



CONTRACT NO: HK/2009/05

**WANCHAI DEVELOPMENT PHASE II AND CENTRAL
WANCHAI BYPASS
SAMPLING, FIELD MEASUREMENT AND TESTING WORK
(STAGE 1)**

**ENVIRONMENTAL PERMIT NO. EP-364/2009/A,
FURTHER ENVIRONMENTAL PERMIT NOS. FEP-01/364/2009,
FEP-02/364/2009, FEP-03/364/2009, FEP-04/364/2009/A, FEP-
05/364/2009/A, FEP-06/364/2009/A AND FEP-07/364/2009/A**

MONTHLY ENVIRONMENTAL MONITORING & AUDIT REPORT

- FEBRUARY 2011 -

CLIENTS:

**Civil Engineering and Development
Department**

and

Highways Department

PREPARED BY:

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CERTIFIED BY:

Raymond Dai
Environmental Team Leader

DATE:

9 March 2011

Ref.: AACWBIECEM00_0_1081L.11

10 March 2011

AECOM Asia Company Limited
8/F, Tower 2
Grand Central Plaza
138 Shatin Rural Committee Road,
Shatin, New Territories,
Hong Kong

By Post and Fax (2691 2649)

Attention: Mr. Kelvin CHENG

Dear Sir,

**Re: Wan Chai Development Phase II and Central-Wan Chai Bypass
Monthly Environmental Monitoring and Audit Report (February 2011)
for EP-364/2009/A, FEP-01/364/2009, FEP-02/364/2009, FEP-03/364/2009,
FEP-04/364/2009/A, FEP-05/364/2009/A, FEP-06/364/2009/A and
FEP-07/364/2009/A**

Reference is made to the Environmental Team's submission of the captioned Monthly Environmental Monitoring and Audit (EM&A) Report for February 2011 dated 9 March 2011.

Please be informed that we have no adverse comment on the captioned submission. We write to verify the captioned submission in accordance with Condition 3.4 in the captioned Environmental Permits.

Thank you very much for your kind attention and please do not hesitate to contact the undersigned should you have any queries.

Yours sincerely,



David Yeung
Independent Environmental Checker

| | | | |
|------|-------|-------------------------------------|-------------------|
| c.c. | HyD | Mr. Jones Lai | by fax: 2714 5289 |
| | CEDD | Mr. Patrick Keung | by fax: 2577 5040 |
| | AECOM | Mr. Francis Leong / Mr. Stephen Lai | by fax: 2691 2649 |
| | Lam | Mr. Raymond Dai | by fax: 2882 3331 |

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TABLE OF CONTENTS

EXECUTIVE SUMMARYIV

1. INTRODUCTION 1

1.1 Scope of the Report 1

1.2 Structure of the Report..... 1

2. PROJECT BACKGROUND 3

2.1 Background 3

2.2 Scope of the Project and Site Description 3

2.3 Division of the Project Responsibility 4

2.4 Project Organization and Contact Personnel..... 5

3. STATUS OF REGULATORY COMPLIANCE..... 10

3.1 Status of Environmental Licensing and Permitting under the Project..... 10

4. MONITORING REQUIREMENTS 16

4.1 Noise Monitoring 16

4.2 Air Monitoring 17

5. MONITORING RESULTS..... 20

5.1 Noise Monitoring Results 20

5.2 Real Time Noise Monitoring Results..... 22

5.3 Air Monitoring Results 22

5.4 Waste Monitoring Results 24

6. COMPLIANCE AUDIT..... 28

6.1 Noise Monitoring 28

6.2 Real Time Noise Monitoring..... 28

6.3 Air Monitoring 28

6.4 Review of the Reasons for and the Implications of Non-compliance..... 29

6.5 Summary of action taken in the event of and follow-up on non-compliance 29

7. CUMULATIVE CONSTRUCTION IMPACT DUE TO THE CONCURRENT PROJECTS 30

8. ENVIRONMENTAL SITE AUDIT 31

9. COMPLAINTS, NOTIFICATION OF SUMMONS AND PROSECUTION 32

10. CONCLUSION 33

LIST OF TABLES

| | |
|-------------------|--|
| Table 2.1 | Schedule 2 Designated Projects under this Project |
| Table 2.2 | Details of Individual Contracts under the Project |
| Table 2.3 | Contact Details of Key Personnel |
| Table 3.1 | Summary of the current status on licences and/or permits on environmental protection pertinent to the Project |
| Table 3.2 | Cumulative Summary of Valid Licences and Permits under Contract no. HY/2009/17 |
| Table 3.3 | Summary of submission status under FEP-03/364/2009 |
| Table 3.4 | Cumulative Summary of Valid Licences and Permits under Contract no. 04/HY/2006 |
| Table 3.5 | Summary of submission status under FEP-04/364/2009/A |
| Table 3.6 | Cumulative Summary of Valid Licences and Permits under Contract no. HK/2009/01 |
| Table 3.7 | Summary of submission status under FEP-02/364/2009 |
| Table 3.8 | Cumulative Summary of Valid Licences and Permits under Contract no. HK/2009/02 |
| Table 3.9 | Summary of submission status under FEP-01/364/2009 |
| Table 3.10 | Cumulative Summary of Valid Licences and Permits under Contract no. HY/2009/18 |
| Table 3.11 | Summary of submission status under FEP-05/364/2009/A |
| Table 3.12 | Cumulative Summary of Valid Licences and Permits under Contract no. HY/2009/15 |
| Table 3.13 | Summary of submission status under FEP-06/364/2009/A |
| Table 3.14 | Cumulative Summary of Valid Licences and Permits under Contract no. HY/2009/19 |
| Table 3.15 | Summary of submission status under FEP-07/364/2009/A |
| Table 4.1 | Noise Monitoring Stations |
| Table 4.2 | Real Time Noise Monitoring Stations |
| Table 4.3 | Air Monitoring Stations |
| Table 5.1 | Noise Monitoring Stations for Contract no. HY/2009/17 |
| Table 5.2 | Noise Monitoring Stations for Contract nos. 04/HY/2006 and HY/2009/18 |
| Table 5.3 | Noise Monitoring Station for Contract nos. HK/2009/01 and HK/2009/02 |
| Table 5.4 | Noise Monitoring Stations for Contract no. HY/2009/15 |
| Table 5.5 | Noise Monitoring Stations for Contract no. HY/2009/19 |
| Table 5.6 | Real Time Noise Monitoring Stations for Contract no. HY/2009/17 |
| Table 5.7 | Real Time Noise Monitoring Stations for Contract no. HY/2009/19 |
| Table 5.8 | Air Monitoring Station for Contract no. HY/2009/17 |
| Table 5.9 | Air Monitoring Stations for Contract no. 04/HY/2006 and HY/2009/18 |
| Table 5.10 | Air Monitoring Station for Contract no. HK/2009/01 |
| Table 5.11 | Air Monitoring Station for Contract no. HK/2009/02 |
| Table 5.12 | Air Monitoring Station for Contract no. HY/2009/15 |
| Table 5.13 | Air Monitoring Stations for Contract no. HY/2009/19 |
| Table 5.12 | Details of Waste Disposal for Contract no. HY/2009/17 |
| Table 5.13 | Details of Waste Disposal for Contract no. 04/HY/2006 |
| Table 5.14 | Details of Waste Disposal for Contract no. HK/2009/01 |
| Table 5.15 | Details of Waste Disposal for Contract no. HK/2009/02 |
| Table 5.16 | Details of Waste Disposal for Contract no. HY/2009/18 |
| Table 5.17 | Details of Waste Disposal for Contract no. HY/2009/15 |
| Table 5.18 | Details of Waste Disposal for Contract no. HY/2009/19 |
| Table 8.1 | Summary of Environmental Inspections for Contract no. HY/2009/17 |
| Table 9.1 | Cumulative Statistics on Complaints |
| Table 9.2 | Cumulative Statistics on Successful Prosecutions |
| Table 10.1 | Summary of Key Construction Activities of Individual Contract(s) to be commenced in Coming Reporting Month |



LIST OF FIGURES

| | |
|-------------------|--|
| <u>Figure 2.1</u> | Project Layout |
| <u>Figure 2.2</u> | Project Organization Chart |
| <u>Figure 4.1</u> | Locations of Environmental Monitoring Stations |

LIST OF APPENDICES

| | |
|----------------------|--|
| <u>Appendix 3.1</u> | Environmental Mitigation Implementation Schedule |
| <u>Appendix 4.1</u> | Action and Limit Level |
| <u>Appendix 4.2</u> | Copies of Calibration Certificates |
| <u>Appendix 5.1</u> | Monitoring Schedule for Reporting Month and Coming month |
| <u>Appendix 5.2</u> | Noise Monitoring Results and Graphical Presentations |
| <u>Appendix 5.3</u> | Air Quality Monitoring Results and Graphical Presentations |
| <u>Appendix 5.4</u> | Real-time Noise Monitoring Results and Graphical Presentations |
| <u>Appendix 6.1</u> | Event Action Plans |
| <u>Appendix 9.1</u> | Complaint Log |
| <u>Appendix 10.1</u> | Construction Programme of Individual Contracts |

EXECUTIVE SUMMARY

- i. This is the Environmental Monitoring and Audit (EM&A) Monthly Report – February 2011 specific for Environmental Permit no. EP-364/2009/A, Further Environmental Permit nos. FEP-01/364/2009, FEP-02-364/2009, FEP-03-364/2009, FEP-04/364/2009/A, FEP-05/364/2009/A, FEP-06/364/2009/A and FEP-07/364/2009/A. The EM&A report is prepared by the Environmental Team (ET) employed under Contract No. HK/2009/05 –Wanchai Development Phase II and Central Wanchai Bypass. This report presents the environmental monitoring findings and information recorded during the period 28th January 2011 to 27th February 2011. The cut-off date of reporting is at 27th of each reporting month.
- ii. In the reporting month, the principal work activities of individual contracts are included as follows:

Contract no. HY/2009/17 - Central - Wan Chai Bypass (CWB) at FEHD Whitfield Depot - Advanced piling works under FEP-03/364/2009

- Piling Works.

Contract no. HY/2009/18 - Central - Wan Chai Bypass (CWB) - Central Interchange under FEP-05/364/2009/A

- No major construction activity was undertaken in reporting month. Only preparation works was commenced in the reporting month.
- Condition survey / Instrumentation Manholes Survey
- Cable detection and excavation of trial pit
- Hoarding erection
- Erection of CLC
- Tree transplanting
- Trial installation of coupler in CR3

Contract no. 04/HY/2006 – Reconstruction of Bus Terminus near Man Yiu Street and Man Kwong Street under FEP-04/364/2009/A

- Major construction works were completed and Engineer's confirmation for completion of work is under processing in this reporting month.

Contract no. HK/2009/01 - Wan Chai Development Phase II - Central - Wan Chai Bypass at Hong Kong Convention and Exhibition Centre - Tunnel Works under FEP-02/364/2009

- No major construction activity was undertaken in reporting month.

Contract no. HK/2009/02 - Wan Chai Development Phase II - Central - Wan Chai Bypass at Wan Chai East (CWB Tunnel) under FEP-01/364/2009

- No major construction activity was undertaken in reporting month.

Contract no. HY/2009/15 - Central-Wanchai Bypass – Tunnel (Causeway Bay Typhoon Shelter Section) under FEP-06/364/2009/A

- No major construction activity was undertaken in reporting month.

Contract no. HY/2009/19 - Central - Wanchai Bypass Tunnel (North Point Section) and Island Eastern Corridor Link under FEP-07/364/2009/A

- No major construction activity was undertaken in reporting month.

Noise Monitoring

- iii. Noise monitoring during daytime was conducted at the International Finance Centre (eastern and western podium) on a weekly basis. No action and limit level exceedances were recorded in the reporting period.
- iv. Noise monitoring during daytime was conducted at Victoria Center on a weekly basis. No action and limit level exceedances were recorded in the reporting period.
- v. 24-hour real time noise monitoring was conducted at RTN1 - FEHD Hong Kong Transport Section Whitefield Depot for the piling works in FEHD Whitfield Depot. Five continuous Limit Level exceedances were recorded on 4 February 2011 due to the shooting off the Lunar New Year Fireworks. It was concluded as non-project related exceedances.

Air Monitoring

- vi. 1-hour and 24-hour Total Suspended Particulates (TSP) monitoring were conducted at International Finance Centre (eastern and western podium) on every six days basis. No action and limit level exceedance were recorded in the reporting period.
- vii. 1-hour and 24-hour Total Suspended Particulates (TSP) monitoring were conducted at Causeway Bay Community Center on every six days basis. No action and limit level exceedance were recorded in the reporting period.

Complaints, Notifications of Summons and Successful Prosecutions

- viii. No complaint, notification of summons and prosecution was recorded in the reporting month.

Site Inspections and Audit

- ix. The Environmental Team (ET) conducted weekly site inspections for Contract nos. HY/2009/17 and 04/HY/2006 in this reporting period. The Contractors rectified major observations and recommendations made during the audit sessions. No non-conformance was identified during the site inspections.

Future Key Issues

- x. In coming reporting month, the principal work activities of individual contracts are anticipated as follows:

Contract no. HY/2009/17 - Central - Wan Chai Bypass (CWB) at FEHD Whitfield Depot - Advanced piling works under FEP-03/364/2009

- Piling Works

Contract no. HY/2009/18 - Central - Wan Chai Bypass (CWB) – Central Interchange under FEP-05/364/2009/A

- No major construction activity was undertaken in next reporting month. Only preparation work was commenced.
- Condition survey / Instrumentation Manholes Survey
- Cable detection and excavation of trial pit
- Hoarding and project signboard erection
- Erection of CLC
- Tree transplanting
- Provision of site welfare facilities
- Trial installation of coupler in CR3

Contract no. 04/HY/2006 – Reconstruction of Bus Terminus near Man Yiu Street and Man Kwong Street under FEP-04/364/2009/A

- Major construction works were completed and Engineer's confirmation for completion of work is under processing.

Contract no. HK/2009/01 - Wan Chai Development Phase II - Central - Wan Chai Bypass at Hong Kong Convention and Exhibition Centre - Tunnel Works under FEP-02/364/2009

- No major construction activities are anticipated in coming reporting month.

Contract no. HK/2009/02 - Wan Chai Development Phase II - Central - Wan Chai Bypass at Wan Chai East (CWB Tunnel) under FEP-01/364/2009

- No major construction activities are anticipated in coming reporting month.

Contract no. HY/2009/15 - Central-Wanchai Bypass – Tunnel (Causeway Bay Typhoon Shelter Section) under FEP-06/364/2009/A

- No major construction activity was undertaken in coming reporting month.

Contract no. HY/2009/19 - Central - Wanchai Bypass Tunnel (North Point Section) and Island Eastern Corridor Link under FEP-07/364/2009/A

- No major construction activity was undertaken in coming reporting month.

1. INTRODUCTION

1.1 Scope of the Report

- 1.1.1. Lam Geotechnics Limited (LGL) has been appointed to work as the Environmental Team (ET) under Environmental Permit no. EP-364/2009A and Further Environmental permit nos. FEP-01/364/2009, FEP-02/364/2009, FEP-03/364/2009, FEP-04/364/2009/A, FEP-05/364/2009/A and FEP-06/364/2009/A to implement the Environmental Monitoring and Audit (EM&A) programme as stipulated in the EM&A Manual of the approved Environmental Impact Assessment (EIA) Report for Wan Chai Development phase II and Central-Wan Chai Bypass (Register No.: AEIAR-125/2008) and in the EM&A Manual of the approved EIA Report for Central-Wan Chai Bypass and Island Eastern Corridor Link (Register No. AEIAR-014/2001).
- 1.1.2. This report presents the environmental monitoring and auditing work carried out in accordance to the Section 10.3 of EM&A Manual and “*Environmental Monitoring and Audit Requirements*” under Particular Specification Section 27.
- 1.1.3. This report documents the finding of EM&A works for Environmental Permit (EP) no. EP-364/2009/A, Further Environmental Permit (FEP) nos. FEP-01-364/2009, FEP-02/364/2009, FEP-03/364/2009, FEP-04/364/2009/A, FEP-05/364/2009/A and FEP-06/364/2009/A during the period 28th January to 27th February 2011. The cut-off date of reporting is at 27th of each reporting month.

1.2 Structure of the Report

- Section 1** ***Introduction*** – details the scope and structure of the report.
- Section 2** ***Project Background*** – summarizes background and scope of the project, site description, project organization and contact details of key personnel during the reporting period.
- Section 3** ***Status of Regulatory Compliance*** – summarizes the status of valid Environmental Permits / Licenses during the reporting period.
- Section 4** ***Monitoring Requirements*** – summarizes all monitoring parameters, monitoring methodology and equipment, monitoring locations, monitoring frequency, criteria and respective event and action plan and monitoring programmes.
- Section 5** ***Monitoring Results*** – summarizes the monitoring results obtained in the reporting period.
- Section 6** ***Compliance Audit*** – summarizes the auditing of monitoring results, all exceedances environmental parameters.
- Section 7** ***Cumulative Construction Impact due to the Concurrent Projects*** –

summarizes the relevant cumulative construction impact due to the concurrent activities of the concurrent Projects.

Section 8 ***Site Inspection*** – summarizes the findings of weekly site inspections undertaken within the reporting period, with a review of any relevant follow-up actions within the reporting period.

Section 9 ***Complaints, Notification of summons and Prosecution*** – summarizes the cumulative statistics on complaints, notification of summons and prosecution

Section 10 ***Conclusion***

2. PROJECT BACKGROUND

2.1 Background

2.1.1. “Wan Chai Development phase II and Central-Wan Chai Bypass” and “Central-Wan Chai Bypass and Island Eastern Corridor Link” (hereafter called “the Project”) are Designed Project (DP) under the Environmental Impact Assessment Ordinance (Cap. 499) (EIAO). The Environmental Impact Assessment (EIA) Reports for Central-Wan Chai Bypass and Island Eastern Corridor Link (Register No. AEIAR-041/2001) and Wan Chai Development phase II and Central-Wan Chai Bypass (Register No.: AEIAR-125/2008) have been approved on 31 August 2001 and 11 December 2008 respectively.

2.1.2. The key purpose of Wan Chai Development Phase II (WDII) is to provide land at Wan Chai North and North Point for construction of the Central-Wan Chai Bypass and Island Eastern Corridor Link (CWB). Land formed under the project will be developed as a world-class waterfront promenade joining that at the new Central waterfront for public enjoyment.

2.1.3. There is a compelling and present need for the CWB to provide relief to the very congested east-west Connaught Road Central/Harcourt Road / Gloucester Road Corridor (the Corridor) which is currently operating beyond its capacity. The CWB will provide relief to the existing congestion along the Corridor and cater for the anticipated growth of traffic on Hong Kong Island. Without the CWB and its access roads, there will not be sufficient capacity to serve the heavy traffic demands at both strategic and local levels.

2.2 Scope of the Project and Site Description

2.2.1. Design and Construction of Central – Wan Chai Bypass and Island Eastern Corridor Link under the Project involves the construction and operation of a trunk road and its road tunnel more than 800m in length between portals that is shown at **Figure 2.1.**

2.2.2. The study area encompasses existing developments from Central to North Point. The scope of the Central-Wanchai Bypass (CWB) and Island Eastern Corridor Link (IECL) includes:

- A dual three-lane trunk road, approximately 4.5 km in length, and tunnel approximately 3.7 km in length defined from the connection with the existing Rumsey Street Flyover in Central, through to a connection with the existing Island Eastern Corridor to the east of the Causeway Bay Typhoon Shelter (CBTS);
- The Central Interchange near the Rumsey Street Flyover to provide road connections to the Central area;
- Tunnel control buildings and ventilation buildings;
- Slip roads to connect the CWB to the local road system in the Wan Chai North and Causeway Bay area;
- Associated road lighting, road signing, traffic control and surveillance system; and
- Other associated works.

2.2.3. The project also contains various Schedule 2 DPs that, under the EIAO, require Environmental Permits (EPs) to be granted by the DEP before they may be either constructed or operated. **Table 2.1** summarises the five individual DPs under this Project. **Figure 2.1** shows the locations of these Schedule 2 DPs.

Table 2.1 Schedule 2 Designated Projects under this Project

| Item | Designated Project | EIAO Reference | Reason for inclusion |
|------|--|----------------------------------|--|
| DP1 | Central-Wanchai Bypass (CWB) including its road tunnel and slip roads | Schedule 2, Part I, A.1 and A.7 | Trunk road and road tunnel more than 800 m in length |
| DP2 | Road P2 and other roads which are classified as primary/district distributor roads | Schedule 2, Part I, A.1 | Primary / district distributor roads |
| DP3 | Reclamation works including associated dredging works | Schedule 2, Part I, C.1 and C.12 | Reclamation more than 5 ha in size and a dredging operation less than 100 m from a seawater intake point |
| DP5 | Wan Chai East Sewage Outfall | Schedule 2, Part I, F.5 and F.6 | Submarine sewage pipelines with a total diameter more than 1,200 mm and include a submarine sewage outfall |
| DP6 | Dredging for the Cross-harbour Water Mains from Wan Chai to Tsim Sha Tsui | Schedule 2, Part I, C.12 | A dredging operation less than 100 m from a seawater intake point |

2.3 Division of the Project Responsibility

2.3.1. Due to the multi-contract nature of the Project, there are a number of contracts sub-dividing the whole works area into different work areas to be commenced. Contractors of individual contracts will be required by the EP holder to apply Further Environmental Permits such that the impact monitoring stations are sub-divided accordingly to facilitate the implementation of EM&A programme and to streamline the EM&A reporting for individual FEP holders correspondingly.

2.3.2. In the reporting month, advance piling work at FEHD Whitfield Depot under Contract no. HY/2009/17 was commenced on 5 October 2010 and completed on 20 February 2011. The details of individual contracts are summarized in **Table 2.2**.

Table 2.2 Details of Individual Contracts under the Project

| Contract No. | Contract Title | Associated DP(s) | Construction Commencement Date |
|--------------|--|------------------|--|
| HY/2009/17 | Central - Wan Chai Bypass (CWB) at FEHD Whitfield Depot - Advanced piling works. | DP1 | 5 October 2010 |
| HY/2009/18 | Central - Wan Chai Bypass (CWB) – Central Interchange | DP1 | Anticipated to be commenced in February 2011 |
| 04/HY/2006 | Reconstruction of Bus Terminus near Man Yiu Street and Man Kwong Street | DP1 | September 2010 |

| Contract No. | Contract Title | Associated DP(s) | Construction Commencement Date |
|--------------|--|------------------|--------------------------------|
| HK/2009/01 | Wan Chai Development Phase II - Central - Wan Chai Bypass at Hong Kong Convention and Exhibition Centre - Tunnel Works | DP1, DP2 | Pending |
| HK/2009/02 | Wan Chai Development Phase II - Central - Wan Chai Bypass at Wan Chai East(CWB Tunnel) (CWB Tunnel) | DP1 | Pending |
| HY/2009/15 | Central-Wanchai Bypass – Tunnel (Causeway Bay Typhoon Shelter Section) | DP1 | Pending |
| HY/2009/19 | Central - Wanchai Bypass Tunnel (North Point Section) and Island Eastern Corridor Link | DP1 | Pending |

2.4 Project Organization and Contact Personnel

2.4.1. Civil Engineering and Development Department and Highways Department are the overall project controllers for the Wan Chai Development Phase II and Central-Wan Chai Bypass respectively. For the construction phase of the Project, Project Engineer, Contractor(s), Environmental Team and Independent Environmental Checker are appointed to manage and control environmental issues.

2.4.2. The proposed project organization and lines of communication with respect to environmental protection works are shown in **Figure 2.2**. Key personnel and contact particulars are summarized in **Table 2.3**:

Table 2.3 Contact Details of Key Personnel

| Party | Role | Post | Name | Contact No. | Contact Fax |
|--|--|----------------------------------|--------------------|-------------|-------------|
| AECOM | Engineer for WDII | Principal Resident Engineer | Mr. Frankie Fan | 2587 1778 | 2587 1877 |
| | Engineer for CWB | Principal Resident Engineer | Mr. Peter Poon | 3916 1818 | 3529 2829 |
| Lam Woo & CO., LTD. | Contractor under Contract no. HY/2009/17 | Project Manager | Mr. K. S. Law | 9090 1378 | 2566 7522 |
| | | Construction Manager / Sub Agent | Mr. Joe Tsang | 9725-5874 | |
| | | Site Agent | Mr. Daniel Chan | 9372 0495 | |
| | | Environmental Officer | Mr. Andy Mak | 6461 3065 | |
| Chiu Hing Construction & Transportation Co. Ltd. | Contractor under Contract no. 04/HY/2006 | Contract Manager | Mr. Frederick Tsui | 2967 6363 | 2967 6366 |
| | | Senior Site Agent | Mr. Alvin Ma | 2967 6363 | 2967 6366 |
| | | Environmental Consultant | Mr. Jimmy Cheng | 2965 0898 | 2556 9172 |

| Party | Role | Post | Name | Contact No. | Contact Fax |
|---|---|---|-----------------------|-------------|-------------|
| Chun Wo – Leader Joint Venture | Contractor under Contract no. HK/2009/01 | Site Agent | Mr. Paul Yu | 9456 9819 | 2634 1626 |
| | | Operation Manager | Mr. Ho Wing Tai | 9306 1356 | |
| | | Construction Manager | Mr. David Wong | 9653 8635 | |
| | | Construction Manager | Mr. Wilson Lau | 5183 1270 | |
| | | Construction Manager | Mr. Alex Tsang | 9194 9383 | |
| | | Environmental Officer (Compliance Manager) | Mr. Ho Wing Tai | 9306 1356 | |
| | | Environmental Engineer | Mr. Ken Yang | 9262 6791 | |
| Chun Wo – CRGL Joint Venture | Contractor under Contract no. HK/2009/02 | Project Manager | Mr. Chan Sing Cho | 3658 3002 | 2827 9996 |
| | | Site Agent | Mr. Eric Lam | 3658-3048 | |
| | | Deputy Site Agent | Mr. Anthony Wu | 3658-3004 | |
| | | Environmental Officer (Compliance Manager) | Mr. Barry Leung | 3658 3031 | |
| | | Environmental Engineer | Ms. Flora Ng | 3658-3064 | |
| Chun Wo – CRGL Joint Venture | Contractor under Contract no. HY/2009/19 | Pending | Pending | Pending | Pending |
| Leighton Contractors (Asia) Limited | Contractor under Contract no. HY/2009/18 | Site Agent | Mr. Brian Gillon | 2214 7700 | 2140 6799 |
| | | Deputy Site Agent | Mr. Desmond Sze | 2214 7703 | |
| | | Quality & Env. Manager | Mr. Stephen Moc | 2214 7720 | |
| | | Environmental Officer | Mr. Anfernee Chow | 2214 7721 | |
| | | Environmental Supervisor | Mr. Dennis Yu | 2214 7738 | |
| China State Construction Engineering (HK) Ltd. | Contractor under Contract no. HY/2009/15 | Project Manager | Mr. M Y Wong | 2823 7879 | 2566 2192 |
| | | Site Agent | Mr. Leung Kwok Yiu | 9026 8808 | |
| | | Head of construction | Mr. Simon Tang | 9022 6060 | |
| | | Construction Manager | Mr. C K Kwok | 9779 2162 | |

| Party | Role | Post | Name | Contact No. | Contact Fax |
|---------------------------|---|---|------------------|-------------|-------------|
| | | Assistant Construction Manager (East) | Mr. Gene Cheung | 6105 4880 | |
| | | Assistant Construction Manager (West) | Mr. Tony Chiu | 9090 0606 | |
| | | Section Agent (East) | Mr. Jason Chan | 9254 1635 | |
| | | Section Agent (West) | Mr. Tang Ka Tung | 9473 4771 | |
| | | Environmental Manager | Ms. Anna Yu | 9473 1945 | |
| | | Environmental Officer | Mr Kelven Yip | 9669 5447 | |
| ENVIRON Hong Kong Limited | Independent Environmental Checker (IEC) | Independent Environmental Checker (IEC) | Mr. David Yeung | 3743 0788 | 3548 6988 |
| Lam Geotechnics Limited | Environmental Team (ET) | Environmental Team Leader (ETL) | Mr. Raymond Dai | 2882 3939 | 2882 3331 |

2.4.3. In the reporting month, the principal work activities of individual contracts are included as follows:

Contract no. 04/HY/2006 – Reconstruction of Bus Terminus near Man Yiu Street and Man Kwong Street under FEP-04/364/2009/A

- Major construction work was completed in this reporting month and Engineer's confirmation for completion of work is under processing.

Contract no. HY/2009/17 - Central - Wan Chai Bypass (CWB) at FEHD Whitfield Depot - Advanced piling works under FEP-03/364/2009

- Piling Works

Contract no. HY/2009/18 - Central - Wan Chai Bypass (CWB) - Central Interchange under FEP-05/364/2009/A

- No major construction activity was undertaken in reporting month. Only preparation works was commenced in the reporting month.
- Condition survey / Instrumentation Manholes Survey
- Cable detection and excavation of trial pit
- Hoarding and project signboard erection
- Erection of CLC
- Tree transplanting
- Provision of site welfare facilities
- Trial installation of coupler in CR3

Contract no. HK/2009/01 - Wan Chai Development Phase II - Central - Wan Chai Bypass at Hong Kong Convention and Exhibition Centre - Tunnel Works under FEP-02/364/2009

- No major construction activity was undertaken in reporting month.

Contract no. HK/2009/02 - Wan Chai Development Phase II - Central - Wan Chai Bypass at Wan Chai East (CWB Tunnel) under FEP-01/364/2009

- No major construction activity was undertaken in reporting month.

Contract no. HY/2009/15 - Central-Wanchai Bypass – Tunnel (Causeway Bay Typhoon Shelter Section) under FEP-06/364/2009/A

- No major construction activity was undertaken in reporting month.

Contract no. HY/2009/19 - Central - Wanchai Bypass Tunnel (North Point Section) and Island Eastern Corridor Link under FEP-07/364/2009/A

- No major construction activity was undertaken in reporting month.

2.4.4. In coming reporting month, the principal work activities of individual contracts are anticipated as follows:

Contract no. 04/HY/2006 – Reconstruction of Bus Terminus near Man Yiu Street and Man Kwong Street under FEP-04/364/2009/A

- Major construction work was completed in this reporting month and waiting Engineer's formal confirmation for completion of work.

Contract no. HY/2009/17 - Central - Wan Chai Bypass (CWB) at FEHD Whitfield Depot - Advanced piling works under FEP-03/364/2009

- Piling Works.

Contract no. HY/2009/18 - Central - Wan Chai Bypass (CWB) – Central Interchange under FEP-05/364/2009/A

- No major construction activity was undertaken in next reporting month. Only preparation works was commenced.
- Condition survey / Instrumentation Manholes and Intake Culvert Survey
- Cable detection and excavation of trial pit
- Hoarding and project signboard erection
- CLC construction works
- Tree transplanting
- Provision of site welfare facilities
- Trial installation of coupler in CR3
- Preparation of drainage diversion scheme

Contract no. HK/2009/01 - Wan Chai Development Phase II - Central - Wan Chai Bypass at Hong Kong Convention and Exhibition Centre - Tunnel Works under FEP-02/364/2009

- No major construction activity is anticipated in coming reporting month.

Contract no. HK/2009/02 - Wan Chai Development Phase II - Central - Wan Chai Bypass at Wan Chai East (CWB Tunnel) under FEP-01/364/2009

- No major construction activity is anticipated in coming reporting month.

Contract no. HY/2009/15 - Central-Wanchai Bypass – Tunnel (Causeway Bay Typhoon Shelter Section) under FEP-06/364/2009/A

- No major construction activity was undertaken in coming reporting month.

Contract no. HY/2009/19 - Central - Wanchai Bypass Tunnel (North Point Section) and Island Eastern Corridor Link under FEP-07/364/2009/A

- No major construction activity was undertaken in coming reporting month.

3. STATUS OF REGULATORY COMPLIANCE

3.1 Status of Environmental Licensing and Permitting under the Project

3.1.1. A summary of the current status on licences and/or permits on environmental protection pertinent to the Project is shown in **Table 3.1**.

Table 3.1 Summary of the current status on licences and/or permits on environmental protection pertinent to the Project

| Permits and/or Licences | Reference No. | Issued Date | Status |
|------------------------------|-------------------|--------------|------------|
| Environmental Permit | EP-356/2009 | 30 Jul 2009 | Valid |
| Environmental Permit | EP-364/2009 | 17 Aug 2009 | Superseded |
| Environmental Permit | EP-364/2009/A | 4 Aug 2010 | Valid |
| Environmental Permit | EP-376/2009 | 13 Nov 2010 | Valid |
| Further Environmental Permit | FEP-01/356/2009 | 18 Feb 2010 | Valid |
| Further Environmental Permit | FEP-02/356/2009 | 24 Mar 2010 | Valid |
| Further Environmental Permit | FEP-03/356/2009 | 24 Mar 2010 | Valid |
| Further Environmental Permit | FEP-04/356/2009 | 15 Nov 2010 | Valid |
| Further Environmental Permit | FEP-01/364/2009 | 24 Mar 2010 | Valid |
| Further Environmental Permit | FEP-02/364/2009 | 21 Apr 2010 | Valid |
| Further Environmental Permit | FEP-03/364/2009 | 12 July 2010 | Valid |
| Further Environmental Permit | FEP-04/364/2009/A | 14 Oct 2010 | Valid |
| Further Environmental Permit | FEP-05/364/2009/A | 15 Nov 2010 | Valid |
| Further Environmental Permit | FEP-06/364/2009/A | 22 Nov 2010 | Valid |
| Further Environmental Permit | FEP-07/364/2009/A | 25 Feb 2011 | Valid |

3.1.2. Due to the multi-contract nature of the Project, the status of permits and/or licences under the individual contract(s) are presented as below:

Contract no. HY/2009/17 - Central - Wan Chai Bypass (CWB) at FEHD Whitfield Depot - Advanced piling works under FEP-03/364/2009

3.1.3. Summary of the current status on licences and/or permits on environmental protection pertinent and submission under FEP-03/364/2009 for contract no. HY/2009/17 are shown in **Table 3.2** and **Table 3.3**.

Table 3.2 Cumulative Summary of Valid Licences and Permits under Contract no. HY/2009/17

| Permits and/or Licences | Reference No. | Issued Date | Valid Period/ Expiry Date | Status |
|--|-------------------|-------------|------------------------------|--------|
| Further Environmental Permit | FEP-03/364/2009 | 12 Jul 2010 | N/A | Valid |
| Notification of Works Under APCO | 319348 | 13 Jul 2010 | N/A | Valid |
| Discharge Licence | WT00007212-2010 | 5 Aug 2010 | 5 Aug 2010 – 31 Aug 2015 | Valid |
| Registration as a Waste Producer | 5213-151-L2608-05 | 13 May 2010 | N/A | Valid |
| Billing Account under Waste Disposal Ordinance | 7010400 | 16 Mar 2010 | N/A | Valid |

Table 3.3 Summary of submission status under FEP-03/364/2009

| EP Condition | Submission | Date of Submission |
|------------------------|--|--------------------|
| Condition 2.6 | Management Organization of Main Construction Companies | 18 September 2010 |
| Conditions 2.7 and 2.8 | Submission of works schedule and location plan | 1 September 2010 |
| Condition 2.9 | Noise Management Plan | 1 September 2010 |

Contract no. 04/HY/2006 – Reconstruction of Bus Terminus near Man Yiu Street and Man Kwong Street under FEP-04/364/2009/A

- 3.1.4. Summary of the current status on licences and/or permits on environmental protection pertinent and submission under FEP-04/364/2009/A for contract no. 04/HY/2006 are shown in **Table 3.4** and **Table 3.5**.

Table 3.4 Cumulative Summary of Valid Licences and Permits under Contract no. 04/HY/2006

| Permits and/or Licences | Reference No. | Issued Date | Valid Period/ Expiry Date | Status |
|--|-------------------|-------------|------------------------------|--------|
| Further Environmental Permit | FEP-04/364/2009/A | 14 Oct 2010 | N/A | Valid |
| Notification of Works Under APCO | 322225 | 7 Oct 2010 | N/A | Valid |
| Billing Account under Waste Disposal Ordinance | 7005123 | 9 Mar 2007 | N/A | Valid |

Table 3.5 Summary of submission status under FEP-04/364/2009/A

| EP Condition | Submission | Date of Submission |
|--------------|------------|--------------------|
|--------------|------------|--------------------|

| EP Condition | Submission | Date of Submission |
|------------------------|--|-----------------------------------|
| Condition 2.6 | Management Organization of Main Construction Companies | 11 June 2010 |
| Conditions 2.7 and 2.8 | Submission of works schedule and location plan | 11 June 2010 and 5 August 2010 |
| Condition 2.9 | Noise Management Plan | 19 October 2010 |
| Condition 2.10 | Landscape Plan | 26 November 2010 |

Contract no. HK/2009/01 - Wan Chai Development Phase II - Central - Wan Chai Bypass at Hong Kong Convention and Exhibition Centre - Tunnel Works under FEP-02/364/2009

- 3.1.5. Summary of the current status on licences and/or permits on environmental protection pertinent and submission under FEP-02/364/2009 for contract no. HK/2009/01 are shown in **Table 3.6** and **Table 3.7**

Table 3.6 Cumulative Summary of Valid Licences and Permits under Contract no. HK/2009/01

| Permits and/or Licences | Reference No. | Issued Date | Valid Period/ Expiry Date | Status |
|--|----------------------|-------------|------------------------------|--------|
| Further Environmental Permit | FEP-02/356/2009 | 24 Mar 2010 | N/A | Valid |
| Further Environmental Permit | FEP-02/364/2009 | 21 Apr 2010 | N/A | Valid |
| Notification of Works Under APCO | 313088 | 6 Jan 2010 | N/A | Valid |
| Discharge Licence | WT00006220-2010 | 18 Mar 2010 | 31 Mar 2015 | Valid |
| Billing Account under Waste Disposal Ordinance | 7010069 | 21 Jan 2010 | N/A | Valid |
| Registration as a Chemical Waste Producer | WPN5213-134-C3585-01 | 21 Jan 2010 | N/A | Valid |

Table 3.7 Summary of submission status under FEP-02/364/2009

| EP Condition | Submission | Date of Submission |
|--------------|------------|--------------------|
| NIL | NIL | NIL |

Contract no. HK/2009/02 - Wan Chai Development Phase II - Central - Wan Chai Bypass at Wan Chai East (CWB Tunnel) under FEP-01/364/2009

- 3.1.6. Summary of the current status on licences and/or permits on environmental protection pertinent and submission under FEP-01/364/2009 for contract no. HK/2009/02 are shown in **Table 3.8** and **Table 3.9**.

Table 3.8 Cumulative Summary of Valid Licences and Permits under Contract no. HK/2009/02

| Permits and/or Licences | Reference No. | Issued Date | Valid Period/ Expiry Date | Status |
|--|----------------------|--------------|------------------------------|--------|
| Further Environmental Permit | FEP-03/356/2009 | 24 Mar 2010 | N/A | Valid |
| | FEP-01/364/2009 | 24 Mar 2010 | N/A | Valid |
| Notification of Works Under APCO | 313962 | 2 Feb 2010 | N/A | Valid |
| Discharge Licence | WT00006249-2010 | 22 Mar 2010 | 31 Mar 2015 | Valid |
| | WT00006436-2010 | 15 Apr 2010 | 30 Apr 2015 | Valid |
| | WT00006673-2010 | 14 May 2010 | 31 Mar 2015 | Valid |
| | WT00006757-2010 | 28 May 2010 | 31 May 2015 | Valid |
| | WT00007129-2010 | 28 July 2010 | 31 Jul 2015 | Valid |
| Billing Account under Waste Disposal Ordinance | 7010255 | 10 Feb 2010 | N/A | Valid |
| Registration as Chemical Waste Producer | WPN5213-135-C3593-01 | 10 Mar 2010 | N/A | Valid |
| | WPN5213-839-C3593-02 | 22 Sep 2010 | N/A | Valid |

Table 3.9 Summary of submission status under FEP-01/364/2009

| EP Condition | Submission | Date of Submission |
|--------------|------------|--------------------|
| NIL | NIL | NIL |

Contract no. HY/2009/18 - Central - Wan Chai Bypass (CWB) – Central Interchange under FEP-05/364/2009/A

3.1.7. Summary of the current status on licences and/or permits on environmental protection pertinent and submission under FEP-05/364/2009A for contract no. HY/2009/18 are shown in Table 3.10 and Table 3.11.

Table 3.10 Cumulative Summary of Valid Licences and Permits under Contract no. HY/2009/18

| Permits and/or Licences | Reference No. | Issued Date | Valid Period/ Expiry Date | Status |
|------------------------------|-------------------|-------------|------------------------------|--------|
| Further Environmental Permit | FEP-05/364/2009/A | 15 Nov 2010 | N/A | Valid |

| Permits and/or Licences | Reference No. | Issued Date | Valid Period/ Expiry Date | Status |
|--|------------------------|-------------|------------------------------|--------|
| Notification of Works Under APCO | 322293 | 07 Oct 2010 | N/A | Valid |
| Discharge Licence | WT00008229-2011 | 13 Jan 2011 | 31 Jan 2016 | Valid |
| Billing Account under Waste Disposal Ordinance | 7011587 | 11-Oct-10 | N/A | Valid |
| Registration as a Waste Producer | WPN: 8335-121-L1048-04 | 17 Dec 2010 | N/A | Valid |

Table 3.11 Summary of submission status under FEP-05/364/2009/A

| EP Condition | Submission | Date of Submission |
|----------------|----------------|--------------------|
| Condition 2.10 | Landscape Plan | 26 Jan 2011 |

Contract no. HY/2009/15 - Central-Wanchai Bypass – Tunnel (Causeway Bay Typhoon Shelter Section) under FEP-06/364/2009/A

- 3.1.8. Summary of the current status on licences and/or permits on environmental protection pertinent and submission under FEP-06/364/2009/A for contract no. HY/2009/15 are shown in **Table 3.12** and **Table 3.13**

Table 3.12 Cumulative Summary of Valid Licences and Permits under Contract no. HY/2009/15

| Permits and/or Licences | Reference No. | Issued Date | Valid Period/ Expiry Date | Status |
|--|-------------------|-------------|------------------------------|--------|
| Further Environmental Permit | FEP-04/356/2009 | 22 Nov 2010 | N/A | Valid |
| | FEP-06/364/2009/A | 22 Nov 2010 | N/A | Valid |
| Notification of Works Under APCO | 321822 | 24 Sep 2010 | N/A | Valid |
| Billing Account under Waste Disposal Ordinance | 7011553 | 30 Sep 2010 | N/A | Valid |

Table 3.13 Summary of submission status under FEP-06/364/2009/A

| EP Condition | Submission | Date of Submission |
|--------------|------------|--------------------|
| NIL | NIL | NIL |

Contract no. HY/2009/19 - Central - Wanchai Bypass Tunnel (North Point Section) and Island Eastern Corridor Link under FEP-07/364/2009/A

3.1.9. The current status on licences and/or permits on environmental protection pertinent and submission under FEP-07/364/2009/A for contract no. HY/2009/19 are shown in **Table 3.14** and **Table 3.15**.

Table 3.14 Cumulative Summary of Valid Licences and Permits under Contract no. HY/2009/19

| Permits and/or Licences | Reference No. | Issued Date | Valid Period/ Expiry Date | Status |
|------------------------------|-------------------|-------------|------------------------------|--------|
| Further Environmental Permit | FEP-07/364/2009/A | 25 Feb 2011 | N/A | Valid |

Table 3.15 Summary of submission status under FEP-07/364/2009/A

| EP Condition | Submission | Date of Submission |
|--------------|------------|--------------------|
| NIL | NIL | NIL |

4. Monitoring Requirements

4.1 Noise Monitoring

NOISE MONITORING STATIONS

4.1.1. The noise monitoring stations for the Project are listed and shown in **Table 4.1** and **Figure 4.1**. **Appendix 4.1** shows the established Action/Limit Levels for the monitoring works.

Table 4.1 Noise Monitoring Stations

| Station | Description |
|---------|--|
| M1a | Harbour Road Sports Centre |
| M2b | Noon Gun Area |
| M3a | Tung Lo Wan Fire Station |
| M4b | Victoria Centre |
| M5b | City Garden |
| M6 | HK Baptist Church Henrietta Secondary School |
| M7e | International Finance Centre (Eastern End of Podium) |
| M7w | International Finance Centre (Western End of Podium) |

REAL TIME NOISE MONITORING STATIONS

4.1.2. The noise monitoring stations for the Project are listed and shown in **Table 4.2** and **Figure 4.1**. **Appendix 4.1** shows the established Action/Limit Levels for the monitoring works.

Table 4.2 Real Time Noise Monitoring Stations

| District | Station | Description |
|-------------|---------|---|
| Tin Hau | RTN1 | FEHD Hong Kong Transport Section Whitefield Depot |
| North Point | RTN2 | Oil Street Community Liaison Centre |

NOISE MONITORING PARAMETERS, FREQUENCY AND DURATION

4.1.3. The construction noise level shall be measured in terms of the A-weighted equivalent continuous sound pressure level (L_{eq}). $L_{eq(30\text{ minutes})}$ shall be used as the monitoring parameter for the time period between 0700 and 1900 hours on normal weekdays. For all other time periods, $L_{eq(5\text{ minutes})}$ shall be employed for comparison with the Noise Control Ordinance (NCO) criteria. Supplementary information for data auditing, statistical results such as L_{10} and L_{90} shall also be obtained for reference.

4.1.4. Noise monitoring shall be carried out at all the designated monitoring stations. The monitoring frequency shall depend on the scale of the construction activities. The following is an initial

guide on the regular monitoring frequency for each station on a weekly basis when noise generating activities are underway:

- One set of measurements between 0700 and 1900 hours on normal weekdays.

4.1.5. Real time noise shall be carried out at the designated monitoring stations. The following is an initial guide on the regular monitoring frequency for each station on a 24 hours daily basis when noise generating activities are underway:

- One set of measurements between 0700 and 1900 hours on normal weekdays.
- One set of measurements between 1900 and 2300 hours on normal weekdays and 0700 and 2300 hours on public holidays.
- One set of measurements between 2300 and 0700 hours on next day on everyday.

4.1.6. If construction works are extended to include works during the hours of 1900 – 0700 as well as public holidays and Sundays, additional weekly impact monitoring shall be carried out during respective restricted hours periods. Applicable permits under NCO shall be obtained by the Contractor.

MONITORING EQUIPMENT

4.1.7. As referred to in the Technical Memorandum TM issued under the NCO, sound level meters in compliance with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications shall be used for carrying out the noise monitoring. 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 level from before and after the noise measurement agree to within 1.0 dB.

4.1.8. Noise measurements shall not be made in fog, rain, wind with a steady speed exceeding 5 m/s or wind with gusts exceeding 10 m/s. The wind speed shall be checked with a portable wind speed meter capable of measuring the wind speed in m/s.

4.1.9. The sound level meter shall be checked using an acoustic calibrator generating a known sound pressure level at a known frequency before deployment to the site and during each site visit. Measurements may be accepted as valid only if the calibration level from before and after the noise measurement agree to within 1.0 dB.

4.2 Air Monitoring

AIR QUALITY MONITORING STATIONS

4.2.1. The air monitoring stations for the Project are listed and shown in **Table 4.3** and **Figure 4.1**. **Appendix 4.1** shows the established Action/Limit Levels for the monitoring works.

Table 4.3 Air Monitoring Stations

| Station ID | Monitoring Location | Description |
|------------|-------------------------------------|--------------|
| CMA1b | Oil Street Community Liaison Centre | North Point |
| CMA2a | Causeway Bay Community Centre | Causeway Bay |

| Station ID | Monitoring Location | Description |
|------------|--|--------------|
| CMA3a | CWB PRE Site Office * | Causeway Bay |
| CMA4a | Society for the Prevention of Cruelty to Animals | Wan Chai |
| CMA6a | WDII PRE Site Office * | Wan Chai |
| MA1e | International Finance Centre (Eastern End of Podium) | Central |
| MA1w | International Finance Centre (western End of Podium) | Central |

* Remarks: As per the ENPC meeting in January 2011, the monitoring stations CMA3a - Future CWB site office at Wanchai Waterfront Promenade and CMA6a - Future AECOM site office at Work Area were renamed as remark.

AIR MONITORING PARAMETERS, FREQUENCY AND DURATION

- 4.2.2. One-hour and 24-hour TSP levels should be measured to indicate the impacts of construction dust on air quality. The 24-hour TSP levels shall be measured by following the standard high volume sampling method as set out in the Title 40 of the Code of Federal Regulations, Chapter 1 (Part 50), Appendix B.
- 4.2.3. All relevant data including temperature, pressure, weather conditions, elapsed-time meter reading for the start and stop of the sampler, identification and weight of the filter paper, and any other local atmospheric factors affecting or affected by site conditions, etc., shall be recorded down in detail.
- 4.2.4. For regular impact monitoring, the sampling frequency of at least once in every six-days, shall be strictly observed at all the monitoring stations for 24-hour TSP monitoring. For 1-hour TSP monitoring, the sampling frequency of at least three times in every six-days should be undertaken when the highest dust impact occurs.

SAMPLING PROCEDURE AND MONITORING EQUIPMENT

- 4.2.5. High volume samplers (HVSs) in compliance with the following specifications shall be used for carrying out the 1-hour and 24-hour TSP monitoring:
 - 0.6 - 1.7 m³ per minute adjustable flow range;
 - Equipped with a timing / control device with +/- 5 minutes accuracy for 24 hours operation;
 - Installed with elapsed-time meter with +/- 2 minutes accuracy for 24 hours operation;
 - Capable of providing a minimum exposed area of 406 cm²;
 - Flow control accuracy: +/- 2.5% deviation over 24-hour sampling period;
 - Equipped with a shelter to protect the filter and sampler;
 - Incorporated with an electronic mass flow rate controller or other equivalent devices;
 - Equipped with a flow recorder for continuous monitoring;
 - Provided with a peaked roof inlet;
 - Incorporated with a manometer;

- Able to hold and seal the filter paper to the sampler housing at horizontal position;
- Easily changeable filter; and
- Capable of operating continuously for a 24-hour period.

4.2.6. Initial calibration of dust monitoring equipment shall be conducted upon installation and thereafter at bi-monthly intervals. The transfer standard shall be traceable to the internationally recognized primary standard and be calibrated annually. The concern parties such as IEC shall properly document the calibration data for future reference. All the data should be converted into standard temperature and pressure condition.

LABORATORY MEASUREMENT / ANALYSIS

4.2.7. A clean laboratory with constant temperature and humidity control, and equipped with necessary measuring and conditioning instruments to handle the dust samples collected, shall be available for sample analysis, and equipment calibration and maintenance. The laboratory should be HOKLAS accredited.

4.2.8. Filter paper of size 8" x 10" shall be labeled before sampling. It shall be a clean filter paper with no pinholes, and shall be conditioned in a humidity-controlled chamber for over 24-hours and be pre-weighed before use for the sampling.

4.2.9. After sampling, the filter paper loaded with dust shall be kept in a clean and tightly sealed plastic bag. The filter paper shall then be returned to the laboratory for reconditioning in the humidity controlled chamber followed by accurate weighing by an electronic balance with readout down to 0.1 mg. The balance shall be regularly calibrated against a traceable standard.

4.2.10. All the collected samples shall be kept in a good condition for 6 months before disposal.

4.2.11. Current calibration certificates of equipments are presented in [Appendix 4.2](#).

5. MONITORING RESULTS

5.0.1. The environmental monitoring will be implemented based on the division of works areas of each designed project managed under different contracts with separate FEP applied by individual contractors. Overall layout showing work areas of various contracts, latest status of work commencement and monitoring stations is shown in **Figure 2.1** and **Figure 4.1**. The monitoring results are presented in according to the Individual Contract(s).

5.0.2. In the reporting month, the concurrent contracts are as follows:

- Contract no. HY/2009/17 - Central - Wan Chai Bypass (CWB) at FEHD Whitfield Depot - Advanced piling works under FEP-03/364/2009

5.0.3. The environment monitoring schedules for reporting month and coming month are presented in **Appendix 5.1**.

5.1 Noise Monitoring Results

Contract no. HY/2009/17 –Central - Wan Chai Bypass (CWB) at FEHD Whitfield Depot - Advanced piling works under FEP-03/364/2009

5.1.1. The proposed division of noise monitoring stations for Contract no. HY/2009/17 are summarized in **Table 5.1** below:

Table 5.1 Noise Monitoring Stations for Contract no. HY/2009/17

| Station | Description |
|---------|-----------------|
| M4b | Victoria Centre |

5.1.2. No action and limit level exceedance was recorded during day time and restricted hour period in the reporting month. Noise monitoring results measured in this reporting period are reviewed and summarized. Details of noise monitoring results and graphical presentation can be referred in **Appendix 5.2**.

Contract no. 04/HY/2006 – Reconstruction of Bus Terminus near Man Yiu Street and Man Kwong Street under FEP-04/364/2009/A and Contract no. HY/2009/18 - Central - Wan Chai Bypass (CWB) – Central Interchange under FEP-05/364/2009/A

5.1.3. The proposed division of noise monitoring stations for Contract no. HY/2009/18 are summarized in **Table 5.2** below:

Table 5.2 Noise Monitoring Stations for Contract nos. 04/HY/2006 and HY/2009/18

| Station | Description |
|---------|--|
| M7e | International Finance Centre (Eastern End of Podium) |
| M7w | International Finance Centre (Western End of Podium) |

- 5.1.4. No exceedance was recorded in the reporting month. Noise monitoring results measured in this reporting period are reviewed and summarized. Details of noise monitoring results and graphical presentation can be referred in **Appendix 5.2**.
- 5.1.5. The commencement of major construction works for Contract no. HY/2009/18 under FEP-05/364/2009A is pending. Only preparation works was commenced in the reporting month.

Contract no. HK/2009/01 - Wan Chai Development Phase II - Central - Wan Chai Bypass at Hong Kong Convention and Exhibition Centre - Tunnel Works under FEP-02/364/2009 and Contract no. HK/2009/02 - Wan Chai Development Phase II - Central - Wan Chai Bypass at Wan Chai East (CWB Tunnel) under FEP-01/364/2009

- 5.1.6. The commencement of construction works for Contract no. HK/2009/01 and HK/2009/02 under FEP-02/364/2009 and FEP-01/364/2009 respectively are pending. The proposed division of noise monitoring stations are summarized in **Table 5.3** below.

Table 5.3 Noise Monitoring Station for Contract nos. HK/2009/01 and HK/2009/02

| Station | Description |
|---------|----------------------------|
| M1a | Harbour Road Sports Centre |

Contract no. HY/2009/15 - Central-Wanchai Bypass – Tunnel (Causeway Bay Typhoon Shelter Section) under FEP-06/364/2009/A

- 5.1.7. The commencement of construction works for Contract no. HY/2009/15 under FEP-06/364/2009/A is pending. The proposed division of noise monitoring stations are summarized in **Table 5.4** below.

Table 5.4 Noise Monitoring Stations for Contract no. HY/2009/15

| Station | Description |
|---------|--------------------------|
| M2b | Noon Gun Area |
| M3a | Tung Lo Wan Fire Station |

Contract no. HY/2009/19 - Central - Wanchai Bypass Tunnel (North Point Section) and Island Eastern Corridor Link under FEP-07/364/2009/A

- 5.1.8. The commencement of construction works for Contract no. HY/2009/19 under FEP-07/364/2009/A is pending. The proposed division of noise monitoring stations are summarized in **Table 5.5** below.

Table 5.5 Noise Monitoring Stations for Contract no. HY/2009/19

| Station | Description |
|---------|--|
| M3a | Tung Lo Wan Fire Station |
| M4b | Victoria Centre |
| M5b | City Garden |
| M6 | HK Baptist Church Henrietta Secondary School |

5.2 Real Time Noise Monitoring Results

Contract no. HY/2009/17 –Central - Wan Chai Bypass (CWB) at FEHD Whitfield Depot - Advanced piling works under FEP-03/364/2009 and Contract no. HY/2009/19 - Central - Wanchai Bypass Tunnel (North Point Section) and Island Eastern Corridor Link under FEP-07/364/2009/A

- 5.2.1. The proposed division of noise monitoring stations are summarized in **Table 5.6** below. Real time noise monitoring for the piling works under contract no. HY/2009/17 was commenced on 5 October 2010

Table 5.6 Real Time Noise Monitoring Stations for Contract no. HY/2009/17

| Location ID | District | Description |
|-------------|----------|---|
| RTN1 | Tin Hau | FEHD Hong Kong Transport Section Whitefield Depot |

- 5.2.2. Five Limit Level exceedances were continuously recorded during restricted hour period on 4th February 2011. Real time noise monitoring results measured in this reporting period are reviewed and summarized. Details of real time noise monitoring results and graphical presentation can be referred to **Appendix 5.4**.

- 5.2.3. The proposed division of noise monitoring stations are summarized in **Table 5.7** below. Real time noise monitoring for major construction works under contract no. HY/2009/19 is pending.

Table 5.7 Real Time Noise Monitoring Stations for Contract no. HY/2009/19

| Location ID | District | Description |
|-------------|-------------|---|
| RTN1 | Tin Hau | FEHD Hong Kong Transport Section Whitefield Depot |
| RTN2 | North Point | Oil Street Community Liaison Center |

5.3 Air Monitoring Results

Contract no. HY/2009/17 –Central - Wan Chai Bypass (CWB) at FEHD Whitfield Depot - Advanced piling works under FEP-03/364/2009

- 5.3.1. The proposed division of air monitoring stations are summarized in **Table 5.8** below. Air monitoring for the piling works under contract no. HY/2009/17 was commenced on 8 October 2010.

Table 5.8 Air Monitoring Station for Contract no. HY/2009/17

| Station | Description |
|---------|-------------------------------|
| CMA2a | Causeway Bay Community Centre |

- 5.3.2. No exceedance was recorded in the reporting month. Air quality monitoring results measured in this reporting period are reviewed and summarized. Details of air monitoring results and graphical presentation can be referred in **Appendix 5.3**.

Contract no. 04/HY/2006 - Reconstruction of Bus Terminus near Man Yiu Street and Man Kwong Street under FEP-04/364/2009/A and Contract no. HY/2009/18 - Central - Wan Chai Bypass (CWB) – Central Interchange under FEP-05/364/2009/A

5.3.3. The proposed division of air monitoring stations are summarized in **Table 5.9** below.

Table 5.9 Air Monitoring Stations for Contract no. 04/HY/2006 and HY/2009/18

| Station | Description |
|---------|--|
| MA1e | International Finance Centre (Eastern End of Podium) |
| MA1w | International Finance Centre (Western End of Podium) |

5.3.4. No exceedance was recorded in the reporting month. Air quality monitoring results measured in this reporting period are reviewed and summarized. Details of air monitoring results and graphical presentation can be referred in **Appendix 5.3**.

5.3.5. The commencement of major construction works for Contract no. HY/2009/18 under FEP-05/364/2009A is pending. Only preparation works was commenced in the reporting month.

Contract no. HK/2009/01 - Wan Chai Development Phase II - Central - Wan Chai Bypass at Hong Kong Convention and Exhibition Centre - Tunnel Works under FEP-02/364/2009

5.3.6. Air quality monitoring will be commenced depending on the commencement of work for Contract no. HK/2009/01 under FEP-02/364/2009. The proposed division of air monitoring stations are summarized in **Table 5.10** below.

Table 5.10 Air Monitoring Station for Contract no. HK/2009/01

| Station | Description |
|---------|---|
| CMA5a | Children Playgrounds opposite to Pedestrian Plaza |

Contract no. HK/2009/02 - Wan Chai Development Phase II - Central - Wan Chai Bypass at Wan Chai East (CWB Tunnel) under FEP-01/364/2009

5.3.7. Air quality monitoring will be commenced depending on the commencement of work for Contract no. HK/2009/02 under FEP-01/364/2009. The proposed division of air monitoring stations are summarized in **Table 5.11** below.

Table 5.11 Air Monitoring Station for Contract no. HK/2009/02

| Station | Description |
|---------|--|
| CMA4a | Society for the Prevention of Cruelty to Animals |

Contract no. HY/2009/15 - Central-Wanchai Bypass – Tunnel (Causeway Bay Typhoon Shelter Section) under FEP-06/364/2009/A

5.3.8. Air quality monitoring will be commenced depending on the commencement of work for Contract no. HY/2009/15 under FEP-06/364/2009/A. The proposed division of air monitoring stations are summarized in **Table 5.12** below.

Table 5.12 Air Monitoring Station for Contract no. HY/2009/15

| Station | Description |
|---------|---------------------|
| CMA3a | CWB PRE Site Office |

Contract no. HY/2009/19 - Central - Wanchai Bypass Tunnel (North Point Section) and Island Eastern Corridor Link under FEP-07/364/2009/A

- 5.3.9. Air quality monitoring will be commenced depending on the commencement of work for Contract no. HY/2009/19 under FEP-07/364/2009/A. The proposed division of air monitoring stations are summarized in **Table 5.13** below.

Table 5.13 Air Monitoring Stations for Contract no. HY/2009/19

| Station | Description |
|---------|---------------------------------|
| CMA1b | Oil St Community Liaison Centre |
| CMA2a | Causeway Bay Community Centre |

5.4 Waste Monitoring Results

Contract no. HY/2009/17 –Central - Wan Chai Bypass (CWB) at FEHD Whitfield Depot - Advanced piling works under FEP-03/364/2009

- 5.4.1. Inert C&D waste was recycled in the reporting month. Details of the waste flow table are summarized in **Table 5.12**

Table 5.12 Details of Waste Disposal for Contract no. HY/2009/17

| Waste Type | Quantity this month, m ³ | Cumulative Quantity-to-Date, m ³ | Disposal / Dumping Grounds |
|----------------------------------|-------------------------------------|---|----------------------------|
| Inert C&D materials disposed | NIL | NIL | N/A |
| Inert C&D materials recycled | NIL | 1354.82 | N/A |
| Non-inert C&D materials disposed | NIL | NIL | N/A |
| Non-inert C&D materials recycled | NIL | NIL | N/A |
| Chemical waste disposed | N/A | N/A | N/A |

Contract no. 04/HY/2006 - Reconstruction of Bus Terminus near Man Yiu Street and Man Kwong Street under FEP-04/364/2009/A

- 5.4.2. No inert C&D waste was disposed of in this reporting month. Details of the waste flow table are summarized in **Table 5.13**.

Table 5.13 Details of Waste Disposal for Contract no. 04/HY/2006

| Waste Type* | Quantity this month, m ³ | Cumulative-to-Date. m ³ | Disposal / Dumping Grounds |
|---------------------|-------------------------------------|------------------------------------|----------------------------|
| Inert C&D materials | NIL | 1288.5 | Chai Wan and |

| Waste Type* | Quantity this month, m ³ | Cumulative-to-Date. m ³ | Disposal / Dumping Grounds |
|----------------------------------|-------------------------------------|------------------------------------|----------------------------|
| disposed | | | T.K.O. 137 |
| Inert C&D materials recycled | NIL | NIL | N/A |
| Non-inert C&D materials disposed | NIL | NIL | N/A |
| Non-inert C&D materials recycled | NIL | NIL | N/A |
| Chemical waste disposed | NIL | NIL | N/A |

Contract nos. HK/2009/01 - Wan Chai Development Phase II - Central - Wan Chai Bypass at Hong Kong Convention and Exhibition Centre - Tunnel Works under FEP-02/364/2009

- 5.4.3. No inert and non-inert C&D waste was disposed of in this reporting month. Details of the waste flow table are summarized in **Table 5.14**.

Table 5.14 Details of Waste Disposal for Contract no. HK/2009/01

| Waste Type* | Quantity this month, m ³ | Cumulative-to-Date. m ³ | Disposal / Dumping Grounds |
|----------------------------------|-------------------------------------|------------------------------------|----------------------------|
| Inert C&D materials disposed | NIL | NIL | N/A |
| Inert C&D materials recycled | NIL | NIL | N/A |
| Non-inert C&D materials disposed | NIL | NIL | N/A |
| Non-inert C&D materials recycled | NIL | NIL | N/A |
| Chemical waste disposed | NIL | NIL | N/A |

Contract no. HK/2009/02 - Wan Chai Development Phase II - Central - Wan Chai Bypass at Wan Chai East (CWB Tunnel) under FEP-01/364/2009

- 5.4.4. No inert and no-inert C&D waste was disposed of in this reporting month. Details of the waste flow table are summarized in **Table 5.15**.

Table 5.15 Details of Waste Disposal for Contract no. HK/2009/02

| Waste Type* | Quantity this month, m ³ | Cumulative-to-Date. m ³ | Disposal / Dumping Grounds |
|----------------------------------|-------------------------------------|------------------------------------|----------------------------|
| Inert C&D materials disposed | NIL | NIL | N/A |
| Inert C&D materials recycled | NIL | NIL | N/A |
| Non-inert C&D materials disposed | NIL | NIL | N/A |
| Non-inert C&D materials recycled | NIL | NIL | N/A |

| Waste Type* | Quantity this month, m ³ | Cumulative-to-Date. m ³ | Disposal / Dumping Grounds |
|-------------------------|-------------------------------------|------------------------------------|----------------------------|
| Chemical waste disposed | NIL | NIL | N/A |

Contract no. HY/2009/18 - Central - Wan Chai Bypass (CWB) – Central Interchange under FEP-05/364/2009/A

- 5.4.5. Non-inert C&D waste was disposed of in this reporting month. Details of the waste flow table are summarized in **Table 5.16**.

Table 5.16 Details of Waste Disposal for Contract no. HY/2009/18

| Waste Type* | Quantity this month, m ³ | Cumulative-to-Date. m ³ | Disposal / Dumping Grounds |
|----------------------------------|-------------------------------------|------------------------------------|----------------------------|
| Inert C&D materials disposed | NIL | NIL | N/A |
| Inert C&D materials recycled | NIL | NIL | N/A |
| Non-inert C&D materials disposed | 3.7 | 41.0 | SENT Landfill |
| Non-inert C&D materials recycled | NIL | NIL | N/A |
| Chemical waste disposed | NIL | NIL | N/A |

Contract no. HY/2009/15 - Central-Wanchai Bypass – Tunnel (Causeway Bay Typhoon Shelter Section) under FEP-06/364/2009/A

- 5.4.6. No inert and no-inert C&D waste was disposed of in this reporting month. Details of the waste flow table are summarized in **Table 5.17**.

Table 5.17 Details of Waste Disposal for Contract no. HY/2009/15

| Waste Type* | Quantity this month, m ³ | Cumulative-to-Date. m ³ | Disposal / Dumping Grounds |
|----------------------------------|-------------------------------------|------------------------------------|----------------------------|
| Inert C&D materials disposed | NIL | NIL | N/A |
| Inert C&D materials recycled | NIL | NIL | N/A |
| Non-inert C&D materials disposed | NIL | NIL | N/A |
| Non-inert C&D materials recycled | NIL | NIL | N/A |
| Chemical waste disposed | NIL | NIL | N/A |

Contract no. HY/2009/19 - Central - Wanchai Bypass Tunnel (North Point Section) and Island Eastern Corridor Link under FEP-07/364/2009/A

- 5.4.7. No inert and no-inert C&D waste was disposed of in this reporting month. Details of the waste flow table are summarized in **Table 5.18**.

Table 5.18 Details of Waste Disposal for Contract no. HY/2009/19

| Waste Type* | Quantity this month, m ³ | Cumulative-to-Date. m ³ | Disposal / Dumping Grounds |
|----------------------------------|-------------------------------------|------------------------------------|----------------------------|
| Inert C&D materials disposed | NIL | NIL | N/A |
| Inert C&D materials recycled | NIL | NIL | N/A |
| Non-inert C&D materials disposed | NIL | NIL | N/A |
| Non-inert C&D materials recycled | NIL | NIL | N/A |
| Chemical waste disposed | NIL | NIL | N/A |

6. Compliance Audit

6.0.1. The Event Action Plan for construction noise, air qualities are presented in **Appendix 6.1**.

6.1 Noise Monitoring

Contract no. HY/2009/17 – Central - Wan Chai Bypass (CWB) at FEHD Whitfield Depot - Advanced piling works under FEP-03/364/2009

6.1.1. No exceedance was recorded in the reporting month.

Contract no. 04/HY/2006 – Reconstruction of Bus Terminus near Man Yiu Street and Man Kwong Street under FEP-04/364/2009/A

6.1.2. No exceedance was recorded in the reporting month.

Contract no. HY/2009/18 - Central - Wan Chai Bypass (CWB) – Central Interchange under FEP-05/364/2009/A

6.1.3. No noise monitoring was undertaken in the reporting month.

Contract nos. HK/2009/01 - Wan Chai Development Phase II - Central - Wan Chai Bypass at Hong Kong Convention and Exhibition Centre - Tunnel Works and HK/2009/02 - Wan Chai Development Phase II - Central - Wan Chai Bypass at Wan Chai East (CWB Tunnel)

6.1.4. No noise monitoring was undertaken in the reporting month.

Contract no. HY/2009/15 - Central-Wanchai Bypass – Tunnel (Causeway Bay Typhoon Shelter Section) under FEP-06/364/2009/A

6.1.5. No noise monitoring was undertaken in the reporting month.

Contract no. HY/2009/19 - Central - Wanchai Bypass Tunnel (North Point Section) and Island Eastern Corridor Link under FEP-07/364/2009/A

6.1.6. No noise monitoring was undertaken in the reporting month.

6.2 Real Time Noise Monitoring

Contract no. HY/2009/17 – Central - Wan Chai Bypass (CWB) at FEHD Whitfield Depot - Advanced piling works under FEP-03/364/2009

6.2.1. Five Limit Level exceedances were continuously recorded during restricted hour period on 4th February 2011 due to the shooting off the Lunar New Year Fireworks. It was concluded as non-project related exceedances.

Contract no. HY/2009/19 - Central - Wanchai Bypass Tunnel (North Point Section) and Island Eastern Corridor Link under FEP-07/364/2009/A

6.2.2. No real time noise monitoring was undertaken in the reporting month.

6.3 Air Monitoring

Contract no. HY/2009/17 – Central - Wan Chai Bypass (CWB) at FEHD Whitfield Depot - Advanced piling works under FEP-03/364/2009

6.3.1. No exceedance was recorded in the reporting month.

Contract no. 04/HY/2006 – Reconstruction of Bus Terminus near Man Yiu Street and Man Kwong Street under FEP-04/364/2009/A

6.3.2. No exceedance was recorded in the reporting month.

Contract no. HY/2009/18 - Central - Wan Chai Bypass (CWB) – Central Interchange under FEP-05/364/2009/A

6.3.3. No air quality monitoring was undertaken in the reporting month.

Contract nos. HK/2009/01 - Wan Chai Development Phase II - Central - Wan Chai Bypass at Hong Kong Convention and Exhibition Centre - Tunnel Works and HK/2009/02 - Wan Chai Development Phase II - Central - Wan Chai Bypass at Wan Chai East(CWB Tunnel)

6.3.4. No air quality monitoring was undertaken in the reporting month.

Contract no. HY/2009/15 - Central-Wanchai Bypass – Tunnel (Causeway Bay Typhoon Shelter Section) FEP-06/364/2009/A

6.3.5. No air quality monitoring was undertaken in the reporting month.

Contract no. HY/2009/19 - Central - Wanchai Bypass Tunnel (North Point Section) and Island Eastern Corridor Link under FEP-07/364/2009/A

6.3.6. No air quality monitoring was undertaken in the reporting month.

6.4 Review of the Reasons for and the Implications of Non-compliance

6.3.1. There was no non-compliance from the site audits in the reporting period. The observations and recommendations made in each individual site audit session were presented in Section 8.

6.3.2. No project-related non-compliance from monitoring was recorded in the reporting month.

6.5 Summary of action taken in the event of and follow-up on non-compliance

6.4.1. There was no particular action taken since no project-related non-compliance was recorded from the site audits and environmental monitoring in the reporting period.

7. Cumulative Construction Impact due to the Concurrent Projects

7.0.1. According to Condition 3.4 of the EP-364/2009/A, this section addresses the relevant cumulative construction impact due to the concurrent activities of the current projects including the Central Reclamation Phase III (CRIII), Wan Chai Development Phase II (WDII), Central-WanChai Bypass (CWB) and Island Eastern Corridor Link projects (IECL).

7.0.2. From the Monthly EM&A report (January 2011) of Central Reclamation Phase III the key works in February 2011 are as follows:

- Type A filling in FRAW and FRAE above +2.5mPD
- General filling works above +2.5mPD in IRAE
- Surcharging in FRAW and FRAE
- Construction of cantilever slab at caisson
- Base slab, wall and roof construction at Culvert F
- Construction of storm and foul drainage and gullies in hinterlands for Road P2, Road D7, and Road D9
- Construction of GPO boundary wall
- Construction of PLA boundary wall
- Construction of Promenade enhancement works
- Construction of buildings at PLA berth
- Road P2 Underpass ramp structures
- Precasting for retaining wall (offsite)
- Installation of cooling mains discharge pipes in FRAE and FRAW
- Bulk excavation to formation level at CWB works
- Construction of CWB structure
- Disposal of material off-site to Government fill banks

7.0.3. According to the construction programme of Wan Chai Development Phase II, Central-Wan Chai Bypass and Island Eastern Corridor Link projects, the major construction activity under Wan Chai Development Phase II was the filling works at North Point Reclamation Stage 1(NPR1), dredging works at Wan Chai Reclamation Stage 1(WCR1), Advanced piling works at FEHD Whitfield Depot and cross-harbour water mains in the reporting month. The major environmental impact was water quality impact at North Point and Wan Chai. Land-based construction activity was only advance piling works at FEHD Whitfield Depot in the reporting month.

7.0.4. The major environmental impacts generated from the Central Reclamation Phase III were located along the coastline of Central and Admiralty while advanced piling works at FEHD Whitfield Depot were undertaken in the reporting month. No significant air, noise impact were anticipated in the reporting month. Besides, no environmental monitoring exceedance was recorded from the Project in the reporting month. Thus, it is evaluated that the cumulative construction impact from the concurrent projects including Wan Chai Development Phase II and Central Reclamation Phase III was insignificant.

8. Environmental Site Audit

- 8.0.1. During this reporting month, weekly environmental site audits were conducted for Contracts no. HY/2009/17 and 04/HY/2006. No non-conformance was identified during the site audits.
- 8.0.2. Four site inspections for Contract no. HY/2009/17 were carried out during this reporting period. The results of these inspections and outcomes are summarized in **Table 8.1**.

Table 8.1 Summary of Environmental Inspections for Contract no. HY/2009/17

| Item | Date | Observations | Action taken by Contractor | Outcome |
|-----------|-----------|---|--|-------------------------------------|
| 110216_01 | 16-Feb-11 | The contractor was reminded to place drip tray underneath the air compressor at piling works area before use. | Place drip tray underneath the air compressor. | Completion as observed on 22-Feb-11 |
| 110216_02 | 16-Feb-11 | Chemical label should be noticed on the oil drum | Notice chemical label on the oil drum | Completion as observed on 22-Feb-11 |

- 8.0.3. Major construction works were completed and Engineer's confirmation for completion of work is under processing in this reporting month. No site inspection for Contract no. 04/HY/2006 was carried out during this reporting period.

9. COMPLAINTS, NOTIFICATION OF SUMMONS AND PROSECUTION

9.0.1. No complaint, notification of summons and prosecution was received in the reporting month. The details of cumulative complaint log and updated summary of complaints are presented in ***Appendix 9.1***.

9.0.2. Cumulative statistic on complaints and successful prosecutions are summarized in ***Table 9.1*** and ***Table 9.2*** respectively.

Table 9.1 Cumulative Statistics on Complaints

| Reporting Period | No. of Complaints |
|------------------|-------------------|
| February 2011 | 0 |
| Project-to-Date | 0 |

Table 9.2 Cumulative Statistics on Successful Prosecutions

| Environmental Parameters | Cumulative No. Brought Forward | No. of Successful Prosecutions this month (Offence Date) | Cumulative No. Project-to-Date |
|--------------------------|--------------------------------|--|--------------------------------|
| Air | - | 0 | 0 |
| Noise | - | 0 | 0 |
| Water | - | 0 | 0 |
| Waste | - | 0 | 0 |
| Total | - | 0 | 0 |

10. CONCLUSION

10.0.1. The EM&A programme was carried out in accordance with the EM&A Manual requirements, minor alterations to the programme proposed were made in response to changing circumstances.

10.0.2. The scheduled construction activities and the recommended mitigation measures for the coming month are listed in **Table 10.1**. The construction programmes of individual contracts are provided in **Appendix 10.1**.

Table 10.1 Summary of Key Construction Activities of Individual Contract(s) to be commenced in Coming Reporting Month

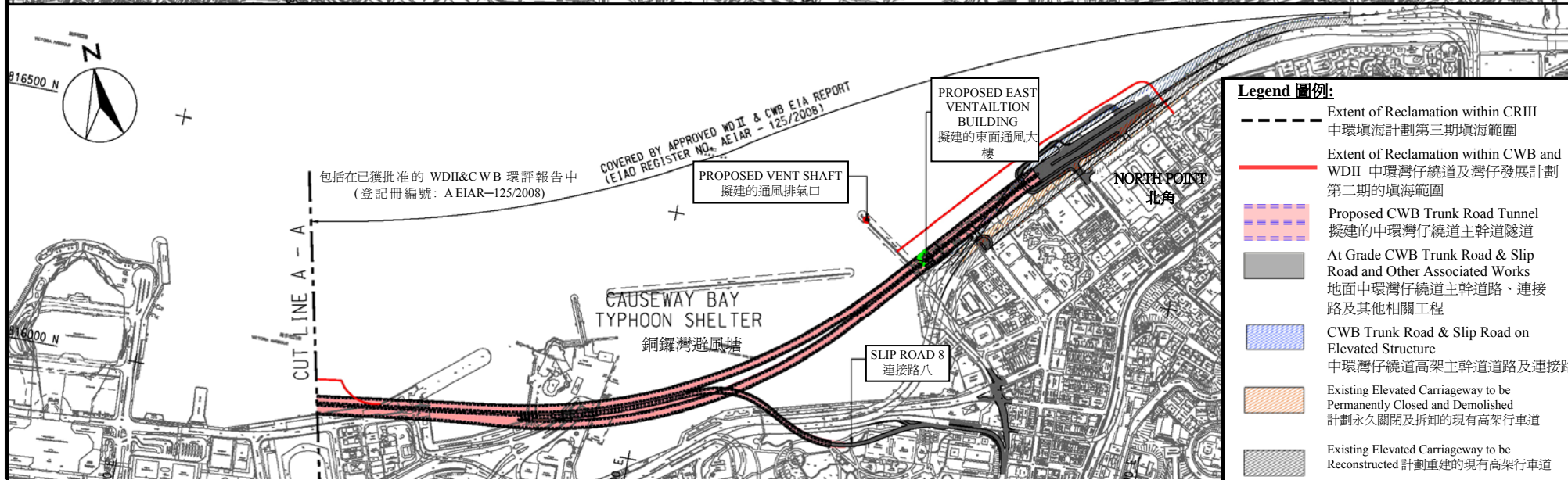
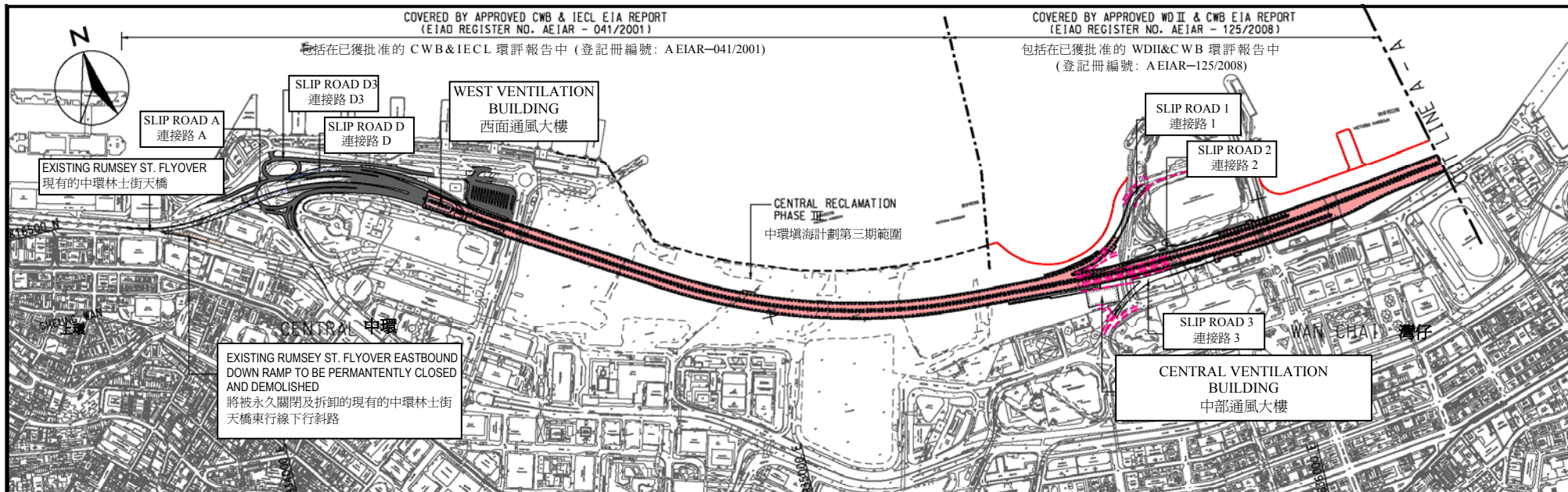
| Contract No. | Key Construction Works | Recommended Mitigation Measures |
|--------------|--|---|
| HY/2009/17 | <ul style="list-style-type: none"> • Drilling, installation steel H-Pile & grouting | <ul style="list-style-type: none"> • Noise barrier shall be implemented; • Watering any dust generating activities; and • Improvement of wheel washing facilities • Improvement and increasing the number of sedimentation tanks. |

10.0.3. Major construction works for Contract no. 04/HY/2006 were completed and Engineer's confirmation for completion of work is under processing in this reporting month.



Figure 2.1

Project Layout

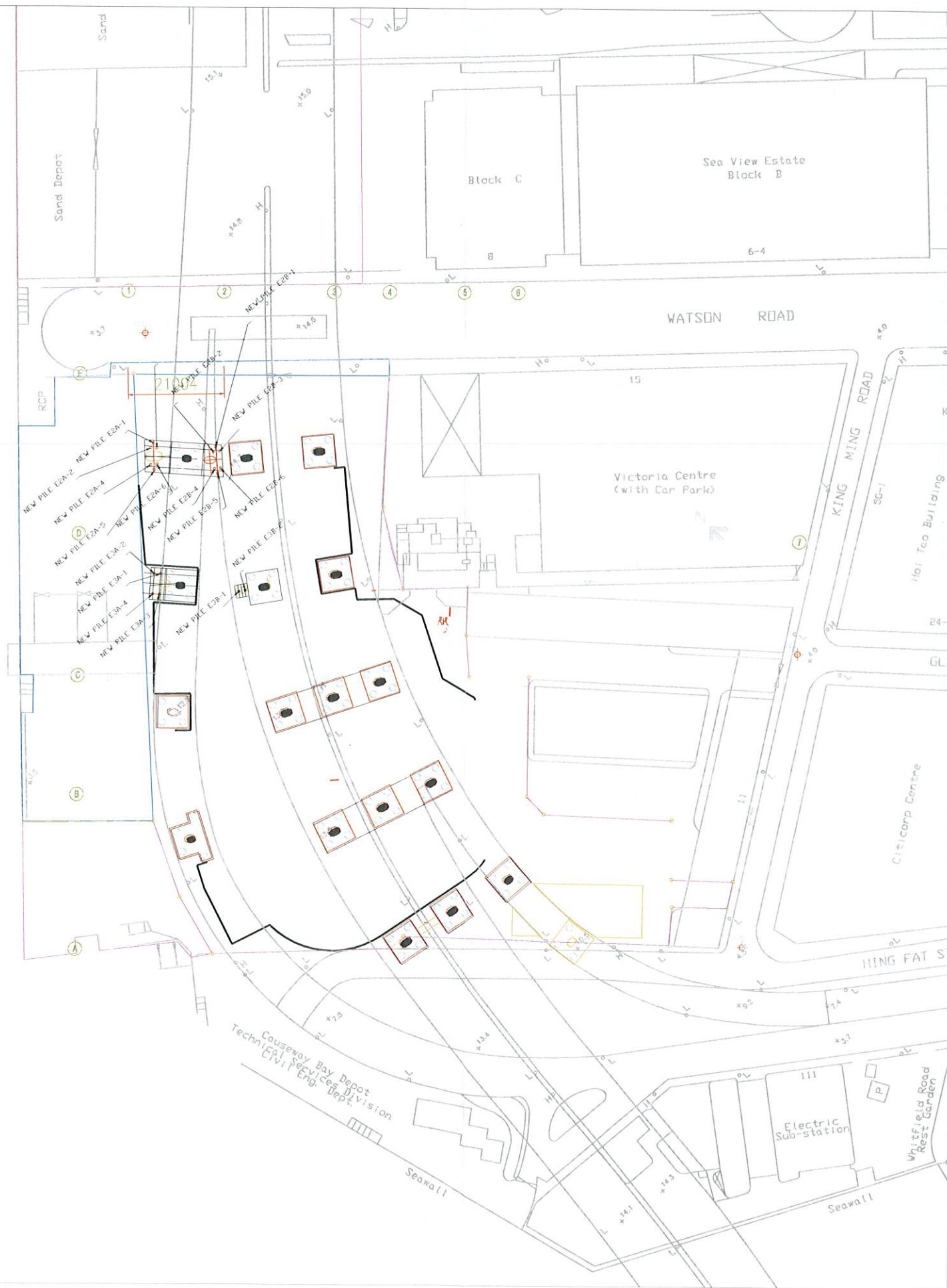


Project Title: Central-Wanchai Bypass (CWB) Including Its Road Tunnel and Slip Roads
工程項目名稱: 中環灣仔繞道包括其行車隧道及連接路

Environmental Permit No.: EP-364/2009/A
環境許可證編號: EP-364/2009/A

Figure 1: Location of the Project
圖 1: 工程項目位置

(This figure was prepared on Figure 1.1 of the Application for Environmental Permit (Application No.: AEP-364/2009))
(本圖是根據環境許可證的申請(申請書編號 AEP-364/2009 圖 1.1 編製)



1 Co-ordinates are relative to Hong Kong Metric Grid (1980)

Legend:

| REV. | DATE | DESCRIPTION | CHK.BY | AUTH.BY |
|------|------|-------------|--------|---------|
| | | | | |

Highways Department 路政署
Major Works Project Management Office

CENTRAL - WAN CHAI BYPASS AND IEC LIN

PWP ITEM NO. 579 TH K
計劃項目編號

Project:
CENTRAL - WAN CHAI BYPASS - FEH WHITFIELD DEPOT RE-PROVISIONING WORKS



Drawing Title
PILING PLAN FOR MODIFIED ICE BRIDGE

Contractor
LAM WOO & COMPANY LIMITED

DRAWING NO. 0020

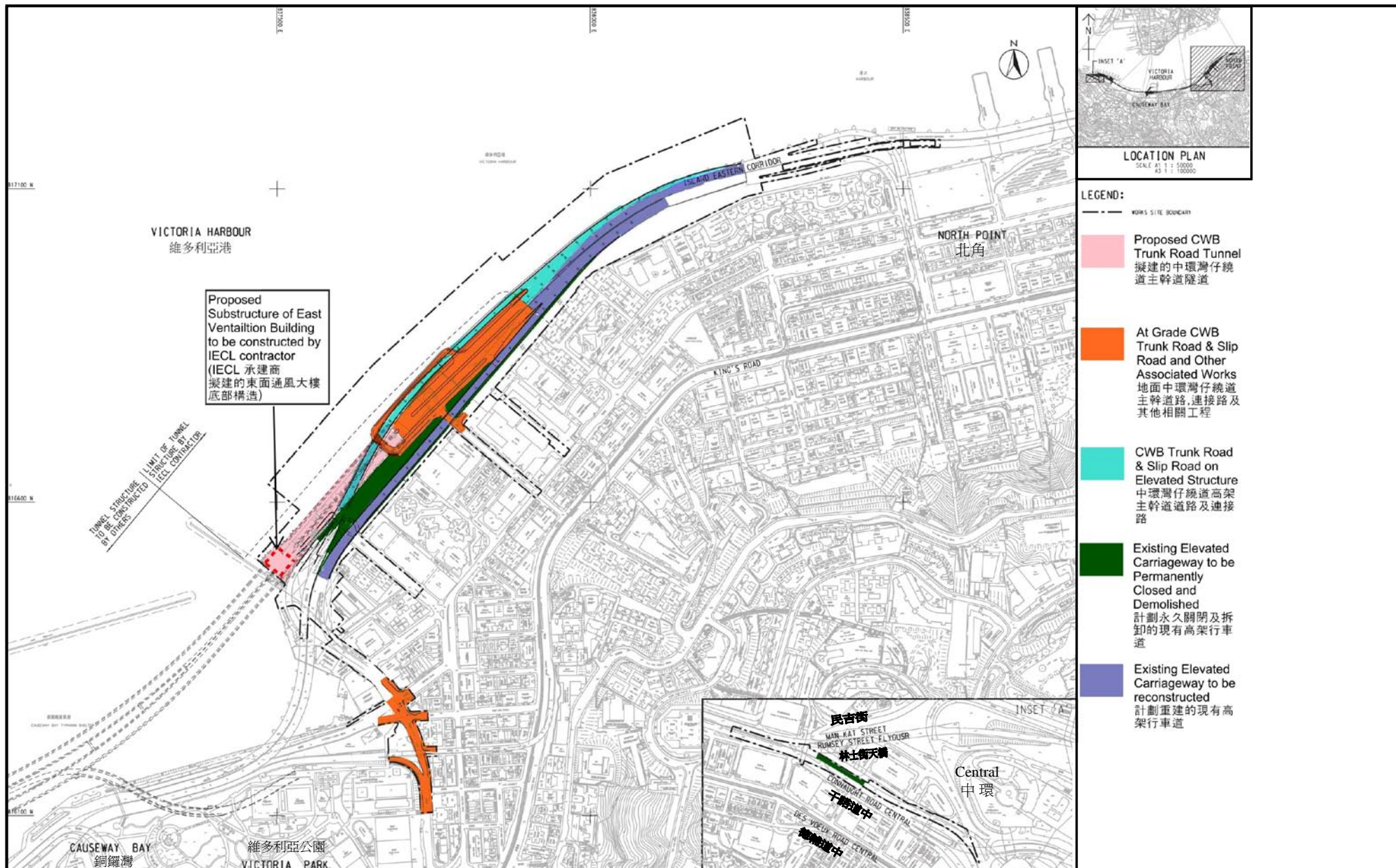
SURVEY DATE 12-06-2010

DRAWN BY KENG

CHECKED BY

SCALE 1:1000

SHEET 1



Project Title: Central-Wanchai Bypass (CWB) – Tunnel (North Point Section) and Island Eastern Corridor Link
 工程項目名稱：中環灣仔繞道—北角段隧道及東區走廊連接路
 Environmental Permit No. : FEP-07-364/2009/A
 環境許可證編號 : FEP-07-364/2009/A

Figure 1b: General Layout Plan
 圖 1b: 工程項目佈局圖

(This figure was prepared based on Sketch No.60095653/IEC/DF0006 of Application for Further Environmental Permit (Application No.: FEP-120/2011)
 (本圖是根據申請新的環境許可證 (申請書編號 FEP-120/2011) 圖 60095653/IEC/DF0006 編製)



Figure 2.2

Project Organization Chart



Project Organization Chart

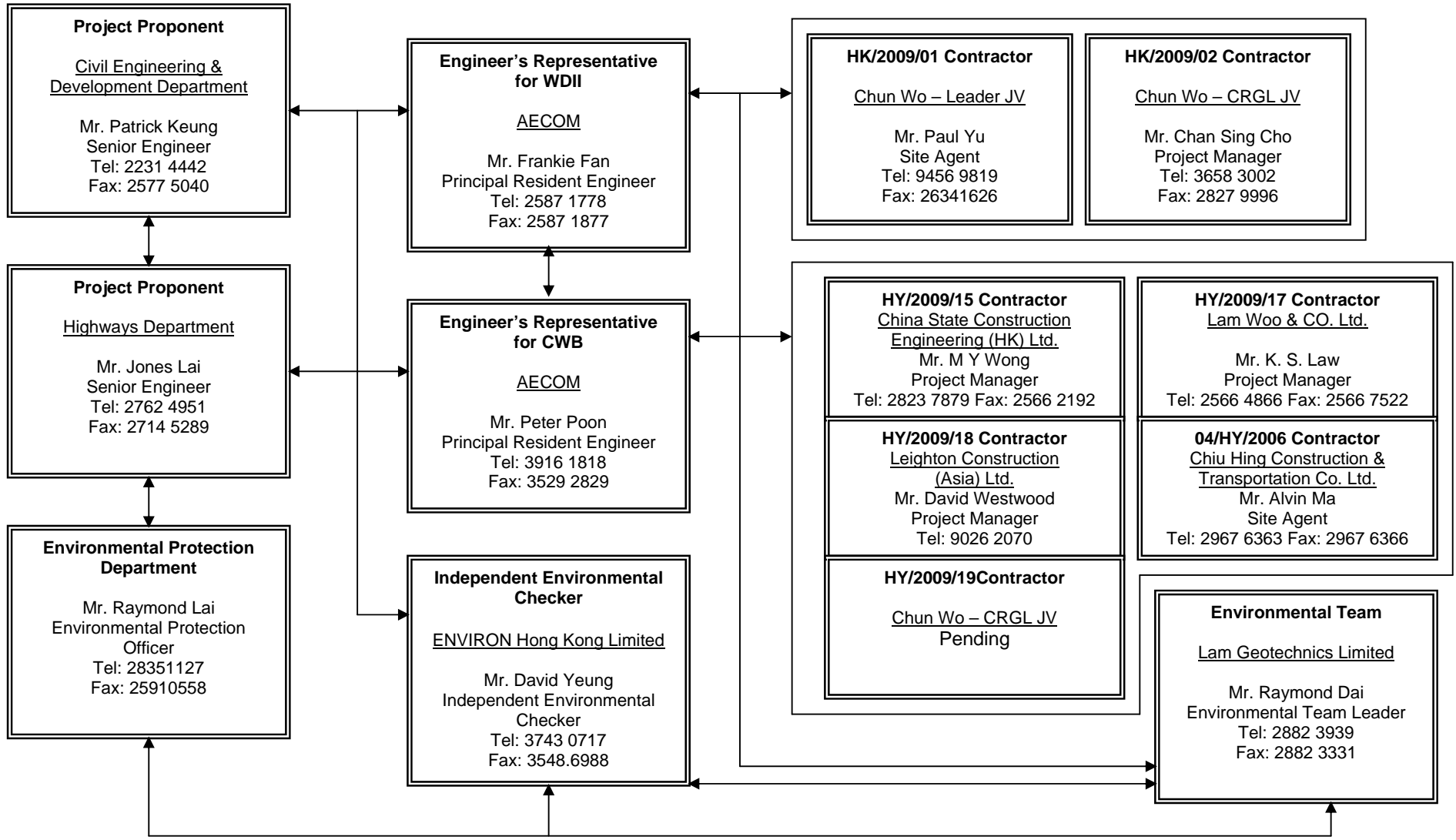
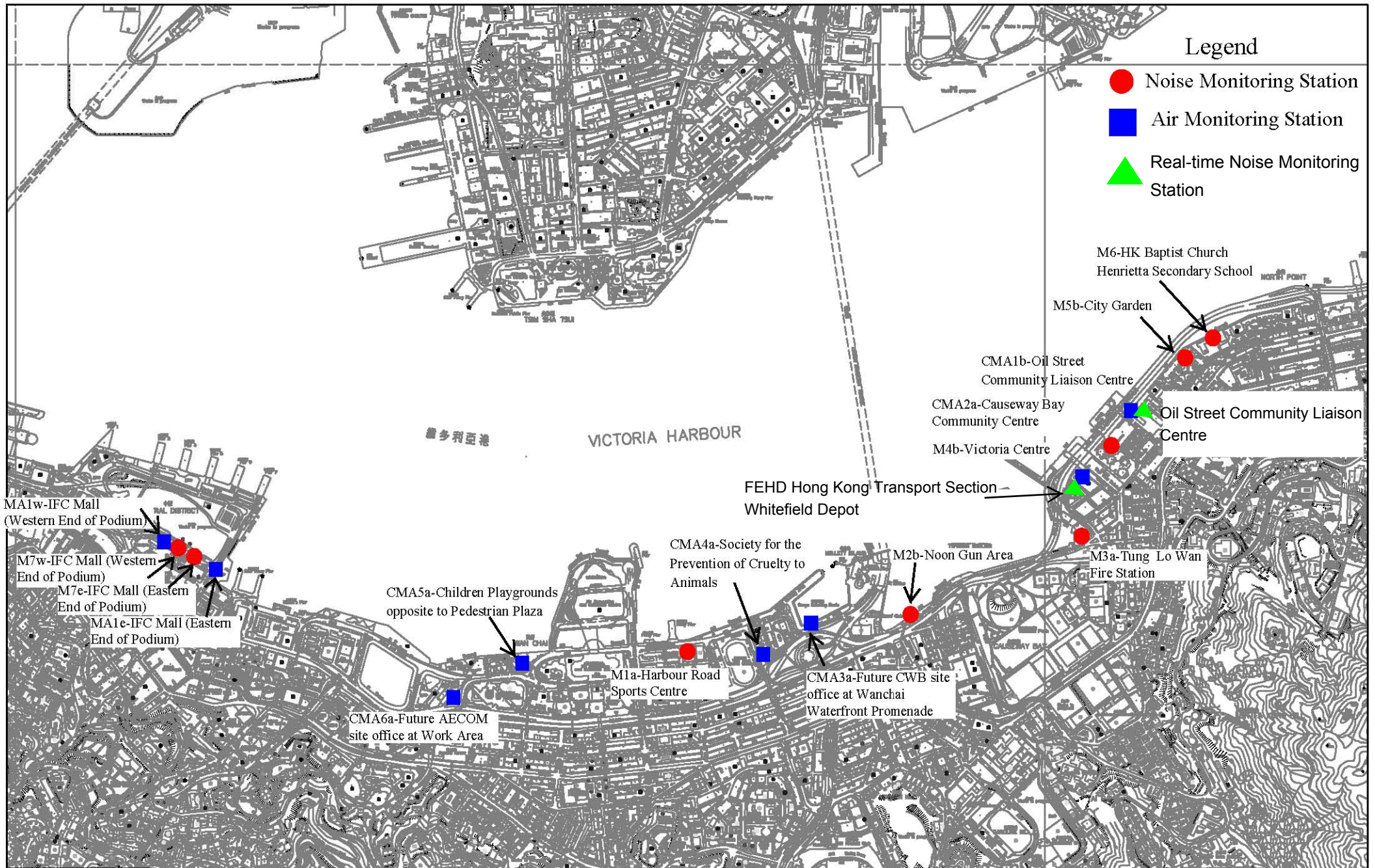




Figure 4.1

Locations of Monitoring Stations



Location plan of Environmental Monitoring Stations



Appendix 3.1

Environmental Mitigation Implementation Schedule

IMPLEMENTATION SCHEDULE OF THE PROPOSED MITIGATION MEASURES

Table A.1 Implementation Schedule for Air Quality Control

| WDII & CWB EIA Report Ref | Environmental Protection Measures / Mitigation Measures | Location / Timing | Implementation Agent | Implementation Stages* | | | | Relevant Legislation and Guidelines |
|---------------------------|---|--|----------------------|------------------------|---|---|-----|-------------------------------------|
| | | | | Des | C | O | Dec | |
| Construction Phase | | | | | | | | |
| S3.6.5 | Four times a day watering of the work site with active operations. | Work site / during construction | Contractor | | √ | | | EIAO-TM |
| S3.8.1 | Implementation of dust suppression measures stipulated in Air Pollution Control (Construction Dust) Regulation. The following mitigation measures, good site practices and a comprehensive dust monitoring and audit programme are recommended to minimise cumulative dust impacts. <ul style="list-style-type: none"> Strictly limit the truck speed on site to below 10 km per hour and water spraying to keep the haul roads in wet condition; Watering during excavation and material handling; Provision of vehicle wheel and body washing facilities at the exit points of the site, combined with cleaning of public roads where necessary; and Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations. | Work site / during construction | Contractor | | √ | | | |
| Operational Phase | | | | | | | | |
| S3.6.53 – S3.6.54 | The design parameters of the East and Central Ventilation Buildings as set in Tables 3.10 and 3.11 of Volume 1 of the WDII & CWB EIA Report. | East and Central Ventilation Buildings / During operation of the Trunk Road | HyD | | | √ | | |
| S3.10.2 | Air quality monitoring for the operation performance of the East Ventilation Building and associated East Vent Shaft will be conducted. | East Vent Shaft / During operation of the East Ventilation Building and associated East Vent Shaft | HyD | | | √ | | EIAO-TM |

* Des - Design, C - Construction, O – Operation, and Dec - Decommissioning

Table A.2 Implementation Schedule for Noise Control

| WDII & CWB EIA Report Ref | Environmental Protection Measures / Mitigation Measures | Location / Timing | Implementation Agent | Implementation Stages* | | | | Relevant Legislation and Guidelines |
|---------------------------|---|----------------------------------|----------------------|------------------------|---|---|-----|-------------------------------------|
| | | | | Des | C | O | Dec | |
| Construction Phase | | | | | | | | |
| S4.9.3 | <p>Good Site Practice:</p> <ul style="list-style-type: none"> Only well-maintained plant shall be operated on-site and plant shall be serviced regularly during the construction program. Silencers or mufflers on construction equipment shall be utilized and shall be properly maintained during the construction program. Mobile plant, if any, shall be sited as far away from NSRs as possible. Machines and plant (such as trucks) that may be in intermittent use shall be shut down between works periods or shall be throttled down to a minimum. Plant known to emit noise strongly in one direction shall, wherever possible, be orientated so that the noise is directed away from the nearby NSRs. Material stockpiles and other structures shall be effectively utilized, wherever practicable, in screening noise from on-site construction activities. | Work Sites / During Construction | Contractor | | √ | | | EIAO-TM, NCO |
| S4.8.1 – S4.8.11 | <p>Use of quiet powered mechanical equipment, movable noise barrier and temporary noise barrier for the following tasks:</p> <ul style="list-style-type: none"> Slip road 8 tunnel Construction of diaphragm wall and substructures of the tunnel approach ramp Excavation Construction of slabs Backfill | Work Sites / During Construction | Contractor | | √ | | | EIAO-TM, NCO |

| WDII & CWB EIA Report Ref | Environmental Protection Measures / Mitigation Measures | Location / Timing | Implementation Agent | Implementation Stages* | | | | Relevant Legislation and Guidelines |
|---------------------------|--|---|----------------------|------------------------|---|---|-----|-------------------------------------|
| | | | | Des | C | O | Dec | |
| | <ul style="list-style-type: none"> Demolition and construction of substructures for the IEC Demolition works of existing piers and crossheads of the marine section of the existing IEC <p>Use of PME grouping for the following tasks:</p> <ul style="list-style-type: none"> At-grade road construction Substructure for IECL connection | | | | | | | |
| Operation Phase | | | | | | | | |
| S4.8.12 – S4.8.23 | <p>For Existing NSRs</p> <ul style="list-style-type: none"> about 235m length of noise semi-enclosure with transparent panel covering the westbound slip road from the IEC about 230m length of noise semi-enclosure with transparent panel covering the main carriageways (eastbound and westbound) of the CWB and IEC about 135m length of 5.5m high cantilevered noise barrier with 4.5m cantilever inclined at 45° with transparent panel on the eastbound slip road to the IEC (amended under EP-364/2009/A) about 95m length of 5.5m high cantilevered noise barrier with 1m cantilever inclined at 45° with transparent panel on the eastbound slip road to the IEC about 350m length of 3.5m high vertical noise barrier with transparent panel on the eastbound slip road to the IEC low noise road surfacing for the trunk road (except tunnel section and beneath the landscaped deck at the eastern portal area)) with speed limit of 70 km/hour | Near North Point / Before commencement of operation of road project | HyD | √ | √ | √ | | EIAO-TM |

| WDII & CWB EIA Report Ref | Environmental Protection Measures / Mitigation Measures | Location / Timing | Implementation Agent | Implementation Stages* | | | | Relevant Legislation and Guidelines |
|---------------------------|---|--|---|------------------------|--------|---|-----|-------------------------------------|
| | | | | Des | C | O | Dec | |
| | <p>For Future/Planned NSRs</p> <ul style="list-style-type: none"> about 265m length of noise semi-enclosure with transparent panel covering the westbound slip road from the IEC The openable windows of the temple, if any, should be orientated so as to avoid direct line of sight to the existing Victoria Park Road as far as practicable. | <p>In between the Electric Centre (next to City Garden) and CDA(1) site / Before occupation of Planned NSRs in CDA and CDA(1) sites.</p> <p>Near Causeway Bay Fire Station / During detailed design of the re-provisioned Tin Hau Temple</p> | <p>HyD</p> <p>Project Proponent for the re-provisioned Tin Hau Temple</p> | √ | √ # | | | |

* Des - Design, C - Construction, O – Operation, and Dec - Decommissioning

Only the steel frame for this section of noise semi-enclosure would be erected in advance during the construction of the westbound slip road.

Table A.4 Implementation Schedule for Waste Management

| WDII & CWB EIA Report Ref | Environmental Protection Measures / Mitigation Measures | Location / Timing | Implementation Agent | Implementation Stages* | | | | Relevant Legislation and Guidelines |
|---------------------------|--|--|----------------------|------------------------|---|---|-----|-------------------------------------|
| | | | | Des | C | O | Dec | |
| Construction Phase | | | | | | | | |
| S6.5.14 | <i>Floating Refuse</i> During the construction phase, the project proponent's contractor will be responsible for the collection of any refuse within their works area. Floating booms will be provided on the water surface to confine the refuse from the working barges as well as to avoid the accumulation of pollutants within temporary embayment as mentioned in Table D9.3. | Work site / During the construction period | Contractor | | √ | | | |
| S6.6.1 | <i>Good Site Practices</i> Recommendations for good site practices during the construction activities include: <ul style="list-style-type: none"> • nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site; • training of site personnel in proper waste management and chemical waste handling procedures; • provision of sufficient waste disposal points and regular collection for disposal; • appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; • regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; and • a recording system for the amount of wastes generated, recycled and disposed of (including the disposal sites). | Work site / During the construction period | Contractor | | √ | | | Waste Disposal Ordinance (Cap.354) |

| WDII & CWB EIA Report Ref | Environmental Protection Measures / Mitigation Measures | Location / Timing | Implementation Agent | Implementation Stages* | | | | Relevant Legislation and Guidelines |
|---------------------------|--|--|----------------------|------------------------|---|---|-----|-------------------------------------|
| | | | | Des | C | O | Dec | |
| S6.6.2 | <p><i>Waste Reduction Measures</i></p> <p>Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Recommendations to achieve waste reduction include:</p> <ul style="list-style-type: none"> • segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal; • to encourage collection of aluminium cans, PET bottles and paper, separate labelled bins shall be provided to segregate these wastes from other general refuse generated by the work force; • any unused chemicals or those with remaining functional capacity shall be recycled; • use of reusable non-timber formwork, such as in casting the tunnel box sections, to reduce the amount of C&D material. • prior to disposal of C&D waste, it is recommended that wood, steel and other metals shall be separated for re-use and / or recycling to minimise the quantity of waste to be disposed of to landfill; • proper storage and site practices to minimise the potential for damage or contamination of construction materials; and • plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste. | Work site / During planning and design stage, and construction stage | Contractor | √ | √ | | | |

| WDII & CWB EIA Report Ref | Environmental Protection Measures / Mitigation Measures | Location / Timing | Implementation Agent | Implementation Stages* | | | | Relevant Legislation and Guidelines |
|---------------------------|--|--|----------------------|------------------------|---|---|-----|--|
| | | | | Des | C | O | Dec | |
| S6.6.4 | <p><i>General Refuse</i></p> <p>General refuse shall be stored in enclosed bins or compaction units separate from C&D material. A licensed waste collector shall be employed by the contractor to remove general refuse from the site, separately from C&D material.</p> <p>A collection area shall be provided where wastes can be stored and loaded prior to removal from site. An enclosed and covered area is recommended to reduce the occurrence of 'wind blow' light material.</p> | Work site / During the construction period | Contractor | | √ | | | Public Health and Municipal Services Ordinance (Cap. 132) |
| S6.6.5 | <p><i>Chemical Wastes</i></p> <p>After use, chemical wastes (for example, cleaning fluids, solvents, lubrication oil and fuel) shall be handled according to the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Spent chemicals shall be collected by a licensed collector for disposal at the CWTF or other licensed facility in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.</p> | Work site / During the construction period | Contractor | | √ | | | <p>Waste Disposal (Chemical Waste) (General) Regulation</p> <p>Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes</p> |
| S6.6.6 | <p><i>Construction and Demolition Material</i></p> <p>C&D material shall be sorted on-site into inert C&D material (that is, public fill) and C&D waste. All the suitable inert C&D material shall be broken down to 250 mm in size for reuse as public fill in the WDII reclamation. C&D waste, such as wood, glass, plastic, steel and other metals shall be reused or recycled and, as a last resort, disposed of to landfill. A suitable area shall be designated to facilitate the sorting process and a temporary stockpiling area will be required for the separated materials.</p> | Work site / During the construction period | Contractor | | √ | | | ETWB TCW No. 33/2002, 31/2004, 19/2005 |

| WDH & CWB EIA Report Ref | Environmental Protection Measures / Mitigation Measures | Location / Timing | Implementation Agent | Implementation Stages* | | | | Relevant Legislation and Guidelines |
|--------------------------|--|--|--|------------------------|---|---|-----|-------------------------------------|
| | | | | Des | C | O | Dec | |
| S6.6.7 | In order to monitor the disposal of public fill and C&D waste at public fill reception facilities and landfills, respectively, and to control fly tipping, a trip-ticket system shall be included as one of the contractual requirements and implemented by the Environmental Team undertaking the environmental monitoring and audit work. An Independent Environment Checker shall be responsible for auditing the results of the system. | Work site / During the construction period | Contractor and Independent Environmental Checker | | √ | | | ETWB TCW No. 31/2004 |
| S6.6.8 | <p><i>Bentonite Slurry</i></p> <p>The disposal of residual used bentonite slurry shall follow the good practice guidelines stated in ProPECC PN 1/94 “Construction Site Drainage” and listed as follows:</p> <ul style="list-style-type: none"> • If the disposal of a certain residual quantity cannot be avoided, the used slurry may be disposed of at the marine spoil grounds subject to obtaining a marine dumping licence from EPD on a case-by-case basis. • If the used bentonite slurry is intended to be disposed of through the public drainage system, it shall be treated to the respective effluent standards applicable to foul sewers, storm drains or the receiving waters as set out in the Technical Memorandum of Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters. • If the used bentonite slurry is intended to be disposed to public fill reception facilities, it will be mixed with dry soil on site before disposal. | Work site / During the construction period | Contractor | | √ | | | ProPECC PN 1/94 |

* Des - Design, C - Construction, O – Operation, and Dec - Decommissioning

Table A.5 Implementation Schedule for Land Contamination

| WDII & CWB EIA Report Ref | Environmental Protection Measures / Mitigation Measures | Location / Timing | Implementation Agent | Implementation Stages* | | | | Relevant Legislation and Guidelines |
|---|--|-------------------|----------------------|------------------------|---|---|-----|-------------------------------------|
| | | | | Des | C | O | Dec | |
| Construction and Operation Phase | | | | | | | | |
| S.7.1.1 | As no potential contaminative land uses were identified within the Study Area, adverse land contamination impacts associated with the construction and operation of the Project is not expected. As such, environmental protection and mitigation measures are considered not necessary and will not be covered in this EM&A Manual. | - | - | | | | | - |

* Des - Design, C - Construction, O – Operation, and Dec - Decommissioning

Table A.7 Implementation Schedule for Landscape and Visual

| WDII & CWB EIA Report Ref | Environmental Protection Measures / Mitigation Measures | Location / Timing | Implementation Agent | Implementation Stages* | | | | Relevant Legislation and Guidelines |
|----------------------------------|---|--|----------------------|------------------------|---|---|-----|-------------------------------------|
| | | | | Des | C | O | Dec | |
| Construction Phase | | | | | | | | |
| Table 10.5 | CM1 Topsoil, where identified, shall be stripped and stored for re-use in the construction of the soft landscape works, where practical. | Work site / During Construction Phase | Contractor | √ | √ | | | EIAO TM |
| Table 10.5 | CM2 Existing trees to be retained on site shall be carefully protected during construction. | Work site / During Construction Phase | Contractor | √ | √ | | | EIAO TM |
| Table 10.5 | CM3 Trees unavoidably affected by the works shall be transplanted where practical. | Work site / During Construction Phase | Contractor | √ | √ | | | EIAO TM |
| Table 10.5 | CM4 Compensatory tree planting shall be provided to compensate for felled trees. | Work site / During Construction Phase | Contractor | √ | √ | | | EIAO TM |
| Table 10.5 | CM5 Control of night-time lighting. | Work site / During Construction Phase | Contractor | | √ | | | EIAO TM |
| Table 10.5 | CM6 Erection of decorative screen hoarding compatible with the surrounding setting. | Work site / During Construction Phase | Contractor | | √ | | | EIAO TM |
| Operation Phase | | | | | | | | |
| Table 10.6, Figure 10.5.1-10.5.5 | OM1 Aesthetic design of buildings and road-related structures, including viaducts, vent buildings, subways, footbridges and noise barriers and enclosure. | Work site / During Design Stage and Operation Phases | HyD | √ | √ | √ | | ETWB TCW 2/2004 |
| Table 10.6, Figure 10.5.1-10.5.5 | OM3 Buffer Tree and Shrub Planting to screen proposed roads and associated structures. | Work site / During Design Stage and Operation Phases | HyD | √ | √ | √ | | ETWB TCW 2/2004 |
| Table 10.6, Figure 10.5.1-10.5.5 | OM5 Aesthetic streetscape design. | Work site / During Design Stage and Operation Phases | HyD | √ | √ | √ | | ETWB TCW 2/2004 |
| Table 10.6, Figure 10.5.1-10.5.5 | OM6 Aesthetic design of roadside amenity areas. | Work site / During Design Stage and Operation Phases | HyD | √ | √ | √ | | ETWB TCW 2/2004 |

*Des - Design, C - Construction, O – Operation, and Dec - Decommissioning



Appendix 4.1

Action and Limit Level

**Action and Limit Level***Action and Limit Level for Noise Monitoring*

| Time Period | Action Level | Limit Level |
|--|--|----------------------------|
| 07:00 – 19:00 hours on normal weekdays | When one documented complaint is received. | 75 dB(A) ^{Note 1} |

Action and Limit Level for Real Time Noise Monitoring

| Time Period | Action Level | Limit Level |
|---|--|----------------------------|
| 07:00 – 19:00 hours on normal weekdays | When one documented complaint is received. | 75 dB(A) ^{Note 2} |
| 19:00 – 23:00 hours on normal weekdays and public holiday | When one documented complaint is received. | 70 dB(A) ^{Note 3} |
| 23:00 – 07:00 at next day on everyday | When one documented complaint is received. | 65 dB(A) |

Note 1:

- 70dB(A) and 65 dB(A) for schools during normal teaching periods and school examination periods, respectively.
- If works are to be carried out during the restricted hours, the conditions stipulated in the Construction Noise Permit (CNP) issued by the Noise Control Authority have to be followed.

Note 2:

- 70dB(A) and 65 dB(A) for schools during normal teaching periods and school examination periods, respectively.

Note 3:

- If works are to be carried out during the restricted hours, the conditions stipulated in the Construction Noise Permit (CNP) issued by the Noise Control Authority have to be followed.

Action and Limit Level for Air Monitoring

| Monitoring Location | 1-hour TSP Level in $\mu\text{g}/\text{m}^3$ | | 24-hour TSP Level in $\mu\text{g}/\text{m}^3$ | |
|---------------------|--|-------------|---|-------------|
| | Action Level | Limit Level | Action Level | Limit Level |
| CMA1a | 320.1 | 500 | 176.7 | 260 |
| CMA2a | 323.4 | 500 | 169.5 | 260 |
| CMA3 | 311.3 | 500 | 171.0 | 260 |
| CMA4a | 312.5 | 500 | 171.2 | 260 |
| CMA5 | 332.0 | 500 | 181.0 | 260 |
| CMA6 | 300.1 | 500 | 187.3 | 260 |
| MA1e | 325.1 | 500 | 173.4 | 260 |
| MA1w | 325.1 | 500 | 173.4 | 260 |



Appendix 4.2

Copies of Calibration Certificates



Calibration Certificate

Certificate No. **96128**

Page 1 of 2 Pages

Customer : Lam Environmental Services Ltd

Address : 11/F, Centre Point, 181-185 Gloucester Road, Wanchai, Hong Kong.

Order No. : Q92434

Date of receipt : 24-Nov-09

Item Tested

Description : Sound Level Calibrator (EL469)

Manufacturer : ACO

Model : --

Serial No. : 050213

Test Conditions

Date of Test : 26-Nov-09

Supply Voltage : --

Ambient Temperature : (23 ± 3)°C

Relative Humidity : (50 ± 25) %

Test Specifications

Calibration check.

Ref. Document/Procedure: F21, Z02.

Test Results

All results were within the IEC 942 Class 1 specification after adjustment.

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

Main Test equipment used:

| <u>Equipment No.</u> | <u>Description</u> | <u>Cert. No.</u> | <u>Due Date</u> | <u>Traceable to</u> |
|----------------------|------------------------|------------------|-----------------|---------------------|
| S014 | Spectrum Analyzer | 93091 | 18-Jun-10 | NIM-PRC & SCL-HKSAR |
| S024 | Sound Level Calibrator | 93758 | 16-Jul-10 | NIM-PRC & SCL-HKSAR |
| S041 | Universal Counter | 94005 | 6-Aug-10 | SCL-HKSAR |
| S206 | Sound Level Meter | 93966 | 5-Aug-10 | SCL-HKSAR |

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

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

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

Calibrated by : 
P.F. Wong

Approved by : 
Dorothy Cheuk

Date: 27-Nov-09

This Certificate is issued by:

Hong Kong Calibration Ltd.

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

Tel: 2425 8801 Fax: 2425 8646

Calibration Certificate

Certificate No. **96128**

Page 2 of 2 Pages

Results :

1. Level

| UUT Nominal Value (dB) | Measured Value (dB) | | IEC 942 Class 1 Spec. |
|------------------------|---------------------|---------------|-----------------------|
| | Before adjust. | After adjust. | |
| 94 | *93.52 | 94.11 | ± 0.3 dB |

The above measured values are the mean of 3 measurements.

Uncertainty : ± 0.1 dB

2. Frequency

| UUT Nominal Value | Measured Value | IEC 942 Class 1 Spec. |
|-------------------|----------------|-----------------------|
| 1 kHz | 1.016 kHz | ± 2 % |

Uncertainty : ± 3.6 x 10⁻⁶

3. Level Stability : 0.0 dB

IEC 942 Class 1 Spec. : ± 0.1 dB

Uncertainty : ± 0.01 dB

4. Total Harmonic Distortion : < 2.9 %

IEC 942 Class 1 Spec. : < 3 %

Uncertainty : ± 2.3 % of reading

Remark : 1. UUT : Unit-Under-Test

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

3. Atmospheric Pressure : 1010 hPa.

4. *Out of Specification.

----- END -----



Calibration Certificate

Certificate No. **96127**

Page 1 of 4 Pages

Customer : Lam Environmental Services Ltd

Address : 11/F, Centre Point, 181-185 Gloucester Road, Wanchai, Hong Kong.

Order No. : Q92434

Date of receipt : 24-Nov-09

Item Tested

Description : Precision Integrating Sound Level Meter

Manufacturer : ACO

Model : Type 6224

Serial No. : 30148

Test Conditions

Date of Test : 26-Nov-09

Supply Voltage : --

Ambient Temperature : (23 ± 3)°C

Relative Humidity : (50 ± 25) %

Test Specifications

Calibration check.

Ref. Document/Procedure: Z01.

Test Results

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

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

Main Test equipment used:

| <u>Equipment No.</u> | <u>Description</u> | <u>Cert. No.</u> | <u>Due Date</u> | <u>Traceable to</u> |
|----------------------|--------------------------|------------------|-----------------|---------------------|
| S017 | Multi-Function Generator | C081456 | 18-Mar-10 | SCL-HKSAR |
| S024 | Sound Level Calibrator | 93758 | 16-Jul-10 | NIM-PRC & SCL-HKSAR |

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

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

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

Calibrated by : 
P.F. Wong

Approved by : 
Dorothy Cheuk

Date: 27-Nov-09

This Certificate is issued by:
Hong Kong Calibration Ltd.

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

Calibration Certificate

Certificate No. **96127**

Page 2 of 4 Pages

Results :

1. SPL Accuracy

| UUT Setting | | | Applied Value (dB) | UUT Reading (dB) |
|------------------|----------------|-------------|--------------------|------------------|
| Level Range (dB) | Weight | Time Const. | | |
| 20 – 100 | L _A | Fast | 94.03 | 94.3 |
| | | Slow | | 94.3 |
| | L _C | Fast | | 94.3 |
| 30 – 120 | L _A | Fast | 94.03 | 94.5 |
| | | Slow | | 94.5 |
| | L _C | Fast | | 94.5 |
| 30 – 120 | L _A | Fast | 113.97 | 114.2 |
| | | Slow | | 114.2 |
| | L _C | Fast | | 114.2 |

IEC 651 Type 1 Spec. : ± 0.7 dB

Uncertainty : ± 0.1 dB

2. Level Stability : 0.0 dB

IEC 651 Type 1 Spec. : ± 0.3 dB

Uncertainty : ± 0.01 dB

3. Linearity

3.1 Level Linearity

| UUT Range (dB) | Applied Value (dB) | UUT Rdg (dB) | Variation (dB) | IEC 651 Type 1 Spec. (Primary Indicator Range) |
|----------------|--------------------|--------------|----------------|--|
| 140 | 114.0 | 114.6 | +0.1 | ± 0.7 dB |
| 130 | 104.0 | 104.7 | +0.2 | |
| 120 | 94.0 | 94.5 (Ref.) | -- | |
| 110 | 84.0 | 84.5 | 0.0 | |
| 100 | 74.0 | 74.2 | -0.3 | |
| 90 | 64.0 | 64.0 | -0.5 | |
| 80 | 54.0 | 54.0 | -0.5 | |

Uncertainty : ± 0.1 dB

Calibration Certificate

Certificate No. **96127**

Page 3 of 4 Pages

3.2 Differential level linearity

| UUT Range | Applied Value (dB) | UUT Rdg (dB) | Variation (dB) | IEC 651 Type 1 Spec. |
|-----------|--------------------|--------------|----------------|----------------------|
| 120 | 84.0 | 84.4 | -0.1 | ± 0.4 |
| | 94.0 | 94.5 (Ref.) | -- | |
| | 95.0 | 95.5 | 0.0 | ± 0.2 |
| | 104.0 | 104.5 | 0.0 | ± 0.3 |
| | 105.0 | 105.5 | 0.0 | ± 1.0 |

Uncertainty : ± 0.1 dB

4. Frequency Weighting

A weighting

| Frequency | Attenuation (dB) | IEC 651 Type 1 Spec. |
|-----------|------------------|----------------------------|
| 31.5 Hz | -39.0 | - 39.4 dB, ± 1.5 dB |
| 63 Hz | -25.8 | - 26.2 dB, ± 1.5 dB |
| 125 Hz | -15.7 | - 16.1 dB, ± 1 dB |
| 250 Hz | -8.3 | - 8.6 dB, ± 1 dB |
| 500 Hz | -3.0 | - 3.2 dB, ± 1 dB |
| 1 kHz | 0.0 (Ref) | 0 dB, ± 1 dB |
| 2 kHz | +1.2 | + 1.2 dB, ± 1 dB |
| 4 kHz | +0.8 | + 1.0 dB, ± 1 dB |
| 8 kHz | -1.3 | - 1.1 dB, + 1.5 dB ~ -3 dB |
| 16 kHz | -5.9 | - 6.6 dB, + 3 dB ~ - ∞ |

Uncertainty : ± 0.1 dB



Calibration Certificate

Certificate No. 96127

Page 4 of 4 Pages

4. Time Averaging

| Applied Burst duty Factor | Applied Leq Value (dB) | UUT Reading (dB) | IEC 804 Type 1 Spec. |
|---------------------------|------------------------|------------------|----------------------|
| continuous | 40.0 | 40.0 | -- |
| 1/10 | 40.0 | 39.9 | ± 0.5 dB |
| 1/10 ² | 40.0 | 40.1 | |
| 1/10 ³ | 40.0 | 40.2 | ± 1.0 dB |
| 1/10 ⁴ | 40.0 | 40.3 | |

Uncertainty : ± 0.1 dB

Remark : 1. UUT : Unit-Under-Test

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

3. Atmospheric Pressure : 1 010 hPa.

----- END -----



Calibration Certificate

Certificate No. **03250A**

Page 1 of 3 Pages

Customer : Lam Geotechnics Limited

Address : 11/F., Centre Point, 181-185 Gloucester Road, Wanchai, Hong Kong

Order No. : Q01282

Date of receipt : 14-Jun-10

Item Tested

Description : Precision Integrating Sound Level Meter

Manufacturer : ONO SOKKI

Model : LA-5110

Serial No. : 72302293

Test Conditions

Date of Test : 21-Jun-10

Supply Voltage : --

Ambient Temperature : (23 ± 3)°C

Relative Humidity : (50 ± 25) %

Test Specifications

Calibration check.

Ref. Document/Procedure: Z01.

Test Results

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

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

Main Test equipment used:


| <u>Equipment No.</u> | <u>Description</u> | <u>Cert. No.</u> | <u>Traceable to</u> |
|----------------------|--------------------------|------------------|---------------------|
| S017 | Multi-Function Generator | C101623 | SCL-HKSAR |
| S024 | Sound Level Calibrator | 93758 | NIM-PRC & SCL-HKSAR |

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

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

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

Calibrated by : 
P. F. Wong

Approved by : 
Dorothy Cheuk

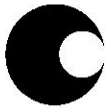
This Certificate is issued by:

Hong Kong Calibration Ltd.

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

Tel: 2425 8801 Fax: 2425 8646

Date: 8-Oct-10



Calibration Certificate

Certificate No. **03250A**

Page 2 of 3 Pages

Results :

1. SPL Accuracy

| UUT Setting | | Frequency Weighting | Dynamic Characteristic | Applied Value (dB) | UUT Reading (dB) |
|-------------|--------|---------------------|------------------------|--------------------|------------------|
| Level Range | Filter | | | | |
| 40 - 100 dB | OFF | A | FAST | 94.03 | 94.0 |
| | | | SLOW | | 94.0 |
| | | C | FAST | | 94.0 |
| 60 - 120 dB | OFF | A | FAST | 94.03 | 94.0 |
| | | | SLOW | | 94.0 |
| | | C | FAST | | 94.0 |
| 60 - 120 dB | OFF | A | FAST | 113.97 | 113.9 |
| | | | SLOW | | 113.9 |
| | | C | FAST | | 113.9 |

IEC 651 Type 1 Spec. : ± 0.7 dB

Uncertainty : ± 0.1 dB

2. Level Stability : 0.0 dB

IEC 651 Type 1 Spec. : ± 0.3 dB

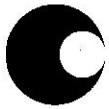
Uncertainty : ± 0.01 dB

3. Linearity

3.1 Level Linearity

| UUT Range (dB) | Applied Value (dB) | UUT Reading (dB) | Variation (dB) | IEC 651 Type 1 Spec. (Primary Indicator Range) |
|----------------|--------------------|------------------|----------------|--|
| 130 | 114.0 | 114.1 | +0.1 | ± 0.7 dB |
| 130 | 104.0 | 104.1 | +0.1 | |
| 120 | 94.0 | 94.0 (Ref.) | -- | |
| 110 | 84.0 | 84.0 | 0.0 | |
| 100 | 74.0 | 74.1 | +0.1 | |
| 90 | 64.0 | 64.1 | +0.1 | |
| 80 | 54.0 | 54.0 | 0.0 | |

Uncertainty : ± 0.1 dB



Calibration Certificate

Certificate No. 03250A

Page 3 of 3 Pages

3.2 Differential level linearity

| UUT Range (dB) | Applied Value (dB) | UUT Reading (dB) | Variation (dB) | IEC 651 Type 1 Spec. |
|----------------|--------------------|------------------|----------------|----------------------|
| 120 | 84.0 | 84.0 | 0.0 | ± 0.4 |
| | 94.0 | 94.0 (Ref.) | -- | |
| | 95.0 | 95.0 | 0.0 | ± 0.2 |

Uncertainty : ± 0.1 dB

4. Frequency Weighting

A weighting

| Frequency | Attenuation (dB) | IEC 651 Type 1 Spec. |
|-----------|------------------|-----------------------------|
| 31.5 Hz | -40.5 | - 39.4 dB, ± 1.5 dB |
| 63 Hz | -26.9 | - 26.2 dB, ± 1.5 dB |
| 125 Hz | -16.9 | - 16.1 dB, ± 1 dB |
| 250 Hz | -9.1 | - 8.6 dB, ± 1 dB |
| 500 Hz | -3.5 | - 3.2 dB, ± 1 dB |
| 1 kHz | 0.0 (Ref.) | 0 dB, ± 1 dB |
| 2 kHz | +1.5 | + 1.2 dB, ± 1 dB |
| 5 kHz | +1.2 | + 1.0 dB, ± 1 dB |
| 8 kHz | -1.0 | - 1.1 dB, + 1.5 dB ~ - 3 dB |
| 16 kHz | -7.0 | - 6.6 dB, + 3 dB ~ ∞ |

Uncertainty : ± 0.1 dB

5. Time Averaging

| Applied Burst duty Factor | Applied Leq Value (dB) | UUT Reading (dB) | IEC 804 Type 1 Spec. |
|---------------------------|------------------------|------------------|----------------------|
| continuous | 40.0 | 40.0 | -- |
| 1/10 | 40.0 | 40.0 | ± 0.5 dB |
| 1/10 ² | 40.0 | 40.0 | |
| 1/10 ³ | 40.0 | 40.1 | ± 1.0 dB |
| 1/10 ⁴ | 40.0 | 39.9 | |

Uncertainty : ± 0.1 dB

Remarks : 1. UUT : Unit-Under-Test

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

3. Atmospheric Pressure : 1 000 hPa.

4. This certificate is supersede our former certificate no. 03250.

----- END -----



Calibration Certificate

Certificate No. 03445

Page 1 of 2 Pages

Customer : Lam Geotechnics Limited

Address : 11/F., Centre Point, 181-185 Gloucester Road, Wanchai, Hong Kong

Order No. : Q01282

Date of receipt : 14-Jun-10

Item Tested

Description : Sound Level Calibrator (EL078)

Manufacturer : ONO SOKKI

Model : SC-2110

Serial No. : 00393

Test Conditions

Date of Test : 21-Jun-10

Supply Voltage : --

Ambient Temperature : (23 ± 3)°C

Relative Humidity : (50 ± 25) %

Test Specifications

Calibration check.

Ref. Document/Procedure: Z02.

Test Results

All results were within the IEC 942 Class 2 specification.

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

Main Test equipment used:

| <u>Equipment No.</u> | <u>Description</u> | <u>Cert. No.</u> | <u>Due Date</u> | <u>Traceable to</u> |
|----------------------|------------------------|------------------|-----------------|---------------------|
| S024 | Sound Level Calibrator | 93758 | 16-Jul-10 | NIM-PRC & SCL-HKSAR |
| S041 | Universal Counter | 94005 | 6-Aug-10 | SCL-HKSAR |

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

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

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

Calibrated by : 
P. F. Wong

Approved by : 
Dorothy Cheuk

This Certificate is issued by:

Hong Kong Calibration Ltd.

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

Tel: 2425 8801 Fax: 2425 8846

Date: 25-Jun-10



Calibration Certificate

Certificate No. 03445

Page 2 of 2 Pages

Results :

1. Level Accuracy (at 1 kHz)

| UUT Nominal Value (dB) | Measured Value (dB) | IEC 942 Class 2 Spec. |
|------------------------|---------------------|-----------------------|
| 94 | 94.05 | ± 0.5 dB |

Uncertainty : ± 0.2 dB

2. Frequency Accuracy

| UUT Nominal Value (kHz) | Measured Value (kHz) | IEC 942 Class 2 Spec. |
|-------------------------|----------------------|-----------------------|
| 1 | 0.998 | ± 4 % |

Uncertainty : ± 0.1 %

3. Level Stability : 0.0 dB

IEC 942 Class 2 Spec. : ± 1.2 dB

Uncertainty : ± 0.01 dB

4. Total Harmonic Distortion : < 1.2 %

IEC 942 Class 1 Spec. : < 3 %

Uncertainty : ± 2.3 % of reading

Remark : 1. UUT : Unit-Under-Test

2. The above measured values are the mean of 3 measurements.

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

4. Atmospheric Pressure : 1 000 hPa.

----- END -----



Calibration Certificate

Certificate No. **06680**

Page 1 of 4 Pages

Customer : Lam Geotechnics Limited

Address : 11/F, Centre Point, 181-185 Gloucester Road, Wanchai, Hong Kong.

Order No. : Q02553

Date of receipt : 18-Nov-10

Item Tested

Description : Precision Integrating Sound Level Meter

Manufacturer : ACO

Model : Type 6224

Serial No. : 050112

Test Conditions

Date of Test : 19-Nov-10

Supply Voltage : --

Ambient Temperature : $(23 \pm 3)^\circ\text{C}$

Relative Humidity : $(50 \pm 25) \%$

Test Specifications

Calibration check.

Ref. Document/Procedure: Z01.

Test Results

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


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

Main Test equipment used:

| <u>Equipment No.</u> | <u>Description</u> | <u>Cert. No.</u> | <u>Traceable to</u> |
|----------------------|--------------------------|------------------|---------------------|
| S017A | Multi-Function Generator | 00804 | SCL-HKSAR |
| S024 | Sound Level Calibrator | 04062 | NIM-PRC & SCL-HKSAR |

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

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

Calibrated by : 
P. F. Wong

Approved by : 
Dorothy Cheuk

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

Date: 23-Nov-10



Calibration Certificate

Certificate No. 06680

Page 2 of 4 Pages

Results :

1. SPL Accuracy

| UUT Setting | | | Applied Value (dB) | UUT Reading (dB) |
|------------------|----------------|-------------|--------------------|------------------|
| Level Range (dB) | Weight | Time Const. | | |
| 20 – 100 | L _A | Fast | 94.0 | 94.3 |
| | | Slow | | 94.3 |
| | L _C | Fast | | 94.3 |
| 30 – 120 | L _A | Fast | 94.0 | 94.4 |
| | | Slow | | 94.4 |
| | L _C | Fast | | 94.4 |
| 30 – 120 | L _A | Fast | 114.0 | 94.3 |
| | | Slow | | 94.3 |
| | L _C | Fast | | 94.3 |

IEC 651 Type 1 Spec. : ± 0.7 dB

Uncertainty : ± 0.1 dB

2. Level Stability : 0.0 dB

IEC 651 Type 1 Spec. : ± 0.3 dB

Uncertainty : ± 0.01 dB

3. Linearity

3.1 Level Linearity

| UUT Range (dB) | Applied Value (dB) | UUT Rdg (dB) | Variation (dB) | IEC 651 Type 1 Spec. (Primary Indicator Range) |
|----------------|--------------------|--------------|----------------|--|
| 140 | 114.0 | 114.5 | +0.1 | ± 0.7 dB |
| 130 | 104.0 | 104.4 | 0.0 | |
| 120 | 94.0 | 94.4 (Ref.) | -- | |
| 110 | 84.0 | 84.1 | -0.3 | |
| 100 | 74.0 | 74.2 | -0.2 | |
| 90 | 64.0 | 64.1 | -0.3 | |
| 80 | 54.0 | 54.1 | -0.3 | |

Uncertainty : ± 0.1 dB



Calibration Certificate

Certificate No. **06680**

Page 3 of 4 Pages

3.2 Differential level linearity

| UUT Range (dB) | Applied Value (dB) | UUT Rdg (dB) | Variation (dB) | IEC 651 Type 1 Spec. |
|----------------|--------------------|--------------|----------------|----------------------|
| 120 | 84.0 | 84.1 | -0.3 | ± 0.4 |
| | 94.0 | 94.4 (Ref.) | - - | |
| | 95.0 | 95.4 | 0.0 | ± 0.2 |

Uncertainty : ± 0.1 dB

4. Frequency Weighting

A weighting

| Frequency | Attenuation (dB) | IEC 651 Type 1 Spec. |
|-----------|------------------|----------------------------|
| 31.5 Hz | -39.3 | - 39.4 dB, ± 1.5 dB |
| 63 Hz | -26.2 | - 26.2 dB, ± 1.5 dB |
| 125 Hz | -16.1 | - 16.1 dB, ± 1 dB |
| 250 Hz | -8.7 | - 8.6 dB, ± 1 dB |
| 500 Hz | -3.3 | - 3.2 dB, ± 1 dB |
| 1 kHz | 0.0 (Ref) | 0 dB, ± 1 dB |
| 2 kHz | +1.3 | + 1.2 dB, ± 1 dB |
| 4 kHz | +0.9 | + 1.0 dB, ± 1 dB |
| 8 kHz | -1.2 | - 1.1 dB, + 1.5 dB ~ -3 dB |
| 16 kHz | -5.8 | - 6.6 dB, + 3 dB ~ - ∞ |

Uncertainty : ± 0.1 dB



Calibration Certificate

Certificate No. 06680

Page 4 of 4 Pages

4. Time Averaging

| Applied Burst duty Factor | Applied Leq Value (dB) | UUT Reading (dB) | IEC 804 Type 1 Spec. |
|---------------------------|------------------------|------------------|----------------------|
| continuous | 40.0 | 40.0 | -- |
| 1/10 | 40.0 | 39.9 | ± 0.5 dB |
| 1/10 ² | 40.0 | 39.9 | |
| 1/10 ³ | 40.0 | 40.3 | ± 1.0 dB |
| 1/10 ⁴ | 40.0 | 40.3 | |

Uncertainty : ± 0.1 dB

- Remark : 1. UUT : Unit-Under-Test
2. The uncertainty claimed is for a confidence probability of not less than 95%.
3. Atmospheric Pressure : 1 009 hPa.

----- END -----



Calibration Certificate

Certificate No. **06681**

Page 1 of 2 Pages

Customer : Lam Geotechnics Limited

Address : 11/F, Centre Point, 181-185 Gloucester Road, Wanchai, Hong Kong.

Order No. : Q02553

Date of receipt : 18-Nov-10

Item Tested

Description : Sound Level Calibrator (EL469)

Manufacturer : ACO

Model : --

Serial No. : 050213

Test Conditions

Date of Test : 19-Nov-10

Supply Voltage : --

Ambient Temperature : $(23 \pm 3)^{\circ}\text{C}$

Relative Humidity : $(50 \pm 25) \%$

Test Specifications

Calibration check.

Ref. Document/Procedure: F21, Z02.

Test Results

All results were within the IEC 942 Class 1 specification.

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

Main Test equipment used:


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

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

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

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

Calibrated by : 
P. F. Wong

Approved by : 
Dorothy Cheuk

Date: 23-Nov-10



Calibration Certificate

Certificate No. 06681

Page 2 of 2 Pages

Results :

1. Level

| UUT Nominal Value (dB) | Measured Value (dB) | IEC 942 Class 1 Spec. |
|------------------------|---------------------|-----------------------|
| 94 | 94.22 | ± 0.3 dB |

The above measured values are the mean of 3 measurements.

Uncertainty : ± 0.1 dB

2. Frequency

| UUT Nominal Value | Measured Value | IEC 942 Class 1 Spec. |
|-------------------|----------------|-----------------------|
| 1 kHz | 0.9834 kHz | ± 2 % |

Uncertainty : ± 3.6 x 10⁻⁶

3. Level Stability : 0.0 dB

IEC 942 Class 1 Spec. : ± 0.1 dB

Uncertainty : ± 0.01 dB

4. Total Harmonic Distortion : < 0.2 %

IEC 942 Class 1 Spec. : < 3 %

Uncertainty : ± 2.3 % of reading

Remark : 1. UUT : Unit-Under-Test

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

3. Atmospheric Pressure : 1 009 hPa.

----- END -----



TISCH ENVIRONMENTAL, INC.
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AIR POLLUTION MONITORING EQUIPMENT

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Jun 28, 2010 Rootsometer S/N 9833620 Ta (K) - 298
 Operator Tisch Orifice I.D. - 0005 Pa (mm) - 745.49

| PLATE OR Run # | VOLUME START (m3) | VOLUME STOP (m3) | DIFF VOLUME (m3) | DIFF TIME (min) | METER | ORFICE |
|----------------------|-------------------------|------------------------|------------------------|-----------------------|--------------------|----------------------|
| | | | | | DIFF Hg (mm) | DIFF H2O (in.) |
| 1 | NA | NA | 1.00 | 1.3860 | 3.2 | 2.00 |
| 2 | NA | NA | 1.00 | 0.9740 | 6.4 | 4.00 |
| 3 | NA | NA | 1.00 | 0.8730 | 7.9 | 5.00 |
| 4 | NA | NA | 1.00 | 0.8320 | 8.8 | 5.50 |
| 5 | NA | NA | 1.00 | 0.6850 | 12.7 | 8.00 |

DATA TABULATION

| Vstd | (x axis) Qstd | (y axis) | Va | (x axis) Qa | (y axis) |
|------------------------------------|------------------|----------|---------------------------|----------------|----------|
| 0.9767 | 0.7047 | 1.4006 | 0.9957 | 0.7184 | 0.8941 |
| 0.9725 | 0.9985 | 1.9808 | 0.9914 | 1.0179 | 1.2645 |
| 0.9704 | 1.1116 | 2.2146 | 0.9893 | 1.1332 | 1.4137 |
| 0.9693 | 1.1650 | 2.3227 | 0.9882 | 1.1877 | 1.4828 |
| 0.9641 | 1.4075 | 2.8013 | 0.9829 | 1.4349 | 1.7883 |
| Qstd slope (m) = 1.99628 | | | Qa slope (m) = 1.25003 | | |
| intercept (b) = -0.00699 | | | intercept (b) = -0.00446 | | |
| coefficient (r) = 0.99995 | | | coefficient (r) = 0.99995 | | |
| y axis = SQRT[H2O(Pa/760)(298/Ta)] | | | y axis = SQRT[H2O(Ta/Pa)] | | |

CALCULATIONS

$$Vstd = \text{Diff. Vol} [(Pa - \text{Diff. Hg}) / 760] (298 / Ta)$$

$$Qstd = Vstd / \text{Time}$$

$$Va = \text{Diff Vol} [(Pa - \text{Diff Hg}) / Pa]$$

$$Qa = Va / \text{Time}$$

For subsequent flow rate calculations:

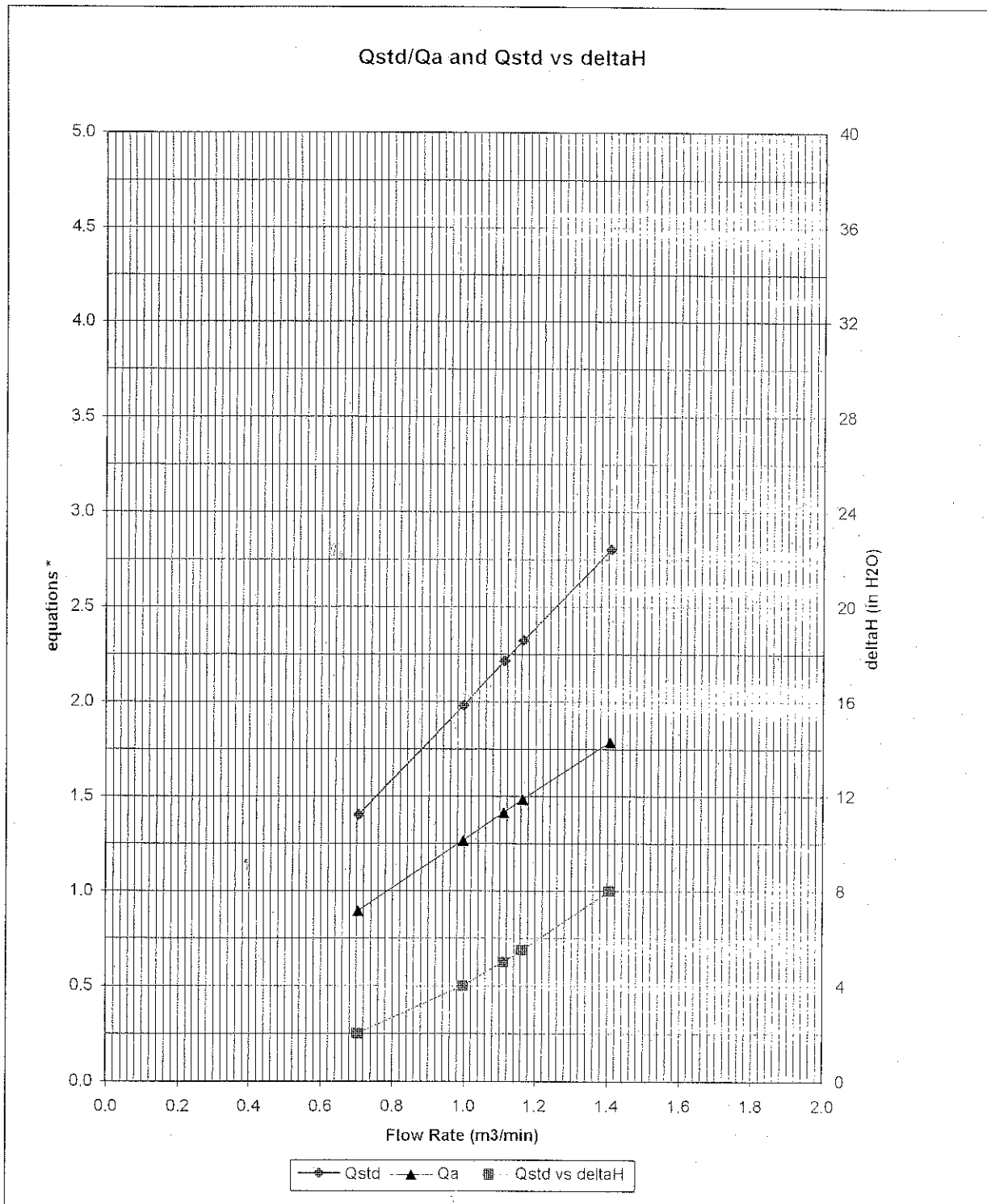
$$Qstd = 1/m \{ [\text{SQRT}(H2O(Pa/760)(298/Ta))] - b \}$$

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



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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:
$$\sqrt{(\Delta H (T_a / P_a))}$$

#0005

CERTIFICATE OF CALIBRATION**Certificate No. :** 2KS100705-2**Page 1 of 2****Calibration of :**

| | | | |
|----------------------|-------------------|---|------------|
| Description : | Sound Level Meter | , | Microphone |
| Manufacture : | Brüel & Kjær | | |
| Type No. : | 2250 | , | 4950 |
| Serial No. : | 2722311 | | 2698703 |

Client :

Lam Geotechnics Limited
11/F, Centre Point
181-185 Gloucester Road
Wanchai
Hong Kong

Calibration Conditions :

| | | |
|----------------------------|-------|-----|
| Air Temperature : | 23 | °C |
| Air Pressure : | 101.9 | kPa |
| Relative Humidity : | 62 | % |

Test Specifications :

The Sound Level Meter has been calibrated in accordance with the requirements as specified in IEC 60651 and IEC 60804 type 1, and vendor specific procedures.

The measurements has been performed with the assistance of :
Brüel & Kjær's Sound Level Meter Calibration System B&K 9600 CAL2238A, Ver.25.10.1999
The standard(s) and instrument(s) used in the calibration are traceable to international standard and are calibrated on a schedule which is adjusted to maintain the required accuracy level.

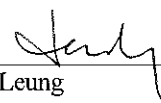
Test Result :

A list of the performed (sub) tests is stated on page 2 of this certificate. Actual Measurement are documented on worksheet.

Date of Calibration : 03 Aug, 2010
Calibrated By :

Certificate issued : 03 Aug, 2010
Approved signatory :


Dai Bin


Jacky Leung

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CERTIFICATE OF CALIBRATION

Certificate No. : 2KS100705-2

Page 2 of 2

Results :

List of performed (sub) test with test status:

“OK” Means the result of the (sub)test is Inside the tolerances stated in the test specifications.

“ - ” Means the result of the (sub)test is Outside these tolerances.

| Test : | Subtest : | Status : |
|---------------------|-----------------------|-----------------|
| Noise | A | OK |
| Noise | C | OK |
| Noise | Lin | OK |
| Frequency Weighting | A | OK |
| Frequency Weighting | C | OK |
| Frequency Weighting | Lin | OK |
| Level Range Control | 1000 Hz | OK |
| Linearity Range | SPL 10dB 4000 Hz | OK |
| Linearity Range | SPL 1dB 1000 Hz | OK |
| Linearity Range | Leq | OK |
| Linearity Range | SEL | OK |
| RMS Detector | CF 3 | OK |
| RMS Detector | CF 5 | OK |
| RMS Detector | CF 10 | OK |
| RMS Detector | Symmetry | OK |
| Time Weighting | Difference Indication | OK |
| Time Weighting | Single Burst FAST | OK |
| Time Weighting | Single Burst SLOW | OK |
| Time Weighting | Single Burst IMPULSE | OK |
| Time Weighting | Repetitive Burst | OK |
| Time Weighting | Peak | OK |
| Time Averaging | | OK |
| Pulse Range | | OK |
| Overload | SPL | OK |
| Overload | SEL | OK |
| Acoustic Response | A | OK |
| Acoustic Response | Lin | OK |

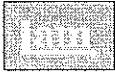
Calibration Equipment :

Brüel & Kjær's Sound Level Meter Calibration System B&K 9600 CAL2238A, Ver.25.10.1999

| Description : | Make & Model : | Serial No. : | Last Cal. Date : | Traceable to: |
|-------------------------|---------------------------|---------------------|-------------------------|----------------------|
| Digital Multi-meter | Datron 1281 | 27361 | 30 Sept, 2009 | HKSCS (HOKLAS) |
| Sine/Noise Generator | B&K 1049 | 1314978 | Test | B&K Conformance |
| Test Waveform Generator | B&K 5918 | 1482949 | Test | B&K Conformance |
| Acoustical Calibrator | B&K 4226 | 1843103 | 11 Aug 2009 | NPL via B&K (DANAK) |

Calibrated By : *Dai & M*
Date : 03 Aug 2010

Checked By : *Janly*
Date : 03 Aug, 2010

**Calibration Data for High Volume Sampler (TSP Sampler)**

Location : IFC-E
 Equipment no. : EL455

Calibration Date : 28-Dec-10
 Calibration Due Date : 28-Feb-11

CALIBRATION OF CONTINUOUS FLOW RECORDER

| Ambient Condition | | | |
|-----------------------------|-----|--------|--------------------------|
| Temperature, T _a | 293 | Kelvin | Pressure, P _a |
| | | | 1020 mmHg |

| Orifice Transfer Standard Information | | | | | |
|---------------------------------------|-----------|---|---------|---------------------------|----------|
| Equipment No. | EL086 | Slope, m _c | 1.99628 | Intercept, b _c | -0.06990 |
| Last Calibration Date | 28-Jun-10 | $(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$ | | | |
| Next Calibration Date | 28-Jun-11 | | | | |

| Calibration of RSP | | | | | | |
|--------------------|-------------------|--------|--------------|---|--------------------------------------|---|
| Calibration Point | Manometer Reading | | | Q _{std} (m ³ / min.) X-axis | Continuous Flow Recorder, W (CFM) | IC (W(P _a /1013.3x298/T _a) ^{1/2} /35.31) Y-axis |
| | (up) | (down) | (difference) | | | |
| 1 | 6.3 | 6.3 | 12.6 | 1.8342 | 59 | 59.6977 |
| 2 | 5.0 | 5.0 | 10.0 | 1.6378 | 53 | 53.6267 |
| 3 | 3.9 | 3.9 | 7.8 | 1.4506 | 46 | 46.5439 |
| 4 | 2.6 | 2.6 | 5.2 | 1.1908 | 34 | 34.4020 |
| 5 | 1.6 | 1.6 | 3.2 | 0.9417 | 24 | 24.2838 |

By Linear Regression of Y on X

Slope, m = 40.5207 Intercept, b = -13.4648
 Correlation Coefficient* = 0.9978
 Calibration Accepted = Yes/No**

* if Correlation Coefficient < 0.990, check and recalibration again.

** Delete as appropriate.

Remarks : _____

Calibrated by : Derek Lo
 Date : 28-Dec-10

Checked by : Cherry Mak
 Date : 28-Dec-10

**Calibration Data for High Volume Sampler (TSP Sampler)**

Location : IFC-W Calibration Date : 28-Dec-10
 Equipment no. : EL080 Calibration Due Date : 28-Feb-11

CALIBRATION OF CONTINUOUS FLOW RECORDER

| Ambient Condition | | | |
|--------------------|-----|--------|-----------------|
| Temperature, T_a | 293 | Kelvin | Pressure, P_a |
| | | | 1020 mmHg |

| Orifice Transfer Standard Information | | | | | |
|---------------------------------------|-----------|--|---------|------------------|----------|
| Equipment No. | EL086 | Slope, m_c | 1.99628 | Intercept, b_c | -0.06990 |
| Last Calibration Date | 28-Jun-10 | $(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$ | | | |
| Next Calibration Date | 28-Jun-11 | | | | |

| Calibration of RSP | | | | | | |
|--------------------|-------------------|--------|--------------|---|--------------------------------------|--|
| Calibration Point | Manometer Reading | | | Q_{std} ($m^3 / min.$) X-axis | Continuous Flow Recorder, W (CFM) | IC ($W(P_a/1013.3 \times 298/T_a)^{1/2}/35.31$) Y-axis |
| | (up) | (down) | (difference) | | | |
| 1 | 6.2 | 6.2 | 12.4 | 1.8198 | 55 | 55.6504 |
| 2 | 5.0 | 5.0 | 10.0 | 1.6378 | 49 | 49.5794 |
| 3 | 3.8 | 3.8 | 7.6 | 1.4323 | 40 | 40.4730 |
| 4 | 2.5 | 2.5 | 5.0 | 1.1684 | 30 | 30.3547 |
| 5 | 1.6 | 1.6 | 3.2 | 0.9417 | 21 | 21.2483 |

By Linear Regression of Y on X

Slope, m = 39.5777 Intercept, b = -15.9482
 Correlation Coefficient* = 0.9995
 Calibration Accepted = Yes/No**

* if Correlation Coefficient < 0.990, check and recalibration again.

** Delete as appropriate.

Remarks : _____

Calibrated by : Derek Lo Checked by : Cherry Mak
 Date : 28-Dec-10 Date : 28-Dec-10

**Calibration Data for High Volume Sampler (TSP Sampler)**

Location : CMA2a Calibration Date : 28-Dec-10
 Equipment no. : EL449 Calibration Due Date : 28-Feb-11

CALIBRATION OF CONTINUOUS FLOW RECORDER

| Ambient Condition | | | |
|-----------------------------|-----|--------|--------------------------|
| Temperature, T _a | 293 | Kelvin | Pressure, P _a |
| | | | 1020 mmHg |

| Orifice Transfer Standard Information | | | | | |
|---------------------------------------|-----------|---|---------|---------------------------|----------|
| Equipment No. | EL086 | Slope, m _c | 1.99628 | Intercept, b _c | -0.06990 |
| Last Calibration Date | 28-Jun-10 | $(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$ | | | |
| Next Calibration Date | 28-Jun-11 | | | | |

| Calibration of RSP | | | | | | |
|--------------------|-------------------|--------|--------------|---|--------------------------------------|---|
| Calibration Point | Manometer Reading | | | Q _{std} (m ³ / min.) X-axis | Continuous Flow Recorder, W (CFM) | IC (W(P _a /1013.3x298/T _a) ^{1/2} /35.31) Y-axis |
| | (up) | (down) | (difference) | | | |
| 1 | 6.5 | 6.5 | 13.0 | 1.8625 | 52 | 52.6149 |
| 2 | 5.2 | 5.2 | 10.4 | 1.6696 | 47 | 47.5558 |
| 3 | 4.0 | 4.0 | 8.0 | 1.4686 | 40 | 40.4730 |
| 4 | 2.6 | 2.6 | 5.2 | 1.1908 | 30 | 30.3547 |
| 5 | 1.5 | 1.5 | 3.0 | 0.9129 | 18 | 18.2128 |

By Linear Regression of Y on X

Slope, m = 36.4116 Intercept, b = -13.8945
 Correlation Coefficient* = 0.9967
 Calibration Accepted = Yes/No**

* if Correlation Coefficient < 0.990, check and recalibration again.

** Delete as appropriate.

Remarks : _____

Calibrated by : Derek Lo Checked by : Cherry Mak
 Date : 28-Dec-10 Date : 28-Dec-10



Appendix 5.1

Monitoring Schedules for Reporting Month and Coming Reporting Month

Contract No. HK/2009/05
Wan Chai Development Phase II and Central-Wan Chai Bypass
Sampling, Field Measurement and Testing Works (Stage 1)

Environmental Monitoring Schedule
February 2011

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|-------------|--------|---------------------------------|-------------|------------------|-------------|-------------|
| 23-Jan | 24-Jan | 25-Jan | 26-Jan | 27-Jan | 28-Jan | 29-Jan |
| | | | | | 1hr TSP x 3 | |
| 30-Jan | 31-Jan | 01-Feb | 02-Feb | 03-Feb | 04-Feb | 05-Feb |
| | | 24hr TSP Noise (Day time) | 1hr TSP x 3 | | | |
| 06-Feb | 07-Feb | 08-Feb | 09-Feb | 10-Feb | 11-Feb | 12-Feb |
| | | 24hr TSP Noise (Day time) | 1hr TSP x 3 | | | |
| 13-Feb | 14-Feb | 15-Feb | 16-Feb | 17-Feb | 18-Feb | 19-Feb |
| 24hr TSP | | 1hr TSP x 3 Noise (Day time) | | Noise (Day time) | | 24hr TSP |
| 20-Feb | 21-Feb | 22-Feb | 23-Feb | 24-Feb | 25-Feb | 26-Feb |
| 1hr TSP x 3 | | Noise (Day time) | | | 24hr TSP | 1hr TSP x 3 |
| 27-Feb | 28-Feb | 01-Mar | 02-Mar | 03-Mar | 04-Mar | 05-Mar |
| | | | | | | |

Contract No. HK/2009/05
Wan Chai Development Phase II and Central-Wan Chai Bypass
Sampling, Field Measurement and Testing Works (Stage 1)
Tentative Environmental Monitoring Schedule
March 2011

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|--------|----------|------------------------------|-------------|------------------|-------------|----------|
| 27-Feb | 28-Feb | 1-Mar | 2-Mar | 3-Mar | 4-Mar | 5-Mar |
| | | Noise (Day time) | | 24hr TSP | 1hr TSP x 3 | |
| 6-Mar | 7-Mar | 8-Mar | 9-Mar | 10-Mar | 11-Mar | 12-Mar |
| | | Noise (Day time) | 24hr TSP | 1hr TSP x 3 | | |
| 13-Mar | 14-Mar | 15-Mar | 16-Mar | 17-Mar | 18-Mar | 19-Mar |
| | | 24hr TSP Noise (Day time) | 1hr TSP x 3 | | | |
| 20-Mar | 21-Mar | 22-Mar | 23-Mar | 24-Mar | 25-Mar | 26-Mar |
| | 24hr TSP | 1hr TSP x 3 | | Noise (Day time) | | 24hr TSP |
| 27-Mar | 28-Mar | 29-Mar | 30-Mar | 31-Mar | 1-Apr | 2-Apr |
| | | | | | | |

Contract No. HK/2009/05
Wan Chai Development Phase II and Central-Wan Chai Bypass
Sampling, Field Measurement and Testing Works (Stage 1)
Tentative Environmental Monitoring Schedule
April 2011

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---------------|---------------------------|--|----------------------------|---------------------------------------|----------------------|----------------------|
| 27-Mar | 28-Mar 1hr TSP x 3 | 29-Mar | 30-Mar Noise (Day time) | 31-Mar | 1-Apr 24hr TSP | 2-Apr 1hr TSP x 3 |
| 3-Apr | 4-Apr | 5-Apr | 6-Apr | 7-Apr 24hr TSP Noise (Day time) | 8-Apr 1hr TSP x 3 | 9-Apr |
| 10-Apr | 11-Apr | 12-Apr Noise (Day time) | 13-Apr 24hr TSP | 14-Apr 1hr TSP x 3 | 15-Apr | 16-Apr |
| 17-Apr | 18-Apr | 19-Apr 24hr TSP Noise (Day time) | 20-Apr 1hr TSP x 3 | 21-Apr | 22-Apr | 23-Apr |
| 24-Apr | 25-Apr 24hr TSP | 26-Apr 1hr TSP x 3 | 27-Apr Noise (Day time) | 28-Apr | 29-Apr | 30-Apr |

Contract No. HK/2009/05
Wan Chai Development Phase II and Central-Wan Chai Bypass
Sampling, Field Measurement and Testing Works (Stage 1)
Tentative Environmental Monitoring Schedule

Remarks (Air)

1. Cut-off date is at the 27th of each reporting month
2. Actual monitoring will subject to change due to any safety concern or adverse weather condition.
3. Air Quality Monitoring Stations corresponding to active contracts are sub-divided below
 - Contract 04/HY/2006: MA1e and MA1w
 - Contract HK/2009/01: CMA5a (To be commenced when commencement of major works under FEP-02/364/2009 begun)
 - Contract HK/2009/02: CMA4a (To be commenced when commencement of major works under FEP-01/364/209 begun)
 - Contract HY/2009/15: CMA3a (To be commenced when commencement of major works under FEP-06/364/209/A begun)
 - Contract HY/2009/17: CMA2a
 - Contract HY/2009/18: MA1e and MA1w (To be commenced when commencement of major works under FEP-05/364/209/A begun)

Remarks (Noise)

1. Cut-off date is at the 27th of each reporting month
2. Actual monitoring will subject to change due to any safety concern or adverse weather condition.
3. Noise Quality Monitoring Stations corresponding to active contracts are sub-divided below
 - Contract 04/HY/2006: M7e and M7w
 - Contract HK/2009/01 and HK/2009/02: M1a (To be commenced when commencement of major works under FEP-02/364/2009 & FEP-01/364/2009 begun)
 - Contract HY/2009/15: M2b (To be commenced when commencement of major works under FEP-06/364/209/A begun)
 - Contract HY/2009/17: M4b
 - Contract HY/2009/18: M7e and M7w (To be commenced when commencement of major works under FEP-05/364/209/A begun)
4. Day time noise will be monitored for Leq(30min) during the period between 07:00 and 19:00 for active contract(s).
5. Restricted hours noise (i.e. outside 07:00-19:00 of normal weekday) will be monitored for 3 nos. Leq(5min) as per the relevant Construction Noise Permit(s) in force for the followin contract(s): Contracts HY/2009/11 and HK/2009/02



Appendix 5.2

Noise Monitoring Results and Graphical Presentations



Noise Monitoring Result

Day Time (0700 - 1900hrs on normal weekdays)

Location: M4b - Victoria Centre

| Date | Time | Weather | Measurement Noise Level | | | Baseline Noise Level | Construction Noise Level | Limit Level |
|----------------------|-------|---------|-------------------------|------|------|----------------------|--------------------------|-------------|
| | | | Leq | L10 | L90 | Leq | Leq | Leq |
| Unit: dB(A), (30min) | | | | | | | | |
| 01/02/11 | 11:31 | Cloudy | 67.1 | 68.6 | 64.8 | - | 67 | 75 |
| 08/02/11 | 11:36 | Fine | 67.4 | 69.1 | 65.1 | - | 67 | 75 |
| 17/02/11 | 14:57 | Cloudy | 71.1 | 73.2 | 68.5 | - | 71 | 75 |
| 22/02/11 | 13:39 | Cloudy | 69.3 | 70.6 | 67.1 | - | 69 | 75 |



Noise Monitoring Result

Day Time (0700 - 1900hrs on normal weekdays)

Location: M7e - International Finance Centre (Eastern End of Podium)

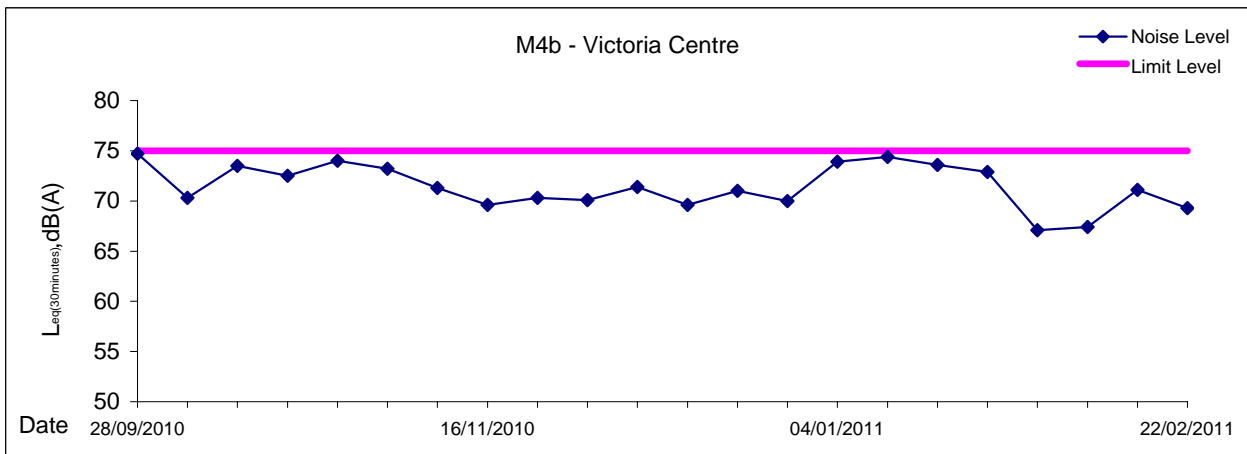
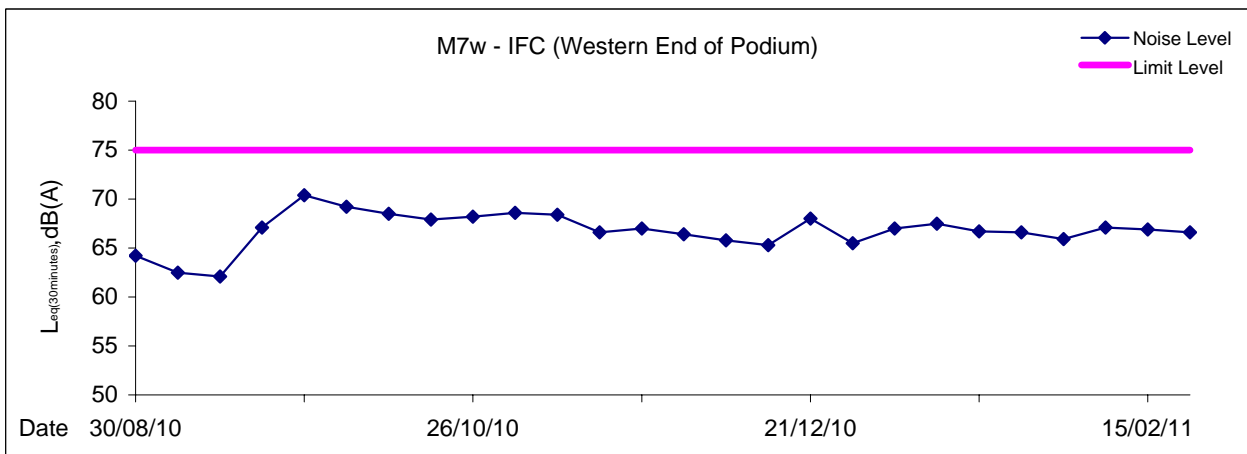
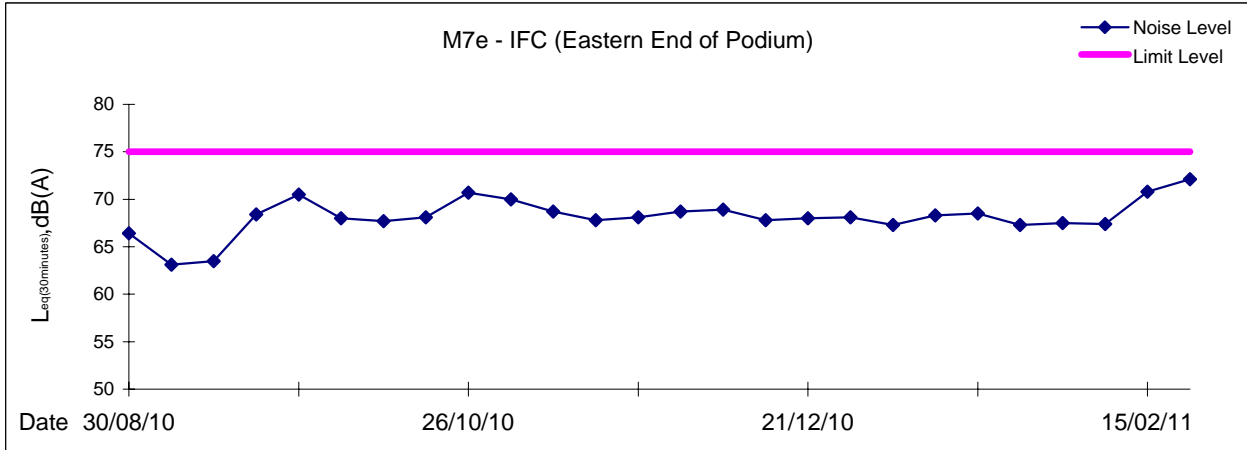
| Date | Time | Weather | Measurement Noise Level | | | Baseline Level | Construction Noise Level | Limit Level |
|-----------------------|-------|---------|-------------------------|------|------|----------------|--------------------------|-------------|
| | | | Leq | L10 | L90 | Leq | Leq | Leq |
| Unit: dB(A), (30-min) | | | | | | | | |
| 01/02/11 | 08:36 | Cloudy | 67.5 | 69.8 | 63.6 | - | 68 | 75 |
| 08/02/11 | 08:34 | Fine | 67.4 | 69.3 | 64.1 | - | 67 | 75 |
| 15/02/11 | 09:05 | Cloudy | 70.8 | 73.2 | 66.9 | - | 71 | 75 |
| 22/02/11 | 08:34 | Cloudy | 72.1 | 75.0 | 67.2 | - | 72 | 75 |

Location: M7w - International Finance Centre (Western End of Podium)

| Date | Time | Weather | Measurement Noise Level | | | Baseline Level | Construction Noise Level | Limit Level |
|-----------------------|-------|---------|-------------------------|------|------|----------------|--------------------------|-------------|
| | | | Leq | L10 | L90 | Leq | Leq | Leq |
| Unit: dB(A), (30-min) | | | | | | | | |
| 01/02/11 | 08:01 | Cloudy | 65.9 | 69.0 | 61.3 | - | 66 | 75 |
| 08/02/11 | 08:00 | Fine | 67.1 | 69.8 | 62.0 | - | 67 | 75 |
| 15/02/11 | 09:50 | Cloudy | 66.9 | 68.8 | 64.0 | - | 67 | 75 |
| 22/02/11 | 09:10 | Cloudy | 66.6 | 68.4 | 64.0 | - | 67 | 75 |



Graphic Presentation of Noise Monitoring Result
Day Time (0700 - 1900hrs on normal weekdays)





Appendix 5.3

Air Quality Monitoring Results and Graphical Presentations

Location: CMA2a - Causeway Bay Community Centre

Report on 24-hour TSP monitoring

Action Level ($\mu\text{g}/\text{m}^3$) - 169.5

Limit Level ($\mu\text{g}/\text{m}^3$) - 260

| Date | Sampling Time | Weather Condition | Filter paper no. | Filter Weight, g | | Elapse Time, hr | | Sampling Time, hr | Flow Rate, m^3/min | | | Total Volume, m^3 | TSP Level, $\mu\text{g}/\text{m}^3$ |
|-----------|---------------|-------------------|------------------|------------------|--------|-----------------|----------|-------------------|------------------------------------|-----------------|---------|----------------------------|-------------------------------------|
| | | | | Initial | Final | Initial | Final | | Initial, Q_{si} | Final, Q_{sf} | Average | | |
| 01-Feb-11 | 08:00 | Hazy | 202028 | 2.8561 | 3.1615 | 13284.98 | 13308.98 | 24.00 | 1.51 | 1.51 | 1.51 | 2176 | 140 |
| 08-Feb-11 | 08:00 | Hazy | 202105 | 2.7714 | 3.0051 | 13311.98 | 13335.98 | 24.00 | 1.49 | 1.49 | 1.49 | 2148 | 109 |
| 14-Feb-11 | 08:00 | Hazy | 202129 | 2.7733 | 2.9387 | 13338.98 | 13362.97 | 23.99 | 1.48 | 1.48 | 1.48 | 2127 | 78 |
| 19-Feb-11 | 08:00 | Hazy | 202150 | 2.7892 | 2.8725 | 13365.97 | 13389.97 | 24.00 | 1.48 | 1.48 | 1.48 | 2129 | 39 |
| 25-Feb-11 | 08:00 | Sunny | 202195 | 2.7639 | 2.9770 | 13392.99 | 13416.99 | 24.00 | 1.49 | 1.49 | 1.49 | 2147 | 99 |

Report on 1-hour TSP monitoring

Action Level ($\mu\text{g}/\text{m}^3$) - 323.4

Limit Level ($\mu\text{g}/\text{m}^3$) - 500

| Date | Sampling Time | Weather Condition | Filter paper no. | Filter Weight, g | | Elapse Time, hr | | Sampling Time, hr | Flow Rate, m^3/min | | | Total Volume, m^3 | TSP Level, $\mu\text{g}/\text{m}^3$ |
|-----------|---------------|-------------------|------------------|------------------|--------|-----------------|----------|-------------------|------------------------------------|-----------------|---------|----------------------------|-------------------------------------|
| | | | | Initial | Final | Initial | Final | | Initial, Q_{si} | Final, Q_{sf} | Average | | |
| 28-Jan-11 | 08:15 | Hazy | 202064 | 2.8522 | 2.8625 | 13257.99 | 13258.99 | 1.00 | 1.49 | 1.49 | 1.49 | 89 | 115 |
| 28-Jan-11 | 10:30 | Hazy | 202066 | 2.8622 | 2.8741 | 13258.99 | 13259.99 | 1.00 | 1.49 | 1.49 | 1.49 | 89 | 133 |
| 28-Jan-11 | 14:00 | Hazy | 202068 | 2.8652 | 2.8749 | 13259.99 | 13260.99 | 1.00 | 1.49 | 1.49 | 1.49 | 89 | 109 |
| 02-Feb-11 | 08:15 | Hazy | 202033 | 2.8553 | 2.8668 | 13308.98 | 13309.98 | 1.00 | 1.51 | 1.51 | 1.51 | 91 | 127 |
| 02-Feb-11 | 09:30 | Hazy | 202103 | 2.7779 | 2.7978 | 13309.98 | 13310.98 | 1.00 | 1.51 | 1.51 | 1.51 | 91 | 220 |
| 02-Feb-11 | 10:50 | Hazy | 202104 | 2.7458 | 2.7625 | 13310.98 | 13311.98 | 1.00 | 1.51 | 1.51 | 1.51 | 91 | 184 |
| 09-Feb-11 | 10:40 | Hazy | 202126 | 2.7605 | 2.7672 | 13335.98 | 13336.98 | 1.00 | 1.47 | 1.50 | 1.48 | 89 | 75 |
| 09-Feb-11 | 15:00 | Hazy | 202127 | 2.7251 | 2.7318 | 13336.98 | 13337.98 | 1.00 | 1.50 | 1.50 | 1.50 | 90 | 75 |
| 09-Feb-11 | 16:45 | Hazy | 202128 | 2.7971 | 2.8018 | 13337.98 | 13338.98 | 1.00 | 1.50 | 1.50 | 1.50 | 90 | 52 |
| 15-Feb-11 | 09:00 | Hazy | 202171 | 2.7253 | 2.7277 | 13362.97 | 13363.97 | 1.00 | 1.51 | 1.51 | 1.51 | 90 | 27 |
| 15-Feb-11 | 10:30 | Hazy | 202143 | 2.7815 | 2.7887 | 13363.97 | 13364.97 | 1.00 | 1.51 | 1.51 | 1.51 | 90 | 80 |
| 15-Feb-11 | 13:00 | Hazy | 202116 | 2.7386 | 2.7493 | 13364.97 | 13365.97 | 1.00 | 1.51 | 1.51 | 1.51 | 90 | 118 |
| 21-Feb-11 | 14:00 | Hazy | 202197 | 2.7600 | 2.7671 | 13389.97 | 13390.97 | 1.00 | 1.51 | 1.51 | 1.51 | 90 | 79 |
| 21-Feb-11 | 15:05 | Hazy | 202190 | 2.7478 | 2.7567 | 13390.97 | 13391.97 | 1.00 | 1.51 | 1.51 | 1.51 | 90 | 98 |
| 21-Feb-11 | 16:30 | Hazy | 202192 | 2.7426 | 2.7539 | 13391.97 | 13392.97 | 1.00 | 1.51 | 1.51 | 1.51 | 90 | 125 |
| 26-Feb-11 | 08:05 | Sunny | 202167 | 2.7243 | 2.7386 | 13416.99 | 13417.99 | 1.00 | 1.50 | 1.50 | 1.50 | 90 | 159 |
| 26-Feb-11 | 09:10 | Sunny | 202230 | 2.7902 | 2.8034 | 13417.99 | 13418.99 | 1.00 | 1.50 | 1.50 | 1.50 | 90 | 147 |
| 26-Feb-11 | 10:30 | Sunny | 202231 | 2.7878 | 2.8004 | 13418.99 | 13419.99 | 1.00 | 1.50 | 1.50 | 1.50 | 90 | 140 |



Location: MA1e - International Finance Centre (Eastern Wing)

Report on 24-hour TSP monitoring

Action Level ($\mu\text{g}/\text{m}^3$) - 173.4
Limit Level ($\mu\text{g}/\text{m}^3$) - 260

| Date | Sampling Time | Weather Condition | Filter paper no. | Filter Weight, g | | Elapse Time, hr | | Sampling Time, hr | Flow Rate, m^3/min | | | Total Volume, m^3 | TSP Level, $\mu\text{g}/\text{m}^3$ |
|-----------|---------------|-------------------|------------------|------------------|--------|-----------------|---------|-------------------|------------------------------------|-----------------|---------|----------------------------|-------------------------------------|
| | | | | Initial | Final | Initial | Final | | Initial, Q_{si} | Final, Q_{sf} | Average | | |
| 01-Feb-11 | 08:00 | Hazy | 202070 | 2.8635 | 3.1600 | 6380.46 | 6404.46 | 24.00 | 1.28 | 1.31 | 1.30 | 1865 | 159 |
| 08-Feb-11 | 08:00 | Hazy | 202074 | 2.8589 | 3.0761 | 6407.47 | 6431.47 | 24.00 | 1.27 | 1.27 | 1.27 | 1835 | 118 |
| 14-Feb-11 | 08:00 | Hazy | 202142 | 2.7706 | 2.8937 | 6434.47 | 6458.46 | 23.99 | 1.32 | 1.32 | 1.32 | 1902 | 65 |
| 19-Feb-11 | 08:00 | Hazy | 202180 | 2.7596 | 2.8347 | 6461.46 | 6485.46 | 24.00 | 1.30 | 1.30 | 1.30 | 1869 | 40 |
| 25-Feb-11 | 08:00 | Sunny | 202157 | 2.7411 | 2.9094 | 6488.46 | 6512.46 | 24.00 | 1.21 | 1.21 | 1.21 | 1741 | 97 |

Report on 1-hour TSP monitoring

Action Level ($\mu\text{g}/\text{m}^3$) - 325.1
Limit Level ($\mu\text{g}/\text{m}^3$) - 500

| Date | Sampling Time | Weather Condition | Filter paper no. | Filter Weight, g | | Elapse Time, hr | | Sampling Time, hr | Flow Rate, m^3/min | | | Total Volume, m^3 | TSP Level, $\mu\text{g}/\text{m}^3$ |
|-----------|---------------|-------------------|------------------|------------------|--------|-----------------|---------|-------------------|------------------------------------|-----------------|---------|----------------------------|-------------------------------------|
| | | | | Initial | Final | Initial | Final | | Initial, Q_{si} | Final, Q_{sf} | Average | | |
| 28-Jan-11 | 08:05 | Hazy | 202023 | 2.8600 | 2.8693 | 6377.46 | 6378.46 | 1.00 | 1.29 | 1.29 | 1.29 | 77 | 120 |
| 28-Jan-11 | 09:15 | Hazy | 202092 | 2.8893 | 2.8968 | 6378.46 | 6379.46 | 1.00 | 1.29 | 1.29 | 1.29 | 77 | 97 |
| 28-Jan-11 | 10:30 | Hazy | 202085 | 2.8662 | 2.8759 | 6379.46 | 6380.46 | 1.00 | 1.29 | 1.29 | 1.29 | 77 | 126 |
| 02-Feb-11 | 08:05 | Hazy | 202075 | 2.8572 | 2.8715 | 6404.46 | 6405.46 | 1.00 | 1.35 | 1.35 | 1.35 | 81 | 177 |
| 02-Feb-11 | 09:10 | Hazy | 202076 | 2.8644 | 2.8818 | 6405.46 | 6406.46 | 1.00 | 1.35 | 1.35 | 1.35 | 81 | 215 |
| 02-Feb-11 | 10:20 | Hazy | 202090 | 2.8795 | 2.8957 | 6406.46 | 6407.46 | 1.00 | 1.35 | 1.35 | 1.35 | 81 | 200 |
| 09-Feb-11 | 08:50 | Hazy | 202139 | 2.7819 | 2.7927 | 6431.47 | 6432.47 | 1.00 | 1.27 | 1.27 | 1.27 | 76 | 141 |
| 09-Feb-11 | 10:00 | Hazy | 212140 | 2.7722 | 2.7794 | 6432.47 | 6433.47 | 1.00 | 1.27 | 1.27 | 1.27 | 76 | 94 |
| 09-Feb-11 | 11:00 | Hazy | 202141 | 2.7722 | 2.7794 | 6433.47 | 6434.47 | 1.00 | 1.27 | 1.27 | 1.27 | 76 | 94 |
| 15-Feb-11 | 09:00 | Hazy | 202117 | 2.7302 | 2.7342 | 6458.46 | 6459.46 | 1.00 | 1.28 | 1.28 | 1.28 | 77 | 52 |
| 15-Feb-11 | 10:05 | Hazy | 202133 | 2.7934 | 2.7955 | 6459.46 | 6460.46 | 1.00 | 1.28 | 1.28 | 1.28 | 77 | 27 |
| 15-Feb-11 | 13:00 | Hazy | 202146 | 2.7999 | 2.8040 | 6460.46 | 6461.46 | 1.00 | 1.28 | 1.28 | 1.28 | 77 | 53 |
| 21-Feb-11 | 08:05 | Hazy | 202154 | 2.7558 | 2.7621 | 6485.46 | 6486.46 | 1.00 | 1.28 | 1.28 | 1.28 | 77 | 82 |
| 21-Feb-11 | 09:08 | Hazy | 202155 | 2.7662 | 2.7724 | 6486.46 | 6487.46 | 1.00 | 1.28 | 1.28 | 1.28 | 77 | 81 |
| 21-Feb-11 | 10:12 | Hazy | 202156 | 2.7419 | 2.7471 | 6487.46 | 6488.46 | 1.00 | 1.28 | 1.28 | 1.28 | 77 | 68 |
| 26-Feb-11 | 08:10 | Sunny | 202203 | 2.7983 | 2.8053 | 6512.46 | 6513.46 | 1.00 | 1.27 | 1.27 | 1.27 | 76 | 92 |
| 26-Feb-11 | 09:15 | Sunny | 202220 | 2.8288 | 2.8367 | 6513.46 | 6514.46 | 1.00 | 1.27 | 1.27 | 1.27 | 76 | 103 |
| 26-Feb-11 | 10:25 | Sunny | 202206 | 2.8016 | 2.8072 | 6514.46 | 6515.46 | 1.00 | 1.27 | 1.27 | 1.27 | 76 | 73 |



Location: MA1w - International Finance Centre (Western Wing)

Report on 24-hour TSP monitoring

Action Level ($\mu\text{g}/\text{m}^3$) - 173.4

Limit Level ($\mu\text{g}/\text{m}^3$) - 260

| Date | Sampling Time | Weather Condition | Filter paper no. | Filter Weight, g | | Elapse Time, hr | | Sampling Time, hr | Flow Rate, m^3/min | | | Total Volume, m^3 | TSP Level, $\mu\text{g}/\text{m}^3$ |
|-----------|---------------|-------------------|------------------|------------------|--------|-----------------|---------|-------------------|------------------------------------|-----------------|---------|----------------------------|-------------------------------------|
| | | | | Initial | Final | Initial | Final | | Initial, Q_{si} | Final, Q_{sf} | Average | | |
| 01-Feb-11 | 08:00 | Hazy | 202071 | 2.8718 | 3.1439 | 9525.31 | 9549.31 | 24.00 | 1.25 | 1.25 | 1.25 | 1807 | 151 |
| 09-Feb-11 | 15:00 | Hazy | 202138 | 2.7771 | 2.9770 | 9558.30 | 9582.30 | 24.00 | 1.27 | 1.27 | 1.27 | 1826 | 109 |
| 14-Feb-11 | 08:00 | Hazy | 202131 | 2.7628 | 2.8875 | 9582.30 | 9606.29 | 23.99 | 1.35 | 1.35 | 1.35 | 1946 | 64 |
| 17-Feb-11 | 08:00 | Hazy | 202181 | 2.7582 | 2.8458 | 9609.29 | 9633.29 | 24.00 | 1.35 | 1.35 | 1.35 | 1947 | 45 |
| 25-Feb-11 | 08:00 | Sunny | 202184 | 2.7590 | 2.9066 | 9636.29 | 9660.29 | 24.00 | 1.34 | 1.34 | 1.34 | 1932 | 76 |

Report on 1-hour TSP monitoring

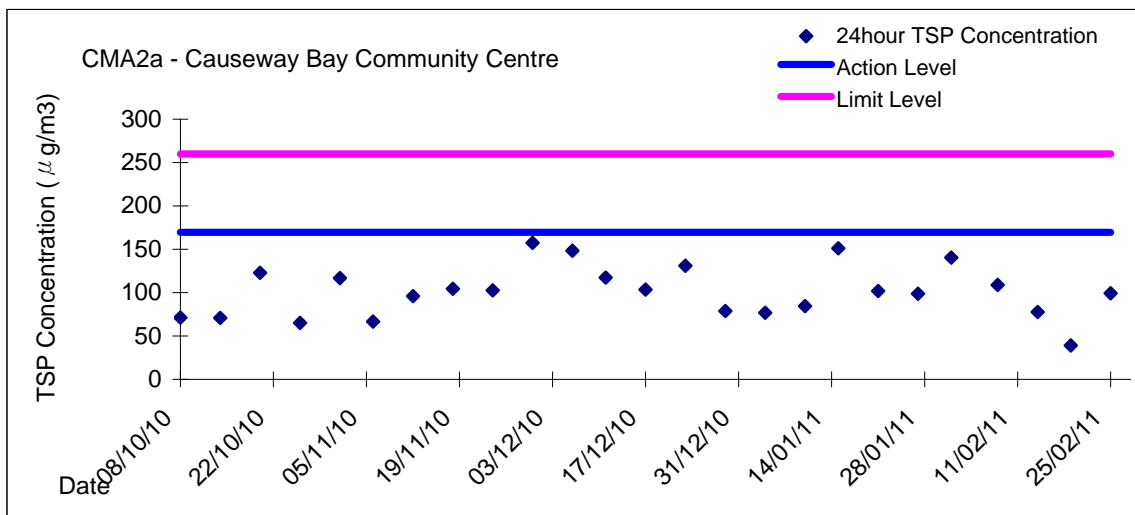
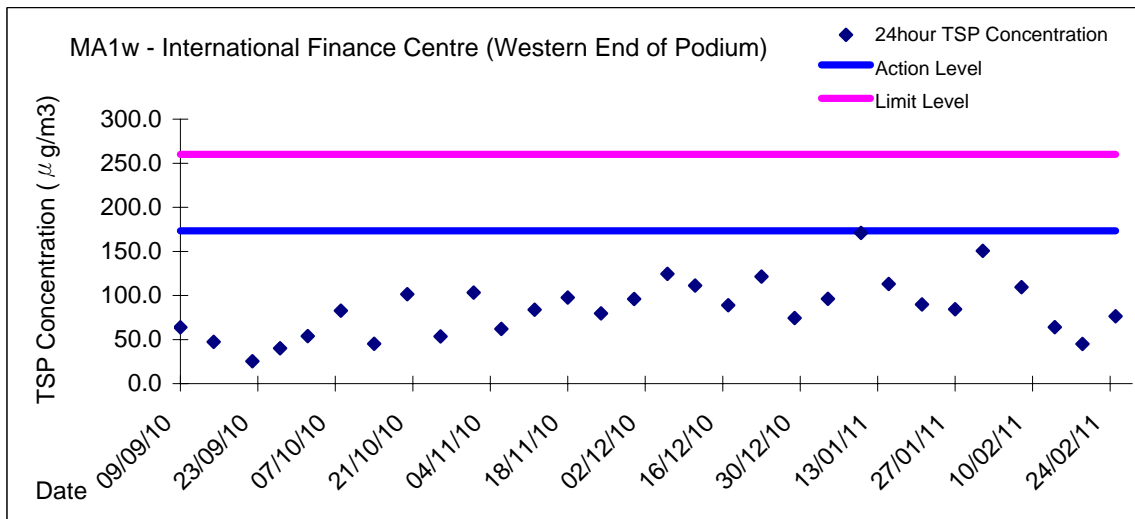
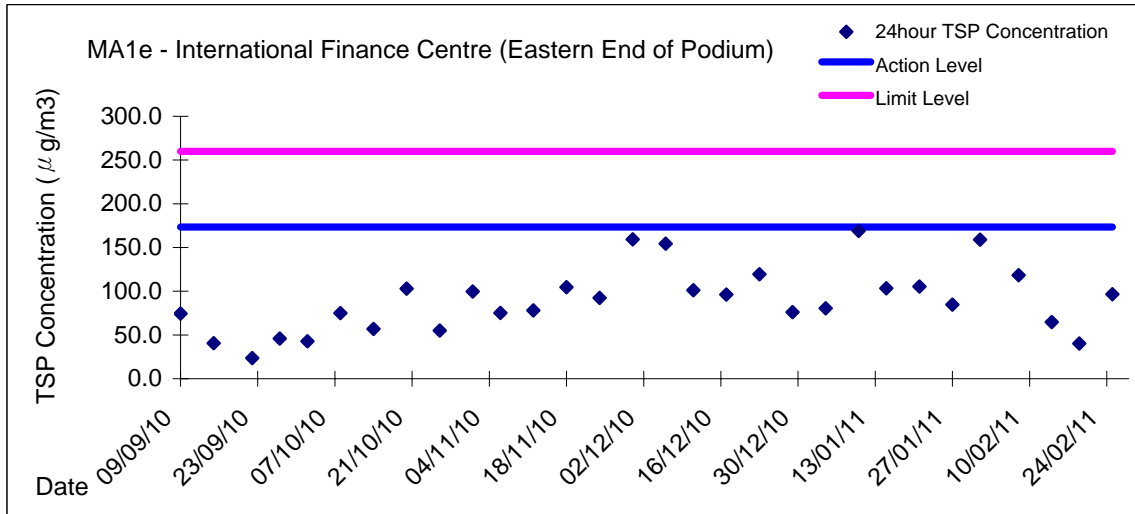
Action Level ($\mu\text{g}/\text{m}^3$) - 325.1

Limit Level ($\mu\text{g}/\text{m}^3$) - 500

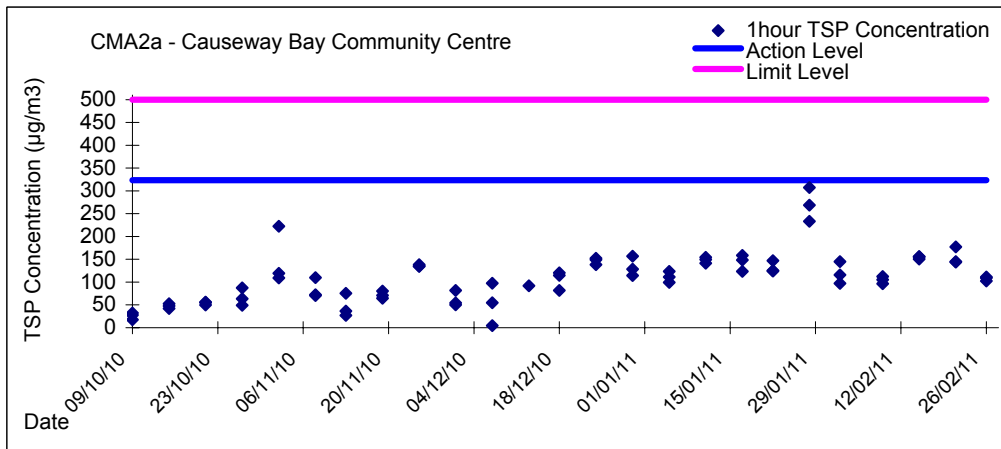
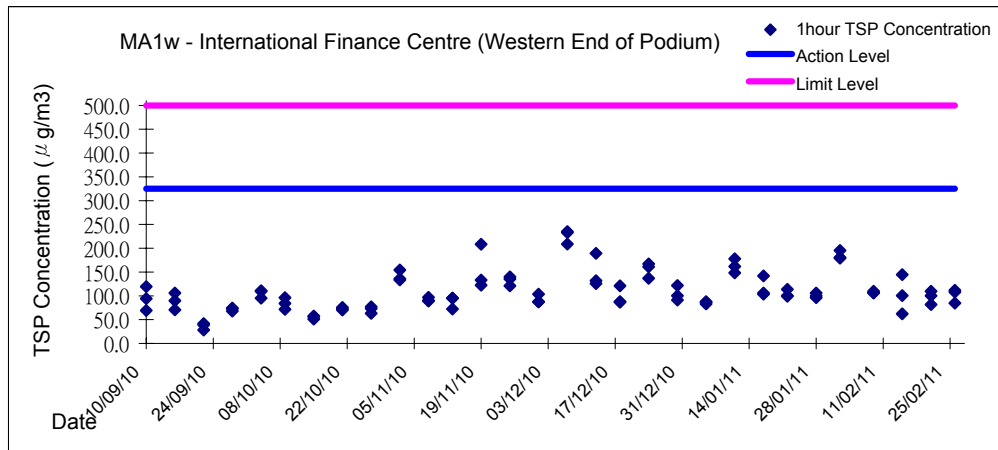
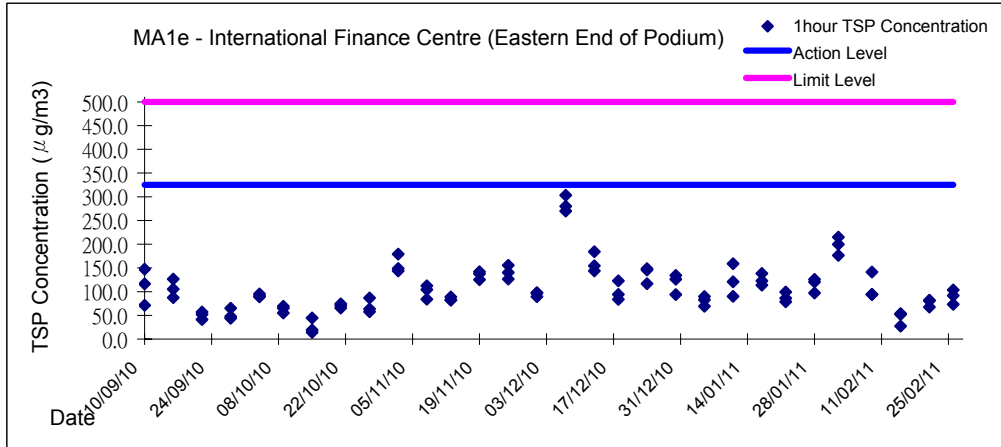
| Date | Sampling Time | Weather Condition | Filter paper no. | Filter Weight, g | | Elapse Time, hr | | Sampling Time, hr | Flow Rate, m^3/min | | | Total Volume, m^3 | TSP Level, $\mu\text{g}/\text{m}^3$ |
|-----------|---------------|-------------------|------------------|------------------|--------|-----------------|---------|-------------------|------------------------------------|-----------------|---------|----------------------------|-------------------------------------|
| | | | | Initial | Final | Initial | Final | | Initial, Q_{si} | Final, Q_{sf} | Average | | |
| 28-Jan-11 | 08:15 | Hazy | 202045 | 2.8613 | 2.8700 | 9522.31 | 9523.31 | 1.00 | 1.37 | 1.37 | 1.37 | 82 | 106 |
| 28-Jan-11 | 09:25 | Hazy | 202089 | 2.8732 | 2.8811 | 9523.31 | 9524.31 | 1.00 | 1.37 | 1.37 | 1.37 | 82 | 96 |
| 28-Jan-11 | 10:50 | Hazy | 202036 | 2.8665 | 2.8747 | 9524.31 | 9525.31 | 1.00 | 1.37 | 1.37 | 1.37 | 82 | 100 |
| 02-Feb-11 | 08:10 | Hazy | 202035 | 2.8577 | 2.8713 | 9549.31 | 9550.31 | 1.00 | 1.25 | 1.25 | 1.25 | 75 | 181 |
| 02-Feb-11 | 09:15 | Hazy | 202072 | 2.8682 | 2.8829 | 9550.31 | 9551.31 | 1.00 | 1.25 | 1.25 | 1.25 | 75 | 195 |
| 02-Feb-11 | 10:40 | Hazy | 202073 | 2.8697 | 2.8832 | 9551.31 | 9552.31 | 1.00 | 1.25 | 1.25 | 1.25 | 75 | 179 |
| 09-Feb-11 | 09:50 | Hazy | 202135 | 2.7925 | 2.8008 | 9555.30 | 9556.30 | 1.00 | 1.31 | 1.31 | 1.31 | 78 | 106 |
| 09-Feb-11 | 10:55 | Hazy | 202136 | 2.8094 | 2.8180 | 9556.30 | 9557.30 | 1.00 | 1.31 | 1.31 | 1.31 | 78 | 110 |
| 09-Feb-11 | 13:00 | Hazy | 202137 | 2.7909 | 2.7993 | 9557.30 | 9558.30 | 1.00 | 1.31 | 1.31 | 1.31 | 78 | 107 |
| 15-Feb-11 | 09:10 | Hazy | 202134 | 2.7872 | 2.7996 | 9606.29 | 9607.29 | 1.00 | 1.39 | 1.47 | 1.43 | 86 | 145 |
| 15-Feb-11 | 10:20 | Hazy | 202132 | 2.7864 | 2.7950 | 9607.29 | 9608.29 | 1.00 | 1.39 | 1.47 | 1.43 | 86 | 100 |
| 15-Feb-11 | 13:00 | Hazy | 202147 | 2.7725 | 2.7778 | 9608.29 | 9609.29 | 1.00 | 1.38 | 1.46 | 1.42 | 85 | 62 |
| 21-Feb-11 | 08:10 | Hazy | 202151 | 2.7714 | 2.7808 | 9633.29 | 9634.29 | 1.00 | 1.39 | 1.47 | 1.43 | 86 | 110 |
| 21-Feb-11 | 09:15 | Hazy | 202152 | 2.7766 | 2.7852 | 9634.29 | 9635.29 | 1.00 | 1.39 | 1.47 | 1.43 | 86 | 100 |
| 21-Feb-11 | 10:20 | Hazy | 202153 | 2.7525 | 2.7595 | 9635.29 | 9636.29 | 1.00 | 1.39 | 1.47 | 1.43 | 86 | 82 |
| 26-Feb-11 | 08:13 | Sunny | 202204 | 2.8191 | 2.8260 | 9660.29 | 9661.29 | 1.00 | 1.38 | 1.34 | 1.36 | 82 | 85 |
| 26-Feb-11 | 09:22 | Sunny | 202205 | 2.8061 | 2.8149 | 9661.29 | 9662.29 | 1.00 | 1.38 | 1.34 | 1.36 | 82 | 108 |
| 26-Feb-11 | 10:30 | Sunny | 202207 | 2.8106 | 2.8197 | 9662.29 | 9663.29 | 1.00 | 1.38 | 1.34 | 1.36 | 82 | 112 |



Graphic Presentation of 24 hour TSP Result



Graphic Presentation of 1 hour TSP Result





Appendix 5.4

Real Time Noise Monitoring Results and Graphical Presentations

Real-time Noise Data RTN1 / FEHD Hong Kong Transport Section Whitefield Depot

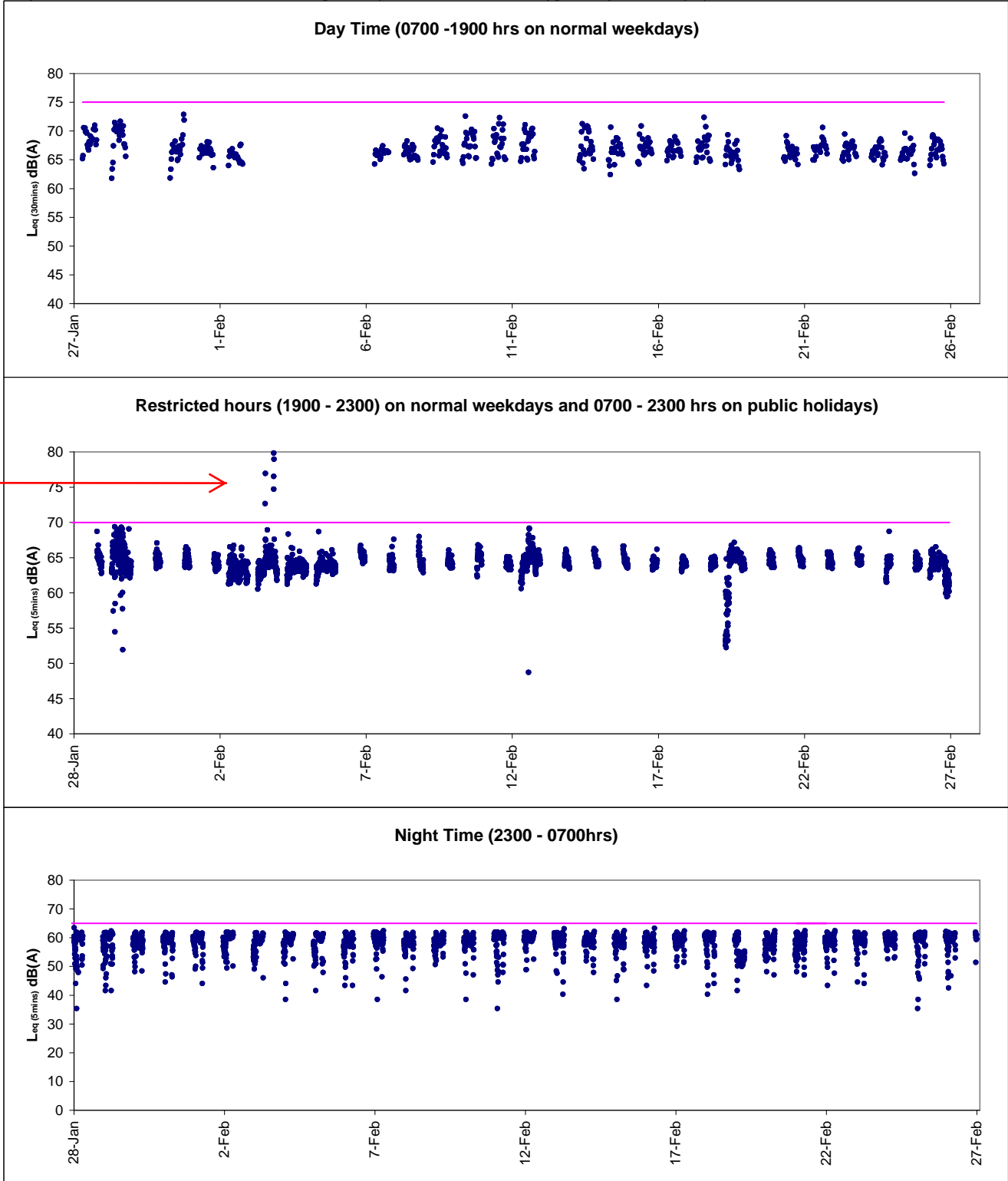
Table with 7 columns containing noise data for RTN1 / FEHD Hong Kong Transport Section Whitefield Depot. Each row includes a date and time, followed by seven noise level measurements.

Real-time Noise Data RTN1 (FEHD Hong Kong Transport Section Whitefield Depot)

| | | |
|-----------------------|-----------------------|-----------------------|
| 24/02/2011 04:31 58.1 | 25/02/2011 05:41 60.0 | 26/02/2011 06:51 57.4 |
| 24/02/2011 04:36 57.9 | 25/02/2011 05:46 59.7 | 26/02/2011 06:56 57.2 |
| 24/02/2011 04:41 58.6 | 25/02/2011 05:51 60.9 | 26/02/2011 23:01 60.3 |
| 24/02/2011 04:46 58.7 | 25/02/2011 05:56 60.2 | 26/02/2011 23:06 60.8 |
| 24/02/2011 04:51 58.8 | 25/02/2011 06:01 60.3 | 26/02/2011 23:11 60.8 |
| 24/02/2011 04:56 58.0 | 25/02/2011 06:06 61.6 | 26/02/2011 23:16 60.3 |
| 24/02/2011 05:01 58.5 | 25/02/2011 06:11 61.4 | 26/02/2011 23:21 62.0 |
| 24/02/2011 05:06 58.5 | 25/02/2011 06:16 53.0 | 26/02/2011 23:26 60.3 |
| 24/02/2011 05:11 58.9 | 25/02/2011 06:21 60.9 | 26/02/2011 23:31 62.2 |
| 24/02/2011 05:16 59.7 | 25/02/2011 06:26 61.3 | 26/02/2011 23:36 60.3 |
| 24/02/2011 05:21 58.1 | 25/02/2011 06:31 57.6 | 26/02/2011 23:41 59.0 |
| 24/02/2011 05:26 59.0 | 25/02/2011 06:36 53.3 | 26/02/2011 23:46 60.7 |
| 24/02/2011 05:31 59.4 | 25/02/2011 06:41 56.3 | 26/02/2011 23:51 60.5 |
| 24/02/2011 05:36 59.6 | 25/02/2011 06:46 57.2 | 26/02/2011 23:56 59.9 |
| 24/02/2011 05:41 60.7 | 25/02/2011 06:51 59.5 | 27/02/2011 00:01 59.2 |
| 24/02/2011 05:46 60.1 | 25/02/2011 06:56 60.9 | 27/02/2011 00:06 59.7 |
| 24/02/2011 05:51 60.6 | 25/02/2011 23:01 59.8 | 27/02/2011 00:11 59.5 |
| 24/02/2011 05:56 60.7 | 25/02/2011 23:06 60.8 | 27/02/2011 00:16 58.9 |
| 24/02/2011 06:01 60.1 | 25/02/2011 23:11 60.3 | 27/02/2011 00:21 58.3 |
| 24/02/2011 06:06 47.1 | 25/02/2011 23:16 60.7 | 27/02/2011 00:26 58.5 |
| 24/02/2011 06:11 61.4 | 25/02/2011 23:21 60.2 | 27/02/2011 00:31 59.9 |
| 24/02/2011 06:16 44.0 | 25/02/2011 23:26 61.0 | 27/02/2011 00:36 56.0 |
| 24/02/2011 06:21 61.7 | 25/02/2011 23:31 61.2 | 27/02/2011 00:41 53.9 |
| 24/02/2011 06:26 57.2 | 25/02/2011 23:36 60.1 | 27/02/2011 00:46 55.8 |
| 24/02/2011 06:31 54.8 | 25/02/2011 23:41 60.0 | 27/02/2011 00:51 58.9 |
| 24/02/2011 06:36 57.9 | 25/02/2011 23:46 60.3 | 27/02/2011 00:56 46.0 |
| 24/02/2011 06:41 58.5 | 25/02/2011 23:51 58.8 | 27/02/2011 01:01 57.4 |
| 24/02/2011 06:46 59.2 | 25/02/2011 23:56 60.2 | 27/02/2011 01:06 51.4 |
| 24/02/2011 06:51 61.1 | 26/02/2011 00:01 58.9 | 27/02/2011 01:11 57.6 |
| 24/02/2011 06:56 61.3 | 26/02/2011 00:06 59.2 | 27/02/2011 01:16 47.7 |
| 24/02/2011 23:01 61.4 | 26/02/2011 00:11 59.6 | 27/02/2011 01:21 48.2 |
| 24/02/2011 23:06 61.0 | 26/02/2011 00:16 58.7 | 27/02/2011 01:26 55.3 |
| 24/02/2011 23:11 60.1 | 26/02/2011 00:21 56.8 | 27/02/2011 01:31 42.5 |
| 24/02/2011 23:16 59.8 | 26/02/2011 00:26 59.4 | 27/02/2011 01:36 61.3 |
| 24/02/2011 23:21 60.0 | 26/02/2011 00:31 58.9 | 27/02/2011 01:41 56.7 |
| 24/02/2011 23:26 60.3 | 26/02/2011 00:36 58.9 | 27/02/2011 01:46 61.8 |
| 24/02/2011 23:31 58.7 | 26/02/2011 00:41 56.7 | 27/02/2011 01:51 61.0 |
| 24/02/2011 23:36 61.4 | 26/02/2011 00:46 55.1 | 27/02/2011 01:56 60.9 |
| 24/02/2011 23:41 59.9 | 26/02/2011 00:51 35.4 | 27/02/2011 02:01 61.1 |
| 24/02/2011 23:46 60.0 | 26/02/2011 00:56 50.2 | 27/02/2011 02:06 61.4 |
| 24/02/2011 23:51 58.2 | 26/02/2011 01:01 54.4 | 27/02/2011 02:11 61.5 |
| 24/02/2011 23:56 59.0 | 26/02/2011 01:06 47.7 | 27/02/2011 02:16 61.1 |
| 25/02/2011 00:01 59.6 | 26/02/2011 01:11 56.1 | 27/02/2011 02:21 60.4 |
| 25/02/2011 00:06 55.9 | 26/02/2011 01:16 38.5 | 27/02/2011 02:26 60.9 |
| 25/02/2011 00:11 55.9 | 26/02/2011 01:21 50.3 | 27/02/2011 02:31 61.0 |
| 25/02/2011 00:16 57.7 | 26/02/2011 01:26 51.4 | 27/02/2011 02:36 59.4 |
| 25/02/2011 00:21 57.0 | 26/02/2011 01:31 61.6 | 27/02/2011 02:41 60.4 |
| 25/02/2011 00:26 57.9 | 26/02/2011 01:36 61.5 | 27/02/2011 02:46 59.8 |
| 25/02/2011 00:31 55.7 | 26/02/2011 01:41 51.9 | 27/02/2011 02:51 59.7 |
| 25/02/2011 00:36 57.5 | 26/02/2011 01:46 46.4 | 27/02/2011 02:56 60.3 |
| 25/02/2011 00:41 58.5 | 26/02/2011 01:51 61.8 | 27/02/2011 03:01 59.7 |
| 25/02/2011 00:46 55.5 | 26/02/2011 01:56 53.7 | 27/02/2011 03:06 60.0 |
| 25/02/2011 00:51 57.7 | 26/02/2011 02:01 61.7 | 27/02/2011 03:11 60.1 |
| 25/02/2011 00:56 61.7 | 26/02/2011 02:06 61.6 | 27/02/2011 03:16 60.5 |
| 25/02/2011 01:01 52.6 | 26/02/2011 02:11 45.6 | 27/02/2011 03:21 60.7 |
| 25/02/2011 01:06 60.8 | 26/02/2011 02:16 61.7 | 27/02/2011 03:26 46.7 |
| 25/02/2011 01:11 61.1 | 26/02/2011 02:21 60.8 | 27/02/2011 03:31 60.1 |
| 25/02/2011 01:16 61.4 | 26/02/2011 02:26 61.7 | 27/02/2011 03:36 61.4 |
| 25/02/2011 01:21 61.6 | 26/02/2011 02:31 60.8 | 27/02/2011 03:41 59.8 |
| 25/02/2011 01:26 61.9 | 26/02/2011 02:36 61.0 | 27/02/2011 03:46 59.7 |
| 25/02/2011 01:31 60.6 | 26/02/2011 02:41 60.1 | 27/02/2011 03:51 60.8 |
| 25/02/2011 01:36 60.6 | 26/02/2011 02:46 60.7 | 27/02/2011 03:56 59.6 |
| 25/02/2011 01:41 61.2 | 26/02/2011 02:51 60.8 | 27/02/2011 04:01 59.6 |
| 25/02/2011 01:46 60.3 | 26/02/2011 02:56 60.7 | 27/02/2011 04:06 60.1 |
| 25/02/2011 01:51 60.3 | 26/02/2011 03:01 61.2 | 27/02/2011 04:11 59.5 |
| 25/02/2011 01:56 60.5 | 26/02/2011 03:06 60.5 | 27/02/2011 04:16 59.4 |
| 25/02/2011 02:01 61.2 | 26/02/2011 03:11 61.8 | 27/02/2011 04:21 59.5 |
| 25/02/2011 02:06 59.7 | 26/02/2011 03:16 60.3 | 27/02/2011 04:26 60.1 |
| 25/02/2011 02:11 60.1 | 26/02/2011 03:21 60.4 | 27/02/2011 04:31 59.3 |
| 25/02/2011 02:16 59.3 | 26/02/2011 03:26 60.1 | 27/02/2011 04:36 59.5 |
| 25/02/2011 02:21 59.7 | 26/02/2011 03:31 61.4 | 27/02/2011 04:41 59.9 |
| 25/02/2011 02:26 60.0 | 26/02/2011 03:36 60.4 | 27/02/2011 04:46 58.6 |
| 25/02/2011 02:31 58.9 | 26/02/2011 03:41 61.0 | 27/02/2011 04:51 59.1 |
| 25/02/2011 02:36 59.8 | 26/02/2011 03:46 60.4 | 27/02/2011 04:56 59.5 |
| 25/02/2011 02:41 60.3 | 26/02/2011 03:51 60.7 | 27/02/2011 05:01 60.8 |
| 25/02/2011 02:46 59.3 | 26/02/2011 03:56 59.2 | 27/02/2011 05:06 60.3 |
| 25/02/2011 02:51 60.5 | 26/02/2011 04:01 60.5 | 27/02/2011 05:11 59.3 |
| 25/02/2011 02:56 59.8 | 26/02/2011 04:06 60.0 | 27/02/2011 05:16 59.7 |
| 25/02/2011 03:01 59.2 | 26/02/2011 04:11 60.0 | 27/02/2011 05:21 59.7 |
| 25/02/2011 03:06 59.9 | 26/02/2011 04:16 60.3 | 27/02/2011 05:26 59.6 |
| 25/02/2011 03:11 58.7 | 26/02/2011 04:21 61.2 | 27/02/2011 05:31 60.1 |
| 25/02/2011 03:16 59.5 | 26/02/2011 04:26 60.7 | 27/02/2011 05:36 59.9 |
| 25/02/2011 03:21 59.4 | 26/02/2011 04:31 58.6 | 27/02/2011 05:41 60.0 |
| 25/02/2011 03:26 57.7 | 26/02/2011 04:36 59.0 | 27/02/2011 05:46 60.6 |
| 25/02/2011 03:31 58.4 | 26/02/2011 04:41 59.8 | 27/02/2011 05:51 59.8 |
| 25/02/2011 03:36 58.1 | 26/02/2011 04:46 59.7 | 27/02/2011 05:56 60.5 |
| 25/02/2011 03:41 58.4 | 26/02/2011 04:51 59.1 | 27/02/2011 06:01 60.0 |
| 25/02/2011 03:46 59.4 | 26/02/2011 04:56 59.5 | 27/02/2011 06:06 60.0 |
| 25/02/2011 03:51 59.3 | 26/02/2011 05:01 59.2 | 27/02/2011 06:11 60.8 |
| 25/02/2011 03:56 60.4 | 26/02/2011 05:06 58.7 | 27/02/2011 06:16 61.3 |
| 25/02/2011 04:01 58.9 | 26/02/2011 05:11 59.8 | 27/02/2011 06:21 60.0 |
| 25/02/2011 04:06 58.2 | 26/02/2011 05:16 60.8 | 27/02/2011 06:26 61.3 |
| 25/02/2011 04:11 57.9 | 26/02/2011 05:21 59.8 | 27/02/2011 06:31 60.7 |
| 25/02/2011 04:16 57.6 | 26/02/2011 05:26 59.7 | 27/02/2011 06:36 61.6 |
| 25/02/2011 04:21 58.2 | 26/02/2011 05:31 59.6 | 27/02/2011 06:41 61.3 |
| 25/02/2011 04:26 58.7 | 26/02/2011 05:36 60.2 | 27/02/2011 06:46 53.0 |
| 25/02/2011 04:31 57.7 | 26/02/2011 05:41 60.2 | 27/02/2011 06:51 57.4 |
| 25/02/2011 04:36 58.8 | 26/02/2011 05:46 59.9 | 27/02/2011 06:56 55.8 |
| 25/02/2011 04:41 58.2 | 26/02/2011 05:51 60.9 | 27/02/2011 23:01 61.2 |
| 25/02/2011 04:46 57.5 | 26/02/2011 05:56 61.3 | 27/02/2011 23:06 61.9 |
| 25/02/2011 04:51 59.0 | 26/02/2011 06:01 61.1 | 27/02/2011 23:11 51.4 |
| 25/02/2011 04:56 58.1 | 26/02/2011 06:06 61.0 | 27/02/2011 23:16 59.9 |
| 25/02/2011 05:01 57.6 | 26/02/2011 06:11 60.0 | 27/02/2011 23:21 61.2 |
| 25/02/2011 05:06 59.1 | 26/02/2011 06:16 61.8 | 27/02/2011 23:26 60.8 |
| 25/02/2011 05:11 59.2 | 26/02/2011 06:21 61.8 | 27/02/2011 23:31 60.5 |
| 25/02/2011 05:16 59.4 | 26/02/2011 06:26 60.7 | 27/02/2011 23:36 59.3 |
| 25/02/2011 05:21 58.7 | 26/02/2011 06:31 50.9 | 27/02/2011 23:41 59.5 |
| 25/02/2011 05:26 59.5 | 26/02/2011 06:36 61.9 | 27/02/2011 23:46 59.4 |
| 25/02/2011 05:31 59.4 | 26/02/2011 06:41 53.4 | 27/02/2011 23:51 59.6 |
| 25/02/2011 05:36 58.5 | 26/02/2011 06:46 57.0 | 27/02/2011 23:56 61.0 |

* Exceedance was recorded during monitoring

Graphic Presentation of Real Time Noise Monitoring Result (Food and Environmental Hygiene Department Depot)



Five Limit Level Exceedances were continuously recorded on 4 February 2011 for 20 minutes during the 2011 Lunar New Year Fireworks Display. In addition, no construction activity was conducted during the exceedance period. As such, the exceedance was non-project related.



Appendix 6.1

Event Action Plans



Event/Action Plan for Construction Noise

| EVENT | ACTION | | | |
|-----------------------------|---|---|---|--|
| | ET | IEC | ER | CONTRACTOR |
| Action Level being exceeded | <ol style="list-style-type: none">1. Notify ER, IEC and Contractor;2. Carry out investigation;3. Report the results of investigation to the IEC, ER and Contractor;4. Discuss with the IEC and Contractor on remedial measures required;5. Increase monitoring frequency to check mitigation effectiveness. <p>(The above actions should be taken within 2 working days after the exceedance is identified)</p> | <ol style="list-style-type: none">1. Review the investigation results submitted by the ET;2. Review the proposed remedial measures by the Contractor and advise the ER accordingly;3. Advise the ER on the effectiveness of the proposed remedial measures. <p>(The above actions should be taken within 2 working days after the exceedance is identified)</p> | <ol style="list-style-type: none">1. Confirm receipt of notification of failure in writing;2. Notify Contractor;3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented;4. Supervise the implementation of remedial measures. <p>(The above actions should be taken within 2 working days after the exceedance is identified)</p> | <ol style="list-style-type: none">1. Submit noise mitigation proposals to IEC and ER;2. Implement noise mitigation proposals. <p>(The above actions should be taken within 2 working days after the exceedance is identified)</p> |



| EVENT | ACTION | | | |
|----------------------------|--|---|--|---|
| | ET | IEC | ER | CONTRACTOR |
| Limit Level being exceeded | <ol style="list-style-type: none"> 1. Inform IEC, ER, Contractor and EPD; 2. Repeat measurements to confirm findings; 3. Increase monitoring frequency; 4. Identify source and investigate the cause of exceedance; 5. Carry out analysis of Contractor's working procedures; 6. Discuss with the IEC, Contractor and ER on remedial measures required; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring. (The above actions should be taken within 2 working days after the exceedance is identified) | <ol style="list-style-type: none"> 1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly. (The above actions should be taken within 2 working days after the exceedance is identified) | <ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise the implementation of remedial measures; 5. If exceedance continues, consider stopping the Contractor to continue working on that portion of work which causes the exceedance until the exceedance is abated. (The above actions should be taken within 2 working days after the exceedance is identified) | <ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC and ER within 3 working days of notification; 3. Implement the agreed proposals; 4. Submit further proposal if problem still not under control; 5. Stop the relevant portion of works as instructed by the ER until the exceedance is abated. (The above actions should be taken within 2 working days after the exceedance is identified) |



Event / Action Plan for Construction Air Quality

| EVENT | ACTION | | | |
|---|---|---|---|---|
| | ET | IEC | ER | CONTRACTOR |
| ACTION LEVEL | | | | |
| 1. Exceedance for one sample | <ol style="list-style-type: none"> Identify source, investigate the causes of exceedance and propose remedial measures; Inform IEC and ER; Repeat measurement to confirm finding; Increase monitoring frequency to daily. (The above actions should be taken within 2 working days after the exceedance is identified) | <ol style="list-style-type: none"> Check monitoring data submitted by ET; Check Contractor's working method. (The above actions should be taken within 2 working days after the exceedance is identified) | <ol style="list-style-type: none"> Notify Contractor. (The above actions should be taken within 2 working days after the exceedance is identified) | <ol style="list-style-type: none"> Rectify any unacceptable practice; Amend working methods if appropriate. (The above actions should be taken within 2 working days after the exceedance is identified) |
| 2. Exceedance for two or more consecutive samples | <ol style="list-style-type: none"> Identify source; Inform IEC and ER; Advise the ER on the effectiveness of the proposed remedial measures; Repeat measurements to confirm findings; Increase monitoring frequency to daily; Discuss with IEC and Contractor on remedial actions required; If exceedance continues, arrange meeting with IEC and ER; If exceedance stops, cease additional monitoring. (The above actions should be taken within 2 working days after the exceedance is identified) | <ol style="list-style-type: none"> Check monitoring data submitted by ET; Check Contractor's working method; Discuss with ET and Contractor on possible remedial measures; Advise the ET on the effectiveness of the proposed remedial measures; Supervise Implementation of remedial measures. (The above actions should be taken within 2 working days after the exceedance is identified) | <ol style="list-style-type: none"> Confirm receipt of notification of failure in writing; Notify Contractor; Ensure remedial measures properly implemented. (The above actions should be taken within 2 working days after the exceedance is identified) | <ol style="list-style-type: none"> Submit proposals for remedial to ER within 3 working days of notification; Implement the agreed proposals; Amend proposal if appropriate. (The above actions should be taken within 2 working days after the exceedance is identified) |
| LIMIT LEVEL | | | | |
| 1. Exceedance for one sample | <ol style="list-style-type: none"> Identify source, investigate the causes of exceedance and propose remedial measures; Inform ER, Contractor and EPD; Repeat measurement to confirm finding; Increase monitoring frequency to daily; Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results. (The above actions should be taken within 2 working days after the exceedance is identified) | <ol style="list-style-type: none"> Check monitoring data submitted by ET; Check Contractor's working method; Discuss with ET and Contractor on possible remedial measures; Advise the ER on the effectiveness of the proposed remedial measures; Supervise implementation of remedial measures. (The above actions should be taken within 2 working days after the exceedance is identified) | <ol style="list-style-type: none"> Confirm receipt of notification of failure in writing; Notify Contractor; Ensure remedial measures properly implemented. (The above actions should be taken within 2 working days after the exceedance is identified) | <ol style="list-style-type: none"> Take immediate action to avoid further exceedance; Submit proposals for remedial actions to IEC within 3 working days of notification; Implement the agreed proposals; Amend proposal if appropriate. (The above actions should be taken within 2 working days after the exceedance is identified) |
| 2. Exceedance for two or more consecutive samples | <ol style="list-style-type: none"> Notify IEC, ER, Contractor and EPD; Identify source; Repeat measurement to confirm findings; Increase monitoring frequency to daily; Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; Arrange meeting with IEC and ER to discuss the remedial actions to be taken; Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; If exceedance stops, cease additional monitoring. (The above actions should be taken within 2 working days after the exceedance is identified) | <ol style="list-style-type: none"> Discuss amongst ER, ET, and Contractor on the potential remedial actions; Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; Supervise the implementation of remedial measures. | <ol style="list-style-type: none"> Confirm receipt of notification of failure in writing; Notify Contractor; In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; Ensure remedial measures properly implemented; If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated. (The above actions should be taken within 2 working days after the exceedance is identified) | <ol style="list-style-type: none"> Take immediate action to avoid further exceedance; Submit proposals for remedial actions to IEC within 3 working days of notification; Implement the agreed proposals; Resubmit proposals if problem still not under control; Stop the relevant portion of works as determined by the ER until the exceedance is abated. (The above actions should be taken within 2 working days after the exceedance is identified) |



Appendix 9.1

Complaint Log



Environmental Complaints Log

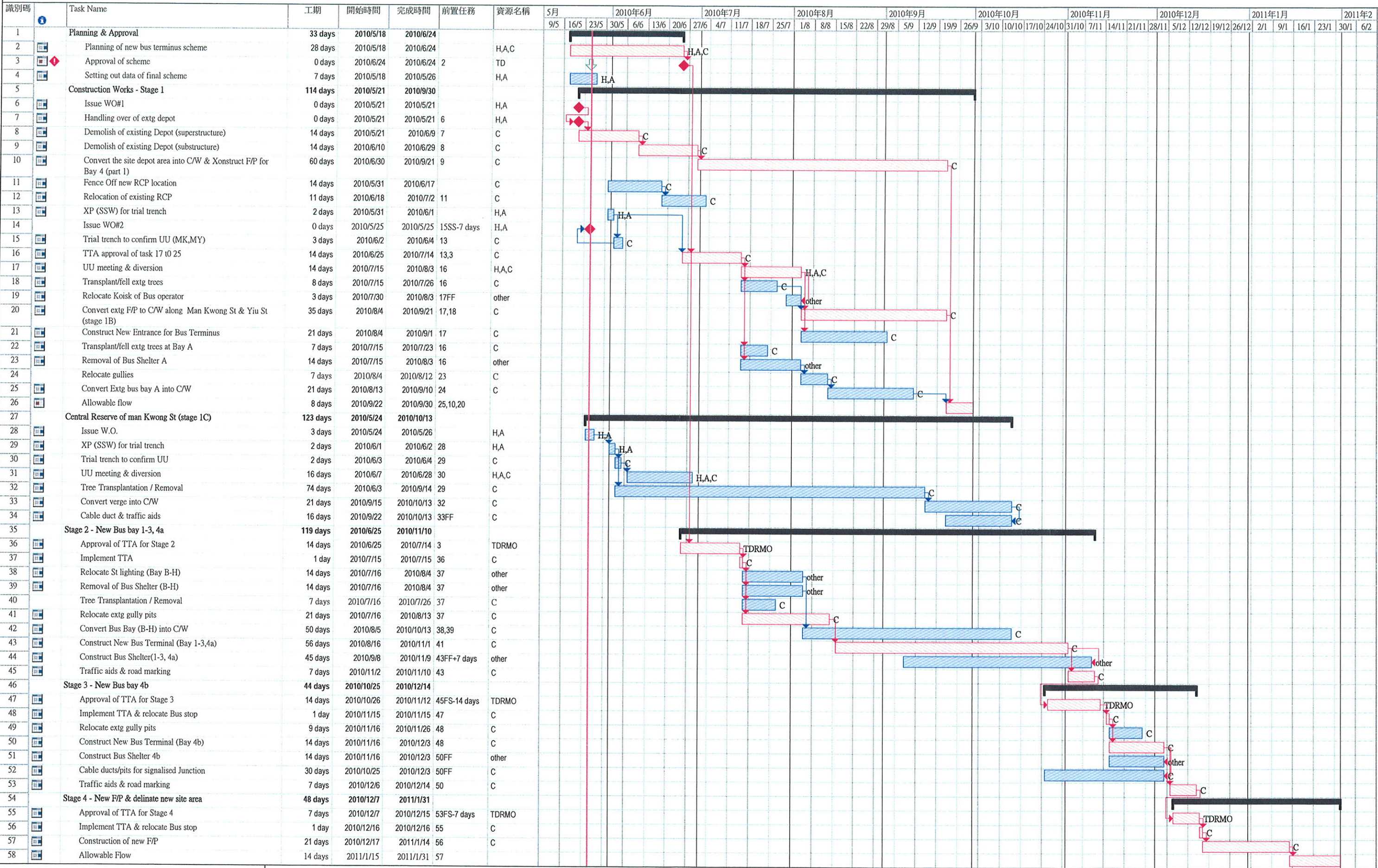
No environmental complaint was received in the reporting month.

| Complaint Log No. | Date of Complaint | Received From and Received By | Location of Complainant | Nature of Complaint | Outcome | Status |
|--------------------------|--------------------------|--------------------------------------|--------------------------------|----------------------------|----------------|---------------|
| - | - | - | - | - | - | - |



Appendix 10.1

Construction Programme of Individual Contracts



Project: MAN KWONG ST. J/O MAN YIU ST. BUS TERMINUS RELOCATION
 Date: 2010/5/25
 H= HIGHWAYS, A=AECOM, C=CHIU HING

| | | | | | | | | | |
|------|--|--------|--|---------|--|-------|--|------|--|
| 任務 | | 要徑任務進度 | | 上顯型任務 | | 上顯型進度 | | 專案摘要 | |
| 任務進度 | | 里程碑 | | 上顯型要徑任務 | | 分割 | | 摘要群組 | |
| 要徑任務 | | 摘要 | | 上顯型里程碑 | | 外部任務 | | 期限 | |

Contract no. HY/2009/17

Contract Title : Central - Wan Chai Bypass - FEHD Whitfield Depot Re-provisioning Works

Works Schedule for the Advance Piling Works

| ACTIVITY | Duration | START | FINISH | 2010 | | | | | | 2011 |
|--|----------|------------|------------|------|--------|-----------|---------|----------|----------|---------|
| | | | | July | August | September | October | November | December | January |
| <u>Submissions before Commencement of Piling Works</u> | | | | | | | | | | |
| Notification of Commencement Date of Construction | 1 | 16/7/2010 | 16/7/2010 | ◆ | | | | | | |
| Organization Chart of Environmental Management Team | 1 | 16/7/2010 | 16/7/2010 | ◆ | | | | | | |
| Works Schedule | 1 | 16/7/2010 | 16/7/2010 | ◆ | | | | | | |
| Location and Layout Plan | 1 | 31/8/2010 | 31/8/2010 | | | ◆ | | | | |
| Construction Noise Management Plan | 1 | 31/8/2010 | 31/8/2010 | | | ◆ | | | | |
| <u>Installation of Piles</u> | | | | | | | | | | |
| Plants Set-up | 7 | 24/9/2010 | 30/9/2010 | | | | ■ | | | |
| Installation of pipes E3b | 70 | 2/10/2010 | 10/12/2010 | | | | ■ | | | |
| Installation of pipes E3a | 60 | 2/10/2010 | 30/11/2010 | | | | ■ | | | |
| Installation of pipes E2a | 60 | 12/10/2010 | 10/12/2010 | | | | ■ | | | |
| Installation of pipes E2b | 70 | 14/10/2010 | 22/12/2010 | | | | ■ | | | |
| Testing | 14 | 23/12/2010 | 6/1/2011 | | | | | | ■ | |

