53.7 | 56.1 | 50.2 | | | |
| | 23:10 | | 53.8 | 56.1 | 50.3 | | | |
| 12-Jan-10 | 23:00 | Cloudy | 52.9 | 54.5 | 49.5 | 52.8 | | 52.8 Measured ≦ Baseline |
| | 23:05 | | 52.8 | 54.5 | 49.5 | | | |
| | 23:10 | | 52.8 | 54.5 | 49.5 | | | |
| 19-Jan-10 | 23:00 | Cloudy | 52.9 | 54.5 | 49.5 | 53.1 | | 53.1 Measured ≦ Baseline |
| | 23:05 | | 53.2 | 54.5 | 49.5 | | | |
| | 23:10 | | 53.1 | 54.5 | 49.5 | | | |
| 26-Jan-10 | 23:00 | Cloudy | 52.2 | 54.5 | 50.5 | 52.2 | | 52.2 Measured ≦ Baseline |
| | 23:05 | | 52.3 | 54.5 | 50.5 | | | |
| | 23:10 | | 52.2 | 54.5 | 50.0 | | | |

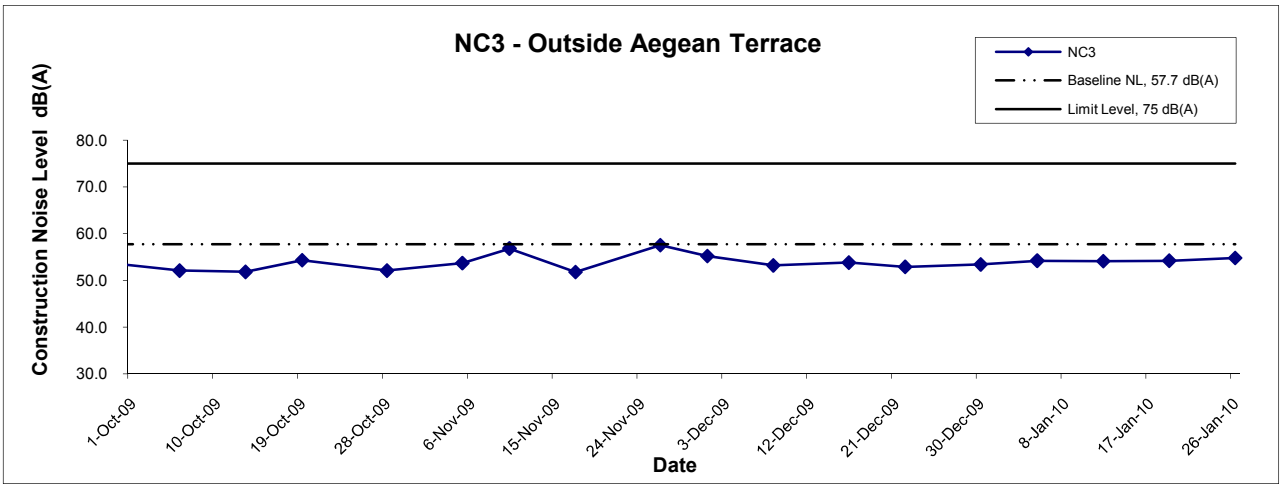
**(Restricted Hours - 23:00 to 07:00 on all days )**

| Location NC3 - Outside Aegean Terrace | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Date | Time | Weather | dB (A) (5-min) | | | | Baseline Level | Construction Noise Level |
| | | | $L_{eq}$ | $L_{10}$ | $L_{90}$ | Average $L_{eq}$ | $L_{eq}$ | $L_{eq}$ |
| 6-Jan-10 | 00:20 | Fine | 49.3 | 52.0 | 48.0 | 49.4 | 52.0 | 49.4 Measured ≦ Baseline |
| | 00:25 | | 49.3 | 52.0 | 48.1 | | | |
| | 00:30 | | 49.5 | 52.2 | 48.4 | | | |
| 13-Jan-10 | 00:15 | Cloudy | 51.2 | 52.5 | 48.5 | 51.1 | | 51.1 Measured ≦ Baseline |
| | 00:20 | | 50.9 | 52.5 | 49.0 | | | |
| | 00:25 | | 51.1 | 52.5 | 49.0 | | | |
| 20-Jan-10 | 00:15 | Cloudy | 50.1 | 52.5 | 49.0 | 49.9 | | 49.9 Measured ≦ Baseline |
| | 00:20 | | 49.8 | 52.0 | 49.0 | | | |
| | 00:25 | | 49.8 | 52.0 | 49.0 | | | |
| 27-Jan-10 | 00:15 | Cloudy | 50.1 | 51.0 | 49.0 | 50.0 | | 50.0 Measured ≦ Baseline |
| | 00:20 | | 49.9 | 50.5 | 49.0 | | | |
| | 00:25 | | 49.9 | 50.5 | 49.0 | | | |

# Noise Levels

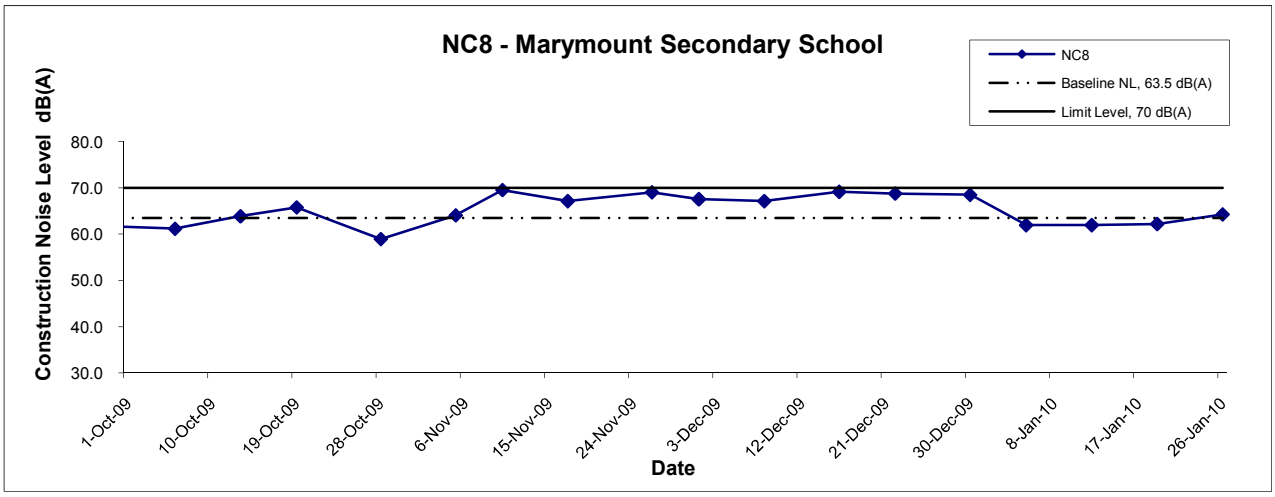


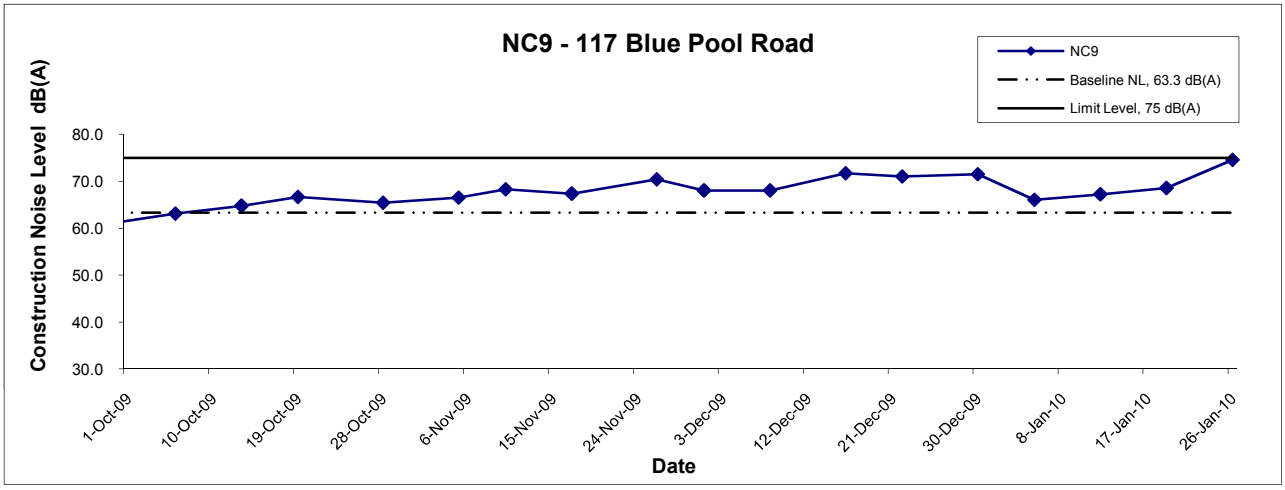



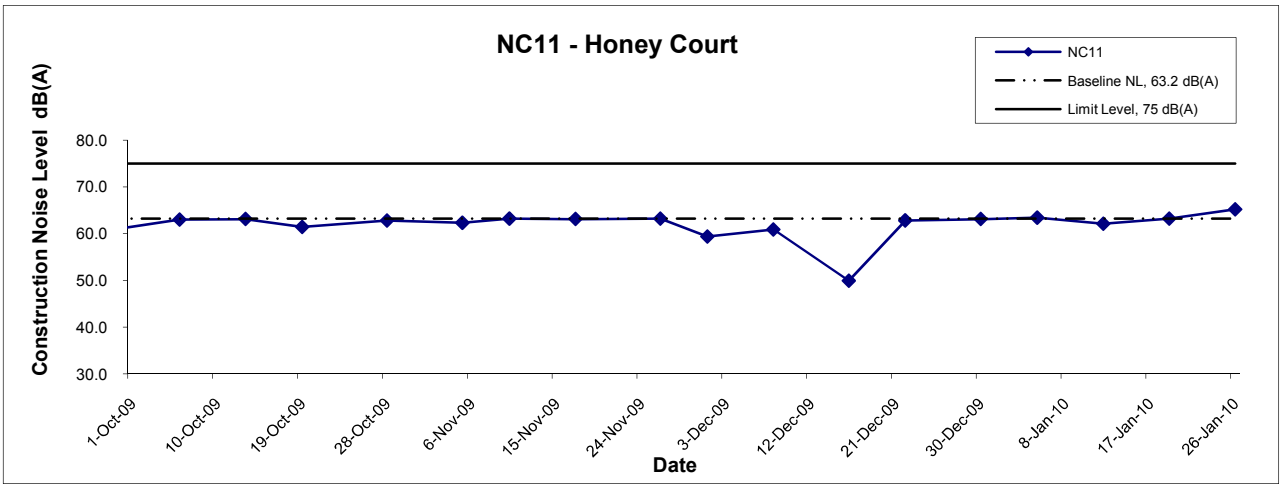




| Title | | Scale | Project No. | |
|---|---|---|---|---|
| | Contract No. DC/2007/10<br>Design and Construction of Hong Kong West Drainage Tunnel | N.T.S | MA8001 | CINOTECH |
| | Graphical Presentation of Construction Noise Monitoring Results | Date: Jan 10 | Appendix: G | |

# Noise Levels

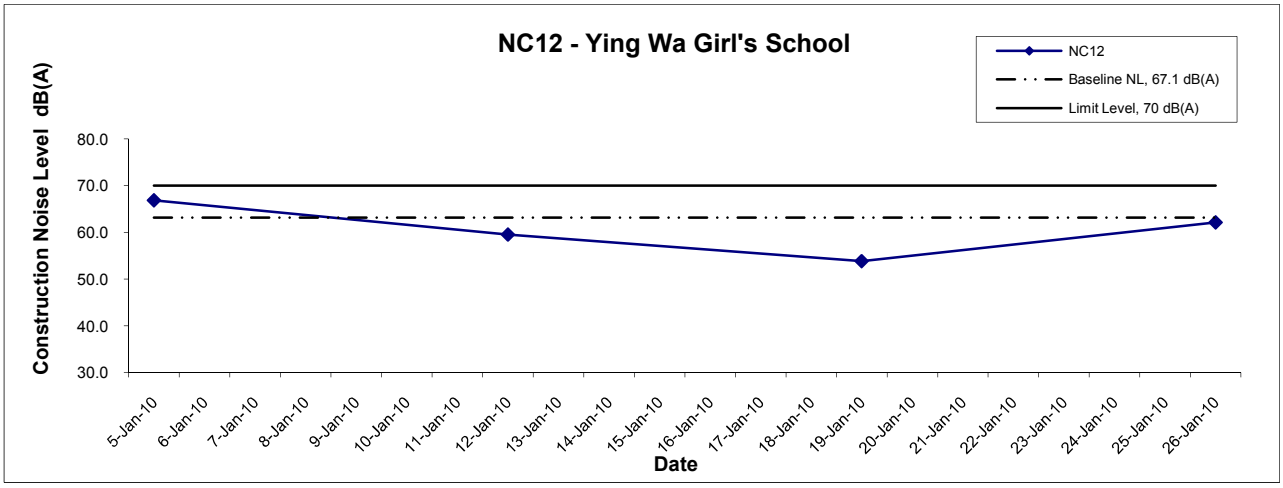


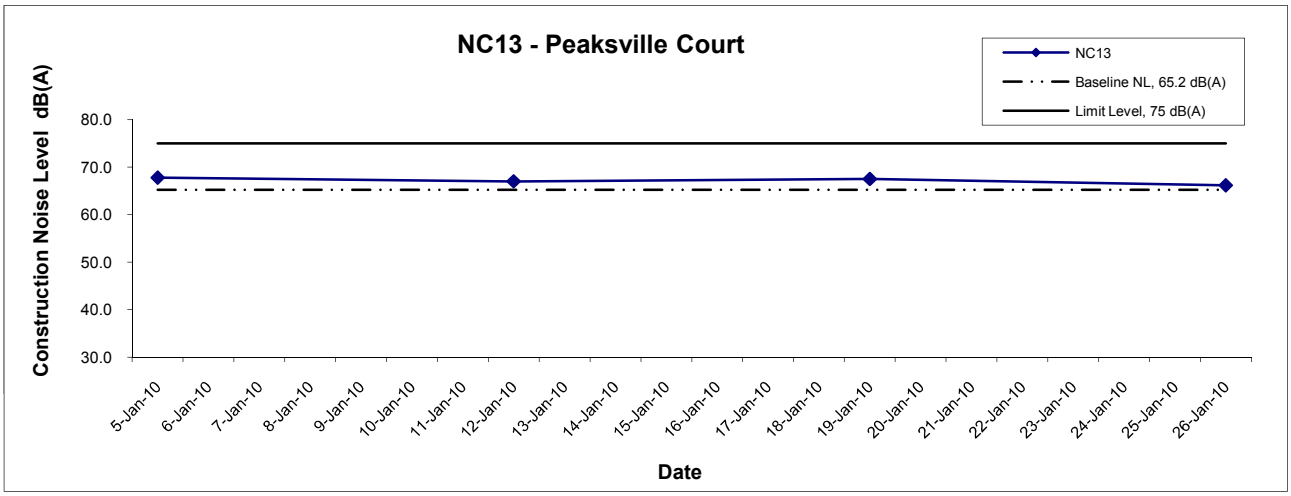



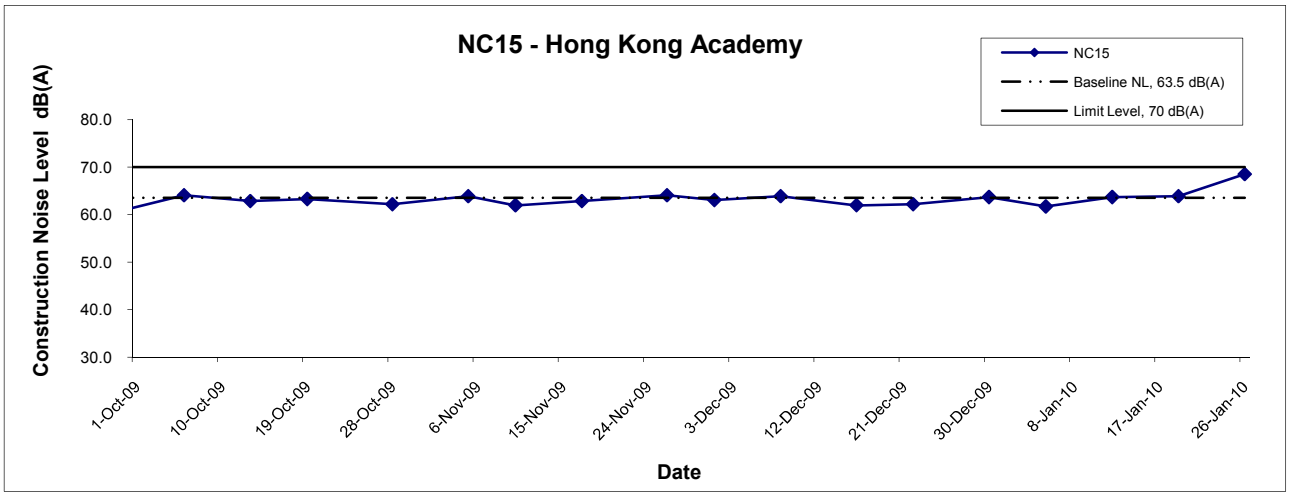




| | | | | |
|---|---|---|---|---|
| Title | Contract No. DC/2007/10<br>Design and Construction of Hong Kong West Drainage Tunnel<br>Graphical Presentation of Construction Noise Monitoring Results | Scale N.T.S | Project No. MA8001 | CINOTECH |
| | | Date Jan 10 | Appendix G | |

# Noise Levels

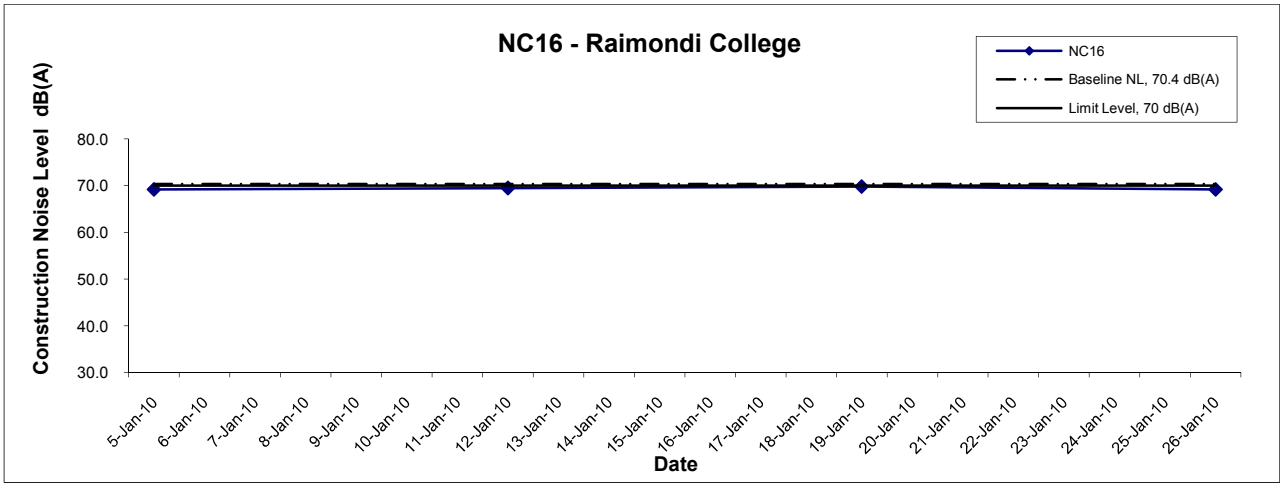


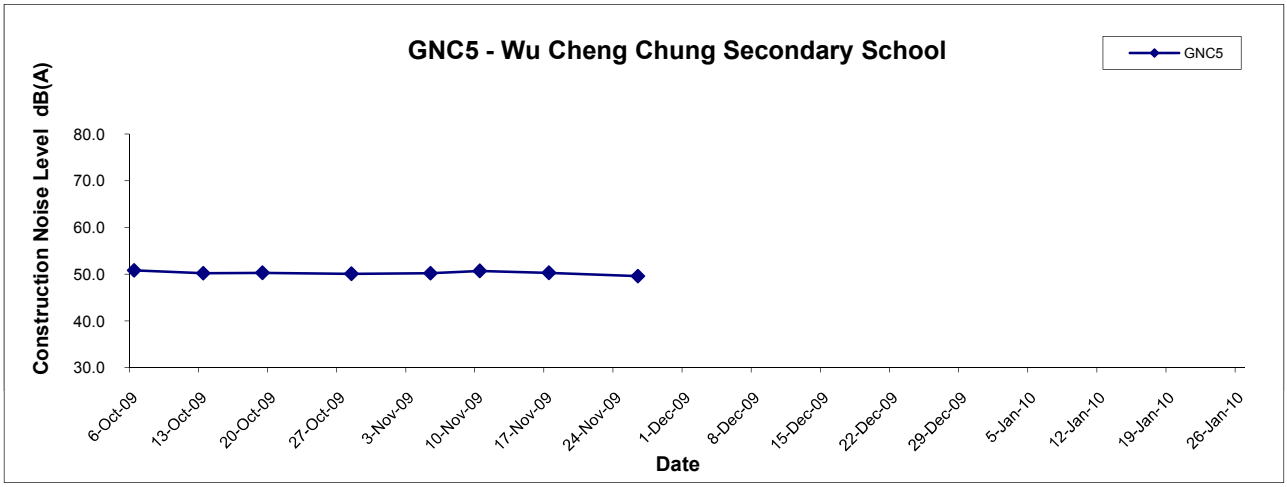




| | | | |
|---|---|---|---|
| Title: Contract No. DC/2007/10<br>Design and Construction of Hong Kong West Drainage Tunnel<br>Graphical Presentation of Construction Noise Monitoring Results | Scale: N.T.S<br>Date: Jan 10 | Project No.: MA8001<br>Appendix: G | CINOTECH |

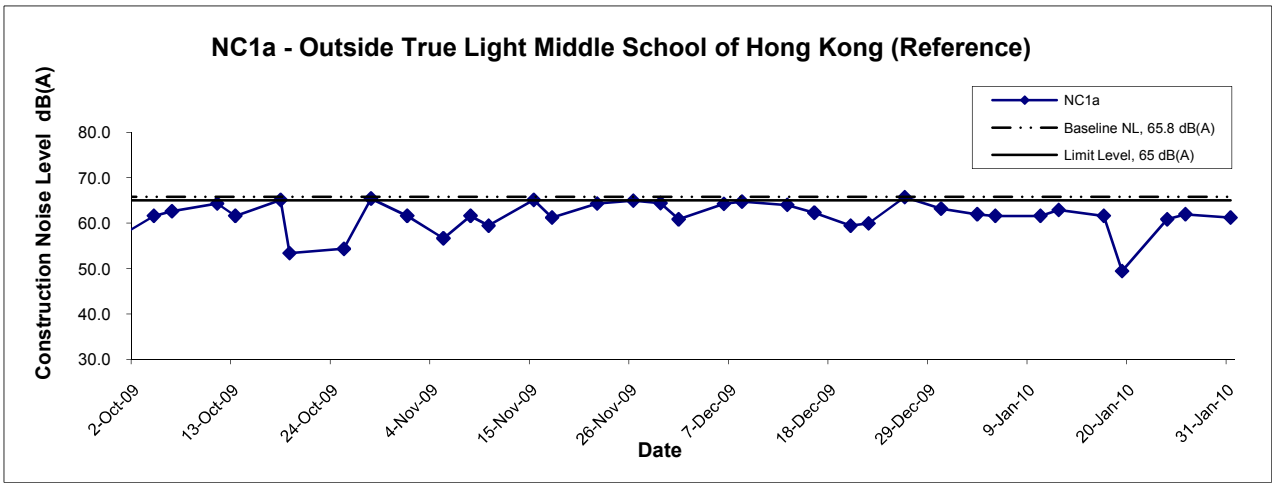
# Noise Levels

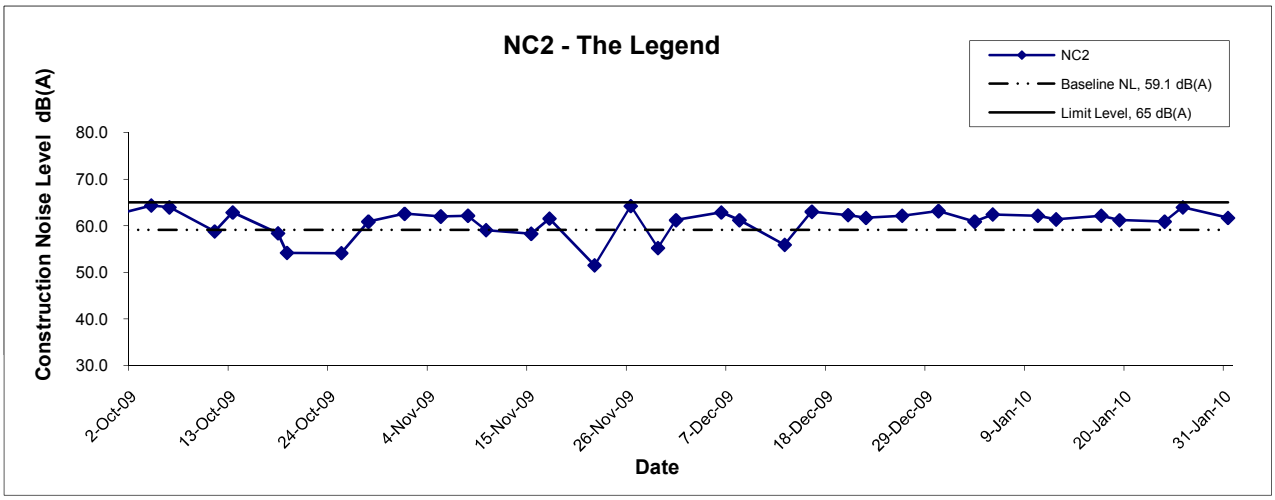


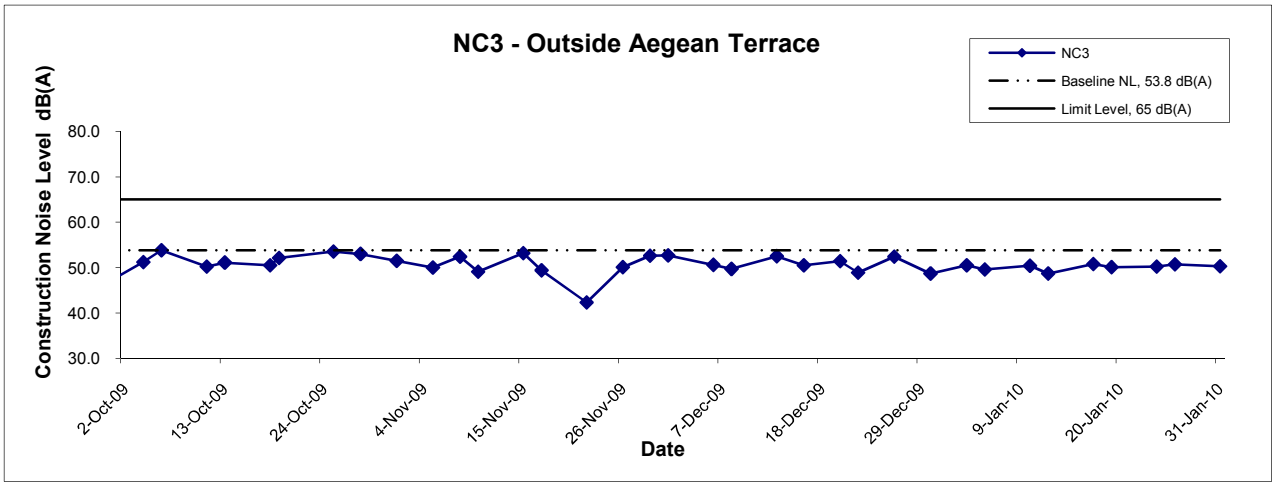




| | | | | |
|---|---|---|---|---|
| Title | Contract No. DC/2007/10<br>Design and Construction of Hong Kong West Drainage Tunnel<br>Graphical Presentation of Construction Noise Monitoring Results | Scale N.T.S | Project No. MA8001 | CINOTECH |
| | | Date Jan 10 | Appendix G | |

# Noise Levels
## (Restricted Hours - 07:00 - 23:00 holidays & 19:00 - 23:00 on all other days )

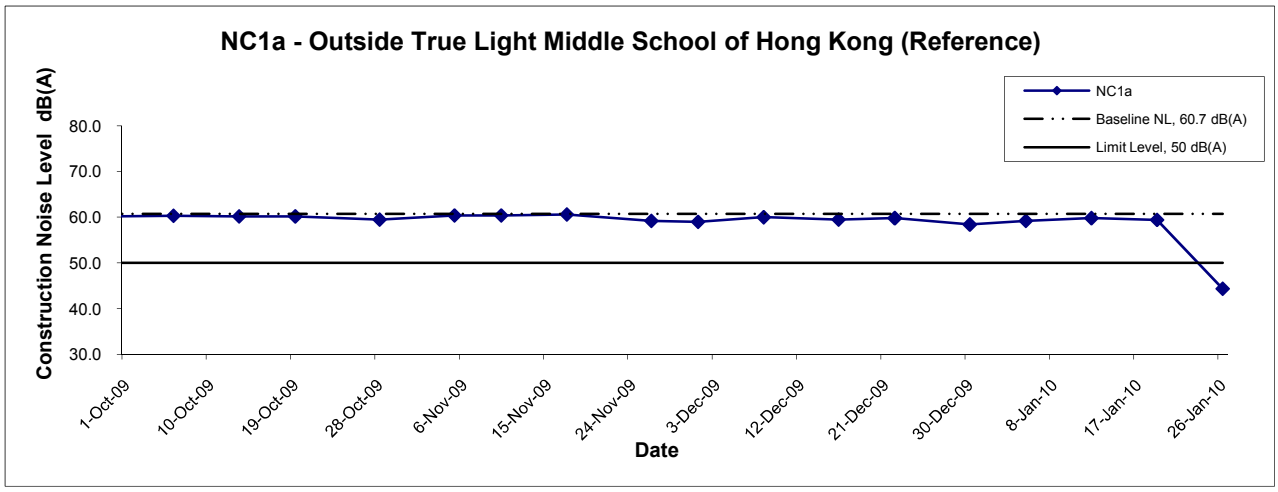


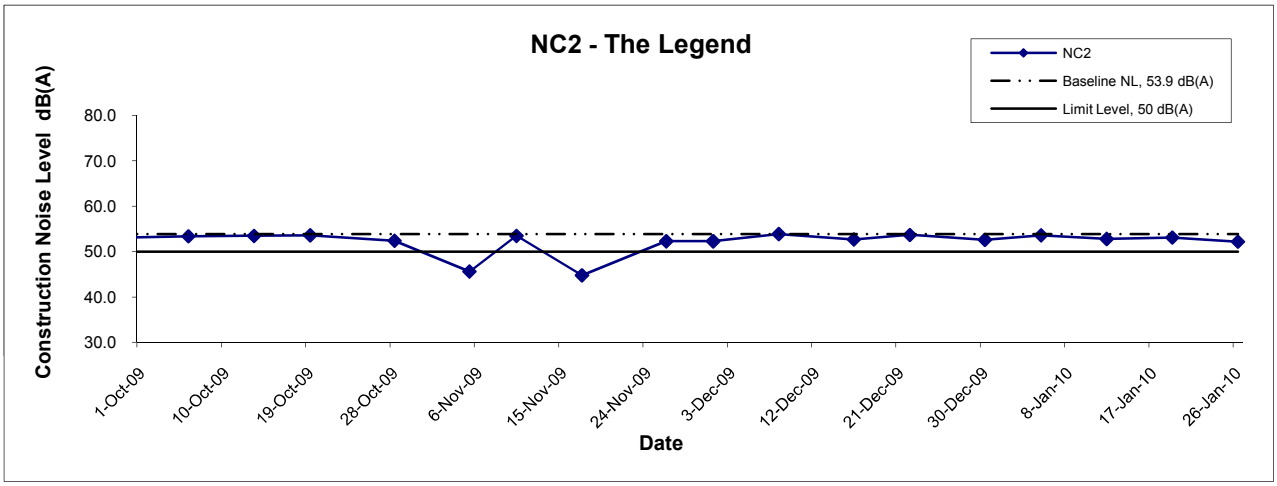



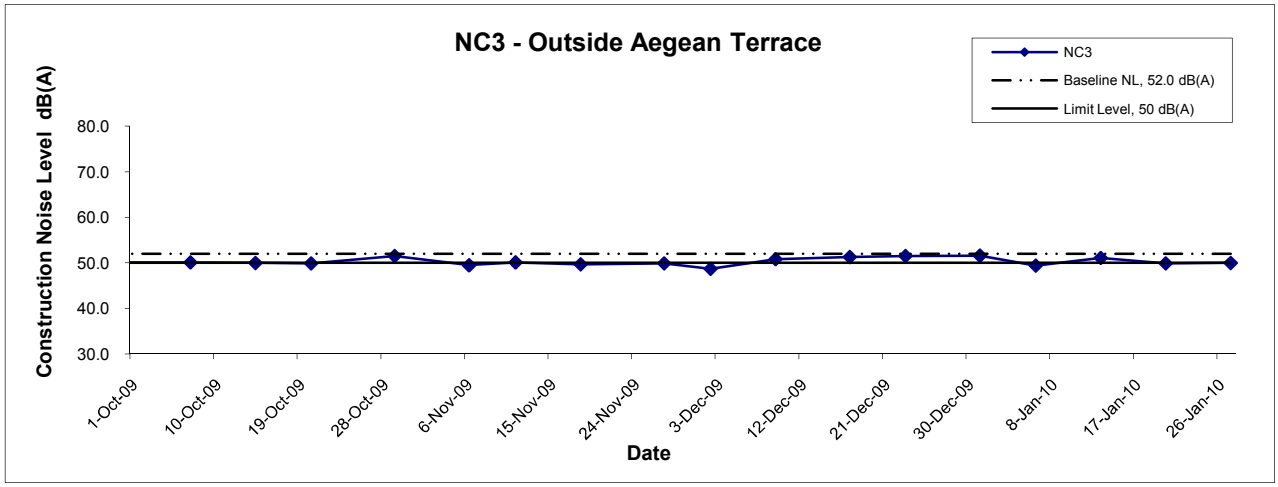




| Title | | Scale | Project No. | |
|---|---|---|---|---|
| | Contract No. DC/2007/10<br>Design and Construction of Hong Kong West Drainage Tunnel | N.T.S | MA8001 | CINOTECH |
| | Graphical Presentation of Construction Noise Monitoring Results | Date: Jan 10 | Appendix: G | |

# Noise Levels
# (Restricted Hours - 23:00 to 07:00 on all days )




| Title | Scale | Project No. |
|---|---|---|
| Contract No. DC/2007/10<br>Design and Construction of Hong Kong West Drainage Tunnel<br>Graphical Presentation of Construction Noise Monitoring Results | N.T.S | MA8001 |
| | Date: Jan 10 | Appendix: G |

CINOTECH

**APPENDIX H**
**SUMMARY OF EXCEEDANCE**

**Contract No. DC/2007/10 – Design and Construction of Hong Kong West Drainage Tunnel**

**Exceedance Report**

**Eastern Portal**

**(A) Exceedance Report for Air Quality (1 hour TSP)**
**(NIL in the reporting month)**

**(B) Exceedance Report for Air Quality (24 hours TSP)**
**(NIL in the reporting month)**

**(C) Exceedance Report for Construction Noise**
**(NIL in the reporting month)**

**Western Portal**

**(D) Exceedance Report for Air Quality (1 hour TSP)**
**(NIL in the reporting month)**

**(E) Exceedance Report for Air Quality (24 hours TSP)**
**(NIL in the reporting month)**

**(F) Exceedance Report for Construction Noise**
**(One Action Level exceedance was recorded due to the complaints raised by a resident of Bel-Air on 3rd January 2010)**

**Intake E7**

**(G) Exceedance Report for Construction Noise**
**(NIL in the reporting month)**

**Intake PFLR1**

**(H) Exceedance Report for Construction Noise**
**(NIL in the reporting month)**

**Intake RR1**

**(I) Exceedance Report for Construction Noise**
**(NIL in the reporting month)**

**Intake W0**

**(J) Exceedance Report for Construction Noise**
**(NIL in the reporting month)**

**Intake W5**

**(K) Exceedance Report for Construction Noise**
**(NIL in the reporting month)**

**APPENDIX I**
**SITE AUDIT SUMMARY**

**Weekly Site Inspection Record Summary**

**Inspection Information**

| | |
|---|---|
| Checklist Reference Number | 100107 |
| Date | 7 January 2010 (Thursday) |
| Time | 9:15-17:00 |

| Ref. No. | Non-Compliance | Related Item No. |
|---|---|---|
| - | None identified | - |
| **Ref. No.** | **Remarks/Observations** | **Related Item No.** |
| | *A. Water Quality* | |
| 100107-O01 | • Sand and silt were observed deposited at the water diversion channel at Intake MB16. The Contractor was reminded to clear them. | B14 |
| | | |
| | *B. Air Quality* | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | *C. Noise* | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | *D. Waste / Chemical Management* | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | *E. Ecology* | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | *F. Marine Ecology* | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | *G. Reminders* | |
| 100107-R02 | • Clear the mud trail and oil stains at the exits of Intake MB16. | D2 |
| 100107-R03 | • Properly maintain the piling rig at Intake E7 to prevent dust emission. | D10 |
| 100107-R04 | • Clear the stagnant water at the drip tray at Intake TP4 and SM1. | B15 |
| 100107-R05 | • Regular clear the construction wastes at Intake MBD2. | F5ii. |
| | | |
| | | |
| | *H. Others* | |
| 100107-F06 | • Follow-up on previous audit section (Ref. No.:91231), follow-up action is needed for the items (91231 –R05-R06 and F07).<br>• Intake E5A was not observed during the site inspection. Follow-Up action is needed for the outstanding items. | |

| | Name | Signature | Date |
|---|---|---|---|
| Recorded by | Ivy Tam | Ivy | 7 January 2010 |
| Checked by | Dr. Priscilla Choy | | 7 January 2010 |

**Weekly Site Inspection Record Summary (For Western Portal Only)**

**Inspection Information**

| | |
|---|---|
| Checklist Reference Number | 100104 |
| Date | 4 January 2009 (Monday) |
| Time | 16:10-16:35 |

| Ref. No. | Non-Compliance | Related Item No. |
|---|---|---|
| - | None identified | - |
| **Ref. No.** | **Remarks/Observations** | **Related Item No.** |
| | ***A. Water Quality*** | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | ***G. Reminders*** | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | ***H. Others*** | |
| | • NIL | |

| | Name | Signature | Date |
|---|---|---|---|
| Recorded by | Yeung Wing Kun | | 4 January 2010 |
| Checked by | Dr. Priscilla Choy | | 4 January 2010 |

**Weekly Site Inspection Record Summary**

**Inspection Information**

| | |
|---|---|
| Checklist Reference Number | 100114 |
| Date | 14 January 2010 (Thursday) |
| Time | 9:15-17:15 |

| Ref. No. | Non-Compliance | Related Item No. |
|---|---|---|
| - | None identified | - |
| **Ref. No.** | **Remarks/Observations** | **Related Item No.** |
| | *A. Water Quality* | |
| 100114-O01 | • Surface runoff from site was observed discharging to the public road at Intake TP789. The Contractor was reminded to provide sand bags to direct the wastewater for treatment. | B5 |
| 100114-O02 | • Oily water was observed discharging out at Intake SM1. The Contractor was reminded to provide mitigation measures to ensure the site discharge was treated prior to disposal. | B9 |
| | | |
| | *B. Air Quality* | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | *C. Noise* | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | *D. Waste / Chemical Management* | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | *E. Ecology* | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | *F. Marine Ecology* | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | *G. Reminders* | |
| 100114-R03 | • Clear the oil stains at exists of Intake MB16. | F2ii. |
| 100114-R04 | • Properly clear the discarded cement bags at Eastern Portal. | D6 |
| 100114-R05 | • Clear the stagnant water at the drip tray at Intake W0, SM1 and E7. | B15 |
| 100114-R06 | • Regular clear the deposited silt at the channels at Intake HKU1. | B9 |
| 100114-R07 | • Provide noise emission label for the hand-held percussive breaker at Intake SM1. | E8 |
| 100114-R08 | • Clear the oil leakage at the workshop at Western Portal. | F2ii. |
| | | |
| | | |
| | *H. Others* | |
| | • Follow-up on previous audit section (Ref. No.:100107), follow-up action is needed for the items (100107 –R02 and R04). | |

| | Name | Signature | Date |
|---|---|---|---|
| Recorded by | Ivy Tam | | 14 January 2010 |
| Checked by | Dr. Priscilla Choy | | 14 January 2010 |

**Weekly Site Inspection Record Summary (For Western Portal Only)**

**Inspection Information**

| | |
|---|---|
| Checklist Reference Number | 100111 |
| Date | 11 January 2009 (Monday) |
| Time | 14:10-14:40 |

| Ref. No. | Non-Compliance | Related Item No. |
|---|---|---|
| - | None identified | - |

| Ref. No. | Remarks/Observations | Related Item No. |
|---|---|---|
| | *A. Water Quality* | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | *G. Reminders* | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | *H. Others* | |
| | • NIL | |

| | Name | Signature | Date |
|---|---|---|---|
| Recorded by | Yeung Wing Kun | | 11 January 2010 |
| Checked by | Dr. Priscilla Choy | | 11 January 2010 |

**Weekly Site Inspection Record Summary**

**Inspection Information**

| | |
|---|---|
| Checklist Reference Number | 100121 |
| Date | 21 January 2010 (Thursday) |
| Time | 9:15-17:00 |

| Ref. No. | Non-Compliance | Related Item No. |
|---|---|---|
| - | None identified | - |
| **Ref. No.** | **Remarks/Observations** | **Related Item No.** |
| | ***A. Water Quality*** | |
| 100121-O01 | • Silty water was observed overflow and discharging to the stream at Intake THR2. The contractor was reminded to provide desilting facilities for settling the muddy water prior to disposal. | B7i |
| 100121-O02 | • Oily water due to the oil leakage at the drip tray was observed discharging to the channel at Intake SM1. The contractor was reminded to ensure the site discharge was treated and comply with the WPCO license. | B9 |
| | ***B. Air Quality*** | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | ***C. Noise*** | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | ***D. Waste / Chemical Management*** | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | ***E. Ecology*** | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | ***F. Marine Ecology*** | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | ***G. Reminders*** | |
| 100121-R03 | • To improve the noise mitigation measures for the noise generation works at Intake MB16. | E5 |
| 100121-R04 | • Properly clear the discarded cement bags at Eastern portal. | D6 |
| 100121-R05 | • Clear the C&D wastes at the existing stream at Eastern portal. | F5ii |
| 100121-R06 | • Provide noise emission label for the hard, held percussive breaker at Intake SM1. | E8 |
| 100121-R07 | • To seal the bottom of the hoarding at intake E5A. | D2 |
| | | |
| | ***H. Others*** | |
| | • Follow-up on previous audit section (Ref. No.:100114), follow-up action is needed for the items (100114 – O02, R04 and R07). | |

| | Name | Signature | Date |
|---|---|---|---|
| Recorded by | Ivy Tam | | 21 January 2010 |
| Checked by | Dr. Priscilla Choy | | 21 January 2010 |

**Weekly Site Inspection Record Summary (For Western Portal Only)**

**Inspection Information**

| | |
|---|---|
| Checklist Reference Number | 100118 |
| Date | 18 January 2009 (Monday) |
| Time | 14:00-14:20 |

| Ref. No. | Non-Compliance | Related Item No. |
|---|---|---|
| - | None identified | - |
| **Ref. No.** | **Remarks/Observations** | **Related Item No.** |
| | ***A. Water Quality*** | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | ***G. Reminders*** | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | ***H. Others*** | |
| | • NIL | |

| | Name | Signature | Date |
|---|---|---|---|
| Recorded by | Yeung Wing Kun | | 18 January 2010 |
| Checked by | Dr. Priscilla Choy | | 18 January 2010 |

**Weekly Site Inspection Record Summary**

**Inspection Information**

| | |
|---|---|
| Checklist Reference Number | 100128 |
| Date | 28 January 2010 (Thursday) |
| Time | 14:00-17:00 |

| Ref. No. | Non-Compliance | Related Item No. |
|---|---|---|
| - | None identified | - |

| Ref. No. | Remarks/Observations | Related Item No. |
|---|---|---|
| | *A. Water Quality* | |
| 100128-O01 | • Chemical waste container was observed mixed with the general refuse at the material skip at Western Portal. The Contractor was reminded to provide sorting for all the wastes on site. | F2ii |
| | | |
| | *B. Air Quality* | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | *C. Noise* | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | *D. Waste / Chemical Management* | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | *E. Ecology* | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | *F. Marine Ecology* | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | *G. Reminders* | |
| 100128-R02 | • Clear the drainage Channels at Intake PFLR1 and Western Portal at near spoil basin. | B9 |
| 100128-R03 | • Clear the oil stains at the platform at Intake HKU1 | F2ii and F8 |
| 100128-R04 | • Clear the chemical container at Intake HKU1 | F2ii |
| | | |
| | | |
| | | |
| | *H. Others* | |
| 100128-F05 | • Follow-up on previous audit section (Ref. No.:100121), follow-up action is needed for the items (100121 – O01, R03, R04, R05and R07). | |

| | Name | Signature | Date |
|---|---|---|---|
| Recorded by | Ivy Tam | | 28 January 2010 |
| Checked by | Dr. Priscilla Choy | | 28 January 2010 |

**Weekly Site Inspection Record Summary (For Western Portal Only)**

**Inspection Information**

| | |
|---|---|
| Checklist Reference Number | 100127 |
| Date | 27 January 2009 (Monday) |
| Time | 15:50-16:15 |

| Ref. No. | Non-Compliance | Related Item No. |
|---|---|---|
| - | None identified | - |

| Ref. No. | Remarks/Observations | Related Item No. |
|---|---|---|
| | *A. Water Quality* | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | *G. Reminders* | |
| | • No environmental deficiency was identified during site inspection. | |
| | | |
| | *H. Others* | |
| | • NIL | |

| | Name | Signature | Date |
|---|---|---|---|
| Recorded by | Yeung Wing Kun | | 27 January 2010 |
| Checked by | Dr. Priscilla Choy | | 27 January 2010 |

**APPENDIX J**
**ENVIRONMENTAL MITIGATION**
**IMPLEMENTATION SCHEDULE (EMIS)**

**Appendix J - Summary of Environmental Mitigation Implementation Schedule**

| Types of Impacts | Mitigation Measures | Status |
|---|---|---|
| **Construction Dust** | *Dust Mitigation Measures* | |
| | • The Contractor shall undertake at all times to prevent dust nuisance as a result of his activities. Effective dust suppression measures should be installed to minimize air quality impacts, at the boundary of the site and at any sensitive receivers. | ^ |
| | • No blasting shall be carried out when the strong wind signal or tropical cyclone warning signal No. 3 or higher is hoisted (unless prior permission of the Commissioner of Mines is obtained). | ^ |
| | • Effective water sprays shall be used during the delivery and handling of all raw sand, aggregate and other similar materials, when dust is likely to be created, to dampen all stored materials during dry and windy weather. Watering of exposed surfaces shall be conducted as often as possible depending on the circumstances. | ^ |
| | • A watering programme of once every 2 hours in normal weather conditions, and hourly in dry/windy conditions. | ^ |
| | • Any stockpile of dusty material cannot be immediately transported out of the Site shall be either: a) covered entirely by impervious sheeting; b) placed in an area sheltered on the top and the three sides; or c) sprayed with water or a dust suppression chemical so as to maintain the entire surface wet. | ^ |
| | • Should a conveyor system be used, the Contractor shall implement the following precautionary measures. Conveyor belts shall be fitted within windboards. Conveyor transfer points and hopper discharge areas shall be enclosed to minimize dust emission. All conveyors under control of the Contractor, and carrying materials which have the potential to create dust, shall be totally enclosed and fitted with belt cleaners. | ^ |
| | • Any dusty materials being discharged to vehicle from a conveying system at fixed transfer point, three-sided roofed enclosed with a flexible curtain across the entry shall be provided. Exhaust fans shall be provided for this enclosure and vented via a suitable fabric filter system. | ^ |
| | • The heights from excavated spoils are dropped should be minimise to reduce the fugitive dust arising from unloading/loading. | ^ |
| | • The Contractor shall confine haulage and delivery vehicles to designated roadways inside the site. If in the opinion of the Engineer, any motorising vehicle is causing dust nuisance, the Engineer may require that the vehicle be restricted to a maximum speed of 15km per hour while within the site area. | ^ |
| | • Areas within the site where there is a regular movement of vehicles shall have an approved hard surface, be kept clear of loose surface materials and / or be regularly watered. | ^ |
| | • Wheel cleaning facilities shall be installed for both portals and used by all vehicles leaving the site. No earth, mud, debris, dust and the like shall be deposited on public roads. Water in the wheel cleaning facility shall be changed at frequent intervals and sediments shall be removed regularly. The Contractor shall submit details of proposals for the wheel cleaning facilities to the Engineer prior to construction of the facility. Such wheel cleaning facilities shall be usable prior to any earthwork excavation activity on site. The Contractor shall provide a hard-surfaced road between any cleaning facility and the public road. | ^ |
| | • Chemical wetting agents shall only be used on completed cuts and fills to reduce wind erosion. | N/A |

Remarks: ^ Compliance of mitigation measure; X Non-compliance of mitigation measure;
N/A Not Applicable at this stage; • Non-compliance but rectified by the contractor;
* Recommendation was made during site audit but improved/rectified by the contractor;
\# Non-compliance but rectified/improved by the contractor and awaiting IEC's further comment.

| Types of Impacts | Mitigation Measures | Status |
|---|---|---|
| | • No vehicle exhausts shall be directed towards the ground or downwards to minimize dust nuisance. | * |
| | • Ventilation system, equipped with proprietary filters, should be provided to ensure the safe working environment inside the tunnel. Particular attention should be paid to the location and direction of the ventilation exhausts. The exhausts should not be allowed to face any sensitive receivers directly. Consideration should also be given to the location of windows, doors and direction of prevailing winds in relation to the nearby sensitive receivers. | ^ |
| | • In the event of any spoil or debris from construction works being deposited on adjacent land, or stream, or any silt being washed down to any area, then all such spoil, debris or material and silt shall be immediately removed and the affected land and areas restored to their natural state by the Contractor to the satisfaction of the Engineers. | ^ |
| | In addition, based on the *Air Pollution Control (Construction Dust) Regulation*, any works involved regulatory and notifiable works, such as stockpiling, loading and unloading of dusty materials, shall take precautions to suppress dust nuisance. | |
| | • The working area of any excavation or earthmoving operation shall spray with water or a dust suppression chemical immediately before, during and immediately after the operation so as to maintain the entire surface wet; | ^ |
| | • Exposed earth shall be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies; and | ^ |
| | • Any stockpile of dusty materials (greater than $20m^3$) shall be either covered entirely by impervious sheeting or placed in an area sheltered on the top and three sides; and sprayed with water or a dust suppression chemical so as to maintain the entire surface wet. | ^ |
| | • Other suitable dust control measures as stipulated in Air Pollution Control (Construction Dust). Regulation, where appropriate, should be adopted. | ^ |

Remarks: ^ Compliance of mitigation measure; X Non-compliance of mitigation measure;
N/A Not Applicable at this stage; • Non-compliance but rectified by the contractor;
* Recommendation was made during site audit but improved/rectified by the contractor;
# Non-compliance but rectified/improved by the contractor and awaiting IEC's further comment.

| Types of Impacts | Mitigation Measures | Status |
|---|---|---|
| **Construction Noise** | *Air borne noise*<br><br>In general, potential construction noise impact can be minimized or avoided by imposing a combination of the following mitigation measures:<br>• Noisy equipment and activities should be sited by the Contractor as far from close-proximity sensitive receivers as practical. Prolonged operation of noisy equipment close to dwellings should be avoided.<br>• The Contractor should minimise construction noise exposure to the schools (especially during examination periods). The Contractor should liaise with the school and the Examination Authority to ascertain the exact dates and times of all examination periods during the course of the works contract and to avoid noisy activities during these periods.<br>• Noisy plant or processes should be replaced by quieter alternatives. Silenced diesel and gasoline generators and power units, as well as silenced and super-silenced air compressor, can be readily obtained.<br>• Noisy activities should be scheduled to minimise exposure of nearby sensitive receivers to high levels of construction noise. For example, noisy activities can be scheduled for midday, or at times coinciding with periods of high background noise (such as during peak traffic hours).<br>• Idle equipment should be turned off of throttled down. Noisy equipment should be properly maintained and used no more often than is necessary.<br>• The power units of non-electric stationary plant and earth-moving plant should be quietened by vibration isolation and partial or full acoustic enclosures for individual noise-generating components.<br>• Construction activities should be planned so that parallel operation of several sets of equipment close to a given receiver is avoided, thus reducing the cumulative impacts between operations. The numbers of operating items of powered mechanical equipment should be minimised. Noise can be reduced by increasing the distance between the operating equipment and the NSRs or by reducing the number of items of equipment and/or construction activity in the area at any one time.<br>• The use of quiet plant working methods can further reduce noise level. Quiet plant is defined as Powered Mechanical Equipment (PME) whose actual sound power level is less than the value specified in the TMs for the same piece of equipment. To allow the Contractor some flexibility to select equipment to suit his needs, it is considered too restrictive to specify which specific items of silenced equipment to be used for the construction operations. It should be noted that various types of silenced equipment can be found in Hong Kong and are readily available on the market. BS 5228 also provides examples of quiet construction plant and their SWL.<br>• Construction plant should be properly maintained (well-greased, damage and worn parts promptly replaced) and operated. Construction equipment often has silencing measures built in or added on, e.g. bulldozer silencers, compressor panels, and mufflers. Silencing measures should be properly maintained and utilised. Rubber or damping materials should be introduced between metal panels to avoid rattle and reverberation of noise.<br>• Equipment known to emit sound strongly in one direction should be oriented so that the noise is directed away from nearby NSRs.<br>• Materials stockpile and other structures (such as site offices) should be effectively utilised to shield construction noise. Noise | ^<br>^<br>^<br>*<br>^<br>^<br>^<br>^<br>^<br>^ |

Remarks: ^ Compliance of mitigation measure; X Non-compliance of mitigation measure;
N/A Not Applicable at this stage; • Non-compliance but rectified by the contractor;
* Recommendation was made during site audit but improved/rectified by the contractor;
# Non-compliance but rectified/improved by the contractor and awaiting IEC's further comment.

| Types of Impacts | Mitigation Measures | Status |
|---|---|---|
| | can also be reduced by construction of temporary noise barriers which screen the lower floors from viewing the sites. Temporary noise barriers should be installed at active parts of construction areas where construction equipment is being operated in close proximity to NSRs.<br>• It is noted that under the WBTC No. 19/2001, all construction sites are required to use metallic site hoarding can be slightly modified (with the addition of steel backings) into temporary noise barriers. These barriers should be gap free and have a surface mass density of at least 7kg/$m^2$.<br>• All hand-held percussive breakers and air compressors should comply the Noise Control (Hand-held Percussive Breakers) Regulations respectively under the NCO (Ordinance No. 75/88, NCO Amendment 1992 No.6).<br><br>The Contractor shall devise, arrange methods of working and carry out the works in such manner as to minimise noise impacts on the surrounding environment, and shall provide experienced personnel with suitable training to ensure that these measures are implemented properly.<br><br><u>Level 2 Use of Barriers</u><br><br>Level 2 mitigation measures include providing movable barriers for sites which have sufficient space for installation, full enclosures during the drilling activities at Eastern Portal and at muck pit areas for Eastern portals and cantilever-typed high rise noise barrier for intake W5 (P) and W8.<br><br>Before construction of the full enclosure at muck pit area, the use of full enclosure noise barrier (Stage A) for the drilling activities at the Eastern Portal area is required. A full enclosure for the muck pit area will then be constructed at this later stage (Stage B). The full enclosure shall be gap free apart from necessary entrance/exits, which shall face towards the entrance of eastern portal to minimize the amount of noise generated from affecting the nearest RNSRs especially school (True Light Middle School of Hong Kong).<br><br>5m high cantilever-typed hoarding barrier to be built at W5 (P) and W8. These enclosures/barriers should have no gaps and have a superficial surface density of at least 10kg/$m^2$. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period. To schedule the noise barrier erection and dismantling to the non sensitive periods of school to avoid adverse impact to W8/3.<br><br>Movable barriers of 3 to 5m height with a small cantilevered upper portion and skid footing to be located within about 5 m or more for mobile equipment such that the line of sight is blocked. To provide purposes-built noise barriers or screens constructed of appropriate materials (minimum superficial density of 10kg/$m^2$) located close to the operating PME.<br><br>Pre-drilling following by chemical splitting instead of using large excavator mounted breaker should be used as mitigation measure for rock breaking and rock drilling. | ^<br><br>^<br><br>^<br><br>^<br><br>^<br><br>^<br><br>^ |

Remarks: ^ Compliance of mitigation measure; X Non-compliance of mitigation measure;
N/A Not Applicable at this stage; • Non-compliance but rectified by the contractor;
* Recommendation was made during site audit but improved/rectified by the contractor;
\# Non-compliance but rectified/improved by the contractor and awaiting IEC's further comment.

| Types of Impacts | Mitigation Measures | Status |
|---|---|---|
| | No construction activity is recommended during the examination period.<br><br><u>*Ground borne noise*</u><br><br>The noise level should be measured on the ground floor inside the nearest building during the TBM construction work in the daytime. If the daytime monitored ground borne noise exceeds the relevant evening/night ground borne noise criteria, evening/night construction work would not be carried out for the concerned tunnel section. Evening/night time construction work is subject to CNP application under the control of NCO.<br><br>Public relationship strategy with 24-hour hotline system. | ^<br><br><br><br>^ |

Remarks: ^ Compliance of mitigation measure; X Non-compliance of mitigation measure;
N/A Not Applicable at this stage; • Non-compliance but rectified by the contractor;
* Recommendation was made during site audit but improved/rectified by the contractor;
# Non-compliance but rectified/improved by the contractor and awaiting IEC's further comment.

| Types of Impacts | Mitigation Measures | Status |
|---|---|---|
| **Water Quality** | <u>Precautionary measures for construction work near natural streams</u><br><br>The government provides guidelines (ETWB TCW NO. 5/2005 and DSD TC 2/2004) are providing guidelines to minimize impacts when there is construction work carried out at near natural streams course. Relevant mitigation measures for the intakes are summarised as follows:<br><br>• Temporary site access to the work sites should be carefully planned and located to minimize disturbance caused to the substrates of streams/rivers and riparian vegetation by construction plant.<br>• Locations well away from the rivers/streams for temporary storage of materials (e.g equipment, filling materials, chemicals and fuel) and temporary stockpile of construction debris and spoil should be identified before commencement of works.<br>• Proposed works site areas inside, or in the proximity of, natural rivers and streams should be temporarily isolated to prevent adverse impacts on the stream water qualities.<br>• Stockpiling of construction materials, if necessary, should be completely properly covered and located away from any natural stream/river.<br>• Construction debris and spoil should be covered up and/or properly disposed of as soon as possible to avoid being washed into nearby rivers/streams by rain and local runoff.<br><br><u>Construction of temporary berthing point at the Western Portal</u><br><br>A refuse collection vessel shall be provided to collect refuse or materials lost into the sea.<br><br>The respective areas of the marine works will be completely enclosed by the silt curtain. The curtain shall be extended from water surface down to the seabed where it is anchored using sinker blocks. The Contractor shall inspect the silt curtain on regular basis to ensure its integrity and it is serviceable for all times. | ^<br>^<br>^<br>^<br>^<br>^<br><br>N/A |

Remarks: ^ Compliance of mitigation measure; X Non-compliance of mitigation measure;
N/A Not Applicable at this stage; • Non-compliance but rectified by the contractor;
* Recommendation was made during site audit but improved/rectified by the contractor;
\# Non-compliance but rectified/improved by the contractor and awaiting IEC's further comment.

| Types of Impacts | Mitigation Measures | Status |
|---|---|---|
| | Transfer of armour rock onto the seabed from barge at the temporary pier location should be conducted by careful grabbing and unloading to the seabed (to minimize sediment migration). | ^ |
| | The conveyor belt should be completely covered and muddy effluent from the temporary barge should be contained, treated and disposed. Where there is transfer of excavated wastes, the Contractor should provide appropriate measures to ensure that the waste is free from floatables, putrescibes, organic wastes and toxic materials and when required a refuse collection vessel be provided to collect float refuse. | ^ |
| | <u>Construction of stilling basin at Western Portal outfall</u> | |
| | All construction for the basin should be carried out inside the temporary cofferdam which is a temporary watertight enclosure built in the water and pumped dry to expose the bottom so that construction of stilling basin can be undertaken. | ^ |
| | During the dewatering process, appropriate desilting/sedimentation devices should be provided on site for treatment before discharge. The Contractor should ensure discharge water from the sedimentation tank meet the WPCO/TM requirements before discharge. | ^ |
| | The cofferdam will remain on site until after the construction of stilling basin has been completed. The coffer dam shall be regularly inspected and maintained to ensure no spillage of waste or wastewater into the sea. Conveyance of dredged materials from the coffer dam shall be carried out cautiously to avoid spillage into the sea. | ^ |
| | The filled material for the stilling basin should be contained inside the temporary cofferdam. The top level of the cofferdam shall be constructed higher than the final backfilled level. | ^ |
| | The Contractor shall be responsible for the design, installation and maintenance of the silt curtains to minimize the impacts on the water quality and the protection of water quality. The design and specification of the silt curtains shall be submitted by the Contractor to the Engineer for approval. | N/A |
| | Silt curtains shall be formed from tough, abrasion resistant, permeable membranes, suitable for the purpose, supported on floating booms in such a way as to ensure that the sediment plume shall be restricted to within the limit of the works area. The silt curtain shall be formed and installed in such a way that tidal rise and fall are accommodated, with the silt curtains always extending from the surface to the bottom of the water column and held with anchor blocks. The removal and reinstallation of such curtains during typhoon conditions shall be as agreed with the Director of Marine Department. The contractor shall regularly inspect the silt curtains and check that they are moored and marked to avoid danger to marine traffic. Any damage to the silt curtain shall be repaired by the Contractor promptly and the works shall be stopped until the repair is fixed to the satisfaction of the Engineer. | N/A |

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| Types of Impacts | Mitigation Measures | Status |
|---|---|---|
| | Transfer of rock fill material (armour rock) from the barge onto the site location should be conducted by grabbing and placement on the seabed to minimize sediment migration. No free dropping of the material will be allowed. | ^ |
| | Prior to the construction of armor rock based panel, a silt curtain shall also be installed prior to carry out any marine works as a preventive mitigation measure. | ^ |
| | <u>Construction of TBM tunnel at both portals and intakes</u> | |
| | Recycled water will be used at the cutter face for cooling purposes. Used water will be collected and discharged to a settling tank for settlement. Excess water from the settling tank will be transferred to the water treatment plant on site where the addition of flocculants will assist in settlement of solids. The Contractor should ensure discharge water from the sedimentation tank meet the WPCO/TM requirements before discharge. | ^ |
| | During the drilling process, all flushing water will be recycled for use. Discharge of the treated water to nearby drainage system shall be allowed provided that it has been treated to a level meeting with statutory requirements. | ^ |
| | Water flow at streams should be maintained by a temporary diversion system during the construction phase of intakes and manhole drop shafts. | ^ |
| | <u>General Construction Activities and Workforce</u> | |
| | A. Surface runoff | |
| | Effluent produced from construction activities are subjected to WPCO control. Effluent produced from sites should be diverted away from stream courses. Construction works near stream course should be scheduled in the dry season as far as practical to avoid excessive site runoff discharge. | * |
| | Under the *Water Pollution Control Ordinance* (WPCO), turbid water from construction sites must be treated to minimize the solids content before being discharged into storm drains. The suspended solids load can be reduced by directing the runoff into temporary sand traps or other silt-removal facilities, and other good and appropriate site management practices. Advice on the handling and disposal of construction site discharge is provided in the ProPECC Paper (PN 1/94) on Construction Site Drainage. | * |
| | A drainage system layout should be prepared by the Contractor for each of the works areas (portals and intakes), detailing the facilities and measures to manage pollution arising from surface runoff from those works areas. The drainage layout and an associated drainage management plan to reduce surface runoff sediments and pollutants entering watercourses, should be submitted to the Engineer for approval and to EPD for agreement. | * |

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| Types of Impacts | Mitigation Measures | Status |
|---|---|---|
| | The system should be capable of handling stormwater from the site and directing it to sediment removal facilities before discharge. If oil and grease is used on the site or brought to the site, the stormwater should pass through oil interceptors before discharge. The interceptors should have a bypass to prevent washout in heavy storms. | ^ |
| | A temporary channel system or earth bunds or sand barriers should be provided in works areas on site to direct stormwater to silt-removal facilities. Stockpiled materials, if susceptible to erosion of rain or wind, should be covered with tarpaulins (or/similar fabric0 or hydroseedings as far as practicable especially during the wet season. | * |
| | Silt removal facilities should be checked and the deposited silt and grit should be removed regularly to ensure these facilities are in good working condition and to prevent blockages. | ^ |
| | Vehicle washing areas should be drained into a settlement into a settlement basin to settle out the suspended solid before discharge to storm water drains. The water should be recycled on site whenever possible. It is suggested that the wash water from the wheel wash basin is either reused for road watering or pumped to the on-site settling tanks for treatment. Water used for dust depression purposes should be minimized and an alternative soil holding agent should be considered. | ^ |
| | B. Spillage, Oil and Solvents<br>Any contractor generating waste oil or other chemicals as a result of his activities should register as a chemical waste producer and provide a safe storage area for chemicals on site. Oil interceptors need to be regularly inspected and cleaned to avoid wash-out of oil during storm conditions. A bypass should be provided to avoid overload of the interceptor's capacity. | ^ |
| | Any spillage should be cleaned up immediately and the resulting contaminated absorbent material should be properly managed according to Waste Disposal Regulations. Spills should be contained to avoid spreading and contaminating the water resources. | ^ |
| | Oil and fuels should be used and stored properly in designated area. All fuel tanks and storage areas should be provided with locks and be sited on within sealed areas within surrounded by bunds of with a capacity equal to 110% of the storage capacity of the largest tank. | * |
| | Good housekeeping practices are required to minimize careless spillage and keep the work space in a tidy and clean condition. Appropriate training, including safety codes and relevant manuals, should be given to the personnel who regularly handle the chemicals on site. | * |

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| Types of Impacts | Mitigation Measures | Status |
|---|---|---|
| | C. On-Site Effluent Generation | |
| | Sewage arising from the additional population of workers on site should be collected in a suitable storage facility (chemical mobile toilets). Most of the work site locations are close to the public sewerage system, and therefore the use of septic tanks isare, therefore, not encouraged. Portable toilets should be used coupled with tickering away services provided by a licensed collector. They should be positioned at appropriate locations across the site to ensure no direct discharge of foul water off-site. | ^ |
| | D. Protection of Existing Flora and Fauna | |
| | The Contractor should provide details of the plant and operation plans at each site for approval by the Engineer before commencing construction. The plans should include how the existing flora and fauna will be protected. Locations required for groundwater levels monitoring are Eastern Portal, PFLR1(P), THR2(P), TP5, TP789 and W12. | ^ |
| | The construction and demolition of the temporary pier may create short term impacts on the local marine water quality. The situation will be restored once the work is finished by proper phasing of the works programme and implementation of the adequate mitigation measures (e.g. silt curtain) the impacts will be minimized. | ^ |
| | <u>Maintaining Baseflow in Downstream Watercourses</u> | |
| | The final design will be developed during the detailed design stage. The exact base flow rates to be maintained at each of the intakes will be subject to detailed site investigation at design stage. | |
| | • Purpose of the by-pass device is to maintain the base-flow of the affected stream course. | N/A |
| | • The by-pass system comprises an approach link and a trapezoidal channel. | N/A |
| | • The approach link is section with inclined profiled surface at a gradient of 1 in 100. It is used to direct the base flow to the bypass trapezoidal channel at its down stream end during the normal days. | N/A |
| | • The trapezoidal channel is sized such that it could handle the base flow in the affected stream course which is estimated to be no more than 20 l/s. | N/A |
| | • Whenever the flow in the stream course exceeding the base flow rate, the excessive flow will overflow into the intake structure via the bottom rack structure. The bottom rack structure has bar screen on the top and inclined channel at the bottom. The top level of the bar screen is level with the by-pass channel with an aim to receive the overflow from the by-pass channel. | N/A |
| | • The by-pass channel is designed requiring minimum maintenance. However, it is recommended that the maintenance authority carry out regular maintenance inspection prior to onset of seasons and after significant rainstorm event to prevent blockage of the by-pass and bottom rack structure. | N/A |

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| Types of Impacts | Mitigation Measures | Status |
|---|---|---|
| **Waste/Chemical** | <u>General</u><br><br>A proper waste management plan should be implemented to promote waste minimisation at source. Where waste generation is unavoidable then the potential for recycling or reuse should be explored and opportunities taken. If wastes cannot be recycled then the recommended disposal routes should be followed.<br><br>All waste materials shall be segregated into categories covering:<br><br>• Excavated material or construction waste suitable for reuse on-site<br>• Excavated material or construction waste suitable for public filling areas<br>• Remaining C&D waste for landfill<br>• Chemical waste, and<br>• General refuse<br><br>Proper segregation and disposal of construction waste should be implemented. Separate containers for inert and non-inert wastes should be provided. The inert waste should be taken to public filling area and the non-inert waste should be transported to strategic landfills.<br><br>A trip-ticket system on the solid waste transfer/disposal operations should be included as one of the contractual requirements (ETWB TCW No. 31/2004). The Independent Environmental Checker (IEC) should responsible for auditing this system.<br><br>IEC should also responsible for auditing the well-documented record system which includes: (i) quantity of waste generation, (ii) quantity of recycled material, (iii) quantity of disposed material, (iv) disposal methods and (v) sites should be implemented during construction phase.<br><br>Regular cleaning and maintenance of the waste storage area should be conducted throughout the construction stage.<br><br><u>Excavated spoil</u><br><br>Control measures for soil temporarily stockpiled on-site should be taken in order to minimize the noise, generation of dust, pollution of water and visual impact. Key impacts include: | *<br><br>^<br>^<br>^<br>^<br>^<br><br>*<br><br>^<br><br>^<br><br>^<br><br>^ |

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| Types of Impacts | Mitigation Measures | Status |
|---|---|---|
| | • Surface of stockpiled soil should be wetted with water when necessary especially during dry season | ^ |
| | • Disturbance of stockpiled soil should be minimized | ^ |
| | • Stockpiled soil should be properly covered with tarpaulins especially heavy rain storms | ^ |
| | • Stockpiling areas should be enclosed if possible | ^ |
| | • Stockpiling location should be away from the shoreline | ^ |
| | • An independent surface water drainage system equipped with silt traps should be installed at the stockpiling area | ^ |
| | <u>Chemical wastes</u> | |
| | For those processes that generate chemical waste, it may be possible to find alternatives which generate reduced quantities or even no chemical waste, or less dangerous types of chemical waste. | ^ |
| | Construction processes produce chemical waste, the contractor must register with EPD as a Chemical Waste Producer. Wastes classified as chemical wastes are listed in the Waste Disposal (Chemical Waste) (General) Regulation (CWR). It should be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Waste published by the EPD. A producer of chemical wastes should be registered as chemical waste producer and registered with EPD. | ^ |
| | The chemical waste generated shall be properly labelled, stored and disposed of according to the CWR. Proper storage area shall be allocated on site for storage of chemical waste. The chemical waste should only be collected by a licensed collector. An updated list of licensed chemical waste collector can be obtained from EPD. | * |
| | In case of spillage, spill absorbent material and emulsifiers should be available on site. This material should be replaced on a regular basis and the contaminated material stored in a designated, secure place. | * |
| | <u>General refuse</u><br>A reputable waste collector should be employed by the contractor to remove general refuse from the site, separate from C&DM and chemical wastes, and on regular basis in order to minimize odour, pest and litter impacts. The burning of refuse at site is not permitted under the Air Pollution Control Ordinance (Cap 311). | * |
| | Office waste can be reduced through recycling of paper if volumes are large enough to warrant collection. | ^ |
| | Good management practices should be implemented to ensure that refuse is properly stored and is transported for disposal of at licensed landfills. | ^ |

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| Types of Impacts | Mitigation Measures | Status |
|---|---|---|
| **Terrestrial Ecology** | During the detailed design stage, the following issues should also be considered as possible to further minimise the impacts:<br>• Adjustment of site boundary to minimise temporary loss of natural stream habitat during construction.<br>• Adjustment of site boundary to minimise use of mixed woodland as temporary works area. In particular, the woodland habitat in temporary works area of the Eastern Portal will be avoided, thereby greatly reducing the area of temporary loss of woodland habitat.<br>• Minimizing felling of large trees.<br>• About 20% of trees within the works area will be transplanted. The individual of Artocarpus hypargyreus recorded within the temporary works area of HKU1, if to be encroached, would also be transplanted.<br><br>Standard site practices including the following, should be enforced to minimise the disturbance to the surroundings:<br><br>• Treat any damage that may occur to large individual trees in the adjacent area using materials and methods appropriate for tree surgery.<br>• Reinstate work sites/disturbed areas immediately after completion of the construction works, in particular, through on-site tree/shrub planting along the woodland and shrubland section within the temporary works area. Tree/shrub species used should make reference from those in the surrounding area.<br>• Regularly check the work site boundaries to ensure that they are not exceeded and that no damage occurs to surrounding areas.<br><br>A total of 1.02 ha would be replanted with woodland species, reaching almost a 1.5:1 ratio for compensatory planting.<br>Tree/shrub species used should be based on those in the surrounding areas, including those which are commonly recorded during the baseline surveys.<br><br>A low-flow channel would be provided within the channelised section to maintain a deeper water depth in the expanded channel, in particular during dry season as well as a basin at the end of the channelised section to provide living space for aquatic life. Step chute in the form of a series of descending water pools would be constructed between the low flow channel and the undisturbed stream course. There would also be openings for aquatic fauna between each chute step (pool). These could work like a "ladder" to help avoid isolating the aquatic fauna in the channelised section from natural habitats.<br><br>Measures are also needed to maintain the flow of all affected streams/nullahs during the construction stages. Temporary bypass should be provided if the stream/nullah flows will be cut off by the construction works. After the construction works are finished, sections of temporary loss should be reinstated. Construction materials, wastes, and equipment should be cleared from the sites. | ^<br>^<br>^<br>^<br>^<br>^<br>^<br>^<br>^ |

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| Types of Impacts | Mitigation Measures | Status |
|---|---|---|
| | Surveys of amphibians at E4(P), PFLR1(P), W12(P), MB16, E5(B)(P), TP789(P) and P5(P) prior to commencement of construction is recommended. Frogs, including Hong Kong Cascade Frog and Lesser Spiny Frog, and tadpoles found at work areas of these proposed intake points will be collected and translocated to nearby streams that will not be affected by the project. These procedures should be performed by experienced herpetologists. A detailed translocation proposal will be submitted during the detailed design stage.<br><br>Measures should also be taken to avoid runoff to streams and marine habitats. Stream/channel which could potentially be affected during construction should be prevented from sedimentation by erection of sediment barriers. Site runoff should be desilted by siltation traps in streams/channels or diverted, to reduce the potential for suspended sediments, organics and other contaminants to enter the local stream environment. | ^<br><br>^ |
| **Marine Ecology** | Silt curtains will be deployed during the construction and demolition of the temporary berthing point. Deployment of silt curtains around the berthing point area would effectively avoid adverse water quality impacts due to barge filling. No significant ecological impact is anticipated.<br><br>The invert of the stilling basin would be at -5.4 mPD. A cofferdam in the form of pipe-pile wall is to be constructed outside the stilling basin prior to the construction of basin. The cofferdam will be dewatered to provide a working area for construction of the stilling basin. The boulders from the seawall will then be removed by landbased grabs.<br><br>Although the speed of the working vessels to be used in the Project (mainly barges) would not be high, a speed limit for marine traffic is proposed as a precautionary measure. A speed limit of 10 knots should be strictly enforced in the works area, in particular in the waters between the outfall location and the navigation channel in East Lamma Channel. | N/A<br><br>^<br><br>^ |

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| Types of Impacts | Mitigation Measures | Status |
|---|---|---|
| **Landscape and Visual** | The proposed landscape and visual mitigation measures during the construction phase include:<br><br>CM1 - Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical.<br>CM2 - Existing trees to be retained on site should be carefully protected during construction. The detailed proposal for any trees felling and transplantation is subject to Lands Department's approval on tree felling application at the detailed design stage.<br>CM3 - Trees unavoidably affected by the works should be transplanted where practical.<br>CM4 - Compensatory tree planting should be provided to compensate for felled trees.<br>CM5 - The extent of disturbance on the existing stream course should be minimized. Any temporary works areas within the stream course shall be reinstated after construction.<br>CM7 – Control of night-time lighting<br>CM8 – Erection of decorative screen hoarding | <br><br>^<br>^<br>^<br>^<br>^<br>^<br>^ |

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| Types of Impacts | Mitigation Measures | Status |
|---|---|---|
| **Cultural Heritage** | The Cultural Heritage Impact Assessment has identified the following resources which will require mitigation measures during the construction stage;<br><br><u>Haw Par Mansion (including boundary wall and gate)</u><br>A condition survey must be undertaken by a qualified professional prior to the commencement of construction works for the tunnel portal in order to assess the structural integrity of the mansion, wall and gate (with special attention paid to any fragile architectural features). A report containing description of the types of construction, identification of fragile elements, an appraisal of the condition and a photographic record must be prepared. The report must also provide an assessment indicating whether further precautionary measures will be necessary during the construction phase, and if so provide details for sufficient protective measures, including monitoring for vibration control to ensure that no damage to the structure and fabric of the house, wall and gate results from the construction works. The report must be submitted to AMO for approval before construction activities commence. Upon approval the appropriate monitoring and precautionary measures shall be put into place.<br><br>A buffer zone with a minimum width of 3 metres and an obstruction free access point must be maintained between the boundary wall/gate and the temporary works area (during construction works associated for both the tunnel portal and the permanent vehicle access ramp). This is to enable access for routine maintenance works on the wall and to ensure that the wall is not damaged by machinery operation or related construction activities. The temporary works area will be enclosed by standard DSD site hoarding.<br><br><u>Former Explosive Magazine of Victoria Barracks</u><br><br>A condition survey must be undertaken by a qualified professional prior to the commencement of construction works in order to assess the structural integrity of the retaining wall and the extent of damage from cracks and vegetation growth. A report containing a description of the wall's construction materials, identification of fragile and/or endangered elements, an appraisal of the condition and a photographic record of the retaining wall must be prepared. The report must also provide an assessment indicating whether further precautionary measures will be necessary during the construction phase, and if so provide details for sufficient protective measures, such as monitoring for vibration control, to ensure that no damage to the retaining wall results from the construction works. The report must be submitted to AMO for approval before construction activities commence. Upon approval the appropriate monitoring and precautionary measures shall be put into place.<br><br>A buffer zone with a minimum width of 3 metres and an obstruction free access point must be maintained between the retaining wall and the temporary works area (for the duration of the construction phase). The works area will be enclosed by standard DSD site hoarding. | ^<br><br>^<br><br>^<br><br>^ |

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| Types of Impacts | Mitigation Measures | Status |
|---|---|---|
| **Fisheries** | Silt curtain will be deployed during the construction and demolition of the temporary berthing point. With the deployment of silt curtains around the berthing point area, adverse water quality impact associated with the filling would not be anticipated. No significant fisheries impact is anticipated.<br><br>The invert of stilling basin will be found at -5.4 mPD. A cofferdam in the form of pipe-pipe wall is to be constructed outside the stilling basin prior to the construction of basin. The cofferdam will be dewatered to provide a working space for the construction of stilling basin. The boulders from the seawall will then be removed by landbased grabs. | N/A<br><br>^ |
| **Hazard to Life** | There will be no overnight storage of explosives for this project. Transportation of explosives to site for the construction of adit will be undertaken on a daily basis. The contractor is required to destroy any unused explosives before nightfall. If contractor wishes to set up magazines for overnight storage of explosives, it is necessary to carry out risk assessment and seek the relevant approval following the EIAO process. | ^ |

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**APPENDIX K**
**EVENT ACTION PLANS**

# Appendix K - Event Action Plans

Event/Action Plan for Air Quality

| | ACTION | | | |
|---|---|---|---|---|
| **EVENT** | **ET** | **IEC** | **SUPERVISING OFFICER'S REPRESENTATIVE** | **CONTRACTOR** |
| ACTION LEVEL | | | | |
| 1.Exceedance for one sample | 1. Identify the source and investigate the causes and propose remedial measures<br>2. Inform Supervising Officer's Representative & IEC<br>3. Repeat measurement to confirm finding<br>4. Increase monitoring frequency to daily | 1. Check monitoring data submitted by ET<br>2.Check Contractor's working methods | 1.Notify Contractor | 1.Rectify any unacceptable practice<br>2.Amend working methods if appropriate |
| 2.Exceedance for two or more consecutive samples | 1. Identify the source<br>2. Inform Supervising Officer's Representative & IEC<br>3. Repeat measurements to confirm findings<br>4. Increase monitoring frequency to daily<br>5. Discuss with Supervising Officer's Representative & IEC for remedial actions required<br>6. If exceedance continues, arrange meeting with Supervising Officer's Representative & IEC<br>7. If exceedance stops, cease additional monitoring | 1.Checking monitoring data submitted by ET<br>2. Check Contractor's working methods<br>3. Discuss with ET, IEC and Contractor on proposed remedial actions<br>4. Advise the Supervising Officer's Representative & ET on the effectiveness of the proposed remedial measures<br>5.Supervise the implementation of the remedial measures | 1.Confirm receipt of notification of failure in writing<br>2.Notify Contractor<br>3.Ensure remedial actions properly implemented | 1.Submit proposals for remedial actions to Supervising Officer's Representative within 3 working days of notification<br>2.Implement the agreed proposals<br>3.Amend proposal if appropriate |
| LIMIT LEVEL | | | | |
| 1.Exceedance for one sample | 1. Identify source,,investigate the causes and propose remedial measures<br>2. Inform Supervising Officer's Representative & IEC and EPD<br>3. Repeat measurement to confirm finding<br>4. Increase monitoring frequency to daily<br>5. Assess effectiveness of Contractor's remedial actions and keep EPD and Supervising Officer's Representative & IEC informed of the results | 1.Check monitoring data submitted by ET<br>2. Check Contractor's working methods<br>3. Discuss with ET and Contractor on proposed remedial actions<br>4. Advise the Supervising Officer's Representative on the effectiveness of the proposed remedial measures<br>5.Supervise the implementation of the remedial measures | 1.Confirm receipt of notification of failure in writing<br>2.Notify Contractor<br>3.Ensure remedial actions properly implemented | 1.Take immediate action to avoid further exceedance<br>2.Submit proposals for remedial actions to Supervising Officer's Representative within 3 working days of notification<br>3.Implement the agreed proposals<br>4.Amend proposal if appropriate |
| 2.Exceedance for two or more consecutive samples | 1. Identify source<br>2. Inform Supervising Officer's Representative, IEC and EPD the causes & actions taken for the exceedances<br>3. Repeat measurement to confirm findings | 1.Discuss amongst Supervising Officer's Representative, ET and Contractor on the potential remedial actions<br>2.Review Contractor's remedial actions to assure their effectiveness and advise the | 1.Confirm receipt of notification of failure in writing<br>2.Notify Contractor<br>3.In consultation with the IEC, agree with the Contractor on the remedial measures to be | 1. Take immediate action to avoid further exceedance<br>2. Submit proposals for remedial actions to Supervising Officer's Representative within 3 working |

| | ACTION | | | |
|---|---|---|---|---|
| **EVENT** | **ET** | **IEC** | **SUPERVISING OFFICER'S REPRESENTATIVE** | **CONTRACTOR** |
| ACTION LEVEL | | | | |
| | 4. Increase monitoring frequency to daily<br>5. Investigate the causes of exceedance<br>6. Arrange meeting with & IEC and Supervising Officer's Representative to discuss the remedial actions to be taken<br>7. Assess effectiveness of Contractor's remedial actions and keep ER, IEC and EPD informed of the results<br>8. If exceedance stops, cease additional monitoring | Supervising Officer's Representative accordingly<br>3.Supervise the implementation of the remedial measures | implemented<br>4.Ensure remedial measure are properly implemented<br>5.If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated | days of notification<br>3. Implement the agreed proposals<br>4. Resubmit proposals if problem still not under control<br>5. Stop the relevant portion of works as determined by the ER until the exceedance is abated |

Event/Action Plan for Construction Noise

| EVENT | ACTION | | | |
|---|---|---|---|---|
| | **ET** | **IEC** | **SUPERVISING OFFICER'S REPRESENTATIVE** | **Contractor** |
| Action Level | 1. Notify IEC, Supervising Officer's Representative and Contractor<br>2. carry our investigation by reviewing all the relevant monitoring data and the corresponding construction activities. Exceedances should also be confirmed by immediate verification in the field as far as practical.<br>3. Report the results of investigation to the IEC, Supervising Officer's Representative and Contractor<br>4. Discuss with the Contractor and formulate remedial measures<br>5. increase monitoring frequency to check mitigation effectiveness | 1.Review the analysed results submitted by the ET<br>2. Review the proposed remedial measures by the Contractor and advise the Supervising Officer's Representative & ET accordingly<br>3.Supervise the implementation of remedial measures | 1. Confirm receipt of notification of complaint in writing<br>2. Notify Contractor<br>3. require Contractor to proposed remedial measures for analyzed noise problem<br>4. Ensure remedial measures are properly implemented | 1. Identify practicable measures to minimize the noise impact. Submit noise mitigation proposals to ET, IEC and ET.<br>2. Implement noise mitigation proposals |
| Limit Level | 1. Notify IEC, Supervising Officer's Representative, EPD and Contractor<br>2. Identify the source(s) of impact by reviewing all the relevant monitoring data and the corresponding construction activities. Exceedances should also be confirmed by immediate verification in the field as far as practical.<br>3. Repeat measurement to confirm findings<br>4. Increase monitoring frequency<br>5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented.<br>6. inform IEC, Supervising Officer's Representative and EPD the cause & actions taken for the exceedances<br>7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and Supervising Officer's Representative informed of the results<br>8. If exceedance stops, cease additional monitoring. | 1. Discuss amongst Supervising Officer's Representative, ET, and Contractor on the potential remedial actions<br>2. Review Contractor's remedial actions to assure their effectiveness and advise the Supervising Officer's Representative &ET accordingly<br>3.Supervise the implementation of the remedial measures | 1. Confirm receipt of notification of exceedance in writing<br>2. Notify Contractor<br>3. Require Contractor to propose remedial measures for the analyzed noise problem<br>4. Ensure remedial measures are properly implemented<br>5. If exceedance continuous, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is aborted | 1. Take immediate action to avoid further exceedance<br>2. Identify practicable measures to minimize the noise impact. Submit proposals for remedial actions to Supervising Officer's Representative within three working days of notification<br>3. Implement the agreed proposals<br>4. Resubmit proposal if problem still not under control<br>5. Stop the relevant portion of works as determined by the Supervising Officer's Representative until the exceedance is abated |

Event/Action Plan for Water Quality

| EVENT | ACTION | | | |
|---|---|---|---|---|
| | **ET** | **IEC** | **SUPERVISING OFFICER'S REPRESENTATIVE** | **CONTRACTOR** |
| ACTION LEVEL | | | | |
| Action level being exceeded by one sampling day | 1. Repeat in situ measurement to confirm findings;<br>2. Identify source(s) of impact;<br>3. Inform IEC, contractor and Supervising Officer's Representative;<br>4. Check monitoring data, all plant, equipment and Contractor's working methods.<br>5. Discuss mitigation measures with IEC and Contractor<br>6. Repeat measurement on next day of exceedance. | 1. Discuss with ET and Contractor on the mitigation measures. Review proposals on mitigation measures submitted by Contractor and advise the Supervising Officer's Representative accordingly; and<br>2. Assess the effectiveness of the implemented mitigation measures. | 1. Discuss with IEC on the proposed mitigation measures; and<br>2. Make agreement on the mitigation measures to be implemented. | 1. Inform the Supervising Officer's Representative and confirm notification of the non-compliance in writing;<br>2. Rectify unacceptable practice;<br>3. Check all plant and equipment;<br>4. Consider changes of working methods;<br>5. Discuss with ET and IEC and propose mitigation measures to IEC and Supervising Officer's Representative;<br>6. Implement the agreed mitigation measures. |
| Action level being exceeded by more than one consecutive sampling days | 1. Repeat in-situ measurement to confirm findings;<br>2. Identify source(s) of impact;<br>3. Inform IEC, contractor;<br>4. Check monitoring data, all plant, equipment and Contractor's working methods;<br>5. Discuss mitigation measures with IEC, Supervising Officer's Representative and Contractor;<br>6. Ensure mitigation measures are implemented;<br>7. Prepare to increase the monitoring frequency to daily;<br>8. Repeat measurement on next day of exceedance. | 1. Discuss with ET and Contractor on the mitigation measures. Review proposals on mitigation measures submitted by Contractor and advise the Supervising Officer's Representative accordingly; and<br>2. Assess the effectiveness of the implemented mitigation measures. | 1. Discuss with IEC on the proposed mitigation measures; and<br>2. Make agreement on the mitigation measures to be implemented.<br>3. Assess the effectiveness of the implemented mitigation measures. | 1. Inform the Supervising Officer and confirm notification of the non-compliance in writing;<br>2. Rectify unacceptable practice;<br>3. Check all plant and equipment and<br>4. Consider changes of working methods;<br>5. Discuss with ET and IEC and propose mitigation measures to IEC and Supervising Officer's Representative within 3 working days;<br>6. Implement the agreed mitigation measures. |
| LIMIT LEVEL | | | | |
| Limit level being exceeded by one sampling day | 1. Repeat measurement on next of exceedance to confirm findings;<br>2. Identify source(s) of impact;<br>3. Inform IEC, contractor, Supervising Officer's Representative and EPD;<br>4. Check monitoring data, all plant, equipment and Contractor's working methods;<br>5. Discuss mitigation measures with IEC, Supervising Officer's Representative and Contractor. | 1. Check monitoring data submitted by ET and Contractor's working methods.<br>2. Discuss with ET and Contractor on possible mitigation measures;<br>3. Review the proposed mitigation measures submitted by Contractor and advise the Supervising Officer's Representative accordingly; | 1. Confirm receipt of notification of failure in writing<br>2. Discuss with IEC, ET and Contractor on the proposed mitigation.<br>3. Request Contractor to view the working methods.<br>4. Ensure mitigation measures are properly implemented. | 1. Inform the Supervising Officer's Representative and confirm notification of the non-compliance in writing;<br>2. Rectify unacceptable practice;<br>3 Check all plant and equipment and consider changes of working methods;<br>4. Discuss with ET, IEC and Supervising Officer's Representative and propose mitigation measures to Supervising Officer's Representative and IEC within 3 working days; |

| EVENT | ACTION | | | |
|---|---|---|---|---|
| | ET | IEC | SUPERVISING OFFICER'S REPRESENTATIVE | CONTRACTOR |
| | | | | 5. Implement the agreed mitigation measures. |
| Limit level being exceeded by more than one consecutive sampling days | 1. Repeat measurement on next of exceedance to confirm findings;<br>2. Identify source(s) of impact;<br>3. Inform IEC, contractor, Supervising Officer's Representative and EPD;<br>4. Check monitoring data, all plant, equipment and Contractor's working methods;<br>5. Discuss mitigation measures with IEC, Supervising Officer's Representative and Contractor;<br>6. Ensure mitigation measures are implemented;<br>7. Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days. | 1. Check monitoring data submitted by ET and Contractor's working methods.<br>2. Discuss with ET and Contractor on possible mitigation measures;<br>3. Review the proposed mitigation measures submitted by Contractor and advise the Supervising Officer's Representative accordingly;<br>4. Supervise the implementation of mitigation measures. | 1. Discuss with IEC, ET and Contractor on the proposed mitigation measures;<br>2. Request Contractor to critically review the working methods;<br>3. Make agreement on the mitigation measures to be implemented;<br>4. Ensure mitigation measures are properly implemented;<br>5. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the construction activities until no exceedance of Limit level | 1. Take immediate action to avoid further exceedance<br>2. Discuss with ET, IEC and Supervising Officer's Representative and propose mitigation measures to Supervising Officer's Representative and IEC within 3 working days;<br>3. Implement the agreed mitigation measures;<br>4. Resubmit proposals of mitigation measures if problem still not under control;<br>5. As directed by the Supervising Officer, to slow down or to stop all or part of the construction activities until no exceedance of Limit level. |

**APPENDIX L**
**COMPLAINT LOG**

**APPENDIX L – COMPLAINT LOG**

| Log Ref. | Location | Received Date | Details of Complaint | Investigation/Mitigation Action | Status |
|---|---|---|---|---|---|
| Com-2008-05-003 | Construction site at Eastern Portal | 22 May 2008 | The complaint was lodged by Ms. Ng on 22 May 2008 regarding noise nuisance generated from the construction activities at the construction site of Eastern Portal | According to the Contractor, only one excavator and one generator were operated for the excavation works around 8 am on 22 May 2008 at the Eastern portal. No other construction activities were conducted.<br><br>In response to the complaint, The Contractor agreed to reschedule their current works activities, with immediate effect from 23 May 2008, that only site preparation works without noise nuisance to the nearby residents will be carried out from 7:00 am to 8:00 am at the Eastern Portal area.<br><br>Base on the information collected and the monitoring results, the complaint was considered not justifiable since (1) no exceedance of the noise monitoring results was recorded in May and (2) no non-compliance or observation on noise was recorded. | Closed |
| Com-2008-05-004 | Construction site at Western Portal (Marine Works) | 31 May 2008 | The complaint was lodged by one of the local resident on 31 May 2008 regarding the noise nuisance generated from the marine works at Western Portal. | According to the Contractor, only two derrick barges and one tug boat were operated for the seabed formation works around 18:00 hrs on 31 May 2008 at the Western Portal. No other construction activities were conducted. | Closed |

| Log Ref. | Location | Received Date | Details of Complaint | Investigation/Mitigation Action | Status |
|---|---|---|---|---|---|
| | | | | Base on the information collected and the monitoring results, the complaint was considered not justifiable since (1) no exceedance of the noise monitoring results was recorded in May and (2) no non-compliance or observation on noise was recorded. | |
| Com-2008-07-007 | Construction site at Eastern Portal | 2 July 2008 | The complaint was lodged by a resident of The Legend on 2 July 2008 regarding noise nuisance generated from the construction activities at the construction site of Eastern Portal | According to the Contractor, only one generator and one drilling rig (Jumbo) were operated for the preparation works around 7:30a.m on 2 July 2008 at the Eastern portal. Construction noise was found from other construction site (Gammon Construction Limitied) adjacent to Eastern Portal area.<br><br>In response to the complaint, The Contractor review his forthcoming operations within the Eastern Portal site as previous they agreed, reschedule their current works activities, with immediate effect from 23 May 2008, that only site preparation works without noise nuisance to the nearby residents will be carried out from 7:00 am to 8:00 am at the Eastern Portal area.<br><br>Additional noise monitoring was conducted on 16 and 17 July 2008 during the drilling rig (Jumbo), excavator and wheel loader were operated for drilling works. | Closed |

| Log Ref. | Location | Received Date | Details of Complaint | Investigation/Mitigation Action | Status |
|---|---|---|---|---|---|
| | | | | Base on the information collected and the monitoring results, the complaint was considered not justifiable since (1) no exceedance of the noise monitoring results was recorded in June and July 2008 and additional noise monitoring (2) no non-compliance or observation on noise was recorded. | |
| COM-2008-10-011 | Construction site at Western Portal | 11 October 2008 | The complaint was lodged by one of the resident of Victoria Road, Ms Cheung on 11 October regarding about the noise nuisance generated from the construction works at Western Portal | According to the Contractor, excavation works and marine works including sheet piling works were also conducted at the time of complaint at Western Portal<br><br>Additional noise monitoring was conducted on 15 October 2008, drilling works, excavation works and marine works including sheet piling works were also conducted. The construction noise levels measured during the construction works were well below the construction noise limit of 75 dB(A)<br><br>The Contractor agreed to reschedule the starting time of the construction works to 8:15am on every Saturday that without noise nuisance from the construction works to the nearby residents will be carried out from 7:00 am to 8:15 am at the Western Portal area. | Closed |

| Log Ref. | Location | Received Date | Details of Complaint | Investigation/Mitigation Action | Status |
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| | | | | Base on the information collected, the noise level measured at outside Aegean Terrace during the construction works at Western Portal site were well below the construction noise limit of 75 dB(A). Also, the Contractor has implemented the remedial measure that reschedule the starting time of the construction works to 8:15am on every Saturday immediately after receiving the complaint to minimize the noise nuisance to the nearby residents. | |
| COM-2008-10-012 | Construction site at Intake TP5 | 15 October 2008 | The complaint was lodged by Mr Choi on 15 October 2008 regarding about the noise generated from the GI works, which starts from 8:30 hrs to 17:30 hrs next to Aigburth at May Road. | According to the information provided by the Contractor, only rotary type drill rigs and water pumps were operated for the GI works at the time of complaint at Intake TP5.<br><br>Additional site inspection and noise monitoring at the podium of the Valverde at May Road were conducted on 3 Nov 2008 and 24 Oct, 5 Nov, 7 Nov 2008 respectively.<br><br>The Contractor agreed to reschedule the starting time of the construction works to 9:30am on every Saturday and 8:00 on normal weekdays that without noise nuisance to the nearby residents will be carried out from 7:00 am to 8:00 am at Intake TP5. Acoustic insulating materials | Closed |
| COM-2008-10-013 | Construction site at Intake TP5 | 31 October 2008 | The complaint was lodged by Mr Lai on 31 October 2008 regarding the black smoke is emitted and noise is generated from the machine at the site (Intake TP5), he needed to close the windows to prevent the black smoke from entering his flat and to attenuate the noise. | | |

| Log Ref. | Location | Received Date | Details of Complaint | Investigation/Mitigation Action | Status |
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| | | | | have been applied for enclosing water pump and rotary type drill rigs to minimize the noise nuisance to the nearest residents. | |
| COM-2008-11-015 | Construction site at Intake TP5 | 4 November 2008 | The complaint was lodged by Ms Lee on 4 November regarding the noise nuisance generated from the construction works at Intake TP5. | Base on the information collected, the noise level measured at the podium of the Valverde at May Road were well below the construction noise limit of 75 dB(A) after the Contractor has implemented the remedial measure. | |
| COM-2008-11-016 | Construction site at Western Portal | 17 November 2008 | The complaint was lodged by Mr Cheng on 17 November 2008 regarding dust nuisance arising from the soil nailing works at the roadside slope of Cyberport Road. | According to the information provided by the Contractor, soil nailing works were conducted and some plant equipments i.e air compressor and generator were operated at the time of complaint at Western Portal.<br><br>Base on the regular air quality monitoring in November 2008 at Outside Aegean Terrace (AQ2) and Outside The Site Office at Western Portal (AQ3), the dust levels measured at AQ2 for 1 hour TSP and at AQ3 for 24 hour TSP were well below the Action Level (321µg/m3 for 1 hour TSP and 156µg/m3 for 24 hour TSP). Also, the Contractor has implemented the dust suppression measures to prevent dust nuisance from the construction activities including soil nailing works. | Closed |

| Log Ref. | Location | Received Date | Details of Complaint | Investigation/Mitigation Action | Status |
|---|---|---|---|---|---|
| COM-2008-11-019 | Construction site at Western Portal | 29 November 2008 | The complaint was lodged by Ms Cheung on 1 December 2008 regarding noise nuisance at Western Portal at 08:30 hrs approx on 29 November 2008 and 00:30 on 1 December 2008. | According to the information provided by The Contractor, no construction works was carried out at the temporary jetty at the time of complaint (00:30 on 1 December 2008) at Western Portal.<br><br>However, base on the regular noise monitoring at Outside Aegean Terrace (NC3), the noise level measured during the construction works at Western Portal site were well below the construction noise limit of 75 dB(A). | Closed |
| COM-2008-12-020 | Construction site at Western Portal | 28 December 2008 | The complaint was lodged by Ms Cheung on 28 December 2008 regarding the excavator was found working within Western Portal works area on Sunday. | The complaint was considered not justifiable as Construction Noise Permit (CNP) – CNP No. GW-RS0827-08 has been granted from EPD for carrying out the construction works at Hong Kong West Drainage Tunnel (Western Portal), Cyberport Road, Cyberport, Hong Kong (DSD Contract No. DC/2007/10) between 1 December 2008 at 1900 hours and 28 February 2009 at 2400 hours. The powered mechanical equipment can be operated during the hours as below:<br><br>a) Any day not being a general holiday between 1900 – 2300 hours<br>b) General holiday (**including Sundays**) between 0700 – 1900 hours | Closed |

| Log Ref. | Location | Received Date | Details of Complaint | Investigation/Mitigation Action | Status |
|---|---|---|---|---|---|
| COM-2009-01-021 | Muddy Water Discharged into Sea at Western Portal | 21 January 2009 | Muddy water was observed from discharging into the sea at Western Portal Site | Base on the information collected, the muddy water discharged into the sea is considered due to the operations of excavation of stilling basin and poor condition of the silt curtain.<br><br>The Contractor agreed to review their current provisions to prevent any muddy water from discharging into the sea again and close check the condition of the silt curtain. | Closed |
| COM-2009-01-022(A) | Construction site at Western Portal | 12 January 2009 | The complaint was lodged by Mr Chan, the assistant of Mr CHAN Ngok pang (Southern District Councillor) about the resident in Baguio Villa near Victoria Road, Mr Ronald Chan concerns on the noisy activities carried out at Western Portal site. | Base on the information collected, the noise level measured at outside Aegean Terrace during the construction works at Western Portal site were well below the construction noise limit of 75 dB(A). Aegean Terrace is at location close to the major site activities compared with Baguio Vila. Also, The Contractor agreed to reschedule their current works activities, no noisy work will be carried out at Western Portal Site before 8:00a.m. | Closed |
| COM-2009-01-022(B) | | 21 January 2009 | The complaint was lodged by resident of Aegean Terrace at Sassoon Road about the noise nuisance generated from Western Portal Site. | | |
| COM-2009-01-022(C) | | 21 January 2009 | The complaint was lodged by the resident in Baguio Villa near Victoria Road about noisy works at Western Portal Site. | | |

| Log Ref. | Location | Received Date | Details of Complaint | Investigation/Mitigation Action | Status |
|---|---|---|---|---|---|
| COM-2009-02-023 | Construction site at Eastern Portal | 7 February 2009 | Complaint of Construction Noise at Early Morning (07:45hrs) at Eastern Portal Site | Based on the information collected, the construction noise at about 07:45hrs on 7 February 2009 was due to the checking of the backhole by the sub-contractor.<br><br>The Contractor was reminded to strengthen their site supervision and provide sufficient site-specific environmental training for sub-contractor to ensure that such situation would not be recurred. | Closed |
| COM-2009-03-025 | Construction site at Western Portal | 2 March 2009<br>4 March 2009 | Complaint of noise generated by midnight works and night-time lighting at Western Portal Site | Base on the information collected, the regular noise monitoring was conducted during the construction works at the restricted hours. The noise measurement results were well below the construction noise limit of 65dB(A) for the period of 0700-2300 hrs on holiday; and 1900-2300 hrs on all other days and baseline level during the night time.<br><br>The Contractor was reminded to strengthen their site supervision and implement necessary noise mitigation measures to minimize and avoid the construction noise impact to the residents nearby especially during the restricted hours.<br><br>Regarding the complaint of spotlight hanging on the plant at the site portion WP, The Contractor was reminded to implement the mitigation measures for Visual during the construction by controlling the night- | Closed |
| COM-2009-03-026 | | 7 March 2009 | Complaint of pipe hitting noise at midnight at Western Portal Site. | | |

| Log Ref. | Location | Received Date | Details of Complaint | Investigation/Mitigation Action | Status |
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| | | | | time lighting so that the residual visual impacts can be accepted. | |
| COM-2009-04-028 | Construction site at Western Portal | 7 April 2009 | Complaint of noise generated from the construction works conducted till 11:00pm at Western Portal of the Hong Kong West Drainage Tunnel. | According to the information provided by The Contractor, TBM, conveyor belt, ventilation fan, tower crane and cherry picker were operated for the construction works on 7 April 2009 before 11:00pm and only TBM works with conveyor belt and ventilation fan were operated on 10 April 09 (Sunday). No operation of derrick barge on 10 April 09.<br><br>According to the photos taken on 8 April 2009, misplacement of plant was observed at Western Portal Site. Upon advice, The Contractor immediately moved the fan properly.<br><br>Based on the information collected, the construction noise levels measured were well below the construction noise limit of 75 dB(A) for the period of 0700-1900 hrs on normal weekdays, 65 dB(A) for the period of 0700-2300 hrs on holiday; and 1900-2300 hrs on all other days and baseline level for the period of 2300-0700 hrs of next day. The ground borne noise levels measured were also well below the construction ground borne noise standards (i.e. 65 | Closed |
| COM-2009-04-029 | | 10 April 2009 | Complaint of noise generated by TBM works at Western Portal. | | |

| Log Ref. | Location | Received Date | Details of Complaint | Investigation/Mitigation Action | Status |
|---|---|---|---|---|---|
| | | | | dB(A) – Daytime (except General Holiday and Sundays) and 55 dB(A) – Daytime during general holidays and Sunday and all days during Evening (1900 to 2300 hrs). No exceedances of noise level have been recorded in March and April 2009.<br><br>The Contractor was advised to strictly follow the conditions of the permit to avoid any misplacement of plants in the future. Also, The Contractor should take sufficient noise mitigation measures to minimize the environmental impact on the nearby community as recommended in the approved EIA report.<br><br>In addition, DNJV already arranged tailors made training for the Production Team including the senior management and foreman to explain the conditions and requirements listed on the CNP and delegated one Engineer to ensure all construction activities and PMEs to be used are fully complying with CNP and legislation requirements before the commencement of the construction activities during the restricted hour. | |

| Log Ref. | Location | Received Date | Details of Complaint | Investigation/Mitigation Action | Status |
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| | | | | Base on the information collected, regular noise Monitoring was conducted during the night time to check the noise levels are complying with the construction noise criteria. The noise levels measured at NC3 during the construction works at night time were well below the construction noise limit.<br><br>The Contractor was reminded to strengthen their site supervision by delegated Engineer to ensure all construction activities and PMEs to be used are fully complying with CNP and legislation requirements and implement necessary noise mitigation measures as recommended in the Approved EIA report to minimize and avoid the construction noise impact to the residents nearby especially during the restricted hours. | |
| COM-2009-04-030 | Construction site at Western Portal | 30 April 2009 | Complaint of Construction Noise Generated at Night at Western Portal. | According to the site activities diaries, TBM chainage, TBM excavation, installation of segment ring, pea gravel & mortar injection and installation cables & pipes at gantries were the activities conducted in the night of 30 April 2009.<br><br>In accordance with the night time visit on 15 May 2009, the noise levels at Aegean Terrace was not high but with occasionally | Closed |
| COM-2009-05-031 | | 4 May 2009 | Complaint of low frequency noise emitted from the construction site at Western Portal. | | |

| Log Ref. | Location | Received Date | Details of Complaint | Investigation/Mitigation Action | Status |
|---|---|---|---|---|---|
| | | 11 May 2009 | Complaint of Construction Noise nuisance generated from the Western Portal Site from day to night. | sound of locomotive and tower crane operations.<br><br>No exceedance of noise level was recorded since the commencement of the project works at Western Portal Site. The noise levels measured at NC3 during the construction works were well below the construction noise limit.<br><br>The Contractor will continue implementing their mitigation measures (e.g. Instruct workers not to shout during work in the evening; no horn signal of locomotive after 6:55 pm). | |
| COM-2009-05-032 | Construction site at Eastern Portal | 13 May 2009 | The complaint was lodged by a resident regarding the Construction Noise Nuisance from the construction works that were carried out from early morning till night time at Eastern Portal Site Area. | Based on the information collected, the noise levels measured at NC1/NC1a and NC2 during the construction works were well below the construction noise limit or baseline level.<br><br>The Contractor is also committed to implement sufficient noise mitigation measures as recommended in the approved EIA report to minimize the nuisance caused to the nearby residents especially during the restricted hours. | Closed |
| COM-2009-06-035 | Hong Kong West Drainage Tunnel Construction Site at Cyberport | 3 June 2009 | EPD received a public complaint raised by Mr. Lee regarding the transportation and disposal of construction wastes from Hong Kong West | Base on the information collected, alternative disposal ground is proposed by The Contractor and they have been submitted the relevant information and sought the approval from Supervising | Closed |

| Log Ref. | Location | Received Date | Details of Complaint | Investigation/Mitigation Action | Status |
|---|---|---|---|---|---|
| | | | Drainage Tunnel Construction Site at Cyberport on 3 June 2009. | Officer. The Contractor also maintains the daily record with details of each disposal trip from the Site and the disposal ground. | |
| COM-2009-06-037 | Construction site at Eastern Portal | 23 June 2009 | The few noise complaints were lodged by a resident of The Legend and Ronsdale Garden regarding the Construction Noise Nuisance from the construction works at Eastern Portal Site Area since 7:00a.m and in the afternoon. | Based on the information collected, the noise levels measured at NC1 and NC2 during the construction works were well below the construction noise limit or baseline level.<br><br>In response to the complaints, the head of hydraulic breaker has been wrapped with sound proof materials and movable noise barriers were provided for rock excavation to reduce noise.<br><br>The Contractor is also committed to implement sufficient noise mitigation measures as recommended in the approved EIA report to minimize the nuisance caused to the nearby residents. | Closed |
| COM-2009-06-038 | | | The complaint was raised by Ms Wong of Goodwell Property Management, she wrote on behalf of the Estate Owner Committe of Legend at Tai Hang about noise nuisance arising from the excacvation works at Eastern Portal site portion. The Committe requested the Contractor to provide mitigation measures to mininise the impact. | | |
| COM-2009-08-040 | Construction site at Intake PFLR1 | 26 August 2009 | The complaint was relating to the noise generated from the construction activities of breaking of the existing boundary wall of Pokfulam Road Playground by use of the | Noise monitoring results conducted on 1 September 2009 at NC11 - Honey Court for the Intake PFLR1 was submitted and no exceedance was recorded. In addition, based on the regular site inspection conducted at Intake PFLR1, no observation/non- | Closed |

| Log Ref. | Location | Received Date | Details of Complaint | Investigation/Mitigation Action | Status |
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| | | | hand-held electric breaker. | compliance on air quality was identified. The environmental conditions of the site will be continuously reviewed and monitored.<br><br>DNJV had installed tarpaulin shielding and cover to mitigate not only the potential emission of exhausted smoke, but also the visual impact to the residents nearby. | |
| COM-2009-09-042 | Construction site at Eastern Portal | 21 September 2009 | The complaint was raised by a resident of The Legend regarding poor housekeeping and construction noise nuisance from the Eastern Portal Site Area. | Based on the information gathered in the Investigation, the Contractor had taken action immediately to rectify the complaint of poor housekeeping. The white site office was painted green in harmony with the surrounding environment and the site was maintained in a clean and tidy condition. All materials required for temporary works were stored in an orderly manner.<br><br>Regarding the complaint of construction noise impact, the noise levels measured at The Legend (NC2) during the construction works in the normal working hours were well below the construction noise limit level.<br><br>Nevertheless, the Contractor is also committed to implementing sufficient noise mitigation measures as recommended in the approved EIA report to minimize the nuisance caused to the nearby residents and | Closed |

| Log Ref. | Location | Received Date | Details of Complaint | Investigation/Mitigation Action | Status |
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| | | | | provide training for the workers to increase awareness of their environmental responsibilities. | |
| COM-2009-10-044<br><br>COM-2009-10-045 | Construction site at Eastern Portal | 6 and 7 October 2009 | The complaint was raised by a resident of The Legend and Ronsdale Garden regarding the construction noise nuisance from the Eastern Portal Site Area. | Based on the information gathered in the Investigation, the noise levels measured (additional noise monitoring) at The Legend (NC2) and Ronsdale Garden during the construction works including rock breaking works and soil nailing works were ranged from 68.4dB(A) to 75.3 dB(A) in the normal working hours.<br><br>The Contractor is committed to implementing sufficient noise mitigation measures as recommended in the approved EIA report to minimize the nuisance caused to the nearby residents and provide training for the workers to increase awareness of their environmental responsibilities.<br><br>It is recommended to increase the construction noise monitoring frequency for Eastern Portal Site to check the mitigation effectiveness. | Closed |
| COM-2009-11-054 | Construction site at Western Portal | 23 and 29 November 2009 | The complaint was raised by a resident of Aegean Terrace regarding the construction noise nuisance from the Western Portal Site Area. | Base on the information collected, the noise levels measured at NC3 during the construction works were well below the construction noise limit. | Closed |

| Log Ref. | Location | Received Date | Details of Complaint | Investigation/Mitigation Action | Status |
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| | | | | Nevertheless, the Contractor is also committed to implement sufficient noise mitigation measures as recommended in the approved EIA report, Clause 5.4.15 to minimize/avoid the nuisance caused to the nearby residents. | |
| COM-2009-12-059 | Construction site at Intake MB16 | 27 November 2009 | The complaint was received on 2 November 2009 regarding the dust nuisance caused by the works at the Construction Site at Mount Butler Road near Clementi Road (Intake MB16). EPD subsequently issued a notice of complaint. | Based on the information collected, the Contractor has implemented the dust suppression measures to prevent dust nuisance from the construction activities.<br><br>During the site inspection in November 2009, slope improvement works including soil nailing works were observed from other construction site adjacent to DNJV's construction works at Mount Butler Road. | Closed |
| COM-2009-12-061 | Construction site at Intake PFLR1 | 23 and 28 December 2009 | Two public complaints were received from the resident of Pok Fu Lam Road on 23rd and 28th December 2009 respectively about the construction noise nuisance from the construction site at Intake PFLR 1. | Based on the information gathered in the Investigation, the noise levels measured at Honey Court (NC11) during the construction works were well below the construction noise limit.<br><br>The location of the designated noise monitoring station (NC11 – Honey Court) is at location close to the construction site compared with Pok Fu Lam Height.<br><br>In addition, a large scale innovation works being undertaken at a resident building adjacent to the Pok Fu Lam Height was observed during the routine site inspection. | Closed |

| Log Ref. | Location | Received Date | Details of Complaint | Investigation/Mitigation Action | Status |
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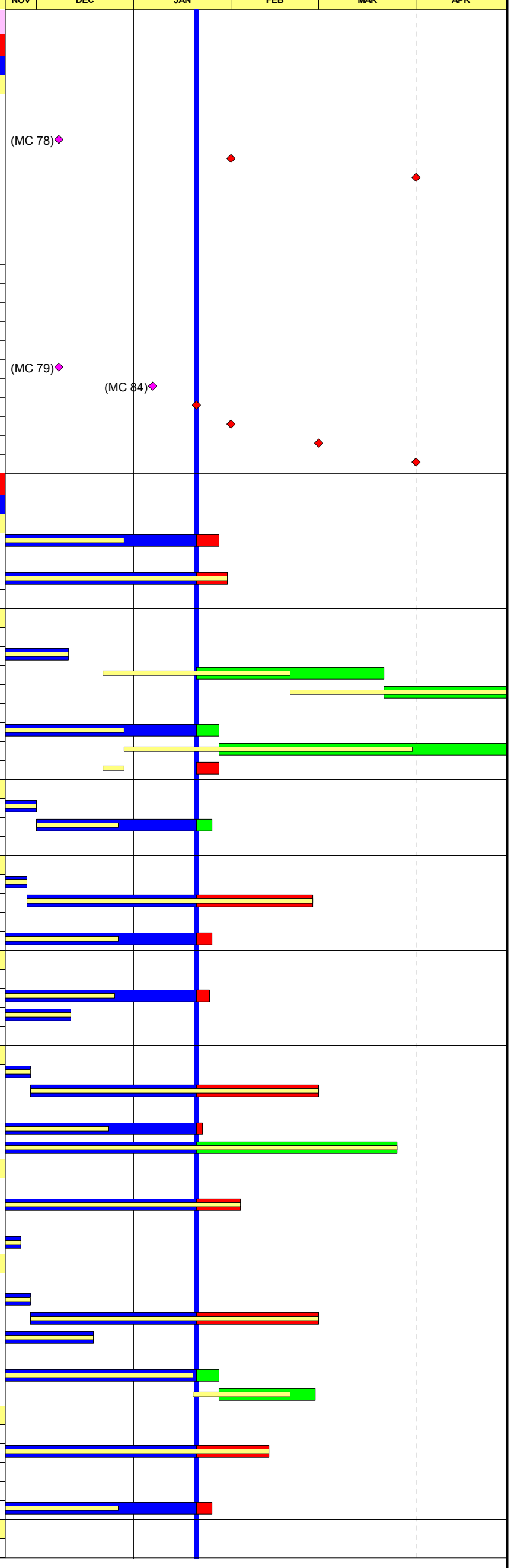
| | | | | The innovation works included hammering and drilling on the outer walls of the building and contributed significantly to the noisy environment. | |
| COM-2010-01-062 | Construction site at Western Portal | 3 January 2010 | The public complaint was received from the resident of Bel-Air through the project hotline on 3rd January 2010 about "wooing" sound heard after midnight, and he suspected that the sound was coming the construction sites at Cyberport. | Base on the information collected, the noise levels measured at NC3 during the construction works were well below the baseline level. The location of the designated noise monitoring station (NC3 – Outside Aegean Terrace) is at location close to the construction site compared with Bel-Air.<br><br>The Contractor will continue implementing the existing noise mitigation measures at the Western Portal to minimize the environmental impact to the nearby residents. | Closed |
| | Intake MB16 | 20 January 2010 | Complaint on suspected ground-borne noise raised by a resident at Clement Court, a short distance downhill from MB16 on 20th January 2010. | Under Investigation | N/A |

# APPENDIX M
# CONSTRUCTION PROGRAMME

| Act ID | Activity Description | Orig Dur | Rem Dur | Anticipated Start | Anticipated Finish | % Comp | Rem Dur | Approved Works Prog 9116 EF Variance |
|---|---|---|---|---|---|---|---|---|
| **THR2 off & re-shuffle RBM** | | | | | | | | |
| **CC01 - PRELIMINARIES & GENERAL REQUIREMENTS** | | | | | | | | |
| **Milestone** | | | | | | | | |
| **General** | | | | | | | | |
| M1-1140 | 1.14-Complete of All Obligat's From 541to600d | 0 | 0 | | 04AUG09A | 100 | 0 | 0 |
| M1-1150 | 1.15-Complete of All Obligat's From 601to660d | 0 | 0 | | 07OCT09A | 100 | 0 | 0 |
| M1-1160 | 1.16-Complete of All Obligat's From 661to720d | 0 | 0 | | 07DEC09A | 100 | 0 | -7 |
| M1-1170 | 1.17-Complete of All Obligat's From 721to780d | 0 | 0 | | 31JAN10* | 0 | 0 | 0 |
| M1-1180 | 1.18-Complete of All Obligat's From 781to840d | 0 | 0 | | 31MAR10* | 0 | 0 | 0 |
| M1-1430 | 1.43-Acceptance of Monthly Report on TDMS(14M) | 0 | 0 | | 04SEP09A | 100 | 0 | 0 |
| M1-1440 | 1.44-Acceptance of Monthly Report on TDMS(15M) | 0 | 0 | | 04SEP09A | 100 | 0 | 0 |
| M1-1450 | 1.45-Acceptance of Monthly Report on TDMS(16M) | 0 | 0 | | 04SEP09A | 100 | 0 | 0 |
| M1-1460 | 1.46-Acceptance of Monthly Report on TDMS(17M) | 0 | 0 | | 04SEP09A | 100 | 0 | 0 |
| M1-1470 | 1.47-Acceptance of Monthly Report on TDMS(18M) | 0 | 0 | | 04SEP09A | 100 | 0 | 0 |
| M1-1480 | 1.48-Acceptance of Monthly Report on TDMS(19M) | 0 | 0 | | 04SEP09A | 100 | 0 | 0 |
| M1-1490 | 1.49-Acceptance of Monthly Report on TDMS(20M) | 0 | 0 | | 04SEP09A | 100 | 0 | 0 |
| M1-1500 | 1.50-Acceptance of Monthly Report on TDMS(21M) | 0 | 0 | | 07OCT09A | 100 | 0 | 0 |
| M1-1510 | 1.51-Acceptance of Monthly Report on TDMS(22M) | 0 | 0 | | 04NOV09A | 100 | 0 | -16 |
| M1-1520 | 1.52-Acceptance of Monthly Report on TDMS(23M) | 0 | 0 | | 07DEC09A | 100 | 0 | -37 |
| M1-1530 | 1.53-Acceptance of Monthly Report on TDMS(24M) | 0 | 0 | | 06JAN10A | 100 | 0 | -37 |
| M1-1540 | 1.54-Acceptance of Monthly Report on TDMS(25M) | 0 | 0 | | 20JAN10* | 0 | 0 | -20 |
| M1-1550 | 1.55-Acceptance of Monthly Report on TDMS(26M) | 0 | 0 | | 31JAN10* | 0 | 0 | 0 |
| M1-1560 | 1.56-Acceptance of Monthly Report on TDMS(27M) | 0 | 0 | | 28FEB10* | 0 | 0 | 0 |
| M1-1570 | 1.57-Acceptance of Monthly Report on TDMS(28M) | 0 | 0 | | 31MAR10* | 0 | 0 | 0 |
| **CC02 - DESIGN & DESIGN CHECKING OF THE WORKS** | | | | | | | | |
| **Design Stage** | | | | | | | | |
| **Secton 1 (Eastern Portal)** | | | | | | | | |
| D00275 | APP Cofferdam for Intake Shaft DDA | 42 | 7 | 21MAY08A | 27JAN10 | 90 | 7 | -93 |
| D00278 | P&S Reinst Perm Slope at Coff Intake Shaft DDA | 63 | 0 | 23JUN09A | 30OCT09A | 100 | 0 | 0 |
| D00279 | APP Reinst Perm Slope at Coff Intake Shaft DDA | 92 | 10 | 31OCT09A | 30JAN10 | 90 | 10 | 0 |
| D02334 | APP East P Temp Drainage Divn Side Stream-DDA | 76 | 0 | 28MAR08A | 03SEP09A | 100 | 0 | 0 |
| **Section 1 Dropshaft** | | | | | | | | |
| D00630 | P&S Dropshaft Temp Rock Supt (Excl. W0) AIP | 70 | 0 | 23OCT08A | 16SEP09A | 100 | 0 | 0 |
| D00633 | APP Dropshaft Temp Rock Supt (Excl. W0) AIP | 91 | 0 | 17SEP09A | 10DEC09A | 100 | 0 | 6 |
| D00636 | P&S Dropshaft Temp Rock Supt (Excl. W0) DDA | 60 | 60 | 21JAN10* | 21MAR10 | 0 | 60 | -93 |
| D00639 | APP Dropshaft Temp Rock Supt (Excl. W0) DDA | 92 | 92 | 22MAR10 | 21JUN10 | 0 | 92 | -93 |
| D00645 | APP Dropshaft Permanent Lining (Excl W0) AIP | 47 | 0 | 18MAR09A | 10SEP09A | 100 | 0 | 0 |
| D00648 | P&S Dropshaft Permanent Lining(Excl W0) DDA | 62 | 7 | 19JUN09A | 27JAN10 | 90 | 7 | -93 |
| D00651 | APP Dropshaft Permanent Lining(Excl W0) DDA | 92 | 92 | 28JAN10 | 29APR10 | 0 | 92 | -93 |
| D00671 | APP Dropshaft&SC at W0 Temp Rock Supt DDA VO10 | 7 | 7 | 21JAN10 | 27JAN10 | 0 | 7 | -93 |
| **Section 1 (Portion W0)** | | | | | | | | |
| D01164 | P&S W0-Permanent Works Intake DDA VO10 | 35 | 0 | 23AUG08A | 30NOV09A | 100 | 0 | -35 |
| D01166 | APP W0-Permanent Works Intake DDA VO10 | 7 | 5 | 01DEC09A | 25JAN10 | 90 | 5 | -84 |
| D01188 | APP W0-Temp Works&Drainage Diversion DDA VO10 | 21 | 0 | 13MAR09A | 22JUL09A | 100 | 0 | 0 |
| **Section 7 (Portion THR2)** | | | | | | | | |
| D00950 | P&S THR2-Permanent Works Intake DDA | 62 | 0 | 20FEB09A | 27NOV09A | 100 | 0 | -46 |
| D00955 | APP THR2-Permanent Works Intake DDA | 92 | 37 | 28NOV09A | 26FEB10 | 59 | 37 | -45 |
| D00958 | P&S THR2-Temp Works & Drainage Diversion DDA | 62 | 0 | 20FEB09A | 04AUG09A | 100 | 0 | 0 |
| D00959 | APP THR2-Temp Works & Drainage Diversion DDA | 92 | 5 | 05AUG09A | 25JAN10 | 90 | 5 | -82 |
| **Section 4 (Portion MB16)** | | | | | | | | |
| D00790 | P&S MB16-Permanent Works Intake DDA | 62 | 0 | 05MAY09A | 23JUL09A | 100 | 0 | 0 |
| D00795 | APP MB16-Permanent Works Intake DDA | 92 | 4 | 24JUL09A | 24JAN10 | 95 | 4 | -93 |
| D00799 | APP MB16-Temp Works & Drainage Diversion - DDA | 92 | 0 | 21JUL09A | 11DEC09A | 100 | 0 | -46 |
| D00828 | APP MB16-Permanent Slopeworks DDA | 122 | 0 | 16MAY09A | 28SEP09A | 100 | 0 | 0 |
| **Section 31 (Portion PFLR1)** | | | | | | | | |
| D02260 | P&S PFLR1-Permanent Works Intake DDA | 62 | 0 | 19OCT09A | 28NOV09A | 100 | 0 | 21 |
| D02265 | APP PFLR1-Permanent Works Intake DDA | 92 | 39 | 29NOV09A | 28FEB10 | 59 | 39 | 21 |
| D02268 | P&S PFLR1-Temp Works & Drainage Diversion DDA | 62 | 0 | 20JUN09A | 21JUL09A | 100 | 0 | 0 |
| D02269 | APP PFLR1-Temp Works & Drainage Diversion DDA | 92 | 2 | 22JUL09A | 22JAN10 | 95 | 2 | -93 |
| D02272 | V0 # SOI 16 Due to Design placed on-hold-(PFLR1) | 213 | 64 | 25AUG09A | 25MAR10 | 78 | 64 | 0 |
| **Section30 (Portion HKU1)** | | | | | | | | |
| D02210 | P&S HKU1-Permanent Works Intake DDA | 62 | 0 | 02OCT08A | 30SEP09A | 100 | 0 | 0 |
| D02215 | APP HKU1-Permanent Works Intake DDA | 92 | 14 | 01OCT09A | 03FEB10 | 84 | 14 | -34 |
| D02218 | P&S HKU1-Temp Works & Drainage Diversion DDA | 62 | 0 | 12MAR09A | 28JUL09A | 100 | 0 | 0 |
| D02219 | APP HKU1-Temp Works & Drainage Diversion DDA | 122 | 0 | 29JUL09A | 25NOV09A | 100 | 0 | 2 |
| **Section 6 (Portion E7)** | | | | | | | | |
| D00885 | APP E7 - Permanent Works Intake AIP | 92 | 0 | 20SEP08A | 31AUG09A | 100 | 0 | 0 |
| D00890 | P&S E7 - Permanent Works Intake DDA | 62 | 0 | 28OCT09A | 28NOV09A | 100 | 0 | 22 |
| D00895 | APP E7 - Permanent Works Intake DDA | 92 | 39 | 29NOV09A | 28FEB10 | 57 | 39 | 22 |
| D00899 | APP E7 - Temp Works & Drainage Diversion - DDA | 92 | 0 | 19MAR09A | 18DEC09A | 100 | 0 | -53 |
| D00935 | APP E7 - Permanent Slopeworks DDA | 122 | 0 | 21APR09A | 30JUL09A | 100 | 0 | 0 |
| D00937 | VO # 15 Design stoppage - (E7) | 182 | 7 | 22JUL09A | 27JAN10 | 90 | 7 | -5 |
| D00939 | VO # 15 Design Revision & IDC Check - (E7) | 31 | 31 | 28JAN10 | 27FEB10 | 0 | 31 | -5 |
| **Section 29 (Portion W10)** | | | | | | | | |
| D02160 | P&S W10-Permanent Works Intake DDA | 62 | 0 | 15MAY09A | 12NOV09A | 100 | 0 | -17 |
| D02165 | APP W10-Permanent Works Intake DDA | 92 | 23 | 13NOV09A | 12FEB10 | 75 | 23 | -17 |
| D02167 | APP W10-Temp Works & Drainage Diversion AIP | 122 | 0 | 19NOV08A | 27OCT09A | 100 | 0 | -1 |
| D02168 | P&S W10-Temp Works & Drainage Diversion DDA | 62 | 0 | 01MAR09A | 11SEP09A | 100 | 0 | 0 |
| D02169 | APP W10-Temp Works & Drainage Diversion DDA | 122 | 5 | 12SEP09A | 25JAN10 | 95 | 5 | -42 |
| **Section 32 (Portion SM1)** | | | | | | | | |
| D02310 | P&S SM1-Permanent Works Intake DDA | 63 | 0 | 05NOV08A | 17NOV09A | 100 | 0 | -22 |




Start Date 30NOV07
Finish Date 25MAY12
Data Date 21JAN10
Run Date 27JAN10 15:51



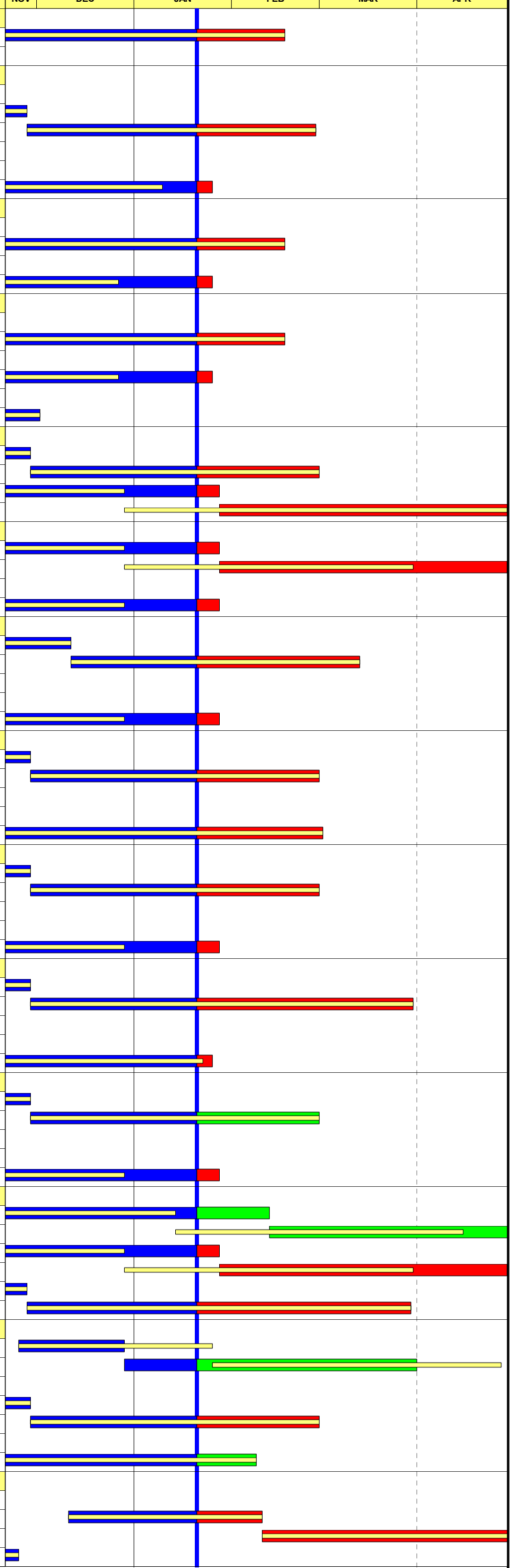
Early Bar
Previous Month (912B)
Progress Bar
Critical Activity

1001 Sheet 1 of 12

**Design & Construction of HK. West Drainage Tunnel**
**Contract No. DC/2007/10**
**3 MONTH ROLLING PROGRAMME**
**JANUARY/2010 MONTHLY REPORT**

| Date | Revision | Checked | Approved |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

| Act ID | Activity Description | Orig Dur | Rem Dur | Anticipated Start | Anticipated Finish | % Comp | Rem Dur | Approved Works Prog 9116 EF Variance |
|---|---|---|---|---|---|---|---|---|
| **Section 32 (Portion SM1)** | | | | | | | | |
| D02315 | APP SM1-Permanent Works Intake DDA | 92 | 28 | 18NOV09A | 17FEB10 | 69 | 28 | -22 |
| D02319 | APP SM1-Temp Works & Drainage Diversion DDA | 92 | 0 | 09JUN09A | 11SEP09A | 100 | 0 | 0 |
| **Section 26 (Portion RR1)** | | | | | | | | |
| D02005 | APP RR1-Permanent Works Intake AIP | 92 | 0 | 09DEC08A | 04SEP09A | 100 | 0 | 0 |
| D02010 | P&S RR1-Permanent Works Intake DDA | 62 | 0 | 08MAY09A | 27NOV09A | 100 | 0 | -32 |
| D02015 | APP RR1-Permanent Works Intake DDA | 92 | 38 | 28NOV09A | 27FEB10 | 58 | 38 | -32 |
| D02017 | APP RR1-Temp Works & Drainage Diversion AIP | 122 | 0 | 13JAN09A | 18NOV09A | 100 | 0 | -23 |
| D02018 | P&S RR1-Temp Works & Drainage Diversion DDA | 62 | 0 | 12MAR09A | 09SEP09A | 100 | 0 | 0 |
| D02019 | APP RR1-Temp Works & Drainage Diversion DDA | 122 | 5 | 10SEP09A | 25JAN10 | 95 | 5 | -16 |
| **Section 5 (Portion MBD2)** | | | | | | | | |
| D00840 | P&S MBD2-Permanent Works Intake DDA | 62 | 0 | 07SEP09A | 17NOV09A | 100 | 0 | -10 |
| D00845 | APP MBD2-Permanent Works Intake DDA | 92 | 28 | 18NOV09A | 17FEB10 | 69 | 28 | -10 |
| D00860 | P&S MBD2-Temp Works & Drainage Diversion DDA | 62 | 0 | 27JUL09A | 25SEP09A | 100 | 0 | 0 |
| D00865 | APP MBD2-Temp Works & Drainage Diversion DDA | 92 | 5 | 26SEP09A | 25JAN10 | 95 | 5 | -30 |
| **Section 23 (Portion TP4)** | | | | | | | | |
| D01850 | P&S TP4-Permanent Works Intake DDA | 62 | 0 | 12AUG09A | 17NOV09A | 100 | 0 | -22 |
| D01855 | APP TP4-Permanent Works Intake DDA | 92 | 28 | 18NOV09A | 17FEB10 | 69 | 28 | -22 |
| D01858 | P&S TP4-Temp Works & Drainage Diversion DDA | 62 | 0 | 03APR09A | 03SEP09A | 100 | 0 | 0 |
| D01859 | APP TP4-Temp Works & Drainage Diversion DDA | 92 | 5 | 04SEP09A | 25JAN10 | 95 | 5 | -52 |
| D01890 | P&S TP4-Permanent Slopeworks DDA | 62 | 0 | 31MAR09A | 17AUG09A | 100 | 0 | 0 |
| D01895 | APP TP4-Permanent Slopeworks DDA | 122 | 0 | 18AUG09A | 01DEC09A | 100 | 0 | 16 |
| **Section 28 (Portion P5)** | | | | | | | | |
| D02110 | P&S P5-Permanent Works Intake DDA | 63 | 0 | 29SEP09A | 28NOV09A | 100 | 0 | 2 |
| D02115 | APP P5-Permanent Works Intake DDA | 92 | 39 | 29NOV09A | 28FEB10 | 57 | 39 | 2 |
| D02118 | P&S P5-Temp Works & Drainage Diversion DDA | 62 | 7 | 12AUG09A | 27JAN10 | 95 | 7 | -93 |
| D02119 | APP P5-Temp Works & Drainage Diversion DDA | 122 | 122 | 28JAN10 | 29MAY10 | 0 | 122 | -93 |
| **Section 22 (Portion TP5)** | | | | | | | | |
| D01800 | P&S TP5-Permanent Works Intake DDA | 62 | 7 | 24SEP09A | 27JAN10 | 90 | 7 | -64 |
| D01805 | APP TP5-Permanent Works Intake DDA | 92 | 92 | 28JAN10 | 29APR10 | 0 | 92 | -64 |
| D01808 | P&S TP5-Temp Works & Drainage Diversion DDA | 62 | 0 | 24JUL09A | 22SEP09A | 100 | 0 | 0 |
| D01809 | APP TP5-Temp Works & Drainage Diversion DDA | 92 | 7 | 23SEP09A | 27JAN10 | 90 | 7 | -35 |
| **Section 21 (Portion TP789)** | | | | | | | | |
| D01740 | P&S TP789-Permanent Works Intake DDA | 62 | 0 | 18MAY09A | 11DEC09A | 100 | 0 | -46 |
| D01745 | APP TP789-Permanent Works Intake DDA | 92 | 52 | 12DEC09A | 13MAR10 | 43 | 52 | -46 |
| D01747 | APP TP789-Temp Works & Drainage Diversion AIP | 92 | 0 | 03DEC08A | 19NOV09A | 100 | 0 | -24 |
| D01748 | P&S TP789-Temp Works & Drainage Diversion DDA | 62 | 0 | 29APR09A | 04SEP09A | 100 | 0 | 0 |
| D01749 | APP TP789-Temp Works & Drainage Diversion DDA | 92 | 7 | 05SEP09A | 27JAN10 | 90 | 7 | -46 |
| **Section 24 (Portion W5)** | | | | | | | | |
| D01906 | P&S W5-Permanent Works Intake DDA | 63 | 0 | 14OCT09A | 28NOV09A | 100 | 0 | 23 |
| D01907 | APP W5-Permanent Works Intake DDA | 92 | 39 | 29NOV09A | 28FEB10 | 57 | 39 | 23 |
| D01911 | APP W5-Temp Works & Drainage Diversion AIP | 122 | 0 | 05MAR09A | 11NOV09A | 100 | 0 | -11 |
| D01912 | P&S W5-Temp Works & Drainage Diversion DDA | 62 | 0 | 04AUG09A | 30OCT09A | 100 | 0 | 2 |
| D01913 | APP W5-Temp Works & Drainage Diversion DDA | 122 | 40 | 31OCT09A | 01MAR10 | 67 | 40 | 2 |
| **Section 2 (Portion E5A)** | | | | | | | | |
| D00684 | P&S E5A-Permanent Works Intake DDA | 62 | 0 | 02OCT09A | 28NOV09A | 100 | 0 | 4 |
| D00686 | APP E5A-Permanent Works Intake DDA | 92 | 39 | 29NOV09A | 28FEB10 | 57 | 39 | 4 |
| D00688 | APP E5A-Temp Works & Drainage Diversion AIP | 92 | 0 | 18OCT08A | 26AUG09A | 100 | 0 | 0 |
| D00690 | P&S E5A-Temp Works & Drainage Diversion DDA | 62 | 0 | 28JUL09A | 11SEP09A | 100 | 0 | 0 |
| D00695 | APP E5A-Temp Works & Drainage Diversion DDA | 92 | 7 | 12SEP09A | 27JAN10 | 95 | 7 | -46 |
| **Section 27 (Portion W8)** | | | | | | | | |
| D02060 | P&S W8-Permanent Works Intake DDA | 63 | 0 | 23OCT09A | 28NOV09A | 100 | 0 | 23 |
| D02065 | APP W8-Permanent Works Intake DDA | 122 | 69 | 29NOV09A | 30MAR10 | 43 | 69 | 23 |
| D02067 | APP W8-Temp Works & Drainage Diversion AIP | 92 | 0 | 12DEC08A | 19OCT09A | 100 | 0 | 0 |
| D02068 | P&S W8-Temp Works & Drainage Diversion DDA | 62 | 0 | 08JUL09A | 22SEP09A | 100 | 0 | 0 |
| D02069 | APP W8-Temp Works & Drainage Diversion DDA | 122 | 5 | 23SEP09A | 25JAN10 | 95 | 5 | -3 |
| **Section 3 (Portion E5B)** | | | | | | | | |
| D00740 | P&S E5B-Permanent Works Intake DDA | 62 | 0 | 02OCT09A | 28NOV09A | 100 | 0 | 4 |
| D00745 | APP E5B-Permanent Works Intake DDA | 92 | 39 | 29NOV09A | 28FEB10 | 57 | 39 | 4 |
| D00747 | APP E5B-Temp Works & Drainage Diversion AIP | 92 | 0 | 28FEB09A | 26AUG09A | 100 | 0 | 0 |
| D00748 | P&S E5B-Temp Works & Drainage Diversion DDA | 62 | 0 | 05AUG09A | 22SEP09A | 100 | 0 | 0 |
| D00749 | APP E5B-Temp Works & Drainage Diversion DDA | 92 | 7 | 23SEP09A | 27JAN10 | 90 | 7 | -40 |
| **Section 20 (Portion M3)** | | | | | | | | |
| D01680 | P&S M3-Permanent Works Intake DDA | 62 | 23 | 13NOV09A | 12FEB10 | 62 | 23 | -54 |
| D01685 | APP M3-Permanent Works Intake DDA | 92 | 92 | 13FEB10 | 15MAY10 | 0 | 92 | -54 |
| D01688 | P&S M3-Temp Works & Drainage Diversion DDA | 62 | 7 | 28OCT09A | 27JAN10 | 90 | 7 | -38 |
| D01689 | APP M3-Temp Works & Drainage Diversion DDA | 92 | 92 | 28JAN10 | 29APR10 | 0 | 92 | -38 |
| D01720 | P&S M3-Permanent Slopeworks DDA | 62 | 0 | 10OCT09A | 27NOV09A | 100 | 0 | 23 |
| D01725 | APP M3-Permanent Slopeworks DDA | 122 | 68 | 28NOV09A | 29MAR10 | 44 | 68 | 23 |
| **Section 19 (Portion MA17)** | | | | | | | | |
| D01620 | P&S MA17-Permanent Works Intake DDA | 62 | 0 | 25NOV09A | 28DEC09A | 100 | 0 | -8 |
| D01625 | APP MA17-Permanent Works Intake DDA | 92 | 70 | 29DEC09A | 31MAR10 | 23 | 70 | -9 |
| D01627 | APP MA17-Temp Works & Drainage Diversion AIP | 92 | 0 | 05MAR09A | 05AUG09A | 100 | 0 | 0 |
| D01628 | P&S MA17-Temp Works & Drainage Diversion DDA | 62 | 0 | 05AUG09A | 28NOV09A | 100 | 0 | -33 |
| D01629 | APP MA17-Temp Works & Drainage Diversion DDA | 92 | 39 | 29NOV09A | 28FEB10 | 57 | 39 | -33 |
| D01660 | P&S MA17-Permanent Slopeworks DDA | 62 | 0 | 10AUG09A | 09OCT09A | 100 | 0 | 0 |
| D01665 | APP MA17-Permanent Slopeworks DDA | 122 | 19 | 10OCT09A | 08FEB10 | 84 | 19 | 0 |
| **Section 15 (Portion W3)** | | | | | | | | |
| D01405 | APP W3-Permanent Works Intake AIP | 92 | 0 | 23JAN09A | 26AUG09A | 100 | 0 | 0 |
| D01410 | P&S W3-Permanent Works Intake DDA | 62 | 21 | 11DEC09A | 10FEB10 | 66 | 21 | -52 |
| D01415 | APP W3-Permanent Works Intake DDA | 92 | 92 | 11FEB10 | 13MAY10 | 0 | 92 | -52 |
| D01417 | APP W3-Temp Works & Drainage Diversion AIP | 92 | 0 | 28FEB09A | 24NOV09A | 100 | 0 | -29 |




| | |
|---|---|
| Start Date | 30NOV07 |
| Finish Date | 25MAY12 |
| Data Date | 21JAN10 |
| Run Date | 27JAN10 15:51 |



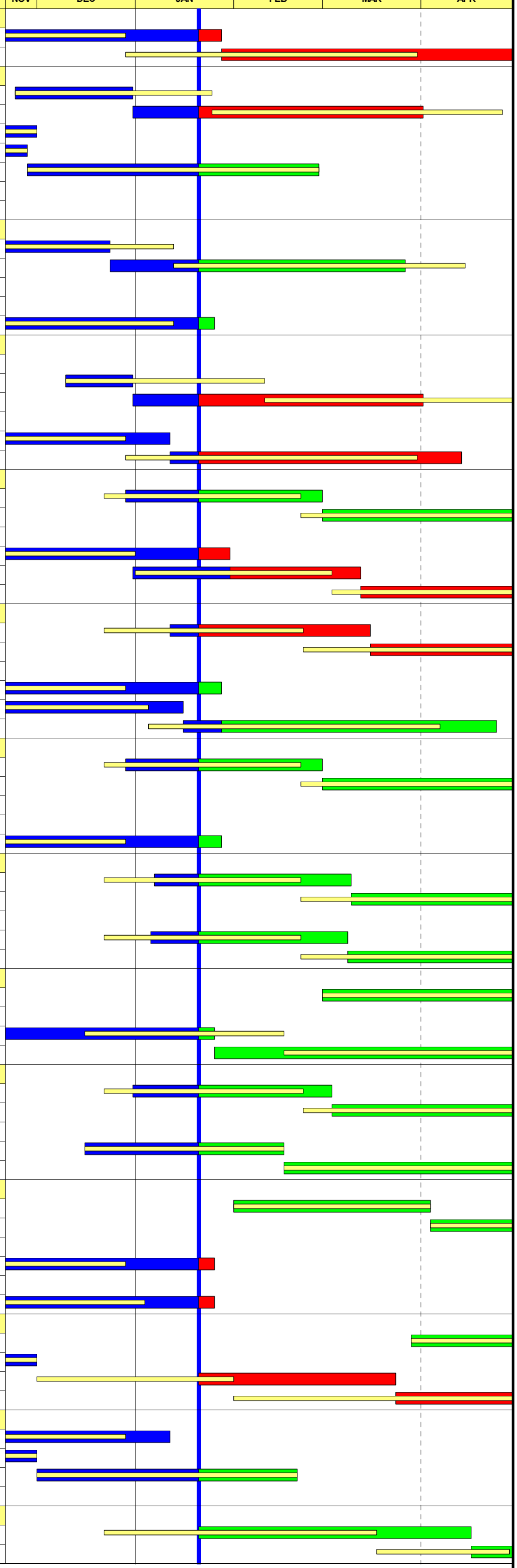
Early Bar
Previous Month (912B)
Progress Bar
Critical Activity



**Design & Construction of HK. West Drainage Tunnel**
**Contract No. DC/2007/10**
**3 MONTH ROLLING PROGRAMME**
**JANUARY/2010 MONTHLY REPORT**

| Date | Revision | Checked | Approved |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

| Act ID | Activity Description | Orig Dur | Rem Dur | Anticipated Start | Anticipated Finish | % Comp | Rem Dur | Approved Works Prog 9116 EF Variance |
|---|---|---|---|---|---|---|---|---|
| **Section 15 (Portion W3)** | | | | | | | | |
| D01418 | P&S W3-Temp Works & Drainage Diversion DDA | 62 | 7 | 27OCT09A | 27JAN10 | 90 | 7 | -38 |
| D01419 | APP W3-Temp Works & Drainage Diversion DDA | 92 | 92 | 28JAN10 | 29APR10 | 0 | 92 | -38 |
| **Section 17 (Portion MA14)** | | | | | | | | |
| D01510 | P&S MA14-Permanent Works Intake DDA | 62 | 0 | 24NOV09A | 30DEC09A | 100 | 0 | -10 |
| D01515 | APP MA14-Permanent Works Intake DDA | 92 | 71 | 31DEC09A | 01APR10 | 22 | 71 | -10 |
| D01517 | APP MA14-Temp Works & Drainage Diversion AIP | 92 | 0 | 04MAR09A | 30NOV09A | 100 | 0 | -35 |
| D01518 | P&S MA14-Temp Works & Drainage Diversion DDA | 62 | 0 | 04SEP09A | 27NOV09A | 100 | 0 | -23 |
| D01519 | APP MA14-Temp Works & Drainage Diversion DDA | 92 | 38 | 28NOV09A | 27FEB10 | 58 | 38 | -23 |
| D01550 | P&S MA14-Permanent Slopeworks DDA | 62 | 0 | 05AUG09A | 28SEP09A | 100 | 0 | 0 |
| D01555 | APP MA14-Permanent Slopeworks DDA | 122 | 0 | 29SEP09A | 27OCT09A | 100 | 0 | 93 |
| **Section 18 (Portion MA15)** | | | | | | | | |
| D01570 | P&S MA15-Permanent Works Intake DDA | 62 | 0 | 11NOV09A | 23DEC09A | 100 | 0 | -3 |
| D01575 | APP MA15-Permanent Works Intake DDA | 92 | 65 | 24DEC09A | 26MAR10 | 29 | 65 | -4 |
| D01585 | APP MA15-Temp Works & Drainage Diversion AIP | 92 | 0 | 04MAR09A | 05AUG09A | 100 | 0 | 0 |
| D01590 | P&S MA15-Temp Works & Drainage Diversion DDA | 62 | 0 | 16JUN09A | 12OCT09A | 100 | 0 | 46 |
| D01595 | APP MA15-Temp Works & Drainage Diversion DDA | 92 | 5 | 13OCT09A | 25JAN10 | 95 | 5 | 33 |
| **Section 10 (Portion DG1)** | | | | | | | | |
| D01095 | APP DG1-Permanent Works Intake AIP | 92 | 0 | 29NOV08A | 29SEP09A | 100 | 0 | 0 |
| D01100 | P&S DG1-Permanent Works Intake DDA | 62 | 0 | 10DEC09A | 30DEC09A | 100 | 0 | -10 |
| D01105 | APP DG1-Permanent Works Intake DDA | 92 | 71 | 31DEC09A | 01APR10 | 22 | 71 | -10 |
| D01107 | APP DG1-Temp Works & Drainage Diversion AIP | 92 | 0 | 13JAN09A | 17SEP09A | 100 | 0 | 0 |
| D01108 | P&S DG1-Temp Works & Drainage Diversion DDA | 63 | 0 | 04SEP09A | 11JAN10A | 100 | 0 | -67 |
| D01109 | APP DG1-Temp Works & Drainage Diversion DDA | 92 | 83 | 12JAN10A | 13APR10 | 9 | 83 | -67 |
| **Section 9 (Portion HR1)** | | | | | | | | |
| D01050 | P&S HR1-Permanent Works Intake DDA | 62 | 39 | 29DEC09A | 28FEB10 | 37 | 39 | -58 |
| D01055 | APP HR1-Permanent Works Intake DDA | 92 | 92 | 01MAR10 | 31MAY10 | 0 | 92 | -58 |
| D01056 | P&S HR1-Temp Works & Drainage Diversion AIP | 62 | 0 | 20APR09A | 30SEP09A | 100 | 0 | 0 |
| D01057 | APP HR1-Temp Works & Drainage Diversion AIP | 92 | 10 | 01OCT09A | 30JAN10 | 90 | 10 | -30 |
| D01058 | P&S HR1-Temp Works & Drainage Diversion DDA | 62 | 41 | 31DEC09A | 12MAR10 | 33 | 41 | -9 |
| D01059 | APP HR1-Temp Works & Drainage Diversion DDA | 92 | 92 | 13MAR10 | 12JUN10 | 0 | 92 | -9 |
| **Section 14 (Portion BR6)** | | | | | | | | |
| D01360 | P&S BR6-Permanent Works Intake DDA | 63 | 54 | 12JAN10A | 15MAR10 | 14 | 54 | -42 |
| D01365 | APP BR6-Permanent Works Intake DDA | 92 | 92 | 16MAR10 | 15JUN10 | 0 | 92 | -42 |
| D01370 | P&S BR6-Temp Works & Drainage Diversion AIP | 62 | 0 | 23FEB09A | 07SEP09A | 100 | 0 | 0 |
| D01375 | APP BR6-Temp Works & Drainage Diversion AIP | 92 | 7 | 08SEP09A | 27JAN10 | 90 | 7 | -50 |
| D01380 | P&S BR6-Temp Works & Drainage Diversion DDA | 63 | 0 | 17SEP09A | 15JAN10A | 100 | 0 | -8 |
| D01385 | APP BR6-Temp Works & Drainage Diversion DDA | 92 | 87 | 16JAN10A | 24APR10 | 5 | 87 | -15 |
| **Section 12 (Portion W1)** | | | | | | | | |
| D01260 | P&S W1-Permanent Works Intake DDA | 62 | 39 | 29DEC09A | 28FEB10 | 37 | 39 | -61 |
| D01265 | APP W1-Permanent Works Intake DDA | 92 | 92 | 01MAR10 | 31MAY10 | 0 | 92 | -61 |
| D01267 | APP W1-Temp Works & Drainage Diversion AIP | 92 | 0 | 28FEB09A | 01SEP09A | 100 | 0 | 0 |
| D01268 | P&S W1-Temp Works & Drainage Diversion DDA | 62 | 0 | 25AUG09A | 29SEP09A | 100 | 0 | 0 |
| D01269 | APP W1-Temp Works & Drainage Diversion DDA | 92 | 7 | 30SEP09A | 27JAN10 | 90 | 7 | -30 |
| **Section 8 (Portion GL1)** | | | | | | | | |
| D01000 | P&S GL1-Permanent Works Intake DDA | 62 | 48 | 07JAN10A | 09MAR10 | 22 | 48 | -67 |
| D01005 | APP GL1-Permanent Works Intake DDA | 92 | 92 | 10MAR10 | 09JUN10 | 0 | 92 | -67 |
| D01007 | APP GL1-Temp Works & Drainage Diversion AIP | 92 | 0 | 23NOV08A | 21JUL09A | 100 | 0 | 0 |
| D01008 | P&S GL1--Temp Works & Drainage Diversion DDA | 62 | 47 | 06JAN10A | 08MAR10 | 24 | 47 | -78 |
| D01009 | APP GL1--Temp Works & Drainage Diversion DDA | 92 | 92 | 09MAR10 | 08JUN10 | 0 | 92 | -78 |
| **Section 25 (Portion CR1)** | | | | | | | | |
| D01960 | P&S CR1-Permanent Works Intake DDA | 62 | 62 | 01MAR10* | 01MAY10 | 0 | 62 | 0 |
| D01967 | APP CR1-Temp Works & Drainage Diversion AIP | 122 | 0 | 03MAR09A | 18SEP09A | 100 | 0 | 0 |
| D01968 | P&S CR1-Temp Works & Drainage Diversion DDA | 62 | 5 | 28OCT09A | 25JAN10 | 95 | 5 | -36 |
| D01969 | APP CR1-Temp Works & Drainage Diversion DDA | 122 | 122 | 26JAN10 | 27MAY10 | 0 | 122 | -36 |
| **Section 13 (Portion BR5)** | | | | | | | | |
| D01310 | P&S BR5-Permanent Works Intake DDA | 63 | 42 | 31DEC09A | 03MAR10 | 33 | 42 | -30 |
| D01315 | APP BR5-Permanent Works Intake DDA | 92 | 92 | 04MAR10 | 03JUN10 | 0 | 92 | -30 |
| D01317 | APP BR5-Temp Works & Drainage Diversion AIP | 92 | 0 | 11FEB09A | 17SEP09A | 100 | 0 | 0 |
| D01318 | P&S BR5-Temp Works & Drainage Diversion DDA | 62 | 27 | 16DEC09A | 16FEB10 | 56 | 27 | -58 |
| D01319 | APP BR5-Temp Works & Drainage Diversion DDA | 92 | 92 | 17FEB10 | 19MAY10 | 0 | 92 | -58 |
| **Section 11 (Portion BR4)** | | | | | | | | |
| D01200 | P&S BR4-Permanent Works Intake DDA | 62 | 62 | 01FEB10* | 03APR10 | 0 | 62 | 0 |
| D01205 | APP BR4-Permanent Works Intake DDA | 92 | 92 | 04APR10 | 04JUL10 | 0 | 92 | 0 |
| D01208 | P&S BR4-Temp Works & Drainage Diversion DDA | 62 | 0 | 20APR09A | 24AUG09A | 100 | 0 | 0 |
| D01209 | APP BR4-Temp Works & Drainage Diversion DDA | 92 | 5 | 25AUG09A | 25JAN10 | 95 | 5 | -65 |
| D01240 | P&S BR4-Permanent Slopeworks DDA | 62 | 0 | 20APR09A | 03SEP09A | 100 | 0 | 0 |
| D01245 | APP BR4-Permanent Slopeworks DDA | 122 | 5 | 04SEP09A | 25JAN10 | 95 | 5 | -22 |
| **Section 16 (Portion B2)** | | | | | | | | |
| D01460 | P&S B2-Permanent Works Intake DDA | 62 | 62 | 29MAR10* | 29MAY10 | 0 | 62 | 0 |
| D01467 | APP B2-Temp Works & Drainage Diversion AIP | 92 | 0 | 04MAR09A | 30NOV09A | 100 | 0 | -35 |
| D01468 | P&S B2-Temp Works & Drainage Diversion DDA | 62 | 62 | 21JAN10 | 23MAR10 | 0 | 62 | -86 |
| D01469 | APP B2-Temp Works & Drainage Diversion DDA | 92 | 92 | 24MAR10 | 23JUN10 | 0 | 92 | -86 |
| **Adits & Stilling Chambers** | | | | | | | | |
| D00535 | APP Adits & Stilling Chamber Temp Support DDA | 122 | 0 | 04JUN09A | 11JAN10A | 100 | 0 | -77 |
| D00550 | P&S Adits & SC Permanent Lining DDA | 63 | 0 | 26JUN09A | 30NOV09A | 100 | 0 | -35 |
| D00555 | APP Adits & SC Permanent Lining DDA | 82 | 31 | 01DEC09A | 20FEB10 | 62 | 31 | -35 |
| D00565 | APP SC Permanent Lining AIP | 92 | 0 | 14MAR09A | 01SEP09A | 100 | 0 | 0 |
| **E&M** | | | | | | | | |
| D02350 | P&S E&M AIP | 86 | 86 | 21JAN10* | 16APR10 | 0 | 86 | -93 |
| D02355 | APP E&M AIP | 42 | 42 | 17APR10 | 28MAY10 | 0 | 42 | -93 |




| | |
|---|---|
| Start Date | 30NOV07 |
| Finish Date | 25MAY12 |
| Data Date | 21JAN10 |
| Run Date | 27JAN10 15:51 |



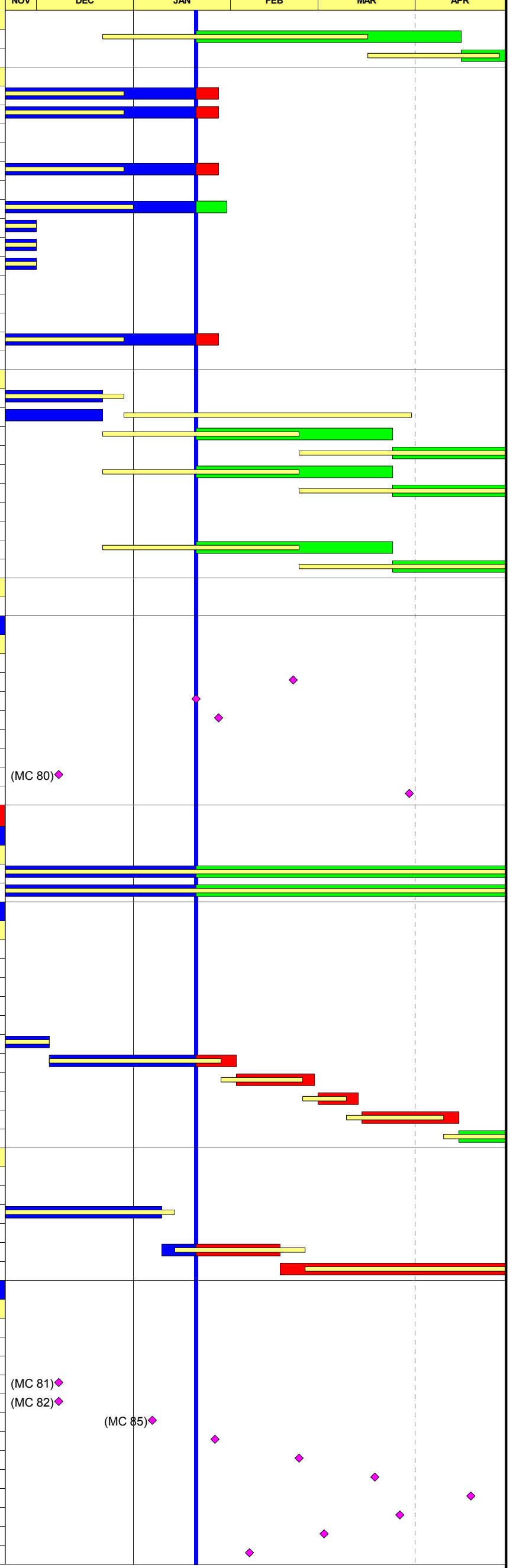
Early Bar
Previous Month (912B)
Progress Bar
Critical Activity

1001 Sheet 3 of 12

**Design & Construction of HK. West Drainage Tunnel**
**Contract No. DC/2007/10**
**3 MONTH ROLLING PROGRAMME**
**JANUARY/2010 MONTHLY REPORT**

| Date | Revision | Checked | Approved |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

| Act ID | Activity Description | Orig Dur | Rem Dur | Anticipated Start | Anticipated Finish | % Comp | Rem Dur | Approved Works Prog 9116 EF Variance |
|---|---|---|---|---|---|---|---|---|
| **Landscaping** | | | | | | | | |
| D02370 | P&S Landscaping AIP | 85 | 85 | 21JAN10* | 15APR10 | 0 | 85 | -93 |
| D02375 | APP Landscaping AIP | 42 | 42 | 16APR10 | 27MAY10 | 0 | 42 | -93 |
| **Project Wide** | | | | | | | | |
| D00145 | APP Detailed Const Risk Assess(Portals) DDA | 42 | 7 | 02AUG08A | 27JAN10 | 90 | 7 | -93 |
| D00148 | APP Det Const Risk Assess(excl Portals) DDA | 40 | 7 | 30JAN09A | 27JAN10 | 90 | 7 | -93 |
| D00150 | APP DCRA V2-PFLR1,SM1,HKU1,E7,MBD2,MB16,etc | 92 | 0 | 21MAY09A | 15SEP09A | 100 | 0 | 0 |
| D00151 | P&S DCRA V3-W10,P5,W8,RR1,CR1,W5,TP4,TP5,etc | 63 | 0 | 22APR09A | 22SEP09A | 100 | 0 | 0 |
| D00152 | APP DCRA V3-W10,P5,W8,RR1,CR1,W5,TP4,TP5,etc | 92 | 7 | 23SEP09A | 27JAN10 | 90 | 7 | -35 |
| D00153 | P&S DCRA V4-M3,MA17,MA15,MA14,B3,W3,BR6,etc | 63 | 0 | 25SEP09A | 30SEP09A | 100 | 0 | 0 |
| D00154 | APP DCRA V4-M3,MA17,MA15,MA14,B3,W3,BR6,etc | 92 | 10 | 01OCT09A | 30JAN10 | 90 | 10 | -30 |
| D00157 | APP Impact ARW V 2B DDA | 1 | 0 | 08JUL09A | 30NOV09A | 100 | 0 | -28 |
| D00163 | APP Impact ARW V 2-PFLR1,SM1,HKU1,THR2,etc DDA | 92 | 0 | 26JUN09A | 30NOV09A | 100 | 0 | -35 |
| D00165 | APP Impact ARW V 3-W10,P5,W8,RR1,CR1,W5,etc DDA | 92 | 0 | 16JUL09A | 30NOV09A | 100 | 0 | -35 |
| D00166 | P&S Impact ARW V 4-M3,MA17,MA15,MA14,B2,etc DDA | 63 | 0 | 22JUL09A | 27AUG09A | 100 | 0 | 0 |
| D00167 | APP Impact ARW V 4-M3,MA17,MA15,MA14,B2,etc DDA | 92 | 0 | 28AUG09A | 21SEP09A | 100 | 0 | 0 |
| D00189 | APP Blasting Assessment - Volume 2B(Adit W0) | 92 | 0 | 17OCT08A | 16SEP09A | 100 | 0 | 0 |
| D00191 | APP BA - Vol 3A(E5A,MB16,MBD2,E7,THR2,HR1,GL1) | 122 | 7 | 01APR09A | 27JAN10 | 90 | 7 | -93 |
| D00193 | APP BA-Vol 3B | 122 | 0 | 28MAY09A | 11SEP09A | 100 | 0 | 0 |
| **Main Tunnel** | | | | | | | | |
| D00455 | APP Adit/main tun intrct Temp Sup(excl W0) DDA | 92 | 0 | 16JUL09A | 21DEC09A | 100 | 0 | -39 |
| D00475 | APP Adit/main tun intrct Perm Ling(exc W0) DDA | 92 | 0 | 16JUL09A | 21DEC09A | 100 | 0 | 36 |
| D00480 | P&S Adit/main tun intrct Perm Ling at W0 AIP | 63 | 63 | 21JAN10* | 24MAR10 | 0 | 63 | -93 |
| D00485 | APP Adit/main tun intrct Perm Ling at W0 AIP | 92 | 92 | 25MAR10 | 24JUN10 | 0 | 92 | -93 |
| D00490 | P&S Adit/main tunl intrsct Perm Ling at W0 DDA | 63 | 63 | 21JAN10* | 24MAR10 | 0 | 63 | -93 |
| D00495 | APP Adit/main tunl intrsct Perm Ling at W0 DDA | 92 | 92 | 25MAR10 | 24JUN10 | 0 | 92 | -93 |
| D00500 | P&S TBM Dismantle Chamber Temp Supt at W0 AIP | 194 | 0 | 16MAY08A | 29SEP09A | 100 | 0 | 0 |
| D00505 | APP TBM Dismantle Chamber Temp Supt at W0 AIP | 92 | 0 | 30SEP09A | 27OCT09A | 100 | 0 | 64 |
| D00510 | P&S TBM Dismantle Chamber Temp Supt at W0 DDA | 63 | 63 | 21JAN10* | 24MAR10 | 0 | 63 | -93 |
| D00515 | APP TBM Dismantle Chamber Temp Supt at W0 DDA | 92 | 92 | 25MAR10 | 24JUN10 | 0 | 92 | -93 |
| D00159 | APP Impact ARW V 2C DDA | 1 | 0 | 12JUN09A | 23SEP09A | 100 | 0 | 0 |
| **Milestone** | | | | | | | | |
| **Design Submission** | | | | | | | | |
| M2-1090 | 2.09-DDA-Adits&Stilling Chambers Submission | 0 | 0 | | 04NOV09A | 100 | 0 | -9 |
| M2-1100 | 2.10-DDA-Adits&Stilling Chambers Consent | 0 | 0 | | 20FEB10 | 0 | 0 | -35 |
| M2-1120 | 2.12-AIP-Dropshaft Consent | 0 | 0 | | 20JAN10 | 0 | 0 | -93 |
| M2-1130 | 2.13-DDA-Dropshaft Submission | 0 | 0 | | 27JAN10 | 0 | 0 | -93 |
| M2-1161 | 2.16-AIP-Intakes Consent (100%) | 0 | 0 | | 07OCT09A | 100 | 0 | 0 |
| M2-1200 | 2.20-AIP Slope Consent (other than E&W Portals) | 0 | 0 | | 04AUG09A | 100 | 0 | 0 |
| M2-1210 | 2.21-DDA Slope Protective(other thanE&W Portals) | 0 | 0 | | 07DEC09A | 100 | 0 | 13 |
| M2-1220 | 2.22-DDA Slope Consent (other than E&W Portals) | 0 | 0 | | 29MAR10 | 0 | 0 | 23 |
| **CC03-PART OF SECTION 1 OF THE WORKS(MAIN TUNNEL)** | | | | | | | | |
| **Preliminary and General Requirements** | | | | | | | | |
| **Prefabrication Precast Segment for Main Tunnel** | | | | | | | | |
| B2240 | Precast Segment Fabrication (E.Tunnel) | 592 | 208 | 16DEC08A | 16AUG10 | 64 | 208 | 0 |
| B2280 | Precast Segment Fabrication (W.Tunnel) | 745 | 379 | 17DEC08A | 03FEB11 | 49 | 379 | 0 |
| **Construction** | | | | | | | | |
| **TBM Excavation (Eastern Tunnel)** | | | | | | | | |
| E1460 | Preparation for Main Drive | 18 | 0 | 10JUL09A | 10AUG09A | 100 | 0 | 0 |
| E1470 | TBM Excav (CH250 to CH380) =130m | 18 | 0 | 06JUL09A | 29AUG09A | 100 | 0 | 0 |
| E1474 | VO/Claim # 38-Aug/09 Typhoon GONI Sig 8 - ETBM | 1 | 0 | 04AUG09A | 04AUG09A | 100 | 0 | 0 |
| E1480 | TBM Excav (CH380 to CH640) =260m | 23 | 0 | 30AUG09A | 19OCT09A | 100 | 0 | 0 |
| E1482 | VO/Claim # 41-Sep/09 Typhoon KOPPU Sig 8 - ETBM | 1 | 0 | 14SEP09A | 14SEP09A | 100 | 0 | 0 |
| E1500 | TBM Excav (CH640 to CH844-E5A,E5B)+200m =404m | 39 | 0 | 20OCT09A | 04DEC09A | 100 | 0 | -6 |
| E1510 | TBM Excav (to CH1377-MB16)+200m =533m | 43 | 11 | 05DEC09A | 02FEB10 | 76 | 11 | -11 |
| E1520 | TBM Excav (to CH1610-MBD2)+200m =233m | 19 | 19 | 03FEB10 | 27FEB10 | 0 | 19 | -11 |
| E1530 | TBM Excav (to CH1758-E7)+200m =148m | 12 | 12 | 01MAR10 | 13MAR10 | 0 | 12 | -11 |
| E1540 | TBM Excav (to CH2042-THR2)+200m =284m | 24 | 24 | 15MAR10 | 14APR10 | 0 | 24 | -11 |
| E1550 | TBM Excav (to CH2652-GL1,HR1)+200m =610m | 59 | 59 | 15APR10 | 24JUN10 | 0 | 59 | -11 |
| **TBM Excavation (Western Tunnel)** | | | | | | | | |
| W1098 | TBM Excav (CH10110 to CH9610) =500m | 56 | 0 | 26JUN09A | 28AUG09A | 100 | 0 | 0 |
| W1100 | VO/Claim # 38-Aug/09 Typhoon GONI Sig 8 - WTBM | 1 | 0 | 04AUG09A | 04AUG09A | 100 | 0 | 0 |
| W1148 | TBM Excav (CH9610toCH8799-SM1,PFLR1)+200m | 94 | 0 | 29AUG09A | 09JAN10A | 100 | 0 | -16 |
| W1149 | VO/Claim # 41-Sep/09 Typhoon KOPPU Sig 8 - WTBM | 1 | 0 | 14SEP09A | 14SEP09A | 100 | 0 | 0 |
| W1150 | TBM Excav (to CH8345-HKU1,W10,P5)+200m =454m | 42 | 27 | 10JAN10A | 16FEB10 | 35 | 27 | -12 |
| W1160 | TBM Excav'n (to CH7447-W8,RR1)+200m =898m | 84 | 84 | 17FEB10 | 11MAY10 | 0 | 84 | -12 |
| **Milestone** | | | | | | | | |
| **Section 1 (Main Tunnel)** | | | | | | | | |
| M3-1041 | 3.04-Commission&Compln 100mExcav(6.25mDia.)100% | 0 | 0 | | 04SEP09A | 100 | 0 | 0 |
| M3-1111 | 3.11-Junction Bet M.Tunnel& E.Portal&CH250 100% | 0 | 0 | | 04AUG09A | 100 | 0 | 0 |
| M3-1120 | 3.12-Excavation, Support & Lining CH250 to 500 | 0 | 0 | | 07OCT09A | 100 | 0 | 0 |
| M3-1130 | 3.13-Excavation, Support & Lining CH500 to 750 | 0 | 0 | | 07DEC09A | 100 | 0 | -38 |
| M3-1140 | 3.14-Excavation, Support & Lining CH750 to 1000 | 0 | 0 | | 07DEC09A | 100 | 0 | -14 |
| M3-1150 | 3.15-Excavation, Support & Lining CH1000 to 1250 | 0 | 0 | | 06JAN10A | 100 | 0 | -20 |
| M3-1160 | 3.16-Excavation, Support & Lining CH1250 to 1500 | 0 | 0 | | 26JAN10 | 0 | 0 | -13 |
| M3-1170 | 3.17-Excavation, Support & Lining CH1500 to 1750 | 0 | 0 | | 22FEB10 | 0 | 0 | -17 |
| M3-1180 | 3.18-Excavation, Support & Lining CH1750 to 2000 | 0 | 0 | | 18MAR10 | 0 | 0 | -13 |
| M3-1410 | 3.41-Excavation, Support & Lining CH7500 to 7750 | 0 | 0 | | 18APR10 | 0 | 0 | -12 |
| M3-1420 | 3.42-Excavation, Support & Lining CH7750 to 8000 | 0 | 0 | | 26MAR10 | 0 | 0 | -12 |
| M3-1430 | 3.43-Excavation, Support & Lining CH8000 to 8250 | 0 | 0 | | 02MAR10 | 0 | 0 | -12 |
| M3-1440 | 3.44-Excavation, Support & Lining CH8250 to 8500 | 0 | 0 | | 06FEB10 | 0 | 0 | -12 |




Start Date 30NOV07
Finish Date 25MAY12
Data Date 21JAN10
Run Date 27JAN10 15:51



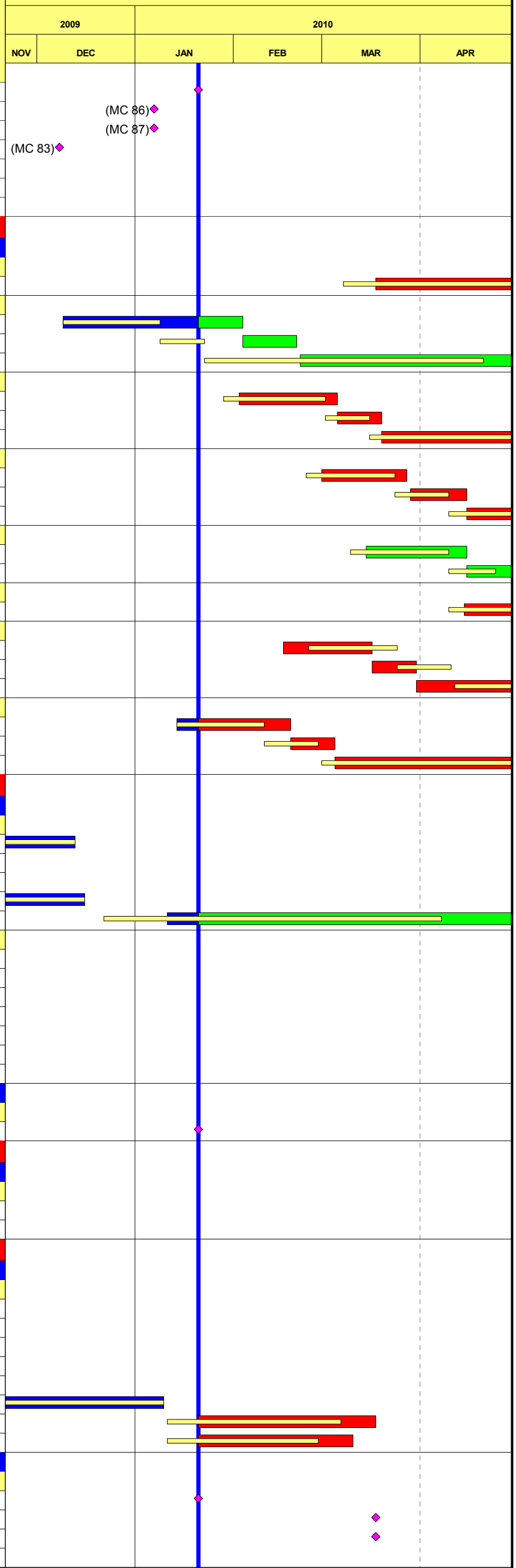
Early Bar
Previous Month (912B)
Progress Bar
Critical Activity



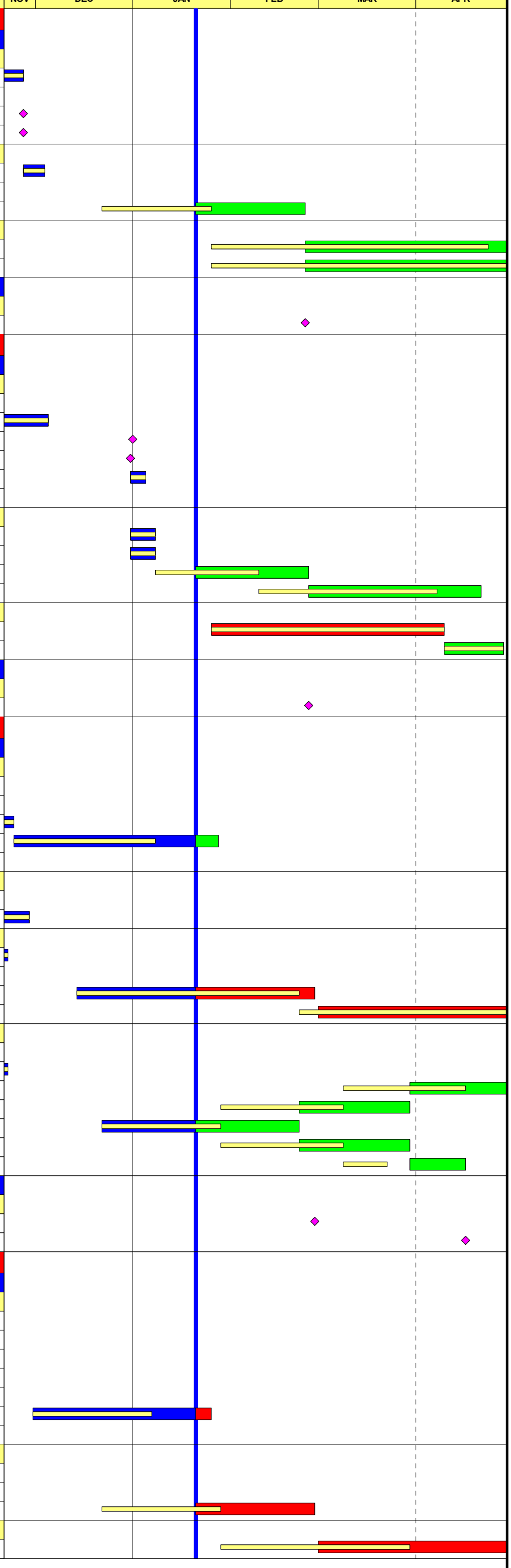
**Design & Construction of HK. West Drainage Tunnel**
**Contract No. DC/2007/10**
**3 MONTH ROLLING PROGRAMME**
**JANUARY/2010 MONTHLY REPORT**

| Date | Revision | Checked | Approved |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

| Act ID | Activity Description | Orig Dur | Rem Dur | Anticipated Start | Anticipated Finish | % Comp | Rem Dur | Approved Works Prog 9116 EF Variance |
|---|---|---|---|---|---|---|---|---|
| **Section 1 (Main Tunnel)** | | | | | | | | |
| M3-1450 | 3.45-Excavation, Support & Lining CH8500 to 8750 | 0 | 0 | | 20JAN10 | 0 | 0 | -18 |
| M3-1460 | 3.46-Excavation, Support & Lining CH8750 to 9000 | 0 | 0 | | 06JAN10A | 100 | 0 | -27 |
| M3-1470 | 3.47-Excavation, Support & Lining CH9000 to 9250 | 0 | 0 | | 06JAN10A | 100 | 0 | -50 |
| M3-1480 | 3.48-Excavation, Support & Lining CH9250 to 9500 | 0 | 0 | | 07DEC09A | 100 | 0 | -44 |
| M3-1490 | 3.49-Excavation, Support & Lining CH9500 to 9750 | 0 | 0 | | 07OCT09A | 100 | 0 | 0 |
| M3-1500 | 3.50-Excavation, Support &Lining CH9750 to 10000 | 0 | 0 | | 04SEP09A | 100 | 0 | 0 |
| M3-1510 | 3.51-Excavation, Support & Lining CH10000-10250 | 0 | 0 | | 04AUG09A | 100 | 0 | 0 |
| **CC04 - PART OF SECTION 1 OF THE WORKS (ADITS)** | | | | | | | | |
| **Construction** | | | | | | | | |
| **Adit Tunnel Excavation & Tunnel Lining - W0** | | | | | | | | |
| S010280 | Back Shunt Tunnels (W0) | 43 | 43 | 18MAR10 | 14MAY10 | 0 | 43 | -9 |
| **Adit Tunnel Excavation & Tunnel Lining - E5A** | | | | | | | | |
| S020195 | Adit Excavation by Mech Excav -Ch0 - Ch9(E5A) | 24 | 12 | 09DEC09A | 03FEB10 | 38 | 12 | -31 |
| S020197 | Adit Excav-Trial DB & Protection Ch9-Ch11(E5A) | 12 | 12 | 04FEB10 | 20FEB10 | 0 | 12 | -31 |
| S020200 | Adit Excavation by Drill & Blast Ch11-193(E5A) | 68 | 68 | 22FEB10 | 20MAY10 | 0 | 68 | -31 |
| **Adit Tunnel Excavation & Tunnel Lining - MB16** | | | | | | | | |
| S040245 | Adit Excavation by Mech Excav -Ch0 - Ch9(MB16) | 24 | 24 | 03FEB10 | 05MAR10 | 0 | 24 | -11 |
| S040247 | Adit Excav Trial DB&Blast Prot -Ch9 -Ch11(MB16) | 12 | 12 | 06MAR10 | 19MAR10 | 0 | 12 | -11 |
| S040250 | Adit Excavation by Drill & Blast Ch11-117(MB16) | 39 | 39 | 20MAR10 | 12MAY10 | 0 | 39 | -11 |
| **Adit Tunnel Excavation & Tunnel Lining - MBD2** | | | | | | | | |
| S05-5065 | Adit Excavation by Mech Excav -Ch0 - Ch9(MBD2) | 24 | 24 | 01MAR10 | 27MAR10 | 0 | 24 | -11 |
| S05-5067 | Adit Excav Trial DB&Blast Prot -Ch9 -Ch11(MBD2) | 12 | 12 | 29MAR10 | 15APR10 | 0 | 12 | -11 |
| S05-5070 | Adit Excavation by Drill & Blast Ch11-128(MBD2) | 42 | 42 | 16APR10 | 10JUN10 | 0 | 42 | -11 |
| **Adit Tunnel Excavation & Tunnel Lining - E7** | | | | | | | | |
| S060265 | Adit Excavation by Mech Excav -Ch0 - Ch9(E7) | 24 | 24 | 15MAR10 | 15APR10 | 0 | 24 | -11 |
| S060267 | Adit Excav Trial DB&Blast Prot -Ch9 -Ch11(E7) | 12 | 12 | 16APR10 | 30APR10 | 0 | 12 | -11 |
| **Adit Tunnel Excavation & Tunnel Lining - THR2** | | | | | | | | |
| S070125 | Adit Excavation by Mech Excav -Ch0 - Ch9(THR2) | 24 | 24 | 15APR10 | 15MAY10 | 0 | 24 | -10 |
| **Adit Tunnel Excavation & Tunnel Lining - P5** | | | | | | | | |
| S280115 | Adit Excavation by Mech Excav -Ch0 - Ch9(P5) | 24 | 24 | 17FEB10 | 16MAR10 | 0 | 24 | -7 |
| S280117 | Adit Excav Trial DB&Blast Prot -Ch9 - Ch11(P5) | 12 | 12 | 17MAR10 | 30MAR10 | 0 | 12 | -7 |
| S280122 | Adit Excavation by Drill & Blast Ch11 - 210(P5) | 72 | 72 | 31MAR10 | 08JUL10 | 0 | 72 | -7 |
| **Adit Tunnel Excavation & Tunnel Lining - SM1** | | | | | | | | |
| S321636 | Adit Excavation by Mech Excav -Ch0 - Ch9(SM1) | 24 | 22 | 14JAN10A | 18FEB10 | 10 | 22 | -18 |
| S321637 | Adit Excav Trial DB&Blast Prot -Ch9 - Ch11(SM1) | 12 | 12 | 19FEB10 | 04MAR10 | 0 | 12 | -18 |
| S321640 | Adit Excavation by Drill & Blast Ch11-185(SM1) | 73 | 73 | 05MAR10 | 09JUN10 | 0 | 73 | -18 |
| **CC5-PART OF SECTION 1 OF THE WORKS (EAST PORTAL)** | | | | | | | | |
| **Construction** | | | | | | | | |
| **East Portal River Channel Works** | | | | | | | | |
| EPC0311 | Rock Excav&Slope Stabilization North Side Row B | 80 | 0 | 09JUL09A | 12DEC09A | 100 | 0 | -43 |
| EPC0320 | Shallow Excavation at river bed | 36 | 0 | 11JUL09A | 21OCT09A | 100 | 0 | 23 |
| EPC0322 | Middle Excav&Install struts at river bed | 48 | 0 | 22OCT09A | 19NOV09A | 100 | 0 | 47 |
| EPC0324 | Deep Excav&Install struts at river bed | 60 | 0 | 20NOV09A | 15DEC09A | 100 | 0 | 85 |
| EPC0330 | Lower River Channel Structure Constr | 83 | 80 | 11JAN10A | 04MAY10 | 5 | 80 | 60 |
| **Site Installation - Phase 2** | | | | | | | | |
| EPA0300 | Spoil Tremie/Storage Construction | 60 | 0 | 13MAR09A | 01AUG09A | 100 | 0 | 0 |
| EPA0310 | Construct Spoil Storage Noise Enclosure | 10 | 0 | 20MAY09A | 01AUG09A | 100 | 0 | 0 |
| EPA0330 | Construct Stub Train Track Noise Enclosure | 7 | 0 | 02JUL09A | 10AUG09A | 100 | 0 | 0 |
| EPA0334 | VO/Claim # 38-Aug/09 Typhoon GONI Sig 8 - EP | 1 | 0 | 04AUG09A | 04AUG09A | 100 | 0 | 0 |
| EPA0336 | VO/Claim # 41-Sep/09 Typhoon KOPPU Sig 8 - EP | 1 | 0 | 14SEP09A | 14SEP09A | 100 | 0 | 0 |
| EPA0450 | Assemble Backups up to 13B | 32 | 0 | 10JUL09A | 05AUG09A | 100 | 0 | 0 |
| EPA0505 | Install Conveyor T1 & T2 | 21 | 0 | 23MAY09A | 05AUG09A | 100 | 0 | 0 |
| **Milestone** | | | | | | | | |
| **Secton 1 (Eastern Portal)** | | | | | | | | |
| M5-1010 | 5.01-Excavation(River Channel Structure) | 0 | 0 | | 20JAN10 | 0 | 0 | 70 |
| **CC6-PART OF SECTION 1 OF THE WORKS (WEST PORTAL)** | | | | | | | | |
| **Construction** | | | | | | | | |
| **Site Installation - Phase 2** | | | | | | | | |
| WPT1564 | VO/Claim # 38-Aug/09 Typhoon GONI Sig 8 - WP | 1 | 0 | 04AUG09A | 04AUG09A | 100 | 0 | 0 |
| WPT1566 | VO/Claim # 41-Sep/09 Typhoon KOPPU Sig 8 - WP | 1 | 0 | 14SEP09A | 14SEP09A | 100 | 0 | 0 |
| **CC7 -PART OF SECTION 1 OF THE WORKS (PORTION W0)** | | | | | | | | |
| **Construction** | | | | | | | | |
| **Intakes - External Structures (Stage1)** | | | | | | | | |
| S010230 | Temp Diversion Natural Stream(Drain)-(W0) | 30 | 0 | 29JUN09A | 25JUL09A | 100 | 0 | 0 |
| S010248 | Excavation to +65mPD | 34 | 0 | 19JUN09A | 02AUG09A | 100 | 0 | 0 |
| S010250 | Excavation to +54.9mPD include waling & struting | 44 | 0 | 03AUG09A | 16OCT09A | 100 | 0 | 0 |
| S010252 | VO/Claim # 38 Aug Typhoon GONI Signal 8 - W0 | 1 | 0 | 04AUG09A | 04AUG09A | 100 | 0 | 0 |
| S010254 | VO/Claim # 41 Sep Typhoon KOPPU Signal 8 - W0 | 1 | 0 | 14SEP09A | 14SEP09A | 100 | 0 | 0 |
| S010268 | Excavation to +46.9mPD | 32 | 0 | 17OCT09A | 09JAN10A | 100 | 0 | -39 |
| S010270 | Excavation to +40.40mPD | 45 | 45 | 21JAN10 | 17MAR10 | 0 | 45 | -48 |
| S010272 | VO/Claim # 10 Part EOT for W0 Intake - W0 | 39 | 39 | 21JAN10 | 10MAR10 | 0 | 39 | -3 |
| **Milestone** | | | | | | | | |
| **Section 1 (Portion W0)** | | | | | | | | |
| M7-1010 | 7.01-Pre-drilling&Grouting Works(Dropshaft) | 0 | 0 | | 20JAN10 | 0 | 0 | -93 |
| M7-1020 | 7.02-Excavation(Dropshaft) | 0 | 0 | | 17MAR10 | 0 | 0 | -60 |
| M7-1040 | 7.04-Excavation(Access Shaft) | 0 | 0 | | 17MAR10 | 0 | 0 | -60 |
| M7-1060 | 7.06-Excavation (Intake) | 0 | 0 | | 07OCT09A | 100 | 0 | 0 |



| Act ID | Activity Description | Orig Dur | Rem Dur | Anticipated Start | Anticipated Finish | % Comp | Rem Dur | Approved Works Prog 9116 EF Variance |
|---|---|---|---|---|---|---|---|---|
| **CC8 - SECTION 2 OF THE WORKS (PORTION E5A)** | | | | | | | | |
| **Construction** | | | | | | | | |
| **Preliminary Works** | | | | | | | | |
| S020040 | Notify,Coord&Obtain Permit-Utility Prov - E5A | 149 | 0 | 19JAN09A | 26NOV09A | 100 | 0 | 0 |
| S020110 | 25 wks prior to Portion Possess Date-(E5A) | 175 | 0 | 20MAY09A | 18NOV09A | 100 | 0 | 0 |
| S020135 | Complete All Utility Diversion by Others-E5A | 0 | 0 | | 26NOV09A | 100 | 0 | 0 |
| S020140 | Site Possession - E5A | 0 | 0 | 27NOV09A | | 100 | 0 | 111 |
| **Preparation Works** | | | | | | | | |
| S020170 | Install Geotech Monitoring Instruments-(E5A) | 6 | 0 | 27NOV09A | 03DEC09A | 100 | 0 | 111 |
| S020171 | Existing Bldg & Structure(EBS) Survey-(E5A) | 6 | 0 | 28AUG09A | 04SEP09A | 100 | 0 | 0 |
| S020180 | Pre-drilling & Grouting Works-(E5A) | 27 | 27 | 21JAN10 | 24FEB10 | 0 | 27 | 75 |
| **Intakes - External Structures (Stage1)** | | | | | | | | |
| S020210 | Cofferdam Wall Driving-(E5A) | 69 | 69 | 25FEB10 | 26MAY10 | 0 | 69 | 75 |
| S020212 | VO # 25 Additional Cofferdam Works | 138 | 138 | 25FEB10 | 26AUG10 | 0 | 138 | 75 |
| **Milestone** | | | | | | | | |
| **Section 2 (Portion E5A)** | | | | | | | | |
| M81010 | 8.01-Pre-drilling&Grouting Works(Dropshaft) | 0 | 0 | | 24FEB10 | 0 | 0 | 98 |
| **CC9 - SECTION 3 OF THE WORKS (PORTION E5B)** | | | | | | | | |
| **Construction** | | | | | | | | |
| **Preliminary Works** | | | | | | | | |
| S030020 | Notify,Coord&Obtain Permit-Utility Prov - E5B | 265 | 0 | 24OCT08A | 29SEP09A | 100 | 0 | 0 |
| S030110 | 25 wks prior to Portion Possess Date-(E5B) | 175 | 0 | 12JUN09A | 04DEC09A | 100 | 0 | 0 |
| S030125 | Complete Utility Diversion by Others - E5B | 0 | 0 | | 31DEC09A | 100 | 0 | -1 |
| S030130 | Site Possession - E5B | 0 | 0 | 31DEC09A | | 100 | 0 | 114 |
| S030160 | 1st Temporary Traffic Diversion-(E5B) | 3 | 0 | 31DEC09A | 04JAN10A | 100 | 0 | 90 |
| S030240 | TMLG submission, coordination & Approval - E5B | 48 | 0 | 21JUL09A | 17OCT09A | 100 | 0 | 0 |
| **Preparation Works** | | | | | | | | |
| S030150 | Install Geotech Monitoring Instruments-(E5B) | 6 | 0 | 31DEC09A | 07JAN10A | 100 | 0 | 90 |
| S030151 | Existing Bldg & Structure(EBS) Survey-(E5B) | 6 | 0 | 31DEC09A | 07JAN10A | 100 | 0 | 90 |
| S030180 | Pre-drilling & Grouting Works-(E5B) | 28 | 28 | 21JAN10 | 25FEB10 | 0 | 28 | 79 |
| S030202 | Utility Diversions - (E5B) | 43 | 43 | 26FEB10 | 21APR10 | 0 | 43 | 79 |
| **Intakes - External Structures (Stage1)** | | | | | | | | |
| S030210 | Cofferdam Wall Driving -(E5B) | 58 | 58 | 26JAN10* | 09APR10 | 0 | 58 | 146 |
| S030214 | Excavate to Expose Drain Pipe -(E5B) | 14 | 14 | 10APR10 | 28APR10 | 0 | 14 | 0 |
| **Milestone** | | | | | | | | |
| **Section 3 (Portion E5B)** | | | | | | | | |
| M91040 | 9.04- Pre-dilling & Grouting Works (Dropshaft) | 0 | 0 | | 25FEB10 | 0 | 0 | 104 |
| **CC10-SECTION 4 OF THE WORKS (PORTION MB16)** | | | | | | | | |
| **Construction** | | | | | | | | |
| **Preliminary Works** | | | | | | | | |
| S040140 | Site Setting up/Mobilization-(MB16) | 24 | 0 | 27JUN09A | 15AUG09A | 100 | 0 | 0 |
| S040146 | VO/Claim # 38-Aug/09 Typhoon GONI Sig 8 - MB16 | 1 | 0 | 04AUG09A | 04AUG09A | 100 | 0 | 0 |
| S041140 | Cut Slope at the Western for Working Platform | 48 | 0 | 17AUG09A | 23NOV09A | 100 | 0 | 11 |
| S041142 | VO # 21 - Add'l Slopeworks-(MB16) | 38 | 6 | 24NOV09A | 27JAN10 | 90 | 6 | -44 |
| S041144 | VO/Claim # 41-Sep/09 Typhoon KOPPU Sig 8 - MB16 | 1 | 0 | 14SEP09A | 14SEP09A | 100 | 0 | 0 |
| **Preparation Works** | | | | | | | | |
| S040150 | Install Geotech Monitoring Instruments-(MB16) | 6 | 0 | 20OCT09A | 27OCT09A | 100 | 0 | 0 |
| S040170 | Pre-drilling & Grouting Works-(MB16) | 34 | 0 | 09NOV09A | 28NOV09A | 100 | 0 | 0 |
| **Intakes - External Structures (Stage1)** | | | | | | | | |
| S040180 | Cofferdam Wall Driving-(MB16) | 72 | 0 | 18SEP09A | 21NOV09A | 100 | 0 | 18 |
| S040210 | Temp Diversion Natural Stream(Drain)-(MB16) | 24 | 0 | 27JUL09A | 27AUG09A | 100 | 0 | 0 |
| S040230 | Cofferdam Excavation-(MB16) | 18 | 30 | 14DEC09A | 27FEB10 | 39 | 30 | -42 |
| S040260 | Main Structure Construciton-(MB16) | 62 | 62 | 01MAR10 | 20MAY10 | 0 | 62 | -42 |
| **Pipe Laying** | | | | | | | | |
| S040160 | Manhole SMH1 to SMH3 | 60 | 0 | 28JUL09A | 02OCT09A | 100 | 0 | 0 |
| S040190 | Manhole SMH2 to SMH3 | 30 | 0 | 03OCT09A | 21NOV09A | 100 | 0 | -11 |
| S040280 | Manhole SMH6 to SMH7 | 30 | 30 | 30MAR10 | 11MAY10 | 0 | 30 | -24 |
| S040330 | Manhole SMH7 to SMH8 | 30 | 30 | 23FEB10 | 29MAR10 | 0 | 30 | 36 |
| S040360 | Manhole SMH8 to SMH9 | 30 | 25 | 22DEC09A | 22FEB10 | 10 | 25 | 96 |
| S040390 | Manhole SMH9 to Intake MB16 | 30 | 30 | 23FEB10 | 29MAR10 | 0 | 30 | 96 |
| S040430 | Existing Manhole to SMH1 | 12 | 12 | 30MAR10 | 16APR10 | 0 | 12 | 96 |
| **Milestone** | | | | | | | | |
| **Section 4 (Portion MB16)** | | | | | | | | |
| M101040 | 10.04-Excavation (Intake) | 0 | 0 | | 27FEB10 | 0 | 0 | -52 |
| M101070 | 10.07-100% of PipeLength of Drain.Works&Reins't | 0 | 0 | | 16APR10 | 0 | 0 | 129 |
| **CC11-SECTION 5 OF THE WORKS (PORTION MBD2)** | | | | | | | | |
| **Construction** | | | | | | | | |
| **Preliminary Works** | | | | | | | | |
| S050030 | Notify,Coord&Obtain Permit-Utility Prov - MBD2 | 149 | 0 | 19JAN09A | 10SEP09A | 100 | 0 | 0 |
| S050110 | 25 wks prior to Portion Possess Date-(MBD2) | 175 | 0 | 05MAY09A | 27OCT09A | 100 | 0 | 0 |
| S050132 | Complete All Utility Diversion by Others- (MBD2) | 0 | 0 | | 05NOV09A | 100 | 0 | 0 |
| S050140 | Site Possession - MBD2 | 0 | 0 | 06NOV09A | | 100 | 0 | 0 |
| S050170 | Temporary Traffic Diversion for Intake | 6 | 0 | 06NOV09A | 12NOV09A | 100 | 0 | 0 |
| S050180 | Site Setting up/Mobilization-(MBD2) | 24 | 4 | 30NOV09A | 25JAN10 | 55 | 4 | -36 |
| S050182 | VO # 26 Re-application Excavation Permit-(MBD2) | 71 | 0 | 07AUG09A | 13NOV09A | 100 | 0 | -7 |
| **Preparation Works** | | | | | | | | |
| S050160 | Install Geotech Monitoring Instruments-(MBD2) | 6 | 0 | 06NOV09A | 12NOV09A | 100 | 0 | 0 |
| S050161 | Existing Bldg & Structural Survey-(MBD2) | 6 | 0 | 28AUG09A | 04SEP09A | 100 | 0 | 0 |
| S050200 | Pre-drilling & Grouting Works-(MBD2) | 30 | 30 | 21JAN10 | 27FEB10 | 0 | 30 | -44 |
| **Intakes - External Structures (Stage1)** | | | | | | | | |
| S050210 | Cofferdam Wall Driving-(MBD2) | 48 | 48 | 01MAR10 | 30APR10 | 0 | 48 | -44 |




Start Date 30NOV07
Finish Date 25MAY12
Data Date 21JAN10
Run Date 27JAN10 15:51



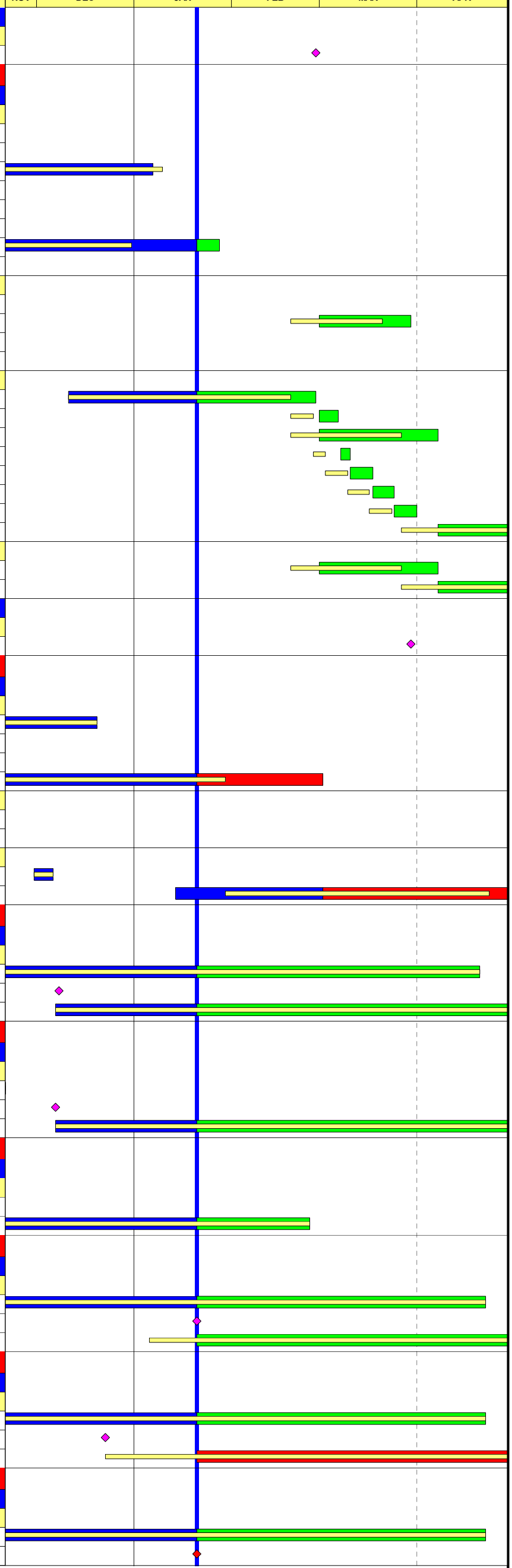
Early Bar
Previous Month (912B)
Progress Bar
Critical Activity



**Design & Construction of HK. West Drainage Tunnel**
**Contract No. DC/2007/10**
**3 MONTH ROLLING PROGRAMME**
**JANUARY/2010 MONTHLY REPORT**

| Date | Revision | Checked | Approved |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

| Act ID | Activity Description | Orig Dur | Rem Dur | Anticipated Start | Anticipated Finish | % Comp | Rem Dur | Approved Works Prog 9116 EF Variance |
|---|---|---|---|---|---|---|---|---|
| **Milestone** | | | | | | | | |
| **Section 5 (Portion MBD2)** | | | | | | | | |
| M11-1010 | 11.01-Pre-drilling & Grouting Works(Dropshaft) | 0 | 0 | | 27FEB10 | 0 | 0 | -54 |
| **CC12-SECTION 6 OF THE WORKS (PORTION E7)** | | | | | | | | |
| **Construction** | | | | | | | | |
| **Preliminary Works** | | | | | | | | |
| S060030 | Notify,Coord&Obtain Permit-Utility Prov - E7 | 225 | 0 | 16OCT08A | 30JUL09A | 100 | 0 | 0 |
| S060110 | 25 wks prior to Portion Possess Date-(E7) | 175 | 0 | 03FEB09A | 27JUL09A | 100 | 0 | 0 |
| S060122 | VO # S0I 16 Tree Felling Application - (E7) | 138 | 0 | 20OCT09A | 06JAN10A | 100 | 0 | 74 |
| S060127 | Complete All Utility Diversions by Others- (E7) | 0 | 0 | | 25AUG09A | 100 | 0 | 0 |
| S060130 | Site Possession - E7 | 0 | 0 | 26AUG09A | | 100 | 0 | 0 |
| S060140 | Site Setting up/Mobilization-(E7) | 12 | 0 | 26AUG09A | 07OCT09A | 100 | 0 | 0 |
| S060142 | VO # 15 Resubmission XP permit-(E7) | 69 | 6 | 20OCT09A | 27JAN10 | 86 | 6 | -13 |
| S060144 | VO/Claim # 41-Sep/09 Typhoon KOPPU Sig 8 - E7 | 1 | 0 | 14SEP09A | 14SEP09A | 100 | 0 | 0 |
| **Preparation Works** | | | | | | | | |
| S060150 | Install Geotech Monitoring Instruments-(E7) | 6 | 0 | 06NOV09A | 12NOV09A | 100 | 0 | -14 |
| S060160 | Grouting Works-(E7) | 25 | 25 | 01MAR10 | 29MAR10 | 0 | 25 | -100 |
| S060180 | Permanent Slope Protective Works (Soil Nails) | 48 | 0 | 28SEP09A | 29OCT09A | 100 | 0 | 0 |
| S060190 | Install Geotech Monitoring Instruments-(E7) | 3 | 0 | 27OCT09A | 29OCT09A | 100 | 0 | 0 |
| **Intakes - External Structures (Stage1)** | | | | | | | | |
| S060260 | Cofferdam Wall Driving-(E7) | 155 | 30 | 11DEC09A | 27FEB10 | 20 | 30 | 78 |
| S060291 | Expose Existing Box Culvert by Excav-(E7) | 6 | 6 | 01MAR10 | 06MAR10 | 0 | 6 | 78 |
| S060300 | Dropshaft Temporary Lining | 30 | 30 | 01MAR10 | 07APR10 | 0 | 30 | 78 |
| S060312 | Saw-cut Box-culvert&place Steel Pipes-(E7) | 3 | 3 | 08MAR10 | 10MAR10 | 0 | 3 | 78 |
| S060320 | Secure Pipes Hang&SealantConnect-(E7) | 6 | 6 | 11MAR10 | 17MAR10 | 0 | 6 | 78 |
| S060330 | Removal Lower Sector Box-culvert-(E7) | 6 | 6 | 18MAR10 | 24MAR10 | 0 | 6 | 78 |
| S060360 | Excavation & Lodging-(E7) | 6 | 6 | 25MAR10 | 31MAR10 | 0 | 6 | 78 |
| S060380 | Excavation (Soft) Soil-(E7) | 30 | 30 | 08APR10 | 17MAY10 | 0 | 30 | 78 |
| **Pipe Laying** | | | | | | | | |
| S060170 | Pipeline SMH16 to SMH15 | 30 | 30 | 01MAR10 | 07APR10 | 0 | 30 | -100 |
| S060200 | Manhole SMH15 & Pipeline SMH15 to SMH14 | 72 | 72 | 08APR10 | 14JUL10 | 0 | 72 | -100 |
| **Milestone** | | | | | | | | |
| **Section 6 (Portion E7)** | | | | | | | | |
| M121010 | 12.01-Pre-drilling & Grouting Works(Dropshaft) | 0 | 0 | | 29MAR10 | 0 | 0 | -124 |
| **CC13-SECTION 7 OF THE WORKS (PORTION THR2)** | | | | | | | | |
| **Construction** | | | | | | | | |
| **Preliminary Works** | | | | | | | | |
| S070160 | Site Setting up/Mobilization-(THR2) | 24 | 0 | 13JUN09A | 19DEC09A | 100 | 0 | 0 |
| S070164 | VO/Claim # 38-Aug/09 Typhoon GONI Sig 8 - THR2 | 1 | 0 | 04AUG09A | 04AUG09A | 100 | 0 | 0 |
| S070166 | VO/Claim # 41-Sep/09 Typhoon KOPPU Sig 8 - THR2 | 1 | 0 | 14SEP09A | 14SEP09A | 100 | 0 | 0 |
| S070180 | Rail System & Overhead Gantry Installation | 58 | 31 | 13JUN09A | 01MAR10 | 12 | 31 | -76 |
| **Preparation Works** | | | | | | | | |
| S070190 | Install Geotech Monitoring Instruments-(THR2) | 6 | 0 | 20OCT09A | 27OCT09A | 100 | 0 | 0 |
| S070191 | Existing Bldg & Structure(EBS) Survey - (THR2) | 6 | 0 | 20OCT09A | 27OCT09A | 100 | 0 | 0 |
| **Intakes - External Structures (Stage1)** | | | | | | | | |
| S070170 | Temp Diversion Natural Stream(Drain)-(THR2) | 24 | 0 | 30NOV09A | 05DEC09A | 100 | 0 | -16 |
| S070230 | Cofferdam Wall Driving-(THR2) | 65 | 55 | 14JAN10A | 12MAY10 | 5 | 55 | -22 |
| **CC14-SECTION 8 OF THE WORKS (PORTION GL1)** | | | | | | | | |
| **Construction** | | | | | | | | |
| **Preliminary Works** | | | | | | | | |
| S080030 | Notify,Coord&Obtain Permit-Utility Prov - GL1 | 364 | 70 | 19JAN09A | 20APR10 | 81 | 70 | 0 |
| S080100 | Notify SO for Portion Possession - (GL1) | 0 | 0 | | 07DEC09A | 100 | 0 | 13 |
| S080110 | 25 wks prior to Portion Possess Date-(GL1) | 175 | 130 | 07DEC09A | 30MAY10 | 26 | 130 | 17 |
| **CC15-SECTION9 OF THE WORKS(PORTION HR1)** | | | | | | | | |
| **Construction** | | | | | | | | |
| **Preliminary Works** | | | | | | | | |
| S090030 | Notify,Coord&Obtain Permit-Utility Prov - HR1 | 315 | 0 | 24OCT08A | 20NOV09A | 100 | 0 | 0 |
| S090100 | Notify SO for Portion Possession - (HR1) | 0 | 0 | 07DEC09A | | 100 | 0 | -40 |
| S090110 | 25 wks prior to Portion Possess Date-(HR1) | 175 | 130 | 07DEC09A | 30MAY10 | 26 | 130 | -48 |
| **CC16-SECTION 10 OF THE WORKS (PORTION DG1)** | | | | | | | | |
| **Construction** | | | | | | | | |
| **Preliminary Works** | | | | | | | | |
| S100100 | Notify SO for Portion Possession - (DG1) | 0 | 0 | | 04SEP09A | 100 | 0 | 0 |
| S100110 | 25 wks prior to Portion Possess Date-(DG1) | 175 | 36 | 04SEP09A | 25FEB10 | 79 | 36 | 0 |
| **CC17-SECTION 11 OF THE WORKS (PORTION BR4)** | | | | | | | | |
| **Construction** | | | | | | | | |
| **Preliminary Works** | | | | | | | | |
| S110020 | Notify,Coord&Obtain Permit-Utility Prov - BR4 | 149 | 72 | 20OCT09A | 22APR10 | 52 | 72 | 1 |
| S110100 | Notify SO for Portion Possession - (BR4) | 0 | 0 | | 20JAN10 | 0 | 0 | -13 |
| S110110 | 25 wks prior to Portion Possess Date-(BR4) | 175 | 175 | 21JAN10 | 14JUL10 | 0 | 175 | -15 |
| **CC18-SECTION 12 OF THE WORKS (PORTION W1)** | | | | | | | | |
| **Construction** | | | | | | | | |
| **Preliminary Works** | | | | | | | | |
| S120020 | Notify,Coord&Obtain Permit-Utility Prov - W1 | 149 | 72 | 20OCT09A | 22APR10 | 52 | 72 | 1 |
| S120100 | Notify SO for Portion Possession - (W1) | 0 | 0 | | 22DEC09A | 100 | 0 | 0 |
| S120110 | 25 wks prior to Portion Possess Date-(W1) | 175 | 175 | 21JAN10 | 14JUL10 | 0 | 175 | -29 |
| **CC19-SECTION 13 OF WORKS (PORTION BR5)** | | | | | | | | |
| **Construction** | | | | | | | | |
| **Preliminary Works** | | | | | | | | |
| S130020 | Notify,Coord&Obtain Permit-Utility Prov - BR5 | 149 | 72 | 20OCT09A | 22APR10 | 52 | 72 | 1 |
| S130100 | Notify SO for Portion Possession - (BR5) | 0 | 0 | | 20JAN10 | 0 | 0 | -13 |




| | |
|---|---|
| Start Date | 30NOV07 |
| Finish Date | 25MAY12 |
| Data Date | 21JAN10 |
| Run Date | 27JAN10 15:51 |



Early Bar
Previous Month (912B)
Progress Bar
Critical Activity



**Design & Construction of HK. West Drainage Tunnel**
**Contract No. DC/2007/10**
**3 MONTH ROLLING PROGRAMME**
**JANUARY/2010 MONTHLY REPORT**

| Date | Revision | Checked | Approved |
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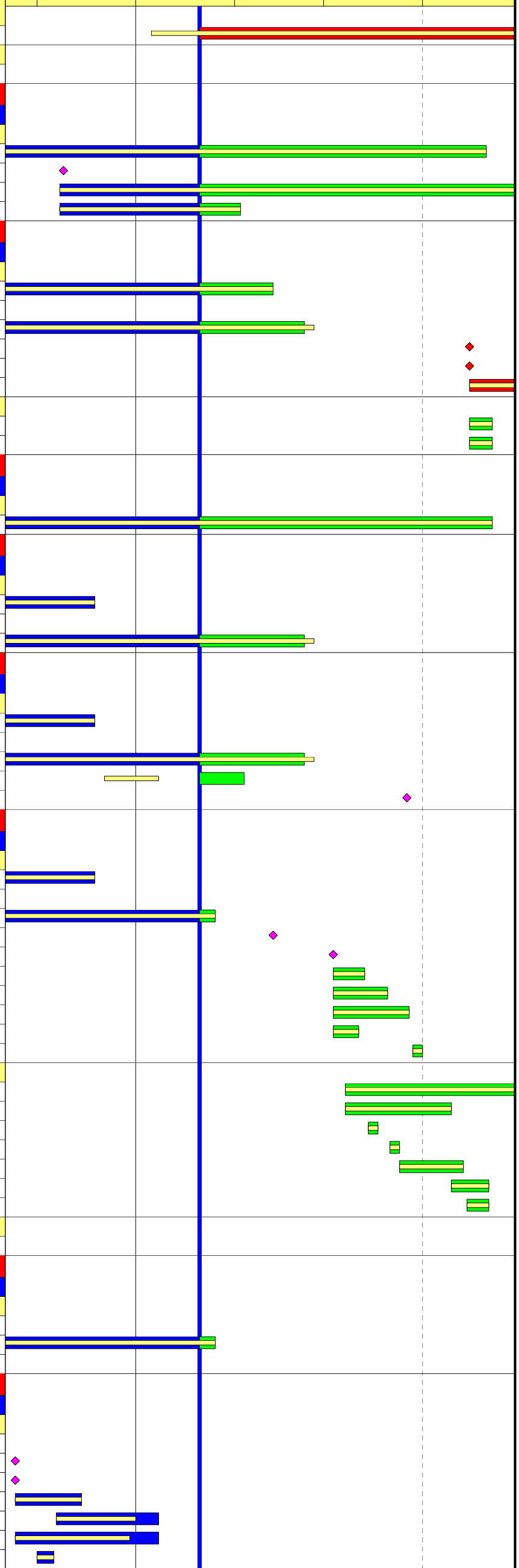
| Act ID | Activity Description | Orig Dur | Rem Dur | Anticipated Start | Anticipated Finish | % Comp | Rem Dur | Approved Works Prog 9116 EF Variance |
|---|---|---|---|---|---|---|---|---|
| **Preliminary Works** | | | | | | | | |
| S130110 | 25 wks prior to Portion Possess Date-(BR5) | 175 | 175 | 21JAN10 | 14JUL10 | 0 | 175 | -15 |
| S130122 | GI & Inspection Pits - Advance Works (BR5) | 1 | 0 | 23JUN09A | 19AUG09A | 100 | 0 | 0 |
| **CC20-SECTION 14 OF THE WORKS (PORTION BR6)** | | | | | | | | |
| **Construction** | | | | | | | | |
| **Preliminary Works** | | | | | | | | |
| S140030 | Notify,Coord&Obtain Permit-Utility Prov - BR6 | 386 | 70 | 24NOV08A | 20APR10 | 82 | 70 | 1 |
| S140100 | Notify SO for Portion Possession - (BR6) | 0 | 0 | | 08DEC09A | 100 | 0 | -15 |
| S140110 | 25 wks prior to Portion Possess Date-(BR6) | 175 | 131 | 08DEC09A | 31MAY10 | 25 | 131 | -17 |
| S140125 | TMLG submission, coordination & Approval - BR6 | 48 | 11 | 08DEC09A | 02FEB10 | 80 | 11 | -12 |
| **CC21-SECTION 15 OF THE WORKS (PORTION W3)** | | | | | | | | |
| **Construction** | | | | | | | | |
| **Preliminary Works** | | | | | | | | |
| S150030 | Notify,Coord&Obtain Permit-Utility Prov - W3 | 359 | 20 | 24NOV08A | 12FEB10 | 94 | 20 | 1 |
| S150100 | Notify SO for Portion Possession - W3 | 0 | 0 | | 04SEP09A | 100 | 0 | 0 |
| S150110 | 25 wks prior to Portion Possess Date-(W3) | 175 | 33 | 04SEP09A | 22FEB10 | 81 | 33 | 3 |
| S150125 | Complete All Utility Diversions by Others - (W3) | 0 | 0 | | 15APR10* | 0 | 0 | 0 |
| S150130 | Site Possession - W3 | 0 | 0 | 16APR10* | | 0 | 0 | 0 |
| S150140 | Site Setting up/Mobilization-(W3) | 24 | 24 | 16APR10 | 17MAY10 | 0 | 24 | 0 |
| **Preparation Works** | | | | | | | | |
| S150160 | Install Geotech Monitoring Instruments-(W3) | 6 | 6 | 16APR10 | 22APR10 | 0 | 6 | 0 |
| S150161 | Existing Bldg & Structure(EBS) Survey - (W3) | 6 | 6 | 16APR10 | 22APR10 | 0 | 6 | 0 |
| **CC22-SECTION 16 OF THE WORKS (PORTION B2)** | | | | | | | | |
| **Construction** | | | | | | | | |
| **Preliminary Works** | | | | | | | | |
| S160020 | Notify,Coord&Obtain Permit-Utility Prov - B2 | 149 | 72 | 20OCT09A | 22APR10 | 52 | 72 | 1 |
| **CC23-SECTION 17 OF THE WORKS (PORTION MA14)** | | | | | | | | |
| **Construction** | | | | | | | | |
| **Preliminary Works** | | | | | | | | |
| S170020 | Notify,Coord&Obtain Permit-Utility Prov - MA14 | 149 | 0 | 25JUN09A | 18DEC09A | 100 | 0 | 0 |
| S170100 | Notify SO for Portion Possession - (MA14) | 0 | 0 | | 04SEP09A | 100 | 0 | 0 |
| S170110 | 25 wks prior to Portion Possess Date-(MA14) | 175 | 33 | 04SEP09A | 22FEB10 | 81 | 33 | 3 |
| **CC24-SECTION 18 OF THE WORKS (PORTION MA15)** | | | | | | | | |
| **Construction** | | | | | | | | |
| **Preliminary Works** | | | | | | | | |
| S180020 | Notify,Coord&Obtain Permit-Utility Prov - MA15 | 149 | 0 | 21JUL09A | 18DEC09A | 100 | 0 | 0 |
| S180100 | Notify SO for Portion Possession - (MA15) | 0 | 0 | | 04SEP09A | 100 | 0 | 0 |
| S180110 | 25 wks prior to Portion Possess Date-(MA15) | 175 | 33 | 04SEP09A | 22FEB10 | 81 | 33 | 3 |
| S180116 | P & S Environmental Base Monitoring Report(MA15) | 12 | 12 | 21JAN10 | 03FEB10 | 0 | 12 | -76 |
| S180125 | Complete All Utility Diversion Works - MA15 | 0 | 0 | | 26MAR10* | 0 | 0 | 0 |
| **CC25-SECTION 19 OF THE WORKS (PORTION MA17)** | | | | | | | | |
| **Construction** | | | | | | | | |
| **Preliminary Works** | | | | | | | | |
| S190030 | Notify,Coord&Obtain Permit-Utility Prov - MA17 | 339 | 0 | 24NOV08A | 18DEC09A | 100 | 0 | 0 |
| S190100 | Notify SO for Portion Possession - (MA17) | 0 | 0 | | 04AUG09A | 100 | 0 | 0 |
| S190110 | 25 wks prior to Portion Possess Date-(MA17) | 175 | 5 | 04AUG09A | 25JAN10 | 95 | 5 | 0 |
| S190127 | Complete All Temp Diversion Works - (MA17) | 0 | 0 | | 12FEB10* | 0 | 0 | 0 |
| S190130 | Site Possession - MA17 | 0 | 0 | 04MAR10* | | 0 | 0 | 0 |
| S190150 | Hoarding/Fencing-(MA17) | 9 | 9 | 04MAR10 | 13MAR10 | 0 | 9 | 0 |
| S190160 | Cut/Fill/Place Concrete Block&Platform-(M17) | 15 | 15 | 04MAR10 | 20MAR10 | 0 | 15 | 0 |
| S190170 | Power & Water Points-(MA17) | 21 | 21 | 04MAR10 | 27MAR10 | 0 | 21 | 0 |
| S190180 | Implement Traffic Divn Scheme-(MA17) | 7 | 7 | 04MAR10 | 11MAR10 | 0 | 7 | 0 |
| S190300 | Site Office-(MA17) | 3 | 3 | 29MAR10 | 31MAR10 | 0 | 3 | 0 |
| **Preparation Works** | | | | | | | | |
| S190200 | Skin Wall-(MA17) | 48 | 48 | 08MAR10 | 08MAY10 | 0 | 48 | 0 |
| S190210 | Soil Nails-(MA17) | 26 | 26 | 08MAR10 | 09APR10 | 0 | 26 | 0 |
| S190220 | Install Geotech Instruments-(MA17) | 3 | 3 | 15MAR10 | 17MAR10 | 0 | 3 | 0 |
| S190260 | Mobilization&Setup(Pre-drill & Grouting)-(MA17) | 3 | 3 | 22MAR10 | 24MAR10 | 0 | 3 | 0 |
| S190270 | Pre-drilling-(MA17) | 14 | 14 | 25MAR10 | 13APR10 | 0 | 14 | 0 |
| S190320 | Shotcreting | 9 | 9 | 10APR10 | 21APR10 | 0 | 9 | 0 |
| S190340 | Analysis of the SI-(MA17) | 6 | 6 | 15APR10 | 21APR10 | 0 | 6 | 0 |
| S190126 | Tree Transplanted - MA17 | 1 | 0 | 27JUL09A | 28JUL09A | 100 | 0 | 0 |
| **CC26-SECTION 20 OF THE WORKS (PORTION M3)** | | | | | | | | |
| **Construction** | | | | | | | | |
| **Preliminary Works** | | | | | | | | |
| S200100 | Notify SO for Portion Possession - (M3) | 0 | 0 | | 04AUG09A | 100 | 0 | 0 |
| S200110 | 25 wks prior to Portion Possess Date-(M3) | 175 | 5 | 04AUG09A | 25JAN10 | 95 | 5 | 0 |
| S200125 | TMLG submission, coordination & Approval - M3 | 48 | 0 | 04AUG09A | 21OCT09A | 100 | 0 | 0 |
| **CC27-SECTION 21 OF THE WORKS (PORTION TP789)** | | | | | | | | |
| **Construction** | | | | | | | | |
| **Preliminary Works** | | | | | | | | |
| S210110 | 25 wks prior to Portion Possess Date-(TP789) | 175 | 0 | 20MAY09A | 10NOV09A | 100 | 0 | 0 |
| S210125 | Complete All Utility Diversions by Others -TP789 | 0 | 0 | | 23NOV09A | 100 | 0 | 0 |
| S210130 | Site Possession - TP789 | 0 | 0 | 24NOV09A | | 100 | 0 | 0 |
| S210150 | Hoarding/Fencing-(TP789) | 9 | 0 | 24NOV09A | 14DEC09A | 100 | 0 | -9 |
| S210160 | Cut/Fill/Place Concrete Block&Platform-(TP789) | 15 | 0 | 07DEC09A | 07JAN10A | 100 | 0 | -21 |
| S210170 | Power & Water Points-(TP789) | 21 | 0 | 24NOV09A | 07JAN10A | 100 | 0 | -15 |
| S210230 | Site Office-(TP789) | 3 | 0 | 01DEC09A | 05DEC09A | 100 | 0 | 13 |




| | |
|---|---|
| Start Date | 30NOV07 |
| Finish Date | 25MAY12 |
| Data Date | 21JAN10 |
| Run Date | 27JAN10 15:51 |



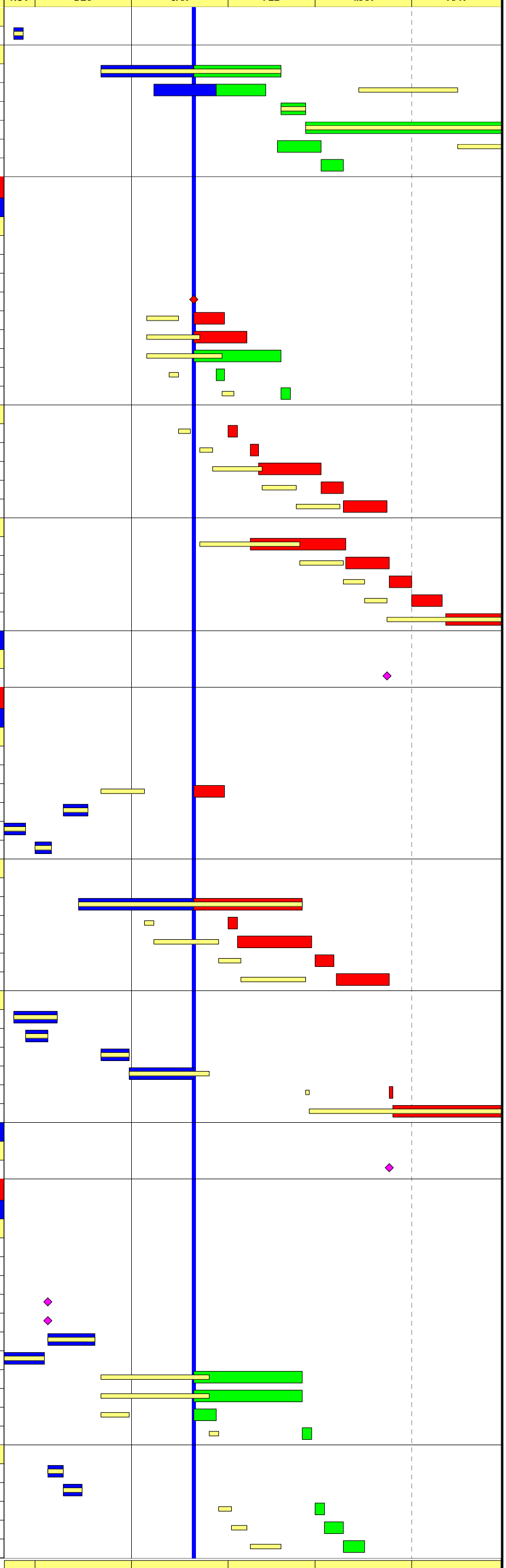
Early Bar
Previous Month (912B)
Progress Bar
Critical Activity

1001 Sheet 8 of 12

**Design & Construction of HK. West Drainage Tunnel**
**Contract No. DC/2007/10**
**3 MONTH ROLLING PROGRAMME**
**JANUARY/2010 MONTHLY REPORT**

| Date | Revision | Checked | Approved |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

| Act ID | Activity Description | Orig Dur | Rem Dur | Anticipated Start | Anticipated Finish | % Comp | Rem Dur | Approved Works Prog 9116 EF Variance |
|---|---|---|---|---|---|---|---|---|
| **Preparation Works** | | | | | | | | |
| S210180 | Install Geotech Monitoring Instruments-(TP789) | 3 | 0 | 24NOV09A | 26NOV09A | 100 | 0 | 9 |
| **Intakes - External Structures (Stage1)** | | | | | | | | |
| S210268 | VO # 09&29 Additional Utilities Works - TP789 | 44 | 21 | 22DEC09A | 17FEB10 | 52 | 21 | 42 |
| S210270 | Open Cut Excavation | 24 | 14 | 08JAN10A | 12FEB10 | 25 | 14 | 67 |
| S210290 | Excavation (Soft) Soil-(TP789) | 7 | 7 | 18FEB10 | 25FEB10 | 0 | 7 | 42 |
| S210300 | Excavation (Hard) Rock-(TP789) | 97 | 97 | 26FEB10 | 05JUL10 | 0 | 97 | 3 |
| S210310 | Forming Steeped Channel & Temp.Manhole/Catchpit | 12 | 12 | 17FEB10 | 02MAR10 | 0 | 12 | 67 |
| S210320 | Shotcreting & Diversion and etc. - (TP789) | 6 | 6 | 03MAR10 | 09MAR10 | 0 | 6 | 67 |
| **CC28-SECTION 22 OF THE WORKS (PORTION TP5)** | | | | | | | | |
| **Construction** | | | | | | | | |
| **Preliminary Works** | | | | | | | | |
| S220030 | Notify,Coord&Obtain Permit-Utility Prov - TP5 | 265 | 0 | 24OCT08A | 29SEP09A | 100 | 0 | 0 |
| S220110 | 25 wks prior to Portion Possess Date-(TP5) | 175 | 0 | 05MAY09A | 26OCT09A | 100 | 0 | 0 |
| S220125 | Complete All Utility Diversions by Others -(TP5) | 0 | 0 | | 18NOV09A | 100 | 0 | 0 |
| S220130 | Site Possession - TP5 | 0 | 0 | 21JAN10* | | 0 | 0 | -13 |
| S220150 | Hoarding/Fencing-(TP5) | 9 | 9 | 21JAN10 | 30JAN10 | 0 | 9 | -13 |
| S220160 | Cut/Fill/Place Concrete Block&Platform-(TP5) | 15 | 15 | 21JAN10 | 06FEB10 | 0 | 15 | -13 |
| S220170 | Power & Water Points-(TP5) | 21 | 21 | 21JAN10 | 17FEB10 | 0 | 21 | -13 |
| S220180 | Implement Traffic Divn Scheme (Pedn)-(TP5 | 3 | 3 | 28JAN10 | 30JAN10 | 0 | 3 | -13 |
| S221025 | Site Office-(TP5) | 3 | 3 | 18FEB10 | 20FEB10 | 0 | 3 | -13 |
| **Preparation Works** | | | | | | | | |
| S220210 | Install Geotech Monitoring Instruments-(TP5) | 3 | 3 | 01FEB10 | 03FEB10 | 0 | 3 | -13 |
| S220230 | Mobilization&Setup(Pre-drill & Grouting)-(TP5) | 3 | 3 | 08FEB10 | 10FEB10 | 0 | 3 | -13 |
| S220260 | Pre-drilling-(TP5) | 14 | 14 | 11FEB10 | 02MAR10 | 0 | 14 | -13 |
| S220280 | Analysis of the SI-(TP5) | 6 | 6 | 03MAR10 | 09MAR10 | 0 | 6 | -13 |
| S220300 | Grouting Works-(TP5) | 12 | 12 | 10MAR10 | 23MAR10 | 0 | 12 | -13 |
| **Intakes - External Structures (Stage1)** | | | | | | | | |
| S220250 | Cast Conc Dam&Excav Trench&Catchpit-(TP5) | 24 | 24 | 08FEB10 | 10MAR10 | 0 | 24 | -13 |
| S220310 | Installation of Steel Pipe-(TP5) | 12 | 12 | 11MAR10 | 24MAR10 | 0 | 12 | -13 |
| S220350 | Concrete Pad & Diversion and etc. | 6 | 6 | 25MAR10 | 31MAR10 | 0 | 6 | -13 |
| S220370 | Mobilization&Setup(Cofferdam Constn)-(TP5) | 6 | 6 | 01APR10 | 10APR10 | 0 | 6 | -13 |
| S220380 | Pre-boring,Backfilling with Sand-(TP5) | 48 | 48 | 12APR10 | 15JUN10 | 0 | 48 | -13 |
| **Milestone** | | | | | | | | |
| **Section 22 (Portion TP5)** | | | | | | | | |
| M28-1010 | 28.01-Pre-drilling & Grouting Works (Dropshaft) | 0 | 0 | | 23MAR10 | 0 | 0 | -15 |
| **CC29-SECTION 23 OF THE WORKS (PORTION TP4)** | | | | | | | | |
| **Construction** | | | | | | | | |
| **Preliminary Works** | | | | | | | | |
| S230110 | 25 wks prior to Portion Possess Date-(TP4) | 175 | 0 | 15APR09A | 06OCT09A | 100 | 0 | 0 |
| S230130 | Site Possession - TP4 | 0 | 0 | 23OCT09A | | 100 | 0 | 0 |
| S230150 | Hoarding/Fencing-(TP4) | 9 | 9 | 21JAN10 | 30JAN10 | 0 | 9 | -73 |
| S230160 | Cut/Fill/Place Concrete Block&Platform-(TP4) | 15 | 0 | 10DEC09A | 17DEC09A | 100 | 0 | -32 |
| S230170 | Power & Water Points-(TP4) | 21 | 0 | 04NOV09A | 27NOV09A | 100 | 0 | -9 |
| S230270 | Site Office-(TP4) | 3 | 0 | 01DEC09A | 05DEC09A | 100 | 0 | -13 |
| **Preparation Works** | | | | | | | | |
| S230200 | Install Geotech Monitoring Instruments-(TP4) | 3 | 0 | 04NOV09A | 06NOV09A | 100 | 0 | 0 |
| S230210 | Permanent Slope Protection Work | 42 | 27 | 15DEC09A | 24FEB10 | 50 | 27 | -43 |
| S230230 | Mobilization&Setup(Pre-drill & Grouting)-(TP4) | 3 | 3 | 01FEB10 | 03FEB10 | 0 | 3 | -67 |
| S230260 | Pre-drilling-(TP4) | 18 | 18 | 04FEB10 | 27FEB10 | 0 | 18 | -67 |
| S230290 | Analysis of the SI-(TP4) | 6 | 6 | 01MAR10 | 06MAR10 | 0 | 6 | -67 |
| S230310 | Grouting Works-(TP4) | 15 | 15 | 08MAR10 | 24MAR10 | 0 | 15 | -67 |
| **Intakes - External Structures (Stage1)** | | | | | | | | |
| S230250 | Concrete Dam, Catch Pits & Open-cut Channel | 24 | 0 | 24NOV09A | 07DEC09A | 100 | 0 | 1 |
| S230300 | Installation of Steel Pipe-(TP4) | 12 | 0 | 28NOV09A | 04DEC09A | 100 | 0 | 15 |
| S230320 | Concrete Pad & Diversion | 6 | 0 | 22DEC09A | 30DEC09A | 100 | 0 | 1 |
| S230322 | VO # 32 Addt'l Work Drainage Diversion - (TP4) | 21 | 0 | 31DEC09A | 20JAN10A | 100 | 0 | 5 |
| S230340 | Excavation (Soft) Soil-(TP4) | 1 | 1 | 25MAR10 | 25MAR10 | 0 | 1 | -46 |
| S230350 | Excavation (Hard) Rock-(TP4) | 72 | 72 | 26MAR10 | 03JUL10 | 0 | 72 | -46 |
| **Milestone** | | | | | | | | |
| **Section 23 (Portion TP4)** | | | | | | | | |
| M291010 | 29.01-Pre-drilling & Grouting Works (Dropshaft) | 0 | 0 | | 24MAR10 | 0 | 0 | -83 |
| **CC30-SECTION 24 OF THE WORKS (PORTION W5)** | | | | | | | | |
| **Construction** | | | | | | | | |
| **Preliminary Works** | | | | | | | | |
| S240030 | Notify,Coord&Obtain Permit-Utility Prov - W5 | 239 | 0 | 24NOV08A | 29SEP09A | 100 | 0 | 0 |
| S240110 | 25 wks prior to Portion Possess Date-(W5) | 175 | 0 | 20MAY09A | 11NOV09A | 100 | 0 | 0 |
| S240116 | P & S Environmental Base Monitoring Report(W5) | 12 | 0 | 20OCT09A | 03NOV09A | 100 | 0 | 0 |
| S240127 | Complete All Utility Diversion Works by - (W5) | 0 | 0 | | 04DEC09A | 100 | 0 | 0 |
| S240130 | Site Possession - (W5) | 0 | 0 | 05DEC09A | | 100 | 0 | 50 |
| S240150 | Hoarding/Fencing-(W5) | 9 | 0 | 05DEC09A | 19DEC09A | 100 | 0 | 46 |
| S240152 | VO # 19 Excavation Permit - (W5) | 51 | 0 | 03OCT09A | 03DEC09A | 100 | 0 | 0 |
| S240160 | Cut/Fill/Place Concrete Block&Platform-(W5) | 27 | 27 | 21JAN10 | 24FEB10 | 0 | 27 | 10 |
| S240170 | Power & Water Points-(W5) | 27 | 27 | 21JAN10 | 24FEB10 | 0 | 27 | 7 |
| S240180 | Implement Traffic Divn Scheme-(W5) | 6 | 6 | 21JAN10 | 27JAN10 | 0 | 6 | 16 |
| S240200 | Site Office-(W5) | 3 | 3 | 25FEB10 | 27FEB10 | 0 | 3 | 7 |
| **Preparation Works** | | | | | | | | |
| S240190 | Install Geotech Monitoring Instruments-(W5) | 3 | 0 | 05DEC09A | 09DEC09A | 100 | 0 | 58 |
| S240191 | Existing Bldg & Structure(EBS) Survey - (W5) | 6 | 0 | 10DEC09A | 15DEC09A | 100 | 0 | 47 |
| S240220 | Mobilization&Setup(Pre-drill & Grouting)-(W5) | 3 | 3 | 01MAR10 | 03MAR10 | 0 | 3 | 7 |
| S240230 | Pre-drilling-(W5) | 5 | 5 | 04MAR10 | 09MAR10 | 0 | 5 | 7 |
| S240240 | Analysis of the SI-(W5) | 6 | 6 | 10MAR10 | 16MAR10 | 0 | 6 | 7 |




| | |
|---|---|
| Start Date | 30NOV07 |
| Finish Date | 25MAY12 |
| Data Date | 21JAN10 |
| Run Date | 27JAN10 15:51 |



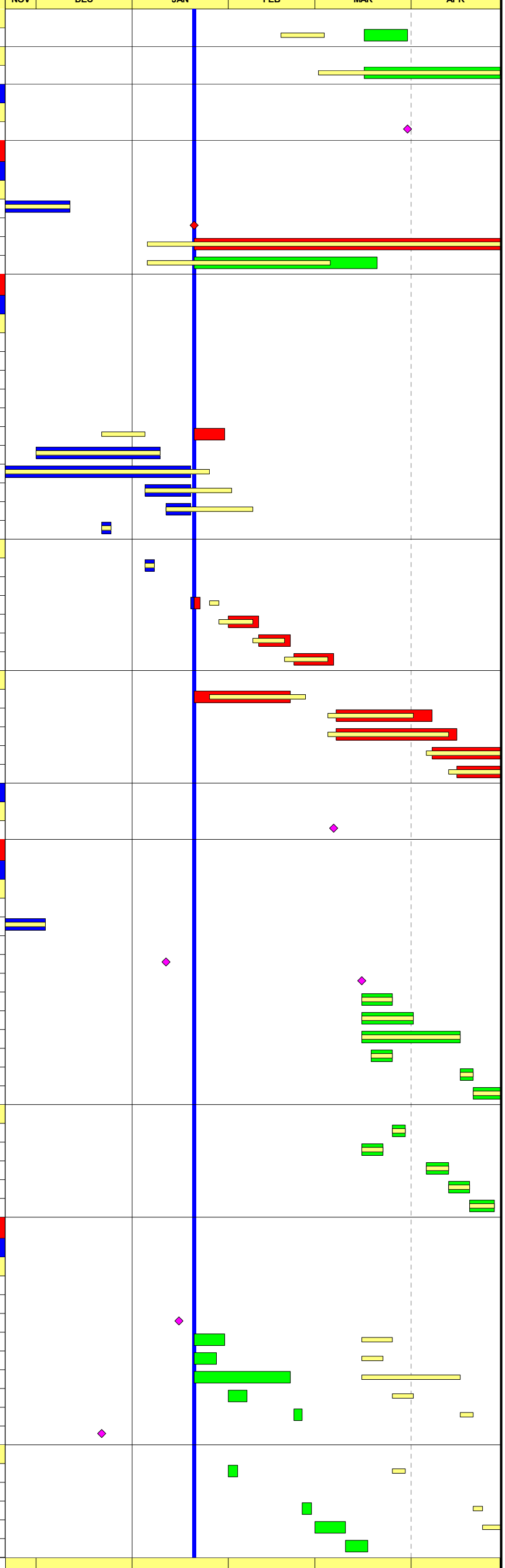
Early Bar
Previous Month (912B)
Progress Bar
Critical Activity

1001 Sheet 9 of 12

**Design & Construction of HK. West Drainage Tunnel**
**Contract No. DC/2007/10**
**3 MONTH ROLLING PROGRAMME**
**JANUARY/2010 MONTHLY REPORT**

| Date | Revision | Checked | Approved |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

| Act ID | Activity Description | Orig Dur | Rem Dur | Anticipated Start | Anticipated Finish | % Comp | Rem Dur | Approved Works Prog 9116 EF Variance |
|---|---|---|---|---|---|---|---|---|
| **Preparation Works** | | | | | | | | |
| S240250 | Grouting Works-(W5) | 12 | 12 | 17MAR10 | 30MAR10 | 0 | 12 | 7 |
| **Intakes - External Structures (Stage1)** | | | | | | | | |
| S240260 | Cofferdam Wall Driving-(W5) | 46 | 46 | 17MAR10 | 17MAY10 | 0 | 46 | 7 |
| **Milestone** | | | | | | | | |
| **Section 24 (Portion W5)** | | | | | | | | |
| M301010 | 30.01-Pre-drilling & Grouting Works (Dropshaft) | 0 | 0 | | 30MAR10 | 0 | 0 | 11 |
| **CC31-SECTION 25 OF THE WORKS (PORTION CR1)** | | | | | | | | |
| **Construction** | | | | | | | | |
| **Preliminary Works** | | | | | | | | |
| S250030 | Notify,Coord&Obtain Permit-Utility Prov - CR1 | 327 | 0 | 24OCT08A | 11DEC09A | 100 | 0 | 0 |
| S250100 | Notify SO for Portion Possession - (CR1) | 0 | 0 | | 20JAN10* | 0 | 0 | -13 |
| S250110 | 25 wks prior to Portion Possess Date-(CR1) | 175 | 175 | 21JAN10 | 14JUL10 | 0 | 175 | -15 |
| S250125 | TMLG submission, coordination & Approval - CR1 | 48 | 48 | 21JAN10 | 20MAR10 | 0 | 48 | -13 |
| **CC32-SECTION 26 OF THE WORKS (PORTION RR1)** | | | | | | | | |
| **Construction** | | | | | | | | |
| **Preliminary Works** | | | | | | | | |
| S260030 | Notify,Coord&Obtain Permit-Utility Prov - RR1 | 265 | 0 | 24OCT08A | 29SEP09A | 100 | 0 | 0 |
| S260110 | 25 wks prior to Portion Possess Date-(RR1) | 175 | 0 | 15APR09A | 06OCT09A | 100 | 0 | 0 |
| S260125 | Complete All Diversion works by Others-(RR1) | 0 | 0 | | 12NOV09A | 100 | 0 | -18 |
| S260127 | VO # 43 Delayed possession due to HEC diversion | 20 | 0 | 21OCT09A | 12NOV09A | 100 | 0 | 0 |
| S260130 | Site Possession - RR1 | 0 | 0 | 13NOV09A | | 100 | 0 | 0 |
| S260150 | Hoarding/Fencing-(RR1) | 9 | 9 | 21JAN10 | 30JAN10 | 0 | 9 | -56 |
| S260160 | Power & Water Points-(RR1) | 21 | 0 | 01DEC09A | 09JAN10A | 100 | 0 | -26 |
| S260170 | Utilities Diversion (Stage I) | 15 | 0 | 13NOV09A | 19JAN10A | 100 | 0 | -31 |
| S260180 | DSD - Foul Sewer (no.1) | 24 | 0 | 05JAN10A | 19JAN10A | 100 | 0 | -22 |
| S260200 | DSD - Foul Sewer (no.2) | 24 | 0 | 12JAN10A | 19JAN10A | 100 | 0 | -16 |
| S260210 | Site Office-(RR1) | 3 | 0 | 22DEC09A | 24DEC09A | 100 | 0 | -12 |
| **Preparation Works** | | | | | | | | |
| S260190 | Install Geotech Monitoring Instruments-(RR1) | 3 | 0 | 05JAN10A | 07JAN10A | 100 | 0 | -33 |
| S260191 | Existing Bldg & Structure(EBS) Survey - (RR1) | 6 | 0 | 07AUG09A | 14AUG09A | 100 | 0 | 0 |
| S260230 | Mobilization&Setup(Pre-drill & Grouting)-(RR1) | 3 | 2 | 20JAN10A | 22JAN10 | 50 | 2 | -31 |
| S260250 | Pre-drilling-(RR1) | 9 | 9 | 01FEB10 | 10FEB10 | 0 | 9 | -38 |
| S260270 | Analysis of the SI-(RR1) | 6 | 6 | 11FEB10 | 20FEB10 | 0 | 6 | -38 |
| S260280 | Grouting Works-(RR1) | 12 | 12 | 22FEB10 | 06MAR10 | 0 | 12 | -38 |
| **Intakes - External Structures (Stage1)** | | | | | | | | |
| S260240 | Upgrading RetainingStructure ofBoxCulvert Outlet | 24 | 24 | 21JAN10 | 20FEB10 | 0 | 24 | -20 |
| S260310 | Pre-bored Pile,SandFile Drive SheetPile-(RR1) | 24 | 24 | 08MAR10 | 07APR10 | 0 | 24 | -32 |
| S260320 | Driving Pile for Drainage Diversion | 30 | 30 | 08MAR10 | 15APR10 | 0 | 30 | -32 |
| S260350 | Excavn,Strutt'g&Decking/UpgradeBoxCulvertOutlet | 24 | 24 | 08APR10 | 08MAY10 | 0 | 24 | -32 |
| S260360 | Driving Pile for Cofferdam | 48 | 48 | 16APR10 | 19JUN10 | 0 | 48 | -32 |
| **Milestone** | | | | | | | | |
| **Section 26 (Portion RR1)** | | | | | | | | |
| M32-1010 | 32.01-Pre-drilling & Grouting Works (Dropshaft) | 0 | 0 | | 06MAR10 | 0 | 0 | -47 |
| **CC33-SECTION 27 OF THE WORKS (PORTION W8)** | | | | | | | | |
| **Construction** | | | | | | | | |
| **Preliminary Works** | | | | | | | | |
| S270030 | Notify,Coord&Obtain Permit-Utility Prov - W8 | 278 | 0 | 03NOV08A | 13NOV09A | 100 | 0 | 0 |
| S270110 | 25 wks prior to Portion Possess Date-(W8) | 175 | 0 | 12JUN09A | 03DEC09A | 100 | 0 | 0 |
| S270116 | P & S Environmental Base Monitoring Report(W8) | 12 | 0 | 20OCT09A | 03NOV09A | 100 | 0 | 0 |
| S270125 | Complete All Utility Diversions by Others(W8) | 0 | 0 | | 11JAN10A | 100 | 0 | 0 |
| S270130 | Site Possession - W8 | 0 | 0 | 16MAR10* | | 0 | 0 | 0 |
| S270150 | Hoarding/Fencing-(W8) | 9 | 9 | 16MAR10 | 25MAR10 | 0 | 9 | 0 |
| S270160 | Cut/Fill/Place Concrete Block&Platform-(W8) | 15 | 15 | 16MAR10 | 01APR10 | 0 | 15 | 0 |
| S270170 | Power & Water Points-(W8) | 24 | 24 | 16MAR10 | 16APR10 | 0 | 24 | 0 |
| S270180 | Pedestrian Diversion (TTM) | 6 | 6 | 19MAR10 | 25MAR10 | 0 | 6 | 0 |
| S270270 | Site Office-(W8) | 3 | 3 | 17APR10 | 20APR10 | 0 | 3 | 0 |
| S270290 | DSD - Foul Sewer | 12 | 12 | 21APR10 | 06MAY10 | 0 | 12 | 0 |
| **Preparation Works** | | | | | | | | |
| S270210 | Install Geotech Monitoring Instruments-(W8) | 3 | 3 | 26MAR10 | 29MAR10 | 0 | 3 | 0 |
| S270211 | Existing Bldg & Structure(EBS) Survey - (W8) | 6 | 6 | 16MAR10 | 22MAR10 | 0 | 6 | 0 |
| S270230 | Mobilization&Setup(Pre-drill & Grouting)-(W8) | 6 | 6 | 06APR10 | 12APR10 | 0 | 6 | 0 |
| S270240 | Pre-drilling-(W8) | 5 | 5 | 13APR10 | 19APR10 | 0 | 5 | 0 |
| S270260 | Analysis of the SI-(W8) | 6 | 6 | 20APR10 | 27APR10 | 0 | 6 | 0 |
| **CC34-SECTION 28 OF THE WORKS (PORTION P5)** | | | | | | | | |
| **Construction** | | | | | | | | |
| **Preliminary Works** | | | | | | | | |
| S280030 | Notify,Coord&Obtain Permit-Utility Prov - P5 | 247 | 0 | 14NOV08A | 29SEP09A | 100 | 0 | 0 |
| S280110 | 25 wks prior to Portion Possess Date-(P5) | 175 | 0 | 20MAY09A | 10NOV09A | 100 | 0 | 0 |
| S280140 | Site Possession - (P5) | 0 | 0 | 16JAN10A | | 100 | 0 | 47 |
| S280160 | Hoarding/Fencing-(P5) | 9 | 9 | 21JAN10 | 30JAN10 | 0 | 9 | 43 |
| S280170 | Cut/Fill/Place Concrete Block&Platform-(P5) | 6 | 6 | 21JAN10 | 27JAN10 | 0 | 6 | 43 |
| S280180 | Power & Water Points-(P5) | 24 | 24 | 21JAN10 | 20FEB10 | 0 | 24 | 43 |
| S280190 | Stage 1 - Drainage Diversion | 6 | 6 | 01FEB10 | 06FEB10 | 0 | 6 | 43 |
| S280230 | Site Office-(P5) | 3 | 3 | 22FEB10 | 24FEB10 | 0 | 3 | 43 |
| S280240 | Complete All Utility Diversions by Others-(P5) | 0 | 0 | | 21DEC09A | 100 | 0 | -20 |
| **Preparation Works** | | | | | | | | |
| S280200 | Install Geotech Monitoring Instruments-(P5) | 3 | 3 | 01FEB10 | 03FEB10 | 0 | 3 | 43 |
| S280201 | Existing Bldg & Structure(EBS) Survey - (P5) | 6 | 0 | 28AUG09A | 04SEP09A | 100 | 0 | 0 |
| S280270 | Mobilization&Setup(Pre-drill & Grouting)-(P5) | 3 | 3 | 25FEB10 | 27FEB10 | 0 | 3 | 43 |
| S280300 | Pre-drilling-(P5) | 9 | 9 | 01MAR10 | 10MAR10 | 0 | 9 | 43 |
| S280310 | Analysis of the SI-(P5) | 6 | 6 | 11MAR10 | 17MAR10 | 0 | 6 | 43 |




| | |
|---|---|
| Start Date | 30NOV07 |
| Finish Date | 25MAY12 |
| Data Date | 21JAN10 |
| Run Date | 27JAN10 15:51 |



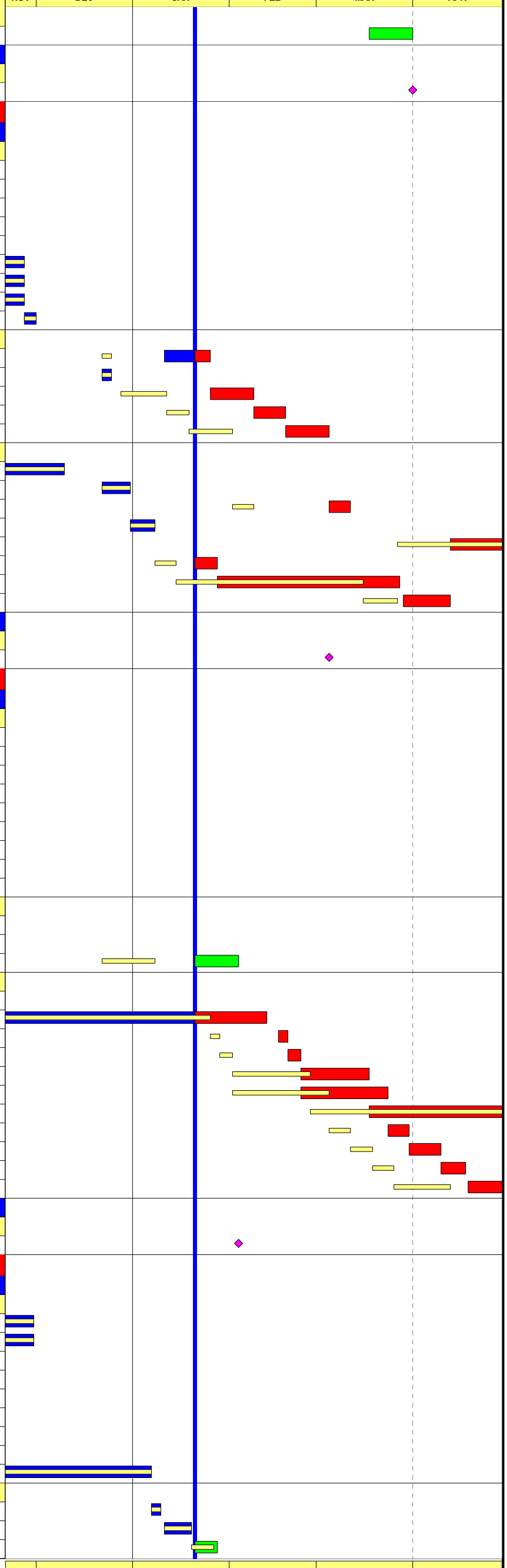
Early Bar
Previous Month (912B)
Progress Bar
Critical Activity



**Design & Construction of HK. West Drainage Tunnel**
**Contract No. DC/2007/10**
**3 MONTH ROLLING PROGRAMME**
**JANUARY/2010 MONTHLY REPORT**

| Date | Revision | Checked | Approved |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

| Act ID | Activity Description | Orig Dur | Rem Dur | Anticipated Start | Anticipated Finish | % Comp | Rem Dur | Approved Works Prog 9116 EF Variance |
|---|---|---|---|---|---|---|---|---|
| **Preparation Works** | | | | | | | | |
| S280330 | Grouting Works-(P5) | 12 | 12 | 18MAR10 | 31MAR10 | 0 | 12 | 43 |
| **Milestone** | | | | | | | | |
| **Section 28 (Portion P5)** | | | | | | | | |
| M341010 | 34.01-Pre-drilling & Grouting Works (Dropshaft) | 0 | 0 | | 31MAR10 | 0 | 0 | 61 |
| **CC35-SECTION 29 OF THE WORKS (PORTION W10)** | | | | | | | | |
| **Construction** | | | | | | | | |
| **Preliminary Works** | | | | | | | | |
| S290030 | Notify,Coord&Obtain Permit-Utility Prov - W10 | 190 | 0 | 26NOV08A | 27AUG09A | 100 | 0 | 0 |
| S290110 | 25 wks prior to Portion Possess Date-(W10) | 175 | 0 | 25MAR09A | 15SEP09A | 100 | 0 | 0 |
| S290122 | VO # claim # 42 Delayed handover of site (W10) | 6 | 0 | 08OCT09A | 15OCT09A | 100 | 0 | 0 |
| S290125 | Complete All Diversion Works by Others-(W10) | 0 | 0 | | 14OCT09A | 100 | 0 | 0 |
| S290130 | Site Possession - W10 | 0 | 0 | 15OCT09A | | 100 | 0 | 0 |
| S290150 | Hoarding/Fencing-(W10) | 12 | 0 | 15OCT09A | 26NOV09A | 100 | 0 | -23 |
| S290160 | Cut/Fill/Place Concrete Block&Platform-(W10) | 12 | 0 | 20OCT09A | 26NOV09A | 100 | 0 | -20 |
| S290170 | Power & Water Points-(W10) | 24 | 0 | 15OCT09A | 26NOV09A | 100 | 0 | -12 |
| S290290 | Site Office-(W10) | 3 | 0 | 27NOV09A | 30NOV09A | 100 | 0 | -12 |
| **Preparation Works** | | | | | | | | |
| S290240 | Mobilization&Setup(Pre-drill & Grouting)-(W10) | 3 | 4 | 11JAN10A | 25JAN10 | 25 | 4 | -65 |
| S290270 | Install Geotech Monitoring Instruments-(W10) | 3 | 0 | 22DEC09A | 24DEC09A | 100 | 0 | -44 |
| S290280 | Pre-drilling-(W10) | 12 | 12 | 26JAN10 | 08FEB10 | 0 | 12 | -65 |
| S290330 | Analysis of the SI-(W10) | 6 | 6 | 09FEB10 | 18FEB10 | 0 | 6 | -65 |
| S290360 | Grouting Works-(W10) | 12 | 12 | 19FEB10 | 04MAR10 | 0 | 12 | -65 |
| **Intakes - External Structures (Stage1)** | | | | | | | | |
| S290210 | Expose Existing Box Culvert by Excav-(W10 | 18 | 0 | 14NOV09A | 09DEC09A | 100 | 0 | 22 |
| S290300 | Saw-cut Box-culvert&place Steel Pipes-(W10) | 6 | 0 | 22DEC09A | 30DEC09A | 100 | 0 | 12 |
| S290320 | Mobilization&Setup(Cofferdam Constn)-(W10) | 6 | 6 | 05MAR10 | 11MAR10 | 0 | 6 | -65 |
| S290340 | Secure Pipes Hang&SealantConnect-(W10) | 6 | 0 | 31DEC09A | 07JAN10A | 100 | 0 | 12 |
| S290350 | Pre-boring,Backfilling with Sand-(W10) | 48 | 48 | 13APR10 | 17JUN10 | 0 | 48 | 1 |
| S290370 | Removal Lower Sector Box-culvert-(W10) | 6 | 6 | 21JAN10 | 27JAN10 | 0 | 6 | 1 |
| S290372 | VO # 13 Add'l drainage diversion works (W10) | 48 | 48 | 28JAN10 | 27MAR10 | 0 | 48 | 1 |
| S290380 | Install Final Struts Cofferdam Wall-(W10) | 10 | 10 | 29MAR10 | 12APR10 | 0 | 10 | 1 |
| **Milestone** | | | | | | | | |
| **Section 29 (Portion W10)** | | | | | | | | |
| M351010 | 35.01-Pre-drilling & Grouting Works (Dropshaft) | 0 | 0 | | 04MAR10 | 0 | 0 | -83 |
| **CC36-SECTION 30 OF THE WORKS (PORTION HKU1)** | | | | | | | | |
| **Construction** | | | | | | | | |
| **Preliminary Works** | | | | | | | | |
| S300020 | Notify,Coord&Obtain Permit-Utility Prov - HKU1 | 218 | 0 | 24OCT08A | 24JUL09A | 100 | 0 | 0 |
| S300120 | Site Possession - HKU1 | 0 | 0 | 15AUG09A | | 100 | 0 | 0 |
| S300121 | Complete All Diversions by Others - HKU1 | 0 | 0 | | 14AUG09A | 100 | 0 | 0 |
| S300130 | Tree Felling-(HKU1) | 12 | 0 | 15AUG09A | 30SEP09A | 100 | 0 | 0 |
| S300160 | Power & Water Points-(HKU1) | 24 | 0 | 15AUG09A | 12SEP09A | 100 | 0 | 0 |
| S300170 | Cut/Fill/Place Concrete Block&Platform-(HKU1) | 21 | 0 | 27JUL09A | 23AUG09A | 100 | 0 | 0 |
| S300180 | Hoarding/Fencing-(HKU1) | 12 | 0 | 24JUN09A | 27JUL09A | 100 | 0 | 0 |
| S300210 | Site Office-(HKU1) | 3 | 0 | 14SEP09A | 18SEP09A | 100 | 0 | 0 |
| S300212 | VO/Claim # 41-Sep/09 Typhoon KOPPU Sig 8 - HKU1 | 1 | 0 | 14SEP09A | 14SEP09A | 100 | 0 | 0 |
| **Preparation Works** | | | | | | | | |
| S300220 | Install Geotech Monitoring Instruments-(HKU1) | 3 | 0 | 03AUG09A | 06AUG09A | 100 | 0 | 0 |
| S300221 | Existing Bldg & Structure(EBS) Survey - (HKU1) | 6 | 0 | 07AUG09A | 14AUG09A | 100 | 0 | 0 |
| S300270 | Grouting Works-(HKU1) | 12 | 12 | 21JAN10 | 03FEB10 | 0 | 12 | -52 |
| **Intakes - External Structures (Stage1)** | | | | | | | | |
| S300290 | Mobilization&Setup(Cofferdam Constn)-(HKU1) | 6 | 0 | 19SEP09A | 05OCT09A | 100 | 0 | 0 |
| S300310 | Cofferdam Wall Driving - (HKU1) | 56 | 20 | 12OCT09A | 12FEB10 | 70 | 20 | -16 |
| S300320 | Grouting for Rock Socket-(HKU1) | 3 | 3 | 17FEB10 | 19FEB10 | 0 | 3 | -16 |
| S300330 | Demobilization Piling-(HKU1) | 3 | 3 | 20FEB10 | 23FEB10 | 0 | 3 | -16 |
| S300350 | Excavation (Soft) Soil-(HKU1) | 19 | 19 | 24FEB10 | 17MAR10 | 0 | 19 | -16 |
| S300370 | Expose Existing Box Culvert by Excav-(HKU1) | 24 | 24 | 24FEB10 | 23MAR10 | 0 | 24 | -16 |
| S300380 | Excavation (Hard) Rock-(HKU1) | 51 | 51 | 18MAR10 | 26MAY10 | 0 | 51 | -16 |
| S300390 | Saw-cut Box-culvert&place Steel Pipes-(HKU1) | 6 | 6 | 24MAR10 | 30MAR10 | 0 | 6 | -16 |
| S300400 | Secure Pipes Hang&SealantConnect-(HKU1) | 6 | 6 | 31MAR10 | 09APR10 | 0 | 6 | -16 |
| S300410 | Removal Lower Sector Box-culvert-(HKU1) | 6 | 6 | 10APR10 | 17APR10 | 0 | 6 | -16 |
| S300420 | Excavation & Lodging-(HKU1) | 12 | 12 | 19APR10 | 04MAY10 | 0 | 12 | -16 |
| **Milestone** | | | | | | | | |
| **Section30 (Portion HKU1)** | | | | | | | | |
| M361010 | 36.01-Pre-drilling & Grouting Works (Dropshaft) | 0 | 0 | | 03FEB10 | 0 | 0 | -64 |
| **CC37-SECTION 31 OF THE WORKS (PORTION PFLR1)** | | | | | | | | |
| **Construction** | | | | | | | | |
| **Preliminary Works** | | | | | | | | |
| S310970 | Hoarding/Fencing-(PFLR1) | 12 | 0 | 12AUG09A | 29NOV09A | 100 | 0 | -16 |
| S310980 | Implement TTM - (Occupy Pedestrain) | 12 | 0 | 15JUL09A | 29NOV09A | 100 | 0 | -25 |
| S310984 | VO/Claim # 38-Aug/09 Typhoon GONI Sig 8 - WP | 1 | 0 | 04AUG09A | 04AUG09A | 100 | 0 | 0 |
| S310986 | VO/Claim # 41-Sep/09 Typhoon KOPPU Sig 8 - WP | 1 | 0 | 14SEP09A | 14SEP09A | 100 | 0 | 0 |
| S310990 | Power & Water Points-(PFLR1) | 24 | 0 | 12AUG09A | 10SEP09A | 100 | 0 | 0 |
| S311100 | Site Office-(PFLR1) | 3 | 0 | 11SEP09A | 17SEP09A | 100 | 0 | 0 |
| S311102 | VO # 23 Tree Felling Application - (PFLR1) | 48 | 0 | 15JUL09A | 14SEP09A | 100 | 0 | 0 |
| S311104 | VO # 23 Add'l Land Application - (PFLR1) | 12 | 0 | 16SEP09A | 30SEP09A | 100 | 0 | 0 |
| S311106 | VO # 23 Add'l Drainage Diversion - (PFLR1) | 23 | 0 | 02OCT09A | 06JAN10A | 100 | 0 | -53 |
| **Preparation Works** | | | | | | | | |
| S311120 | Mobilization&Setup(Pre-drill & Grouting)-(PFLR1) | 3 | 0 | 07JAN10A | 09JAN10A | 100 | 0 | -46 |
| S311140 | Pre-drilling-(PFLR1) | 8 | 0 | 11JAN10A | 19JAN10A | 100 | 0 | -46 |
| S311150 | Analysis of the SI-(PFLR1) | 6 | 6 | 21JAN10 | 27JAN10 | 0 | 6 | -47 |




| | |
|---|---|
| Start Date | 30NOV07 |
| Finish Date | 25MAY12 |
| Data Date | 21JAN10 |
| Run Date | 27JAN10 15:51 |



Early Bar
Previous Month (912B)
Progress Bar
Critical Activity

1001 Sheet 11 of 12

**Design & Construction of HK. West Drainage Tunnel**
**Contract No. DC/2007/10**
**3 MONTH ROLLING PROGRAMME**
**JANUARY/2010 MONTHLY REPORT**

| Date | Revision | Checked | Approved |
|---|---|---|---|
| | | | |
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| | | | |
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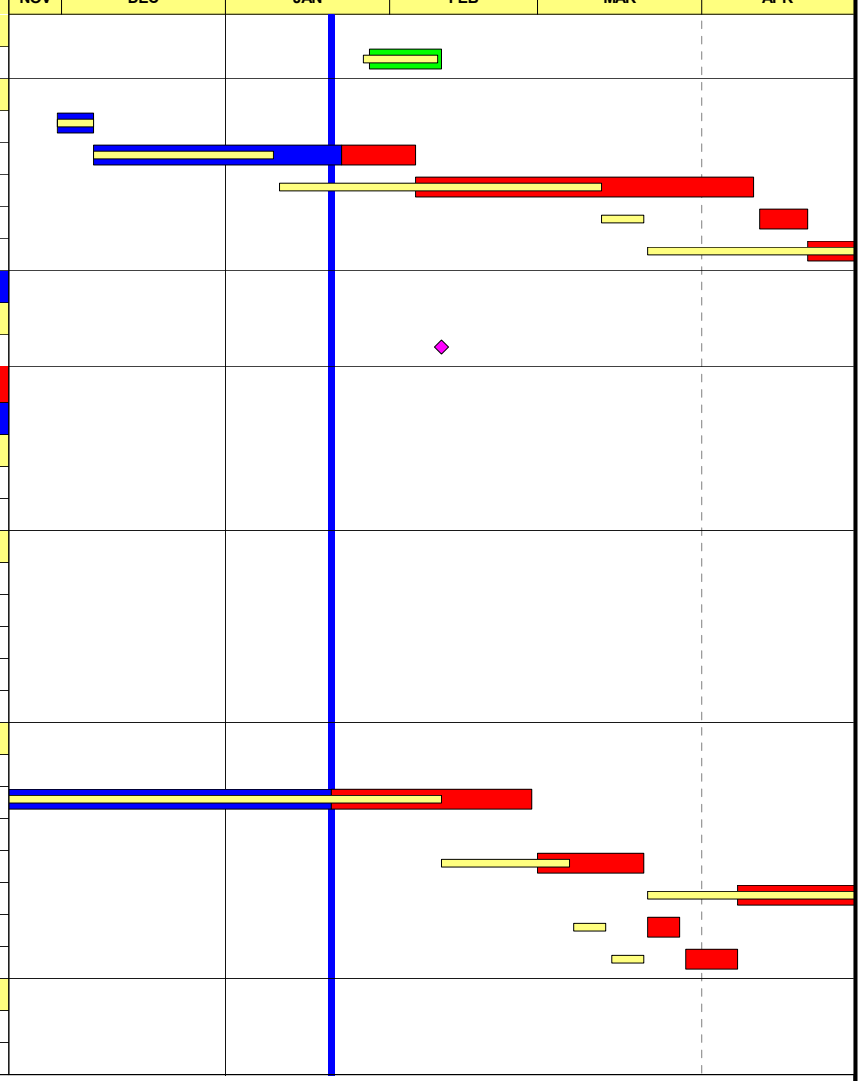
| Act ID | Activity Description | Orig Dur | Rem Dur | Anticipated Start | Anticipated Finish | % Comp | Rem Dur | Approved Works Prog 9116 EF Variance |
|---|---|---|---|---|---|---|---|---|
| **Preparation Works** | | | | | | | | |
| S311160 | Grouting Works-(PFLR1) | 12 | 12 | 28JAN10 | 10FEB10 | 0 | 12 | -47 |
| **Intakes - External Structures (Stage1)** | | | | | | | | |
| S311180 | Mobilization&Setup(Cofferdam Constn)-(PFLR1) | 7 | 0 | 30NOV09A | 06DEC09A | 100 | 0 | -4 |
| S311190 | Pre-boring,Backfilling with Sand-(PFLR1) | 32 | 12 | 07DEC09A | 05FEB10 | 45 | 12 | -22 |
| S311200 | Driving of Cofferdam Wall-(PFLR1) | 50 | 49 | 06FEB10 | 10APR10 | 0 | 49 | -51 |
| S311210 | Grouting for Rock Socket-(PFLR1) | 7 | 7 | 12APR10 | 20APR10 | 0 | 7 | -55 |
| S311230 | Excavation (Soft) Soil-(PFLR1) | 36 | 36 | 21APR10 | 08JUN10 | 0 | 36 | -55 |
| **Milestone** | | | | | | | | |
| **Section 31 (Portion PFLR1)** | | | | | | | | |
| M371010 | 37.01-Pre-drilling & Grouting Works (Dropshaft) | 0 | 0 | | 10FEB10 | 0 | 0 | -58 |
| **CC38-SECTION 32 OF THE WORKS (PORTION SM1)** | | | | | | | | |
| **Construction** | | | | | | | | |
| **Preliminary Works** | | | | | | | | |
| S321012 | VO # 14 Bend Block & Noise Barrier Modific-(SM1) | 73 | 0 | 29MAY09A | 02SEP09A | 100 | 0 | 0 |
| S321016 | VO/Claim # 38-Aug/09 Typhoon GONI Sig 8 - SM1 | 1 | 0 | 04AUG09A | 04AUG09A | 100 | 0 | 0 |
| **Preparation Works** | | | | | | | | |
| S321030 | Install Geotech Monitoring Instruments-(SM1) | 3 | 0 | 02SEP09A | 04SEP09A | 100 | 0 | 0 |
| S321050 | Mobilization&Setup(Pre-drill & Grouting)-(SM1) | 12 | 0 | 04SEP09A | 07SEP09A | 100 | 0 | 0 |
| S321060 | Pre-drilling-(SM1) | 24 | 0 | 07SEP09A | 15OCT09A | 100 | 0 | 0 |
| S321062 | VO/Claim # 41-Sep/09 Typhoon KOPPU Sig 8 - SM1 | 1 | 0 | 14SEP09A | 14SEP09A | 100 | 0 | 0 |
| S321080 | Grouting Works-(SM1) | 12 | 0 | 16OCT09A | 06NOV09A | 100 | 0 | 0 |
| **Intakes - External Structures (Stage1)** | | | | | | | | |
| S321100 | Mobilization&Setup(Cofferdam Constn)-(SM1) | 6 | 0 | 04SEP09A | 07SEP09A | 100 | 0 | 0 |
| S321170 | Excavation & Strutting-(SM1) | 70 | 30 | 31OCT09A | 27FEB10 | 65 | 30 | -1 |
| S321180 | Cofferdam Excavation (Soft) Soil | 8 | 0 | 31OCT09A | 09NOV09A | 100 | 0 | 87 |
| S321190 | Construction Temporary Manholes-(SM1) | 18 | 18 | 01MAR10 | 20MAR10 | 0 | 18 | -1 |
| S321200 | Excavation (Hard) Rock-(SM1) | 30 | 30 | 08APR10 | 17MAY10 | 0 | 30 | -12 |
| S321210 | Laying of Pipes-(SM1) | 6 | 6 | 22MAR10 | 27MAR10 | 0 | 6 | -1 |
| S321220 | Divn & Backfilling/Temp. Decking & etc.-(SM1) | 6 | 6 | 29MAR10 | 07APR10 | 0 | 6 | -1 |
| S321040 | Modification of the Noise Barrier Footings | 1 | 0 | 24AUG09A | 03SEP09A | 100 | 0 | 0 |
| S321090 | Modification of the WSD Bend Blocks | 1 | 0 | 25JUN09A | 23AUG09A | 100 | 0 | 0 |




| Start Date | 30NOV07 |
|---|---|
| Finish Date | 25MAY12 |
| Data Date | 21JAN10 |
| Run Date | 27JAN10 15:51 |



Early Bar
Previous Month (912B)
Progress Bar
Critical Activity



**Design & Construction of HK. West Drainage Tunnel**
**Contract No. DC/2007/10**
**3 MONTH ROLLING PROGRAMME**
**JANUARY/2010 MONTHLY REPORT**

| Date | Revision | Checked | Approved |
|---|---|---|---|
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**APPENDIX N**
**WASTE GENERATED QUANTITY**

# Monthly Waste Flow Table

| Quarter ending | | Actual Quantities of Inert C&D Materials Generated Monthly | | | | | Actual Quantities of C&D Wastes Generated Monthly | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total Quantity Generated | Broken Concrete | Reused in the Contract | Reused in other Projects | Disposed as Public Fill | Imported Fill | Metals | Paper/ cardboard packaging | Plastics (see notes 2) | Chemical Waste | Others, e.g. general refuse |
| | ( in $m^3$) | ( in $m^3$) | ( in $m^3$) | ( in $m^3$) | ( in $m^3$) | ( in $m^3$) | ( in Kg) | ( in Kg) | ( in Kg) | ( in Kg) | ( in $m^3$) |
| Jan 2010 | 39537 | | 15 | 38356 | 1166 | | 6550 | 220 | | 650 | 118 |
| Feb 2010 | | | | | | | | | | | |
| Mar 2010 | | | | | | | | | | | |
| Apr 2010 | | | | | | | | | | | |
| May 2010 | | | | | | | | | | | |
| Jun 2010 | | | | | | | | | | | |
| Sub-Total | 39537 | | 15 | 38356 | 1166 | | 6550 | 220 | | 650 | 118 |
| July 2010 | | | | | | | | | | | |
| Aug 2010 | | | | | | | | | | | |
| Sep 2010 | | | | | | | | | | | |
| Oct 2010 | | | | | | | | | | | |
| Nov 2010 | | | | | | | | | | | |
| Dec 2010 | | | | | | | | | | | |
| Total | 39537 | | 15 | 38356 | 1166 | | 6550 | 220 | | 650 | 118 |

Notes:
(1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
(2) Plastics refer to plastic bottles/containers, plastic/foam from packaging material.
(3) Quantities in Jan 2010 are upto 31st January 2010.
(4) Assuming the conversion factor from $m^3$ to ton for rock is 2.5.
(5) The materials reused in other Project shall not be treated as waste under the Waste Disposal Ordinance (Cap 354).
(6) The figures are included for the sake of completeness of record.