Gammon Construction Limited

Contract No. DC/2007/23 Harbour Area Treatment Scheme Stage 2A Construction of Sewage Conveyance System from North Point to Stonecutters Island: *Twentieth Quarterly EM&A Report*

January 2015

Environmental Resources Management
16/F Berkshire House
25 Westlands Road, Quarry Bay
Hong Kong
Telephone: (852) 2271 3000
Facsimile: (852) 2723 5660
E-mail: post.hk@erm.com
http://www.erm.com

Gammon Construction Limited

Contract No. DC/2007/23 Harbour Area Treatment Scheme Stage 2A Construction of Sewage Conveyance System from North Point to Stonecutters Island: *Twentieth Quarterly EM&A Report*

January 2015

Reference 0104887

For and on behalf of ERM-Hong Kong, Limited

Approved by: Frank Wan

Signed: _____

Position: Partner

Certified by: _____
(Environmental Team Leader – Winnie Ko)

Date: 23 January 2015

CONTENTS

1	*INTRODUCTION*	*1*
1.1	*PURPOSE OF THE REPORT*	*1*
1.2	*STRUCTURE OF THE REPORT*	*1*
2	*PROJECT INFORMATION*	*5*
2.1	*BACKGROUND AND GENERAL SITE DESCRIPTION*	*5*
2.2	*STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS AND REQUIRED SUBMISSIONS*	*6*
2.3	*PROJECT ORGANISATION*	*6*
3	*NORTH POINT PRODUCTION AND DROP SHAFTS*	*7*
3.1	*CONSTRUCTION ACTIVITIES DURING THE REPORTING PERIOD*	*7*
3.2	*STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS*	*7*
3.3	*ENVIRONMENTAL MONITORING REQUIREMENTS*	*8*
3.3.1	*Air Quality Monitoring*	*8*
3.3.2	*Noise Monitoring*	*11*
3.3.3	*Cultural Heritage*	*13*
3.3.4	*Landscape and Visual Monitoring*	*13*
3.4	*IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS*	*13*
3.5	*MONITORING RESULTS*	*14*
3.5.1	*Air Quality*	*14*
3.5.2	*Noise*	*14*
3.5.3	*Landscape and Visual*	*14*
3.5.4	*Cultural Heritage*	*14*
3.5.5	*Waste Management*	*14*
3.6	*ENVIRONMENTAL SITE INSPECTION*	*15*
3.7	*ENVIRONMENTAL NON-CONFORMANCE*	*15*
3.7.1	*Summary of Monitoring Exceedance*	*15*
3.7.2	*Summary of Environmental Non-Compliance*	*15*
3.7.3	*Summary of Environmental Complaint*	*15*
3.7.4	*Summary of Environmental Summon and Successful Prosecution*	*15*
4	*WAN CHAI EAST PRODUCTION AND DROP SHAFTS*	*16*
4.1	*CONSTRUCTION ACTIVITIES DURING THE REPORTING PERIOD*	*16*
4.2	*STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS*	*16*
4.3	*ENVIRONMENTAL MONITORING REQUIREMENTS*	*17*
4.3.1	*Air Quality Monitoring*	*17*
4.3.2	*Noise Monitoring*	*20*
4.3.3	*Cultural Heritage*	*22*
4.3.4	*Landscape and Visual Monitoring*	*22*
4.4	*IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS*	*22*
4.5	*MONITORING RESULTS*	*22*
4.5.1	*Air Quality*	*22*
4.5.2	*Noise*	*22*
4.5.3	*Landscape and Visual*	*23*

4.5.4	*Cultural Heritage*	*23*
4.5.5	*Waste Management*	*23*
4.6	*ENVIRONMENTAL SITE INSPECTION*	*23*
4.7	*ENVIRONMENTAL NON-CONFORMANCE*	*24*
4.7.1	*Summary of Monitoring Exceedance*	*24*
4.7.2	*Summary of Environmental Non-Compliance*	*24*
4.7.3	*Summary of Environmental Complaint*	*24*
4.7.4	*Summary of Environmental Summon and Successful Prosecution*	*24*
5	*CENTRAL DROP SHAFT*	*25*
5.1	*CONSTRUCTION ACTIVITIES DURING THE REPORTING PERIOD*	*25*
5.2	*STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS*	*25*
5.3	*ENVIRONMENTAL MONITORING REQUIREMENTS*	*25*
5.3.1	*Air Quality Monitoring*	*25*
5.3.2	*Noise Monitoring*	*29*
5.3.3	*Cultural Heritage*	*30*
5.3.4	*Landscape and Visual Monitoring*	*30*
5.4	*IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS*	*31*
5.5	*MONITORING RESULTS*	*31*
5.5.1	*Air Quality*	*31*
5.5.2	*Noise*	*31*
5.5.3	*Landscape and Visual*	*31*
5.5.4	*Cultural Heritage*	*32*
5.5.5	*Waste Management*	*32*
5.6	*ENVIRONMENTAL SITE INSPECTION*	*32*
5.7	*ENVIRONMENTAL NON-CONFORMANCE*	*32*
5.7.1	*Summary of Monitoring Exceedance*	*32*
5.7.2	*Summary of Environmental Non-Compliance*	*33*
5.7.3	*Summary of Environmental Complaint*	*33*
5.7.4	*Summary of Environmental Summon and Successful Prosecution*	*33*
6	*SAI YING PUN JUNCTION SHAFT*	*34*
6.1	*CONSTRUCTION ACTIVITIES DURING THE REPORTING PERIOD*	*34*
6.2	*STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS*	*34*
6.3	*ENVIRONMENTAL MONITORING REQUIREMENTS*	*34*
6.3.1	*Air Quality Monitoring*	*34*
6.3.2	*Noise Monitoring*	*36*
6.3.3	*Cultural Heritage*	*37*
6.3.4	*Landscape and Visual Monitoring*	*37*
6.4	*IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS*	*38*
6.5	*MONITORING RESULTS*	*38*
6.5.1	*Air Quality*	*38*
6.5.2	*Noise*	*38*
6.5.3	*Landscape and Visual*	*38*
6.5.4	*Cultural Heritage*	*39*
6.5.5	*Waste Management*	*39*
6.6	*ENVIRONMENTAL SITE INSPECTION*	*39*
6.7	*ENVIRONMENTAL NON-CONFORMANCE*	*39*
6.7.1	*Summary of Monitoring Exceedance*	*39*
6.7.2	*Summary of Environmental Non-Compliance*	*40*

6.7.3	*Summary of Environmental Complaint*	*40*
6.7.4	*Summary of Environmental Summon and Successful Prosecution*	*40*
7	*STONECUTTERS ISLAND PRODUCTION AND RISER SHAFTS*	*41*
7.1	*CONSTRUCTION ACTIVITIES DURING THE REPORTING PERIOD*	*41*
7.2	*STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS*	*41*
7.3	*ENVIRONMENTAL MONITORING REQUIREMENTS*	*41*
7.3.1	*Air Quality Monitoring*	*41*
7.3.2	*Noise Monitoring*	*45*
7.3.3	*Cultural Heritage*	*47*
7.3.4	*Landscape and Visual Monitoring*	*47*
7.4	*IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS*	*47*
7.5	*MONITORING RESULTS*	*47*
7.5.1	*Air Quality*	*47*
7.5.2	*Noise*	*47*
7.5.3	*Landscape and Visual*	*48*
7.5.4	*Cultural Heritage*	*48*
7.5.5	*Waste Management*	*48*
7.6	*ENVIRONMENTAL SITE INSPECTION*	*48*
7.7	*ENVIRONMENTAL NON-CONFORMANCE*	*49*
7.7.1	*Summary of Monitoring Exceedance*	*49*
7.7.2	*Summary of Environmental Non-Compliance*	*49*
7.7.3	*Summary of Environmental Complaint*	*49*
7.7.4	*Summary of Environmental Summon and Successful Prosecution*	*49*
8	*CONCLUSIONS*	*50*
8.1	*NORTH POINT PRODUCTION AND DROP SHAFTS*	*50*
8.2	*WAN CHAI EAST PRODUCTION AND DROP SHAFTS*	*50*
8.3	*CENTRAL DROP SHAFT*	*51*
8.4	*SAI YING PUN JUNCTION SHAFT*	*51*
8.5	*STONECUTTERS ISLAND PRODUCTION AND RISER SHAFTS*	*51*
8.6	*OVERALL*	*51*

LIST OF TABLES

TABLE 2.1 SUMMARY OF ENVIRONMENTAL LICENSING, NOTIFICATION AND PERMIT STATUS FOR THE CONTRACT (A)

TABLE 2.2 STATUS OF REQUIRED SUBMISSION FOR ALL SITES

TABLE 3.1 SUMMARY OF CONSTRUCTION ACTIVITIES UNDERTAKEN FROM 1 SEPTEMBER 2014 TO 30 NOVEMBER 2014 AT NORTH POINT PRODUCTION AND DROP SHAFTS

TABLE 3.2 SUMMARY OF ENVIRONMENTAL LICENSING, NOTIFICATION AND PERMIT STATUS AT NORTH POINT PRODUCTION AND DROP SHAFTS

TABLE 3.3 CONSTRUCTION PHASE AIR MONITORING LOCATION AT NORTH POINT PRODUCTION AND DROP SHAFTS

TABLE 3.4 TSP MONITORING PARAMETER AND FREQUENCY

TABLE 3.5 ACTION AND LIMIT LEVELS FOR AIR QUALITY AT NORTH POINT PRODUCTION AND DROP SHAFTS

TABLE 3.6 CONSTRUCTION PHASE NOISE MONITORING STATION AT NORTH POINT PRODUCTION AND DROP SHAFTS

TABLE 3.7 ACTION AND LIMIT LEVELS FOR NOISE MONITORING AT NORTH POINT PRODUCTION AND DROP SHAFTS

TABLE 4.1 SUMMARY OF CONSTRUCTION ACTIVITIES UNDERTAKEN FROM 1 SEPTEMBER 2014 TO 30 NOVEMBER 2014 AT WAN CHAI EAST PRODUCTION AND DROP SHAFTS

TABLE 4.2 SUMMARY OF ENVIRONMENTAL LICENSING, NOTIFICATION AND PERMIT STATUS AT WAN CHAI EAST PRODUCTION AND DROP SHAFTS

TABLE 4.3 CONSTRUCTION PHASE AIR MONITORING LOCATION AT WAN CHAI EAST PRODUCTION AND DROP SHAFTS

TABLE 4.4 TSP MONITORING PARAMETER AND FREQUENCY AT WAN CHAI EAST PRODUCTION AND DROP SHAFTS

TABLE 4.5 ACTION AND LIMIT LEVELS FOR AIR QUALITY AT WAN CHAI EAST PRODUCTION AND DROP SHAFTS

TABLE 4.6 CONSTRUCTION PHASE NOISE MONITORING STATION AT WAN CHAI EAST PRODUCTION AND DROP SHAFTS

TABLE 4.7 ACTION AND LIMIT LEVELS FOR NOISE MONITORING AT WAN CHAI EAST PRODUCTION AND DROP SHAFTS

TABLE 5.1 SUMMARY OF CONSTRUCTION ACTIVITIES UNDERTAKEN FROM 1 SEPTEMBER 2014 TO 30 NOVEMBER 2014 AT CENTRAL DROP SHAFT

TABLE 5.2 SUMMARY OF ENVIRONMENTAL LICENSING, NOTIFICATION AND PERMIT STATUS AT CENTRAL DROP SHAFT

TABLE 5.3 CONSTRUCTION PHASE AIR MONITORING LOCATION AT CENTRAL DROP SHAFT

TABLE 5.4 TSP MONITORING PARAMETER AND FREQUENCY AT CENTRAL DROP SHAFT

TABLE 5.5 ACTION AND LIMIT LEVELS FOR AIR QUALITY AT CENTRAL DROP SHAFT

TABLE 5.6 CONSTRUCTION PHASE NOISE MONITORING STATION AT CENTRAL DROP SHAFT

TABLE 5.7 ACTION AND LIMIT LEVELS FOR NOISE MONITORING AT CENTRAL DROP SHAFT

TABLE 6.1 SUMMARY OF CONSTRUCTION ACTIVITIES UNDERTAKEN FROM 1 SEPTEMBER 2014 TO 30 NOVEMBER 2014 AT SAI YING PUN JUNCTION SHAFT

TABLE 6.2 SUMMARY OF ENVIRONMENTAL LICENSING, NOTIFICATION AND PERMIT STATUS AT SAI YING PUN JUNCTION SHAFT

TABLE 6.3 CONSTRUCTION PHASE AIR MONITORING LOCATION AT SAI YING PUN JUNCTION SHAFT

TABLE 6.4 TSP MONITORING PARAMETER AND FREQUENCY AT SAI YING PUN JUNCTION SHAFT

TABLE 6.5 ACTION AND LIMIT LEVELS FOR AIR QUALITY AT SAI YING PUN JUNCTION SHAFT

TABLE 6.6 CONSTRUCTION PHASE NOISE MONITORING STATION AT SAI YING PUN JUNCTION SHAFT

TABLE 6.7 ACTION AND LIMIT LEVELS FOR NOISE MONITORING AT SAI YING PUN JUNCTION SHAFT

TABLE 7.1 SUMMARY OF CONSTRUCTION ACTIVITIES UNDERTAKEN FROM 1 SEPTEMBER 2014 TO 30 NOVEMBER 2014 AT STONECUTTERS ISLAND PRODUCTION AND RISER SHAFTS

TABLE 7.2 SUMMARY OF ENVIRONMENTAL LICENSING, NOTIFICATION AND PERMIT STATUS AT STONECUTTERS ISLAND PRODUCTION AND RISER SHAFTS

TABLE 7.3 CONSTRUCTION PHASE AIR MONITORING LOCATION AT STONECUTTERS ISLAND PRODUCTION AND RISER SHAFTS

TABLE 7.4 TSP MONITORING PARAMETER AND FREQUENCY AT STONECUTTERS ISLAND PRODUCTION AND RISER SHAFTS

TABLE 7.5 ACTION AND LIMIT LEVELS FOR AIR QUALITY AT STONECUTTERS ISLAND PRODUCTION AND RISER SHAFTS

TABLE 7.6 CONSTRUCTION PHASE NOISE MONITORING STATION AT STONECUTTERS ISLAND PRODUCTION AND RISER SHAFTS

TABLE 7.7 ACTION AND LIMIT LEVELS FOR NOISE MONITORING AT STONECUTTERS ISLAND PRODUCTION AND RISER SHAFT

LIST OF ANNEXES

Annex A Location of Works Areas

Annex B Project Organisation Chart and Contact Details

Annex C North Point Production and Drop Shafts
Annex C1 Locations of Construction Activities during the Reporting period
Annex C2 Locations of Air Quality and Noise Monitoring Stations
Annex C3 Not Used
Annex C4 Summary of Implementation Status
Annex C5 24-hour and 1-hour averaged TSP Monitoring Results
Annex C6 Noise Monitoring Results
Annex C7 Cumulative Complaints and Summons/Prosecutions Log

Annex D Wan Chai East Production and Drop Shafts
Annex D1 Locations of Construction Activities during the Reporting period
Annex D2 Locations of Air Quality and Noise Monitoring Stations
Annex D3 Not Used
Annex D4 Summary of Implementation Status
Annex D5 24-hour and 1-hour averaged TSP Monitoring Results
Annex D6 Noise Monitoring Results
Annex D7 Summary of Exceedance Investigation
Annex D8 Cumulative Complaints and Summons/Prosecutions Log

Annex E Central Drop Shaft
Annex E1 Locations of Construction Activities during the Reporting period
Annex E2 Locations of Air Quality and Noise Monitoring Stations
Annex E3 Not Used
Annex E4 Summary of Implementation Status
Annex E5 24-hour and 1-hour averaged TSP Monitoring Results
Annex E6 Noise Monitoring Results
Annex E7 Cumulative Complaints and Summons/Prosecutions Log

Annex F Sai Ying Pun Junction Shaft
Annex F1 Locations of Construction Activities during the Reporting period
Annex F2 Locations of Air Quality and Noise Monitoring Stations
Annex F3 Not Used
Annex F4 Summary of Implementation Status
Annex F5 24-hour and 1-hour averaged TSP Monitoring Results
Annex F6 Noise Monitoring Results
Annex F7 Cumulative Complaints and Summons/Prosecutions Log

Annex G Stonecutters Island Production and Riser Shafts
Annex G1 Locations of Construction Activities during the Reporting period

Annex G2 *Locations of Air Quality and Noise Monitoring Stations*
Annex G3 *Not Used*
Annex G4 *Summary of Implementation Status*
Annex G5 *24-hour and 1-hour averaged TSP Monitoring Results*
Annex G6 *Noise Monitoring Results*
Annex G7 *Cumulative Complaints and Summons/Prosecutions Log*

Annex H Calibration Reports for HVSs and Sound Level Meters for All Sites

Annex I Event / Action Plans for Air Quality, Noise and Landscape and Visual Monitoring

Annex J Waste Flow Table for All Sites

Annex K Summary of Observations and Follow-up Actions of Environmental Site Inspections for All Sites

EXECUTIVE SUMMARY

The construction works of **DC/2007/23 of Harbour Area Treatment Scheme Stage 2A (HATS2A) - Construction of Sewage Conveyance System from North Point to Stonecutters Island (the Project)** had commenced on 1 December 2009. This is the 20th quarterly Environmental Monitoring and Audit (EM&A) report presenting the EM&A work carried out during the period from 1 September 2014 to 30 November 2014 in accordance with the EM&A Manual.

North Point Production and Drop Shafts

Summary of Construction Works undertaken during Reporting Period

The major construction works undertaken included:

- Permanent invert and vault lining construction at Production Shaft;
- Construction of draw pits and cable ducts at Drop Shaft;
- Construction of supporting beams construction for precast cover at Drop Shaft; and
- Base slab of connection channel was cast at Drop Shaft.

Environmental Monitoring and Audit Progress

A summary of the monitoring activities in this reporting period is listed below:

• 24-hour averaged TSP Monitoring at each monitoring station (AM1)	16 sets
• 1-hour averaged TSP Monitoring at each monitoring station (AM1)	48 sets
• 24-hour averaged TSP Monitoring at each monitoring station (AM2)	16 sets
• 1-hour averaged TSP Monitoring at each monitoring station (AM2)	48 sets
• Construction Noise Monitoring during Normal Weekdays at NM1	13 times
• Construction Noise Monitoring during Restricted Hours at NM1	12 times
• Joint Environmental Site Inspection	12 times
• Landscape & Visual Monitoring	3 times

Environmental Exceedance/Non-conformance/Complaint/Summons and Prosecution

No exceedance of Action and Limit Levels of 1-hr and 24-hr averaged TSP was recorded during the reporting period.

No exceedance of the Noise Limit Levels was recorded at the monitoring station during both normal working hours and restricted hours in the reporting period.

No non-compliance event was recorded during the reporting period.

There was no complaint/summon/prosecution received during the reporting period.

Wan Chai East Production and Drop Shaft

Summary of Construction Works undertaken during Reporting period

The major construction works undertaken included:

- Permanent invert and vault lining construction at Production Shaft;
- Base preparation and blinding for tunnel lining at Production Shaft;
- Foamwork preparation for concrete lining at Production Shaft;
- Invert shutter and concrete pumping system set up at Production Shaft;
- Excavation of scum chamber at Drop Shaft; and
- D-wall cutting at Drop Shaft;

Environmental Monitoring and Audit Progress

A summary of the monitoring activities in this reporting period is listed below:

• 24-hour averaged TSP Monitoring at AM3	16 sets
• 1-hour averaged TSP Monitoring at AM3	48 sets
• Construction Noise Monitoring during Normal Weekdays at NM2	13 times
• Construction Noise Monitoring during Restricted hours at NM2	12 times
• Joint Environmental Site Inspection	10 times
• Landscape & Visual Monitoring	3 times

Environmental Exceedance/Non-conformance/Complaint/Summons and Prosecution

No exceedance of Action and Limit Levels of 1-hr and 24-hr average TSP was recorded during the reporting period.

No exceedance of noise limit level was recorded during normal working hours. However, 7 exceedances of noise Limit Level during restricted hours were reported on 9, 14 and 23 September 2014; 7, 21, and 26 October 2014; and 23 November 2014.

The exceedances were investigated. Referring to the works summary provided by the Contractor, no noisy outdoor construction activity was conducted at the Wan Chai East Production and Drop Shafts during the noise monitoring sessions. Other potential noise sources were also identified in the vicinity (i.e., traffic) to contribute to the measured noise level. In view of no noisy outdoor construction works carried out and contribution from other potential noise source in vicinity (i.e., traffic), it is considered that the exceedances were not due to the Contract 23 construction works. However, the Contractor was reminded to adhere strictly to the Construction Noise Mitigation Plan and to implement all relevant noise mitigation measures to avoid exceedance of noise limit levels or causing nuisance.

No non-compliance event was recorded during the reporting period.

No complaint/ summon/prosecution was received in this reporting period.

Central Drop Shaft

Summary of Construction Works undertaken during the Reporting Period
The major construction works undertaken included:

- Central Junction lining construction; and
- Upper shaft construction.

Environmental Monitoring and Audit Progress

A summary of the monitoring activities in this reporting period is listed below:

• 24-hour averaged TSP Monitoring at AM4	16 sets
• 1-hour averaged TSP Monitoring at AM4	48 sets
• Construction Noise Monitoring during Normal Weekdays at NM3	13 times
• Joint Environmental Site Inspection	5 times
• Landscape & Visual Monitoring	3 times

Environmental Exceedance/Non-conformance/Complaint/Summon and Prosecution

No exceedance of the Action and Limit Levels of the 1-hour and 24-hour averaged TSP was recorded during the reporting period.

No exceedance of Action and Limit Levels of construction noise was recorded during the reporting period.

No non-compliance event was recorded during the reporting period.

There was no complaint/summon/prosecution received during the reporting period.

Sai Ying Pun Junction Shaft

Summary of Construction Works undertaken during the reporting period

The major construction works undertaken included:

- Telescopic foamwork preassemble and trail run;
- Fiberglass foamwork erection for permanent invert lining;
- Foamwork preparation for invert lining;
- Pre-excavation grouting;
- Drilling and blasting;
- Permanent invert and vault lining construction;
- Base preparation and blinding for tunnel lining construction; and
- Invert shutter and concrete pumping system set up.

Environmental Monitoring and Audit Progress

A summary of the monitoring activities in this reporting period is listed below:

• 24-hour averaged TSP Monitoring at AM5	16 sets
• 1-hour averaged TSP Monitoring at AM5	48 sets
• Construction Noise Monitoring during Normal Weekdays at NM4	13 times
• Construction Noise Monitoring during Restricted hours at NM4	12 times
• Joint Environmental Site Inspection	13 times
• Landscape & Visual Monitoring	3 times

Environmental Exceedance/Non-conformance/Complaint/Summon and Prosecution

No exceedance of the Action and Limit Levels of the 1-hour and 24-hour averaged TSP was recorded during the reporting period

No exceedance of the Noise Limit Levels was recorded at the monitoring station during both normal working hours and restricted hours in the reporting period.

No exceedance of maximum limit for safe vibration level (25 mm/s) was recorded during the reporting period.

No non-compliance event was recorded during the reporting period.

There was no complaint/summon/prosecution received during the reporting period.

Stonecutters Island Production and Riser Shafts

Summary of Construction Works undertaken during the Reporting Period

The major construction works undertaken included:

- Base preparation & blinding for tunnel lining at Production Shaft;
- Telescopic foamwork preassemble and trail run at Production Shaft;
- Fiberglass foamwork erection for permanent invert lining at Production Shaft;
- Permanent invert and vault lining construction at Production Shaft;
- Pre-excavation grouting at Production Shaft; and
- Drilling and blasting at Production Shaft;
- Construction of shaft permanent lining at Riser Shaft.

Environmental Monitoring and Audit Progress

A summary of the monitoring activities in this reporting period is listed below:

• 24-hour averaged TSP Monitoring at AM6	16 sets
• 1-hour averaged TSP Monitoring at AM6	48 sets
• Construction Noise Monitoring during Normal Weekdays at NM5	14 times
• Construction Noise Monitoring during Restricted Hours at NM5	13 times
• Joint Environmental Site Inspection	13 times
• Landscape & Visual Monitoring	3 times

Environmental Exceedance/Non-conformance/Complaint/Summon and Prosecution

No exceedance of Action and Limit Levels of 1-hr and 24-hr averaged TSP was recorded during the reporting period.

No exceedance of the Noise Limit Levels was recorded at the monitoring station during both normal working hours and restricted hours in the reporting period.

No non-compliance event was recorded during the reporting period.

There was no summon/prosecution received during the reporting period.

1 INTRODUCTION

ERM-Hong Kong, Limited (ERM) has been appointed by Gammon Construction Limited (the Contractor) as the Environmental Team (ET) to undertake the Environmental Monitoring and Audit (EM&A) programme for the Contract - "*DC/2007/23 of Harbour Area Treatment Scheme Stage 2A (HATS2A) - Construction of Sewage Conveyance System from North Point to Stonecutters Island" (*the Project*).*

1.1 PURPOSE OF THE REPORT

This is the twentieth quarterly EM&A report which summarises the impact monitoring results and audit findings for the EM&A programme during the reporting period from **1 September 2014 to 30 November 2014**.

1.2 STRUCTURE OF THE REPORT

The structure of the report is as follows:

Section 1 : **Introduction**
It details the scope and structure of the report.

Section 2 : **Project Information**
It summarises the background and scope of the project, site description, project organisation and contact details.

Section 3 : **North Point Production and Drop Shafts**

- **Construction Activities**
  It summarises the construction activities conducted during the reporting period.
- **Status of Environmental Approval Documents**
  It summarises the required environmental documents submitted under the relevant EP conditions during the reporting period.
- **Environmental Monitoring Requirement**
  It summarises the environmental monitoring including monitoring parameters, programmes, methodologies, frequency, and locations, Action and Limit Levels, Event and Action Plans, environmental mitigation measures as recommended in the EIA report and relevant environmental requirements.
- **Implementation Status on Environmental Mitigation Measures**
  It summarises the implementation of environmental protection measures during the reporting period.
- **Monitoring Results**
  It summarises the monitoring results obtained in the reporting period.
- **Environmental Site Inspection**

It summarises the audit findings of the weekly site inspections undertaken within the reporting period.

- **Environmental Non-conformance**

  It summarises any monitoring exceedance, environmental complaints and environmental summons within the reporting period.

Section 4 : **Wan Chai East Production and Drop Shafts**

- **Construction Activities**

  It summarises the construction activities conducted during the reporting period.

- **Status of Environmental Approval Documents**

  It summarises the environmental documents submissions under the EP condition during the reporting period.

- **Environmental Monitoring Requirement**

  It summarises the environmental monitoring including monitoring parameters, programmes, methodologies, frequency, and locations, Action and Limit Levels, Event and Action Plans, environmental mitigation measures as recommended in the EIA report and relevant environmental requirements.

- **Implementation Status on Environmental Mitigation Measures**

  It summarises the implementation of environmental protection measures during the reporting period.

- **Monitoring Results**

  It summarises the monitoring results obtained in the reporting period.

- **Environmental Site Inspection**

  It summarises the audit findings of the weekly site inspections undertaken within the reporting period.

- **Environmental Non-conformance**

  It summarises any monitoring exceedance, environmental complaints and environmental summons within the reporting period.

Section 5 : **Central Drop Shaft**

- **Construction Activities**

  It summarises the construction activities conducted during the reporting period.

- **Status of Environmental Approval Documents**

  It summarises the environmental documents submissions under the EP condition during the reporting period.

- **Environmental Monitoring Requirement**

  It summarises the environmental monitoring including monitoring parameters, programmes, methodologies, frequency and locations, Action and Limit Levels, Event and Action Plans, environmental mitigation measures as recommended in the EIA report and relevant environmental requirements.

- **Implementation Status on Environmental Mitigation Measures**

It summarises the implementation of environmental protection measures during the reporting period.

- **Monitoring Results**

  It summarises the monitoring results obtained in the reporting period.

- **Environmental Site Inspection**

  It summarises the audit findings of the weekly site inspections undertaken within the reporting period.

- **Environmental Non-conformance**

  It summarises any monitoring exceedance, environmental complaints and environmental summons within the reporting period.

Section 6 : **Sai Ying Pun Junction Shaft**

- **Construction Activities**

  It summarises the construction activities conducted during the reporting period.

- **Status of Environmental Approval Documents**

  It summarises the environmental documents submissions under the EP condition during the reporting period.

- **Environmental Monitoring Requirement**

  It summarises the environmental monitoring including monitoring parameters, programmes, methodologies, frequency and locations, Action and Limit Levels, Event and Action Plans, environmental mitigation measures as recommended in the EIA report and relevant environmental requirements.

- **Implementation Status on Environmental Mitigation Measures**

  It summarises the implementation of environmental protection measures during the reporting period.

- **Monitoring Results**

  It summarises the monitoring results obtained in the reporting period.

- **Environmental Site Inspection**

  It summarises the audit findings of the weekly site inspections undertaken within the reporting period.

- **Environmental Non-conformance**

  It summarises any monitoring exceedance, environmental complaints and environmental summons within the reporting period.

Section 7 : **Stonecutters Island Production and Riser Shafts**

- **Construction Activities**

  It summarises the construction activities conducted during the reporting period.

- **Status of Environmental Approval Documents**

  It summarises the environmental documents submissions under the EP condition during the reporting period.

- **Environmental Monitoring Requirement**

It summarises the environmental monitoring including monitoring parameters, programmes, methodologies, frequency and locations, Action and Limit Levels, Event and Action Plans, environmental mitigation measures as recommended in the EIA report and relevant environmental requirements.

- **Implementation Status on Environmental Mitigation Measures**

  It summarises the implementation of environmental protection measures during the reporting period.

- **Monitoring Results**

  It summarises the monitoring results obtained in the reporting period.

- **Environmental Site Inspection**

  It summarises the audit findings of the weekly site inspections undertaken within the reporting period.

- **Environmental Non-conformance**

  It summarises any monitoring exceedance, environmental complaints and environmental summons within the reporting period.

Section 8 : **Conclusions**

2 PROJECT INFORMATION

2.1 BACKGROUND AND GENERAL SITE DESCRIPTION

The Project comprises the construction of production shafts, drop shafts and a riser shaft and approximately 12 km of tunnel excavation from North Point (NP) via Sai Ying Pun (SYP) to Stonecutters Island (SCI). Shafts vary in depth from 140 m to 170 m below ground with 10 - 12 m diameter. Tunnel-face area ranges from 16 m^2 to 23 m^2. Embedded drainage pipelines will be installed upon the completion of tunnel excavation.

Construction works to be carried out under this Contract include the following major items:

- construction of sewage conveyance system (SCS) from North Point Preliminary Treatment Works (PTW) to Stonecutters Island Sewage Treatment Works (STW) via Wan Chai East (WCE) Preliminary Treatment Works, Central (CEN) Preliminary Treatment Works and Fung Mat Street Sai Ying Pun junction shaft;
- construction of drop shafts at NP PTW, WCE PTW and CEN PTW;
- construction of riser shafts at SCI STW;
- construction of junction shafts at SYP;
- construction of temporary production shafts at NP, WCE and SCI to provide access for the construction of SCS;
- construction of connection channels, pipes, chambers and tunnels connecting the proposed drop shafts / riser shafts to the facilities of the preliminary treatment works / sewage treatment works;
- carrying out surveys of existing buildings, taking over of existing buildings and installation of new piezometers and ground settlement markers and subsequent vibration monitoring along the alignment of the SCS;
- miscellaneous building, civil, electrical and mechanical works; and
- landscaping works.

The potential environmental impacts of the Project have been studied in the "*Harbour Area Treatment Scheme (HATS) Stage 2A*" (EIAO Register No: AEIAR-121/2008). The EIA was approved on 2 June 2008 under the *Environmental Impact Assessment Ordinance* (EIAO) and an updated Environmental Permit (EP-322/2008/F) for the works was granted on 10 Oct 2010. An application for a variation of EP was made by Drainage Service Department (DSD) on 23 Apr 2014, and EP-322/2008/G was issued on 9 May 2014, which superseded EP-322/2008/F. Under the requirements of Condition 4.1 of Environmental Permit EP-322/2008/G, an EM&A programme as set out in the EM&A Manual is required to be implemented.

The construction works of this Project commenced on 1 December 2009 and are scheduled to be completed by 2015.

The general layout plan of the Project is shown in *Annex A*.

2.2 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS AND REQUIRED SUBMISSIONS

A summary of the relevant permits, licences, and/or notifications on environmental protection for this Project since November 2008 is presented in *Table 2.1.*

Table 2.1 Summary of Environmental Licensing, Notification and Permit Status for the Contract [(a)]

Permit/ Licences/ Notification	Reference	Validity Period	Remarks
Environmental Permit (EP)	EP-322/2008/G	Throughout the Contract	• Permit granted on 9 May 2014

Note:

(a) The status on environmental licensing and permit for each worksite is discussed in the following sections.

(b) Marine deposits from all sites have been disposed of in accordance with their respective disposal methods (ie Type 1, 2, or 3 disposal methods), and no further marine deposit is anticipated to generate. When marine deposits are encountered, relevant dumping permits will be obtained and they will be disposed of properly.

Status of required submissions under the current EP during the reporting period is presented in *Table 2.2*.

Table 2.2 Status of Required Submission for all Sites

EP Condition	Submission	Submission Date
Condition 4.4	Submission of 58th Monthly EM&A Report	15 October 2014
	Submission of 59th Monthly EM&A Report	14 November 2014
	Submission of 60th Monthly EM&A Report	12 December 2014

2.3 PROJECT ORGANISATION

The project organisational chart and contact details are shown in *Annex B*.

3 NORTH POINT PRODUCTION AND DROP SHAFTS

3.1 CONSTRUCTION ACTIVITIES DURING THE REPORTING PERIOD

A summary of the major construction activities undertaken in this reporting period is shown in *Table 3.1*. The locations of the construction activities are shown in *Annex C1*.

Table 3.1 Summary of Construction Activities Undertaken from 1 September 2014 to 30 November 2014 at North Point Production and Drop Shafts

Worksite	Construction Activities Undertaken
Production Shaft	• Permanent invert and vault lining construction
Drop Shaft	• Construction of draw pits and cable ducts; • Construction of supporting beams construction for precast cover; and • Base slab of connection channel was cast.

3.2 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS

A summary of the relevant permits, licences, and/or notifications on environmental protection for this Project in this reporting period is presented in *Table 3.2*.

Table 3.2 Summary of Environmental Licensing, Notification and Permit Status at North Point Production and Drop Shafts

Permit/ Licences/ Notification	Reference	Validity Period	Remarks
Wastewater Discharge License	North Point PTW Drop Shaft WT00019809-2014	22 August 2014 - 31 October 2019	--
	North Point Production Shaft WT00007055-2010	9 July 2010 - 31 March 2015	--
	Discharge License (Public Car Parking Area, North of North Point Preliminary Treatment Plant) WT00012705-2012	12 April 2012 – 30 April 2017	
Chemical Waste Producer Registration	North Point Production Shaft 5213-153-G2484-01	Throughout the Contract	--
	North Point PTW Drop Shaft 5213-153-G2483-01	Throughout the Contract	--
Construction Noise Permit (CNP)	North Point Production Shaft GW-RS0876-14	10 September 2014 – 9 March 2015	--
	North Point Drop Shaft GW-RS0343-14	1 May 2014 – 30 October 2014	Superceded by GW-RS1114-14

Permit/ Licences/ Notification	Reference	Validity Period	Remarks
	North Point Drop Shaft GW-RS1114-14	31 October 2014 – 30 April 2015	--

3.3 ENVIRONMENTAL MONITORING REQUIREMENTS

3.3.1 Air Quality Monitoring

Monitoring Location

In accordance with the EM&A Manual, 24-hour and 1-hour averaged Total Suspended Particulates (TSP) levels should be conducted at designated monitoring stations. Since access to some of the proposed monitoring locations stated in the EM&A Manual were rejected or not available, alternative locations, therefore, were proposed and agreed by the Engineer Representative (ER) and Independent Environmental Checker (IEC). Owing to the security issues with the High Volume Sampler (HVS) mounted at the designated monitoring stations CM_NP2 (rooftop of WSD office) especially under adverse weather conditions, an alternative location which is one floor below the rooftop was identified and agreed by ER and IEC in July 2010.

The construction air quality monitoring stations for this Contract are listed in *Table 3.3* and shown in *Annex C2*.

Table 3.3 Construction Phase Air Monitoring Location at North Point Production and Drop Shafts

Worksite	Construction Air Quality Monitoring Stations			
	ID in EM&A Manual	ID	Location	Remark
North Point	-	AM1	Chan's Creative School (formerly known as Madam Chan Wai Chow Memorial School)	• Access for station setup to K.Wah Centre (CM_NP1) and Tin Chiu Street Children's Playground (CM_NP3) was refused.
	CM_NP2	AM2	Hong Kong & Islands Regional Office, WSD	

Monitoring Parameters, Frequency and Programme

Air quality monitoring was conducted in accordance with the requirements stipulated in the EM&A Manual (*Table 3.4*).

Table 3.4 TSP Monitoring Parameter and Frequency

Parameter	Frequency
24-hour averaged TSP	Once every 6 days
1-hour averaged TSP	3 times every 6 days

Monitoring Equipment

Continuous 24-hour and three 1-hour averaged TSP monitoring were performed using HVS with appropriate sampling inlets installed and located at the designated monitoring station. The performance specification of HVS complied with the standard method "*Determination of Suspended Particulate Matter in the Atmosphere (High Volume Method)*" as stipulated in *US EPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50 Appendix B)*. The equipment that was deployed for the 24-hour and 1-hour averaged TSP monitoring is listed in *Annex C5*.

Monitoring Methodology

Installation

The setup locations of the HVSs at monitoring stations were listed in *Table 3.3*. All HVSs were free-standing with no obstruction.

The following criteria were considered in the installation of the HVSs:

- appropriate support to secure the samplers against gusty wind was provided at AM1 and AM2;
- a minimum of 2 m separation from walls, parapets and penthouses was required for rooftop samplers;
- no furnace or incinerator flues was nearby;
- airflow around the sampler was unrestricted; and
- permission was obtained to set up the samplers and to gain access to the monitoring stations.

Preparation of Filter Papers

- glass fibre filters were labelled and filters that were clean and without pinholes were selected;
- all filters were equilibrated in the conditioning environment for 24 hours before weighing. The conditioning environment temperature was around 25 °C and did not net vary by more than ± 3 °C; the relative humidity (RH) was 40%; and
- SGS Hong Kong Ltd, a HOKLAS accredited laboratory, implements comprehensive quality assurance and quality control programmes.

Field Monitoring

- the power supply was checked to ensure that the HVSs were working properly;
- the filter holder and the area surrounding the filter were cleaned;

- the filter holder was removed by loosening the foul bolts and a new filter, with stamped number upward, on a supporting screen was aligned carefully;

- the filter was properly aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter;

- the swing bolts were fastened to hold the filter holder down to the frame. The pressure applied should be sufficient to avoid air leakage at the edges;

- the shelter lid was closed and secured with an aluminium strip;

- the HVSs were warmed-up for about 5 minutes to establish run-temperature conditions;

- a new flow rate record sheet was set into the flow recorder;

- the flow rates of the HVSs were checked and adjusted to between 1.22 - 1.37 m^3min^{-1} which were within the range specified in the EM&A Manual (i.e. 0.6 – 1.7 m^3min^{-1});

- the programmable timer was set for a sampling period of 24 hours ± 1 hour, and the starting time, weather condition and the filter number were recorded;

- the initial elapsed time was recorded;

- at the end of sampling, the sampled filter was removed carefully and folded in half so that only surfaces with collected particulate matter were in contact;

- the filter paper was placed in a clean plastic envelope and sealed;

- all monitoring information was recorded on a standard data sheet; and

- filters were sent to SGS Hong Kong Ltd for analysis.

<u>Maintenance and Calibration</u>

- the HVSs and their accessories were maintained in good working condition, such as replacing motor brushes routinely and checking electrical wiring to ensure a continuous power supply; and

- the flow rate of each HVS with a mass flow controller was calibrated using an orifice calibrator. Initial calibrations of the dust monitoring equipment were conducted upon installation and prior to commissioning. Five-point calibration was carried out for HVSs using CM-AIR-43 Calibration Kit. HVSs are calibrated on a bi-monthly basis. The calibration records for the HVSs are given in *Annex H*.

Wind Data Monitoring

The nearest weather station to North Point Production and Drop Shafts is Kai Tak Station. The average wind data (wind speed and wind direction) during the monitoring period were obtained from the meteorological station at Kai Tak of the Hong Kong Observatory (HKO) and are presented in *Annex C5.*

Action and Limit Levels

The Action and Limit levels have been established and are presented in *Table 3.5*.

Table 3.5 Action and Limit Levels for Air Quality at North Point Production and Drop Shafts

Parameter	Air Monitoring Station	Action Level, μgm^{-3}	Limit Level, μgm^{-3}
24-hour averaged TSP	AM1	185	260
	AM2	182	260
1-hour averaged TSP	AM1	340	500
	AM2	352	500

Event and Action Plan

The Event and Action Plan (EAP) for air quality monitoring is presented in *Annex I*.

3.3.2 Noise Monitoring

Monitoring Location

In accordance with the EM&A Manual, monitoring of construction noise impact should be conducted at the designated monitoring stations. Since access to some of the proposed monitoring locations stated in the EM&A Manual were refused or not available; alternative locations, therefore, were proposed and agreed by the ER and IEC. Construction activities during restricted hours (1900 – 2300 on weekdays and 0700 – 2300 on public holidays and Sundays) commenced in August 2010. Chan's Creative School (the noise monitoring station NM1) is not accessible during its closing hours (from 1900 to 0700 on normal week days and from 0000 to 2400 on public holidays as well as Sundays). During these hours, noise monitoring would be conducted on the pedestrian walkway adjacent to the school boundary along Tin Chiu Street, which was agreed by the ER and IEC. The construction noise monitoring location for this Contract is listed in *Table 3.6* and shown in *Annex C2*.

Table 3.6 ***Construction Phase Noise Monitoring Station at North Point Production and Drop Shafts***

Worksite	Proposed Construction Noise Monitoring Station				
	ID in EM&A Manual	ID	Location	Type of Measurement	Remark
North Point	M1	NM1	Rooftop of Chan's Creative School (formerly known as Madam Chan Wai Chow Memorial School)	Façade	0700 to 1900 on normal weekdays
			Pedestrian walkway adjacent to Chan's Creative School (formerly known as Madam Chan Wai Chow Memorial School) boundary along Tin Chiu Street	Façade	1900 – 2300 on all days and 0700 – 2300 on general holidays and Sundays

Monitoring Parameters, Frequency and Programme

Weekly construction noise monitoring was conducted in accordance with the requirements stipulated in the EM&A Manual. Additional noise monitoring was also conducted as per the requirement in the EM&A Manual when works were carried out during restricted periods.

The construction noise levels were measured in terms of A-weighted equivalent continuous sound pressure level (L_{eq}) in decibels dB(A). $L_{Aeq\ (30min)}$ was used as the monitoring parameter for the time period between 0700 – 1900 hours on normal weekdays, and $L_{Aeq\ (5min)}$ was used as the monitoring parameter for all the restricted periods. Supplementary information (two statistical sound levels L_{10} and L_{90}; the levels exceeded for 10 and 90 percent of the time respectively) was also recorded during the monitoring for data auditing. The measured noise levels were logged every 5 minutes throughout the impact monitoring period.

Monitoring Equipment and Methodology

Construction noise measurements were conducted in accordance with the calibration and measurement procedures as stated in *Annex – General Calibration and Measurement Procedures* of *Technical Memorandum on Noise from Construction Work other than Percussive Piling* (*GW-TM*) issued under the *Noise Control Ordinance* (*NCO*) (Cap.400).

The sound level meters and calibrator used for the noise measurement, as listed in *Annex C-6*, comply with IEC 651: 1979 and 804:1985 (Type 1) specification. The calibration certificates of the sound level meters are included in *Annex H*.

Immediately prior to and following the noise measurements, the accuracy of the measurement equipment was checked using an acoustic calibrator generating a known sound pressure level at a known frequency.

Action and Limit Levels

The action and limit levels for noise monitoring during different monitoring periods are summarised in *Table 3.7*.

Table 3.7 Action and Limit Levels for Noise Monitoring at North Point Production and Drop Shafts

Noise Monitoring Location	Measurement Parameter	Noise Criteria (dB(A))	Remark
NM1	$L_{Aeq\ (30mins)}$	70	During normal teaching period
	$L_{Aeq\ (30mins)}$	69 (a)	During the school examination period
	$L_{Aeq\ (30mins)}$	75	During school holidays
	$L_{Aeq\ (5mins)}$	70	Evening (1900-2300) and Sundays and public holidays (0700-2300)
	$L_{Aeq\ (5mins)}$	55	Night-time (2300-0700)

Note:

(a) With reference to the Baseline Monitoring Report, the average $L_{Aeq,30min}$ measured at NM1 between 0700 and 1900 hours is 69.0 dB(A), exceeded the Limit Level of daytime construction noise during the examination periods (65 dB(A)). Hence it was therefore adopted as the Limit Level during the examination period at NM1.

Event and Action Plan

The Event and Action Plan (EAP) for noise monitoring is presented in *Annex I*.

3.3.3 Cultural Heritage

No vibration monitoring is required for this reporting period as no blasting of tunnel / shaft works was carried out in the vicinity of the historical buildings listed in the EM&A Manual.

3.3.4 Landscape and Visual Monitoring

In accordance with the EM&A Manual, landscape and visual monitoring is required to ensure that the design, implementation and maintenance of landscape and visual mitigation measures are fully achieved. The landscape and visual monitoring is carried out on site as part of the environmental site inspection. The monitoring procedures and criteria as described in the EM&A Manual were adopted.

Event and Action Plan

The Event and Action Plan (EAP) for landscape and visual monitoring is presented in *Annex I*.

3.4 IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS

The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Report, Environmental Permit and EM&A Manual. The implementation status during the reporting period is summarized in *Annex C4*.

3.5 MONITORING RESULTS

3.5.1 Air Quality

A total of 16 sets of 24-hour averaged and 48 sets of 1-hour averaged TSP measurements were carried out at AM1 and 16 sets of 24-hour averaged and 48 sets of 1-hour averaged TSP measurements were carried out at AM2 during the reporting period. The monitoring data for 24-hour and 1-hour averaged TSP together with wind data and graphical presentations are presented in *Annex C5*.

The weather condition during the monitoring period varied from fine to sunny. The local impacts near the monitoring stations of AM1 to AM2 were mainly associated with vehicle emissions. No exceedance of Action and Limit Levels of 1-hr and 24-hr TSP was recorded during the reporting period.

3.5.2 Noise

A total of 13 sets of 30-minute construction noise measurements were carried out at the monitoring station NM1 during normal working hours of weekdays of the reporting period. 12 sets of 3 x 5-minute construction noise measurements were carried out during restricted hours (between 1900 and 0700 hours on weekdays, and any time on Sundays and public holidays) on 9, 14, 23 and 28 September 2014; 7, 12, 21, and 26 October 2014; and 4, 9, 18, and 23 November 2014. No exceedance of the noise limit level was recorded during the reporting period.

The monitoring results together with their graphical presentations are presented in *Annex C6*.

3.5.3 Landscape and Visual

In accordance with the EM&A Manual, monthly landscape and visual monitoring is required to ensure that the design, implementation and maintenance of landscape and visual mitigation measures are fully achieved. The monitoring has commenced since December 2009 during weekly site inspections. There was no major observation during the reporting period.

3.5.4 Cultural Heritage

No vibration monitoring was conducted for this reporting period as the blasting of tunnel/shaft works has not commenced in the vicinity of the historical buildings listed in the EM&A Manual.

3.5.5 Waste Management

Waste generated from this Project includes inert construction and demolition (C&D) materials, non-inert C&D materials and marine deposit. Non-inert C&D materials are made up of general refuse, steel and paper/cardboard packaging materials. Steel materials generated from the project are also grouped into non-inert C&D materials as the materials were not disposed of

with other inert C&D materials. No marine deposit requiring type 1, type 2, or type 3 disposal methods was generated.

The quantity of different types of wastes generated in the reporting period has been shown in the Monthly Summary Waste Flow Table prepared by the Contractor (*Annex J*).

3.6 ENVIRONMENTAL SITE INSPECTION

Weekly site inspections were carried out by the representatives of the Contractor, Engineer and the ET. Site inspections were conducted on 4, 11, 18 and 24 September 2014; 3, 9, 16, 23, and 29 October 2014; and 6, 13, and 20 November 2014. A representative of the IEC joined the site inspection on 24 September 2014, and 29 October 2014. There was no non-compliance recorded during this reporting period.

Observations during site inspections and follow-up actions in the reporting period are presented in *Annex K*. All the follow-up actions requested by IEC and Contractor's ET during the site inspection were undertaken as reported by the Contractor and confirmed in the following weekly site inspection conducted during the reporting period.

3.7 ENVIRONMENTAL NON-CONFORMANCE

3.7.1 Summary of Monitoring Exceedance

No exceedance of the Action and Limit Levels of 1-hour averaged and 24-hour averaged TSP was recorded at monitoring stations during the reporting period.

No exceedance of the Noise Limit Levels was recorded at monitoring station during both normal working hours and restricted hours in the reporting period.

3.7.2 Summary of Environmental Non-Compliance

No non-compliance event was recorded during the reporting period.

3.7.3 Summary of Environmental Complaint

No complaint was received during the reporting period. The cumulative complaints log is shown in *Annex C7*.

3.7.4 Summary of Environmental Summon and Successful Prosecution

No summon or prosecution was received during the reporting period. The cumulative summon and prosecution log is shown in *Annex C7*.

4.1 CONSTRUCTION ACTIVITIES DURING THE REPORTING PERIOD

A summary of the major construction activities undertaken during the reporting period is shown in *Table 4.1*. The locations of the construction activities are shown in *Annex D1*.

Table 4.1 Summary of Construction Activities Undertaken from 1 September 2014 to 30 November 2014 at Wan Chai East Production and Drop Shafts

Worksite	Construction Activities Undertaken
Production Shaft	• Permanent invert and vault lining construction; • Base preparation and blinding for tunnel lining; • Foamwork preparation for concrete lining; and • Invert shutter and concrete pumping system set up.
Drop Shaft	• Excavation of scum chamber; and • D-wall cutting.

4.2 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS

A summary of the relevant permits, licences, and/or notifications on environmental protection for this Project in this reporting period is presented in *Table 4.2*.

Table 4.2 ***Summary of Environmental Licensing, Notification and Permit Status at Wan Chai East Production and Drop Shafts***

Permit/ Licences/ Notification	Reference	Validity Period	Remarks
Wastewater Discharge License	Wan Chai East Production Shaft and Drop Shaft WT00019901-2014	8 September 2014 - 31 October 2019	--
Chemical Waste Producer Registration	Wan Chai East Production Shaft and Drop Shaft 5213-135-G2308-03	Throughout the Contract	--
Construction Noise Permit (CNP)	Wan Chai East Production Shaft GW-RS0553-14	4 June 2014 – 3 December 2014	--
	Wan Chai East Drop Shaft GW-RS0633-14	26 June 2014 – 23 December 2014	--
	Marsh Road, Wan Chai GW-RS0684-14	15 July 2014 – 31 October 2014	--

4.3 ENVIRONMENTAL MONITORING REQUIREMENTS

4.3.1 *Air Quality Monitoring*

Monitoring Location

In accordance with the EM&A Manual, 24-hour and 1-hour averaged Total Suspended Particulates (TSP) levels should be conducted at designated monitoring stations. Since access to some of the proposed monitoring locations stated in the EM&A Manual was denied or not available, alternative locations, therefore, were proposed and agreed by the ER and IEC. The construction air quality monitoring station for this Contract is listed in *Table 4.3* and shown in *Annex D2*.

Table 4.3 ***Construction Phase Air Monitoring Location at Wan Chai East Production and Drop Shafts***

Worksite	Construction Air Quality Monitoring Station			
	ID in EM&A Manual	ID	Location	Remark
Wan Chai East	-	AM3	Rooftop of Wan Chai East PTW	• The rooftop of Society for the Prevention of Cruelty to Animals building (CM_WC1) was crowded with existing facilities (e.g. water tanks) that setup of HVSs for baseline monitoring was not feasible.

Monitoring Parameters, Frequency and Programme

Air quality monitoring was conducted in accordance with the requirements stipulated in the EM&A Manual (*Table 4.4*).

Table 4.4 ***TSP Monitoring Parameter and Frequency at Wan Chai East Production and Drop Shafts***

Parameter	Frequency
24-hour averaged TSP	Once every 6 days
1-hour averaged TSP	3 times every 6 days

Monitoring Equipment

Continuous 24-hour and 1-hour averaged TSP monitoring were performed using High Volume Samplers (HVS) with appropriate sampling inlets installed, located at the designated monitoring station. The performance specification of HVS complied with the standard method "Determination of Suspended Particulate Matter in the Atmosphere (High Volume Method)*" as stipulated in US EPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50 Appendix B). The equipment that was deployed for the 24-hour and 1-hour averaged TSP monitoring is listed in* Annex D5.*Monitoring Methodology.*

Installation

The setup location of the HVS at monitoring stations was listed in *Table 4.3*. The HVS was free-standing with no obstruction.

The following criteria were considered in the installation of the HVSs:

- appropriate support to secure the sampler against gusty wind was provided at AM3;
- a minimum of 2 m separation from walls, parapets and penthouses was required for rooftop samplers;
- no furnace or incinerator flues was nearby;
- airflow around the sampler was unrestricted; and
- permission was obtained to set up the samplers and to gain access to the monitoring stations.

Preparation of Filter Papers

- glass fibre filters were labelled and sufficient filters that were clean and without pinholes were selected;
- all filters were equilibrated in the conditioning environment for 24 hours before weighing. The conditioning environment temperature was around 25 °C and not variable by more than ± 3 °C; the relative humidity (RH) was 40%; and
- SGS Hong Kong Ltd, a HOKLAS accredited laboratory, implements comprehensive quality assurance and quality control programmes.

Field Monitoring

- the power supply was checked to ensure that the HVSs were working properly;
- the filter holder and the area surrounding the filter were cleaned;
- the filter holder was removed by loosening the foul bolts and a new filter, with stamped number upward, on a supporting screen was aligned carefully;
- the filter was properly aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter;
- the swing bolts were fastened to hold the filter holder down to the frame. The pressure applied should be sufficient to avoid air leakage at the edges;
- then the shelter lid was closed and secured with the aluminium strip;
- the HVSs were warmed-up for about 5 minutes to establish run-temperature conditions;
- a new flow rate record sheet was set into the flow recorder;
- the flow rates of the HVSs were checked and adjusted to between 1.22 - 1.37 m^3min^{-1} which were within the range specified in the EM&A Manual (ie 0.6 – 1.7 m^3min^{-1});
- the programmable timer was set for a sampling period of 24 hours ± 1 hour, and the starting time, weather condition and the filter number were recorded;
- the initial elapsed time was recorded;
- at the end of sampling, the sampled filter was removed carefully and folded in half so that only surfaces with collected particulate matter were in contact;
- the filter paper was placed in a clean plastic envelope and sealed;
- all monitoring information was recorded on a standard data sheet; and
- filters were sent to SGS Hong Kong Ltd for analysis.

<u>Maintenance and Calibration</u>

- the HVSs and their accessories were maintained in good working condition, such as replacing motor brushes routinely and checking electrical wiring to ensure a continuous power supply; and
- the flow rate of each HVS with mass flow controller was calibrated using an orifice calibrator. Initial calibrations of the dust monitoring equipment were conducted upon installation and prior to commissioning. Five-point calibration was carried out for HVSs using CM-AIR-43 Calibration

Kit. HVSs are calibrated on a bi-monthly basis. The calibration record for the HVS is given in *Annex H*.

Wind Data Monitoring

The nearest weather station to Wan Chai East Production and Drop Shafts is located at King's Park. The average wind data (wind speed and wind direction) during the monitoring period were obtained from the meteorological station at King's Park of the Hong Kong Observatory (HKO) and is presented in *Annex D5*.

Action and Limit Levels

The Action and Limit levels have been established and presented in *Table 4.5*.

Table 4.5 Action and Limit Levels for Air Quality at Wan Chai East Production and Drop Shafts

Parameter	Air Monitoring Station	Action Level, μgm^{-3}	Limit Level, μgm^{-3}
24-hour averaged TSP	AM3	181	260
1-hour averaged TSP	AM3	355	500

Event and Action Plan

The Event and Action Plan (EAP) for air quality monitoring is presented in *Annex I*.

4.3.2 Noise Monitoring

Monitoring Location

In accordance with the EM&A Manual, monitoring of construction noise impact should be conducted at the designated monitoring stations. Since access to some of the proposed monitoring locations stated in the EM&A Manual was denied or not available, alternative locations were proposed and agreed by the ER and IEC. The construction noise monitoring location for this Contract is listed in *Table 4.6* and shown in *Annex D2*.

Table 4.6 Construction Phase Noise Monitoring Station at Wan Chai East Production and Drop Shafts

Worksite	Construction Noise Monitoring Station				
	ID in EM&A Manual	ID	Location	Type of Measurement	Remark
Wan Chai East	-	NM2	Rooftop of Hyde Building	Façade	• No guaranteed access for equipment set-up due to no caretaker of Kei Wah Building (M2) • Alternative location, NM2, is located next to

Worksite	Construction Noise Monitoring Station				
	ID in EM&A Manual	ID	Location	Type of Measurement	Remark
					Kei Wah Building and is also the background noise monitoring station in the HATS2A EIA study.

Monitoring Parameters, Frequency and Programme

Weekly construction noise monitoring was conducted in accordance with the requirements stipulated in the EM&A Manual. Additional noise monitoring was also conducted as per required the EM&A Manual when works were carried out during restricted periods. The monitoring programme for this reporting period is shown in *Annex D3*.

The construction noise levels were measured in terms of A-weighted equivalent continuous sound pressure level (L_{eq}) in decibels dB(A). $L_{Aeq(30min)}$ was used as the monitoring parameter for the time period between 0700 – 1900 hours on normal weekdays, and $L_{Aeq(5min)}$ was used as the monitoring parameter for all restricted periods. Supplementary information for data auditing (two statistical sound levels L_{10} and L_{90}which are the levels exceeded for 10 and 90 percent of the time respectively) was also recorded during the monitoring period for reference. The measured noise levels were logged every 5 minutes throughout the impact monitoring period.

Monitoring Equipment and Methodology

Construction noise measurements were conducted in accordance with the calibration and measurement procedures as stated in *Annex – General Calibration and Measurement Procedures* of *Technical Memorandum on Noise from Construction Work other than Percussive Piling* (*GW-TM*) issued under the *Noise Control Ordinance* (*NCO*) (Cap.400).

The sound level meters and calibrator used for the noise measurement, as listed in *Annex D6*, complies with IEC 651: 1979 and 804:1985 (Type 1) specification. The calibration certificates of the sound level meters are included in *Annex H*.

Immediately prior to and following the noise measurements, the accuracy of the measurement equipment was checked using an acoustic calibrator generating a known sound pressure level at a known frequency.

Action and Limit Levels

The action and limit levels for noise monitoring during different monitoring periods are summarized in *Table 4.7*.

Table 4.7 ***Action and Limit Levels for Noise Monitoring at Wan Chai East Production and Drop Shafts***

Noise Monitoring Location	Measurement Parameter	Noise Criteria (dB(A))	Remark
NM2	$L_{Aeq\ (30mins)}$	75	Normal working hours during weekdays
	$L_{Aeq\ (5mins)}$	70	Evening (1900-2300); and Sundays and public holidays (0700-2300)
	$L_{Aeq\ (5mins)}$	55	Night-time (2300-0700)

Event and Action Plan

The Event and Action Plan (EAP) for noise monitoring is presented in *Annex I*.

4.3.3 Cultural Heritage

No vibration monitoring is required for this reporting period as blasting of tunnel / shaft works was not carried out in the vicinity of the historical buildings listed in EM&A manual.

4.3.4 Landscape and Visual Monitoring

In accordance with the EM&A Manual, landscape and visual monitoring is required to ensure that the design, implementation and maintenance of landscape and visual mitigation measures are fully achieved. The landscape and visual monitoring is carried out on site within the environmental site inspection. The monitoring procedures and criteria as described in the EM&A Manual were adopted.

Event and Action Plan

The EAP for landscape and visual monitoring is presented in *Annex I*.

4.4 IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS

The Contractor had implemented environmental mitigation measures and requirements as stated in the EIA Report, the Environmental Permit and EM&A Manual. The implementation status during the reporting period is summarized in *Annex D4*.

4.5 MONITORING RESULTS

4.5.1 Air Quality

A total of 16 sets of 24-hour averaged and 48 sets of 1-hour averaged TSP measurements were carried out at AM3 during the reporting period. The monitoring data for 24-hour TSP and 1-hour TSP together with wind data and graphical presentations are presented in *Annex D5*.

The weather conditions during the monitoring period varied from fine to sunny. The local impacts near the monitoring stations of AM3 were mainly associated with vehicle emissions. No exceedance of Action and Limit Levels of 1-hr and 24-hr TSP was recorded during the reporting period.

4.5.2 Noise

A total of 13 sets of 30-minute construction noise measurements were carried out at the monitoring station NM2 during normal working hours of weekdays of the reporting period. 12 sets of 3 x 5-minute construction noise measurements were carried out during restricted hours (between 1900 and 0700 hours on weekdays, and any time on Sundays and public holidays) on 9, 14, 23 and 28 September 2014; 7, 12, 21, and 26 October 2014; and 4, 9, 18, and 23 November 2014. The monitoring results together with their graphical presentations are presented in *Annex D6*.

No exceedance of limit level was recorded during normal working hours; nevertheless, 7 numbers of exceedance of the limit level were recorded during restricted hours at NM2 on 9, 14 and 23 September 2014; 7, 21, and 26 October 2014; and 23 November 2014. Investigations had been conducted to identify the potential causes for the recorded noise level. A summary of the investigation results is presented in *Section 4.7.1*.

4.5.3 Landscape and Visual

Implementation and maintenance of landscape and visual mitigation measures are fully achieved and no major findings were observed during the reporting period.

4.5.4 Cultural Heritage

No vibration monitoring is required for this reporting period as blasting of tunnel / shaft works was not carried out in the vicinity of the historical buildings listed in EM&A manual.

4.5.5 Waste Management

Waste generated from this Project includes inert C&D materials, non-inert C&D materials and marine deposit. Non-inert C&D materials are made up of general refuse, steel and paper/cardboard packaging materials. Steel materials generated from the project are also grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials. No marine deposit requiring type 1, type 2, or type 3 disposal methods was generated.

The inert C&D materials and general refuse generated from the Project were disposed of at Tuen Mun Area 38/Tseung Kwan O Area 137 Fill Bank/Chai Wan Barging Point and SENT Landfill, respectively.

The quantity of different types of wastes generated in the reporting period has been shown in the Monthly Summary Waste Flow Table prepared by the Contractor (*Annex J*).

4.6 ENVIRONMENTAL SITE INSPECTION

Weekly site inspections were carried out by the representatives of the Contractor, Engineer and ET. Site inspections were conducted 4, 11 and 18 September 2014; 3, 9, 16, and 23 October 2014; and 6, 13, and 20 November 2014. Due to the scheduled SSEMC meetings on 24 September 2014, 29 October 2014 and 26 November 2014 immediately after the joint inspections, inspections were not arranged for the WCE site on those days. No non-compliance was recorded during the site inspections.

Observations during site inspections and follow-up actions in the reporting period are presented in *Annex K*. All the follow-up actions requested by IEC and Contractor's ET during the site inspections were undertaken as reported by the Contractor and confirmed in the following weekly site inspection conducted during the reporting period.

4.7 ENVIRONMENTAL NON-CONFORMANCE

4.7.1 Summary of Monitoring Exceedance

No exceedance of the Action and Limit Levels of 1-hour TSP and 24-hour averaged TSP were recorded at monitoring stations during the reporting period.

7 numbers of exceedances of noise Limit Level during restricted hours were reported at NM2 on 9, 14 and 23 September 2014; 7, 21, and 26 October 2014; and 23 November 2014. The exceedances were investigated and they are detailed in *Annex D7*. Referring to the works summary provided by the Contractor, no noisy outdoor construction activities were conducted at the Wan Chai East Production and Drop Shafts during the noise monitoring sessions. Other potential noise source was also identified in the vicinity (i.e., traffic) to contribute to the measured noise level. In view of no noisy outdoor construction works were carried out and contribution from other potential noise sources in vicinity (i.e., traffic), it is considered that the exceedances were not due to the Contract 23 construction works. However, the Contractor was reminded to adhere strictly to the Construction Noise Mitigation Plan and to implement all relevant noise mitigation measures to avoid exceedance of noise limit levels or causing nuisance.

4.7.2 Summary of Environmental Non-Compliance

No non-compliance event was recorded during the reporting period.

4.7.3 Summary of Environmental Complaint

No complaint was received during the reporting period. The cumulative complaints log is shown in *Annex D8*.

4.7.4 Summary of Environmental Summon and Successful Prosecution

No summon or prosecution was received during the reporting period. The cumulative summon and prosecution log is shown in *Annex D8*.

5 CENTRAL DROP SHAFT

5.1 CONSTRUCTION ACTIVITIES DURING THE REPORTING PERIOD

A summary of the major construction activities undertaken in this reporting period is shown in *Table 5.1*. The location of the construction activities is shown in *Annex E1*.

Table 5.1 Summary of Construction Activities Undertaken from 1 September 2014 to 30 November 2014 at Central Drop Shaft

Construction Activities Undertaken
• Central Junction lining construction; and • Upper shaft construction.

5.2 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS

A summary of the relevant permits, licences, and/or notifications on environmental protection for this Project in this reporting period is presented in *Table 5.2*.

Table 5.2 Summary of Environmental Licensing, Notification and Permit Status at Central Drop Shaft

Permit/ Licences/ Notification	**Reference**	**Validity Period**	**Remarks**
Wastewater Discharge License	Central PTW Drop Shaft WT0005131-2009	09 October 2009 - 31 October 2014	Superceded by Wastewater Discharge License No. WT00020031-2014
	Central PTW Drop Shaft WT00020031-2014	30 September 2014 – 31 October 2019	--
Chemical Waste Producer Registration	Central PTW Drop Shaft 5213-115-G2347-06	Throughout the contract	--
Construction Noise Permit (CNP)	Central PTW Drop Shaft GW-RS0787-14	19 August 2014 – 17 February 2015	--

5.3 ENVIRONMENTAL MONITORING REQUIREMENTS

5.3.1 *Air Quality Monitoring*

Monitoring Location

In accordance with the EM&A Manual, 24-hour and 1-hour averaged TSP levels should be conducted at designated monitoring stations. Since access to some of the proposed monitoring locations stated in the EM&A Manual were

rejected or not available, alternative locations, therefore, were proposed and agreed by the ER and the IEC. The construction air quality monitoring station for this Contract is listed in *Table 5.3* and shown in *Annex E2*.

Table 5.3 Construction Phase Air Monitoring Location at Central Drop Shaft

Worksite	Construction Air Quality Monitoring Station			
	ID in EM&A Manual	ID	Location	Remark
Central	-	AM4_2	A Location within the DSD Central PTW	• Access to Sheung Wan Fire Station (CM_C1) was rejected. • All possible locations along Connaught Road West and Connaught Road East have been exhausted and no suitable location is identified due to rejection by the premise owner, security reason, without guaranteed access or inaccessible. AM4 is the alternative location. • Since air monitoring station AM4 has to return to DSD for other Work Contract, AM4_2 is the alternative location to replace AM4.

Monitoring Parameters, Frequency and Programme

Air quality monitoring was conducted in accordance with the requirements stipulated in the EM&A Manual (*Table 5.4*).

Table 5.4 TSP Monitoring Parameter and Frequency at Central Drop Shaft

Parameter	Frequency
24-hour averaged TSP	Once every 6 days
1-hour averaged TSP	3 times every 6 days

Monitoring Equipment

Continuous 24-hour and 1-hour TSP monitoring were performed using HVS with appropriate sampling inlets installed, located at the designated monitoring station. The performance specification of HVS complied with the standard method "*Determination of Suspended Particulate Matter in the Atmosphere (High Volume Method)*" as stipulated in *US EPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50 Appendix B)*. The equipment that was deployed for the 24-hour and 1-hour average TSP monitoring is listed in *Annex E5*.

Monitoring Methodology

Installation

The setup location of the HVS at monitoring stations was listed in *Table 5.3*. The HVS was free-standing with no obstruction.

The following criteria were considered in the installation of the HVSs:

- appropriate support to secure the samplers against gusty wind were provided at AM4;
- a minimum of 2 m separation from walls, parapets and penthouses was required for rooftop samplers;
- no furnace or incinerator flues were nearby;
- airflow around the sampler was unrestricted; and
- permission was obtained to set up the samplers and to gain access to the monitoring stations.

Preparation of Filter Papers

- glass fibre filters were labelled and sufficient filters that were clean and without pinholes were selected;
- all filters were equilibrated in the conditioning environment for 24 hours before weighing. The conditioning environment temperature was around 25 °C and not variable by more than ± 3 °C; the relative humidity (RH) was 40%; and
- SGS Hong Kong Ltd, a HOKLAS accredited laboratory, implements comprehensive quality assurance and quality control programmes.

Field Monitoring

- the power supply was checked to ensure that the HVSs were working properly;
- the filter holder and the area surrounding the filter were cleaned;
- the filter holder was removed by loosening the foul bolts and a new filter, with stamped number upward, on a supporting screen was aligned carefully;
- the filter was properly aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter;
- the swing bolts were fastened to hold the filter holder down to the frame. The pressure applied should be sufficient to avoid air leakage at the edges;

- then the shelter lid was closed and secured with the aluminium strip;
- the HVSs were warmed-up for about 5 minutes to establish run-temperature conditions;
- a new flow rate record sheet was set into the flow recorder;
- the flow rates of the HVSs were checked and adjusted to between 1.22 - 1.37 m^3min^{-1} which were within the range specified in the EM&A Manual (i.e. 0.6 – 1.7 m^3min^{-1});
- the programmable timer was set for a sampling period of 24 hours ± 1 hour, and the starting time, weather condition and the filter number were recorded;
- the initial elapsed time was recorded;
- at the end of sampling, the sampled filter was removed carefully and folder in half-length so that only surfaces with collected particulate matter were in contact;
- it was then placed in a clean plastic envelope and sealed;
- all monitoring information was recorded on a standard data sheet; and
- filters were sent to SGS Hong Kong Ltd for analysis.

Maintenance and Calibration

- the HVSs and their accessories were maintained in good working condition, such as replacing motor brushes routinely and checking electrical wiring to ensure a continuous power supply; and
- the flow rate of each HVS with mass flow controller were calibrated using an orifice calibrator. Initial calibrations of the dust monitoring equipment were conducted upon installation and prior to commissioning. Five-point calibration was carried out for HVSs using CM-AIR-43 Calibration Kit. HVSs are calibrated on a bi-monthly basis. The calibration record for the HVS is given in *Annex H*.

Wind Data Monitoring

The nearest weather stations to at Central Drop Shaft are King's Park Station and Green Island Station. Average wind data (wind speed and wind direction) during the monitoring period were obtained from the meteorological stations at Green Island and King's Park of the Hong Kong Observatory (HKO) and is presented in *Annex E5*.

Action and Limit Levels

The Action and Limit levels have been established and presented in *Table 5.5*.

Table 5.5 Action and Limit Levels for Air Quality at Central Drop Shaft

Parameter	Air Monitoring Station	Action Level, μgm^{-3}	Limit Level, μgm^{-3}
24-hour TSP	AM4	211	260
1-hour TSP	AM4	393	500

Event and Action Plan

The EAP for air quality monitoring is presented in *Annex I.*

5.3.2 Noise Monitoring

Monitoring Location

In accordance with the EM&A Manual, monitoring of construction noise impact should be conducted at the designated monitoring stations. Since access to some of the proposed monitoring locations stated in the EM&A Manual were rejected or not available; alternative locations, therefore, were proposed and agreed by the ER and the IEC. The construction noise monitoring locations for this Contract are listed in *Table 5.6* and are shown in *Annex E2*.

Table 5.6 Construction Phase Noise Monitoring Station at Central Drop Shaft

Worksite	Construction Noise Monitoring Station				
	ID in EM&A Manual	ID	Location	Type of Measurement	Remark
Central	-	NM3	Rooftop of Goldfield Building	Façade	• Chi Cheung Building (M4) is not accessible.

Monitoring Parameters, Frequency and Programme

Weekly construction noise monitoring was conducted in accordance with the requirements stipulated in the EM&A Manual. Additional noise monitoring were also conducted as per required in the EM&A Manual when works were carried out during restricted periods.

The construction noise levels were measured in terms of A-weighted equivalent continuous sound pressure level (L_{eq}) in decibels dB(A). $L_{Aeq(30min)}$ were used as the monitoring parameter for the time period in between 0700 – 1900 hours on normal weekdays, and $L_{Aeq\ (5min)}$ were used as the monitoring parameter for all restricted periods. Supplementary information for data auditing, two statistical sound levels L_{10} and L_{90}; the levels exceeded for 10 and 90 percent of the time respectively, were also recorded during the monitoring for reference. The measured noise levels were logged in every 5 minutes throughout the impact monitoring period.

Monitoring Equipment and Methodology

Construction noise measurements were conducted in accordance with the calibration and measurement procedures as stated in *Annex – General Calibration and Measurement Procedures* of *Technical Memorandum on Noise from Construction Work other than Percussive Piling* (*GW-TM*) issued under the *Noise Control Ordinance* (*NCO*) (Cap.400).

The sound level meters and calibrator used for the noise measurement, as listed in *Annex E6*, complies with IEC 651: 1979 and 804:1985 (Type 1) specification. The calibration certificates of the sound level meters are included in *Annex H*.

Immediately prior to and following the noise measurements, the accuracy of the measurement equipment was checked using an acoustic calibrator generating a known sound pressure level at a known frequency.

Measurements were accepted as the calibration level from before and after the noise measurement agree to within 1.0 dB.

Action and Limit Levels

The action and limit levels for the noise monitoring during different monitoring periods are summarized in *Table 5.7*.

Table 5.7 Action and Limit Levels for Noise Monitoring at Central Drop Shaft

Noise Monitoring Location	Measurement Parameter	Noise Criteria (dB(A))	Remark
NM3	$L_{Aeq\ (30mins)}$	75	Normal working hours during weekdays
	$L_{Aeq\ (5mins)}$	70	Evening (1900-2300); and Sundays and public holidays (0700-2300)
	$L_{Aeq\ (5mins)}$	55	Night-time (2300-0700)

Event and Action Plan

The EAP for noise monitoring is presented in *Annex I*.

5.3.3 Cultural Heritage

No vibration monitoring is required for this reporting period as blasting of tunnel / shaft works was not carried out in the vicinity of the historical buildings listed in EM&A manual.

5.3.4 Landscape and Visual Monitoring

In accordance with the EM&A Manual, landscape and visual monitoring is required to ensure that the design, implementation and maintenance of landscape and visual mitigation measures are fully achieved. The landscape and visual monitoring is carried out on site within the environmental site

inspection. The monitoring procedures and criteria as described in the EM&A Manual were adopted.

Event and Action Plan

The EAP for landscape and visual monitoring is presented in *Annex I*.

5.4 IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS

The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Report, the Environmental Permit and EM&A Manual. The implementation status during the reporting period is summarised in *Annex E4*.

5.5 MONITORING RESULTS

5.5.1 Air Quality

A total of 16 sets of 24-hour averaged and 48 sets of 1-hour averaged TSP measurements were carried out at AM4_2 during the reporting period. The monitoring data for 24-hour TSP and 1-hour TSP together with wind data and graphical presentations are presented in *Annex E5*.

The weather conditions during the monitoring period varied from fine to sunny. The local impacts near the monitoring stations of AM4_2 were mainly associated with vehicle emissions.

No exceedance of Action and Limit Levels of 1 hr and 24 hr was recorded during the reporting period.

5.5.2 Noise

A total of 13 sets of 30-minute construction noise measurements were carried out at the monitoring station NM3 during normal weekdays of the reporting period. The monitoring results together with graphical presentations are presented in *Annex E6*. The local impacts observed near the monitoring stations of NM3 were traffic noise from Connaught Road Central.

No exceedance of Action and Limit Levels of construction noise was recorded during the reporting period.

5.5.3 Landscape and Visual

Implementation and maintenance of landscape and visual mitigation measures are fully achieved and no major finding was observed during the reporting period.

5.5.4 Cultural Heritage

No vibration monitoring is required for this reporting period as blasting of tunnel / shaft works was not carried out in the vicinity of the historical buildings listed in EM&A manual.

5.5.5 Waste Management

Waste generated from this Project includes inert C&D materials, non-inert C&D materials and marine deposit. Non-inert C&D materials are made up of general refuse, steel and paper/cardboard packaging materials. Steel materials generated from the project are also grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials. No marine deposit requiring type 1, type 2, or type 3 disposal methods was generated.

The inert C&D materials and general refuse generated from the Project were disposed of at Tuen Mun Area 38/Tseung Kwan O Area 137 Fill Bank/Chai Wan Barging Point and SENT Landfill respectively.

The quantity of different types of wastes generated in the reporting period has been shown in the Monthly Summary Waste Flow Table prepared by the Contractor (*Annex J*).

5.6 ENVIRONMENTAL SITE INSPECTION

Weekly site inspections were carried out by the representatives of the Contractor, Engineer and the ET. Site inspections were conducted on 4, 11 and 18 September 2014; and 3 and 9 October 2014. Since there was no major construction works taking place on 24 September 2014; 16, 23 and 29 October 2014; and November 2014, no site inspection was conducted on those days. Furthermore, because of the scheduled SSEMC meetings on 24 September 2014, 29 October 2014, and 26 November 2014 immediately after the joint inspections, inspections were not arranged for the Central site on those days.

Observations during site inspections and follow-up actions in the reporting period are presented in *Annex K*. All the follow-up actions requested by IEC and Contractor's ET during the site inspections were undertaken as reported by the Contractor and confirmed in the following weekly site inspection conducted during the reporting period.

5.7 ENVIRONMENTAL NON-CONFORMANCE

5.7.1 Summary of Monitoring Exceedance

No exceedance of the Action and Limit Levels of 1-hour TSP and the 24-hour averaged TSP were recorded at the monitoring station during the reporting period.

No exceedance of the Action and Limit Levels of noise was recorded at the monitoring station during the reporting period.

5.7.2 Summary of Environmental Non-Compliance

No non-compliance event was recorded during the reporting period.

5.7.3 Summary of Environmental Complaint

No complaint was received during the reporting period. The cumulative complaints log is shown in *Annex E7*.

5.7.4 Summary of Environmental Summon and Successful Prosecution

No summon or prosecution was received during the reporting period. The cumulative summon and prosecution log is shown in *Annex E7*.

6 SAI YING PUN JUNCTION SHAFT

6.1 CONSTRUCTION ACTIVITIES DURING THE REPORTING PERIOD

A summary of the major construction activities undertaken in this reporting period is shown in *Table 6.1*. The location of the construction activities is shown in *Annex F1*.

Table 6.1 Summary of Construction Activities Undertaken from 1 September 2014 to 30 November 2014 at Sai Ying Pun Junction Shaft

Construction Activities Undertaken
• Telescopic foamwork preassemble and trail run; • Fiberglass foamwork erection for permanent invert lining; • Foamwork preparation for invert lining; • Pre-excavation grouting; • Drilling and blasting; • Permanent invert and vault lining construction; • Base preparation and blinding for tunnel lining construction; and • Invert shutter and concrete pumping system set up.

6.2 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS

A summary of the relevant permits, licences, and/or notifications on environmental protection for this Project in this reporting period is presented in *Table 6.2*.

Table 6.2 Summary of Environmental Licensing, Notification and Permit Status at Sai Ying Pun Junction Shaft

Permit/ Licences/ Notification	Reference	Validity Period	Remarks
Wastewater Discharge License	Sai Ying Pun Junction Shaft WT00006884-2010	11 June 2010 - 31 October 2014	--
	Sai Ying Pun Junction Shaft WT00020318-2014	10 November 2014 – 31 October 2019	--
Chemical Waste Producer Registration	Sai Ying Pun Junction Shaft 5213-112-G2347-05	Throughout the Contractor	--
Construction Noise Permit (CNP)	Fung Mat Road, Sai Ying Pun Junction Shaft GW-RS0780-14	4 August 2014 –3 February 2015	--

6.3 ENVIRONMENTAL MONITORING REQUIREMENTS

6.3.1 Air Quality Monitoring

Due to contractual arrangements, air quality monitoring was implemented by the Environmental Team of Contract No. *DC/2007/24 of Harbour Area Treatment*

Scheme Stage 2A (HATS2A) - Construction of Sewage Conveyance System from Aberdeen to Stonecutters Island.

Monitoring Location

In accordance with the EM&A Manual, 24-hour and 1-hour averaged TSP levels should be conducted at designated monitoring stations. Since access to some of the proposed monitoring locations stated in the EM&A Manual were rejected or not available, alternative locations, therefore, were proposed and agreed by the ER and the IEC. The construction air quality monitoring station for this Contract is listed in *Table 6.3* and shown in *Annex F2*.

Table 6.3 Construction Phase Air Monitoring Location at Sai Ying Pun Junction Shaft

Worksite	Construction Air Quality Monitoring Station			
	ID in EM&A Manual	ID	Location	Remark
Fung Mat Street	CM_FM1	AM5	Western Wholesale Food Market	-

Monitoring Parameters, Frequency and Programme

Air quality monitoring was conducted in accordance with the requirements stipulated in the EM&A Manual (*Table 6.4*).

Table 6.4 TSP Monitoring Parameter and Frequency at Sai Ying Pun Junction Shaft

Parameter	Frequency
24-hour averaged TSP	Once every 6 days
1-hour averaged TSP	3 times every 6 days

Wind Data Monitoring

The nearest weather stations to Sai Ying Pun Junction Shaft are King's Park Station and Green Island Station. Average wind data (wind speed and wind direction) during the monitoring period were obtained from the meteorological stations at King's Park and Green Island of the Hong Kong Observatory (HKO) and are presented in *Annex F5*.

Action and Limit Levels

The Action and Limit levels have been established and presented in *Table 6.5*.

Table 6.5 Action and Limit Levels for Air Quality at Sai Ying Pun Junction Shaft

Parameter	Air Monitoring Station	Action Level, μgm^{-3}	Limit Level, μgm^{-3}
24-hour averaged TSP	AM5	188	260
1-hour averaged TSP	AM5	332	500

Event and Action Plan

The EAP for air quality monitoring is presented in *Annex I*.

6.3.2 Noise Monitoring

Monitoring Location

In accordance with the EM&A Manual, monitoring of construction noise impact should be conducted at designated monitoring stations. Since access to some of the proposed monitoring locations stated in the EM&A Manual were rejected or not available; alternative locations, therefore, were proposed and agreed by the ER and the IEC. The construction noise monitoring location for this Contract is listed in *Table 6.6* and is shown in *Annex F2*.

Table 6.6 Construction Phase Noise Monitoring Station at Sai Ying Pun Junction Shaft

Worksite	**Construction Noise Monitoring Station**				
	ID in EM&A Manual	**ID**	**Location**	**Type of Measurement**	**Remark**
Fung Mat Road	M3	NM4	Rooftop of Block A, Kwan Yick Building Phase III	Façade	-

Monitoring Parameters, Frequency and Programme

Weekly construction noise monitoring was conducted in accordance with the requirements stipulated in the EM&A Manual. Additional noise monitoring were also conducted as per required in the EM&A Manual when works were carried out during restricted periods.

The construction noise levels were measured in terms of A-weighted equivalent continuous sound pressure level (L_{eq}) in decibels dB(A). $L_{Aeq\ (30min)}$ were used as the monitoring parameter for the time period in between 0700 – 1900 hours on normal weekdays, and $L_{Aeq\ (5min)}$ were used as the monitoring parameter for all restricted periods. Supplementary information for data auditing, two statistical sound levels L_{10} and L_{90}; the levels exceeded for 10 and 90 percent of the time respectively, were also recorded during the monitoring for reference. The measured noise levels were logged in every 5 minutes throughout the impact monitoring period.

Monitoring Equipment and Methodology

Construction noise measurements were conducted in accordance with the calibration and measurement procedures as stated in *Annex – General Calibration and Measurement Procedures* of *Technical Memorandum on Noise from Construction Work other than Percussive Piling* (*GW-TM*) issued under the *Noise Control Ordinance* (*NCO*) (Cap.400).

The sound level meters and calibrator used for the noise measurement, as listed in *Annex F*, complies with IEC 651: 1979 and 804:1985 (Type 1) specification. The calibration certificates of the sound level meters are included in *Annex H*.

Immediately prior to and following the noise measurements, the accuracy of the measurement equipment was checked using an acoustic calibrator generating a known sound pressure level at a known frequency.

Measurements were accepted as the calibration level from before and after the noise measurement agree to within 1.0 dB.

Action and Limit Levels

The action and limit levels for the noise monitoring during different monitoring periods are summarized in *Table 6.7.*

Table 6.7 Action and Limit Levels for Noise Monitoring at Sai Ying Pun Junction Shaft

Noise Monitoring Location	Measurement Parameter	Noise Criteria (dB(A))	Remark
NM4	$L_{Aeq\ (30mins)}$	75	Normal working hours during weekdays
	$L_{Aeq\ (5mins)}$	70	Evening (1900-2300); and Sundays and public holidays (0700-2300)
	$L_{Aeq\ (5mins)}$	55	Night-time (2300-0700)

Event and Action Plan

The Event and Action Plan (EAP) for noise monitoring is presented in *Annex I*.

6.3.3 Cultural Heritage

In order to prevent potential damage to historical buildings and structures, maximum limits for safe vibration levels have been set at 25 mm/s. This vibration limit has been applied in controlling vibrations due to blasting operations in Hong Kong by CEDD and MTRC. Vibration monitoring shall be undertaken during blasting for tunnel, shafts and effluent conveyance system in the vicinity of the buildings / structures as a requirement of EM&A programme in such a way that a maximum vibration level of 25 mm/s is not exceeded. To ensure that this maximum limit is not exceeded, a monitoring schedule shall be implemented. The monitoring should be undertaken through the use of measures such as tell tales and tilting monitoring points to the historic buildings and structures on a weekly basis. If vibration levels are found to exceed the maximum limit of 25 mm/s, immediate corrective action shall be taken by reducing the rate of forward progress, as necessary, to bring PPV levels within compliance. Monitoring results should be submitted to the engineer in an agreed format within two days of each monitoring undertaken.

6.3.4 Landscape and Visual Monitoring

In accordance with the EM&A Manual, landscape and visual monitoring is required to ensure that the design, implementation and maintenance of landscape and visual mitigation measures are fully achieved. The landscape and visual monitoring is carried out on site within the environmental site

inspection. The monitoring procedures and criteria as described in the EM&A Manual were adopted.

Event and Action Plan

The EAP for landscape and visual monitoring is presented in *Annex I*.

6.4 IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS

The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Report, the Environmental Permit and EM&A Manual. The implementation status during the reporting period is summarized in *Annex F4*.

6.5 MONITORING RESULTS

6.5.1 *Air Quality*

A total of 16 sets of 24-hour and 48 sets of 1-hour TSP measurements were carried out at AM5 during the reporting period. The monitoring data for 24-hour TSP and 1-hour averaged TSP together with wind data and graphical presentations are presented in *Annex F5*. The weather condition during the monitoring period varied from fine to sunny. The local impacts near the monitoring stations of AM5 were mainly associated with vehicle emissions.

No exceedance of Action and Limit Levels of 1-hr and 24-hr TSP were recorded during the reporting period.

6.5.2 *Noise*

A total of 13 sets of 30-minute construction noise measurements were carried out at the monitoring station NM4 during normal working hours of weekdays of the reporting period. 12 sets of 3 x 5-minute construction noise measurements were carried out during restricted hours (between 1900 and 0700 hours on weekdays, and any time on Sundays and public holidays) on 9, 14, 23 and 28 September 2014; 7, 12, 21, and 26 October 2014; 4, 9, 18, and 23 November 2014 during the reporting period. The monitoring results together with graphical presentations are presented in *Annex F6*. The local impacts observed near the monitoring stations of NM4 were noise from traffic movement on nearby roads.

No exceedance of limit level for noise monitoring during both normal and restricted hours were recorded.

6.5.3 *Landscape and Visual*

Implementation and maintenance of landscape and visual mitigation measures are fully achieved and no major findings were observed during the reporting period.

6.5.4 Cultural Heritage

No vibration monitoring was conducted for this reporting period as the blasting of tunnel/shaft works has not commenced in the vicinity of the historical buildings listed in the EM&A Manual.

6.5.5 Waste Management

Waste generated from this Project includes inert C&D materials, non-inert C&D materials and marine deposit. Non-inert C&D materials are made up of general refuse, steel and paper/cardboard packaging materials. Steel materials generated from the project are also grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials. No marine deposit requiring type 1, type 2, or type 3 disposal methods was generated. The inert C&D materials and general refuse generated from the Project were disposed of at Tuen Mun Area 38/Tseung Kwan O Area 137 Fill Bank/Chai Wan Barging Point and SENT Landfill respectively.

The quantity of different types of wastes generated in the reporting period has been shown in the Monthly Summary Waste Flow Table prepared by the Contractor (*Annex J*).

6.6 ENVIRONMENTAL SITE INSPECTION

Weekly site inspections were carried out by the representatives of the Contractor, Engineer and the ET. Site inspections were conducted on 4, 11, 18 and 24 September 2014; 3, 9, 16, 23, and 29 October 2014; 6, 13, 20, and 26 November 2014. The representative of the IEC joined the site inspections on 24 September 2014, 29 October 2014, and 26 November 2014. There was no non-compliance recorded during the site inspections. Observations during site inspections and follow-up actions in the reporting period are presented in *Annex K*. All follow-up actions requested by the IEC and the Contractor's ET during the site inspections were undertaken as reported by the Contractor and confirmed in the following weekly site inspection conducted during the reporting period.

6.7 ENVIRONMENTAL NON-CONFORMANCE

6.7.1 Summary of Monitoring Exceedance

No exceedance of the Action and Limit Levels of 1-hour TSP and 24-hour averaged TSP was recorded at monitoring stations during the reporting period.

No exceedance of the Noise Limit Levels was recorded at monitoring station during both normal working hours and restricted hours in the reporting period.

6.7.2 Summary of Environmental Non-Compliance

No non-compliance event was recorded during the reporting period.

6.7.3 Summary of Environmental Complaint

No complaint was recorded during the reporting period.

The cumulative complaint log is shown in *Annex F7*.

6.7.4 Summary of Environmental Summon and Successful Prosecution

No summon or prosecution was received during the reporting period. The cumulative summon and prosecution log is shown in *Annex F7*.

7.1 CONSTRUCTION ACTIVITIES DURING THE REPORTING PERIOD

A summary of the major construction activities undertaken in this reporting period is shown in *Table 7.1*. The locations of the construction activities are shown in *Annex G1*.

Table 7.1 Summary of Construction Activities Undertaken from 1 September 2014 to 30 November 2014 at Stonecutters Island Production and Riser Shafts

Construction Activities Undertaken
Riser Shaft
• Construction of shaft permanent lining.
Production Shaft
• Base preparation & blinding for tunnel lining; • Telescopic foamwork preassemble and trail run; • Fiberglass foamwork erection for permanent invert lining; • Permanent invert and vault lining construction; • Pre-excavation grouting; and • Drilling and blasting;

7.2 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS

A summary of the relevant permits, licences, and/or notifications on environmental protection for this Project in this reporting period is presented in *Table 7.2*.

Table 7.2 Summary of Environmental Licensing, Notification and Permit Status at Stonecutters Island Production and Riser Shafts

Permit/ Licences/ Notification	**Reference**	**Validity Period**	**Remarks**
Wastewater Discharge License	Stonecutters Island Production Shaft and Riser Shaft WT00005069-2009	3 November 2010 – 31 October 2014	Superceded by Wastewater Discharge License No. WT00020219-2014
	Stonecutters Island Production Shaft and Riser Shaft WT00020219-2014	30 October 2014 – 31 October 2019	--
Chemical Waste Producer Registration	Stonecutters Island Production Shaft and Riser Shaft 5213-269-G2449-07	Throughout the Contract	--
Construction Noise Permit (CNP)	Stonecutters Island Production Shaft and Riser Shaft GW-RW0238-14	23 April 2014 – 22 October 2014	superceded by GW-RW0798-14
	Stonecutters Island Production Shaft and	23 October 2014 – 22 April 2015	

	Riser Shaft GW-RW0798-14		
	Stonecutters Island Area K-1 GW-RW0460-14	9 July 2014 – 8 January 2015	--

7.3 ENVIRONMENTAL MONITORING REQUIREMENTS

7.3.1 Air Quality Monitoring

Monitoring Location

In accordance with the EM&A Manual, 24-hour and 1-hour averaged TSP levels should be conducted at designated monitoring stations. Since access to some of the proposed monitoring locations stated in the EM&A Manual were rejected or not available, alternative locations, therefore, were proposed and agreed by the ER and the IEC. The construction air quality monitoring station for this Contract is listed in *Table 7.3* and shown in *Annex G2*.

Table 7.3 Construction Phase Air Monitoring Location at Stonecutters Island Production and Riser Shafts

Worksite	**Construction Air Quality Monitoring Station**			
	ID in EM&A Manual	**ID**	**Location**	**Remark**
SCISTW	-	AM6	Works Site Boundary	• Power Access supply for operation of HVS was not feasible to the rooftop of Government Dockyard Offices (CM_SCI1). • For COSCO HIT Terminal (CM_SCI2), access application was verbally rejected. • Club House (CM_SCI3) is blocked by a high building which will affect the dust levels during measurement. • Work Site Boundary (near Ngong Shuen Chau Barracks Group 2 (CM_SCI4) was designed for the HATS2A Disinfection Facilities works and the station is separated by a small hill. • Baseline dust monitoring data measured under HATS2A – Provision of Disinfection Facilities at SCISTW will also be obtained for the establishment of the action level for the impact monitoring.

Monitoring Parameters, Frequency and Programme

Air quality monitoring was conducted in accordance with the requirements stipulated in the EM&A Manual (*Table 7.4*).

Table 7.4 ***TSP Monitoring Parameter and Frequency at Stonecutters Island Production and Riser Shafts***

Parameter	Frequency
24-hour averaged TSP	Once every 6 days
1-hour averaged TSP	3 times every 6 days

Monitoring Equipment

Continuous 24-hour and 1-hour averaged TSP monitoring were performed using HVS with appropriate sampling inlets installed, located at the designated monitoring station. The performance specification of HVS complied with the standard method "*Determination of Suspended Particulate Matter in the Atmosphere (High Volume Method)*" as stipulated in *US EPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50 Appendix B)*. The equipment that was deployed for the 24-hour and 1-hour averaged TSP monitoring is listed in *Annex G5*.

Monitoring Methodology

Installation

The setup location of the HVS at monitoring station was listed in *Table 7.3*. The HVS was free-standing with no obstruction.

The following criteria were considered in the installation of the HVSs:

- appropriate support to secure the samplers against gusty wind were provided at AM6;
- a minimum of 2 m separation from walls, parapets and penthouses was required for rooftop samplers;
- no furnace or incinerator flues were nearby;
- airflow around the sampler was unrestricted; and
- permission was obtained to set up the samplers and to gain access to the monitoring stations.

Preparation of Filter Papers

- glass fibre filters were labelled and sufficient filters that were clean and without pinholes were selected;
- all filters were equilibrated in the conditioning environment for 24 hours before weighing. The conditioning environment temperature was around 25 °C and not variable by more than ± 3 °C; the relative humidity (RH) was 40%; and
- SGS Hong Kong Ltd, a HOKLAS accredited laboratory, implements comprehensive quality assurance and quality control programmes.

Field Monitoring

- the power supply was checked to ensure that the HVSs were working properly;
- the filter holder and the area surrounding the filter were cleaned;
- the filter holder was removed by loosening the foul bolts and a new filter, with stamped number upward, on a supporting screen was aligned carefully;
- the filter was properly aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter;
- the swing bolts were fastened to hold the filter holder down to the frame. The pressure applied should be sufficient to avoid air leakage at the edges;
- then the shelter lid was closed and secured with the aluminium strip;
- the HVSs were warmed-up for about 5 minutes to establish run-temperature conditions;
- a new flow rate record sheet was set into the flow recorder;
- the flow rates of the HVSs were checked and adjusted to between 1.22 - 1.37 m^3min^{-1} which were within the range specified in the EM&A Manual (i.e. 0.6 – 1.7 m^3min^{-1});
- the programmable timer was set for a sampling period of 24 hours ± 1 hour, and the starting time, weather condition and the filter number were recorded;
- the initial elapsed time was recorded;
- at the end of sampling, the sampled filter was removed carefully and folder in half-length so that only surfaces with collected particulate matter were in contact;
- it was then placed in a clean plastic envelope and sealed;
- all monitoring information was recorded on a standard data sheet; and
- filters were sent to SGS Hong Kong Ltd for analysis.

Maintenance and Calibration

- the HVSs and their accessories were maintained in good working condition, such as replacing motor brushes routinely and checking electrical wiring to ensure a continuous power supply; and
- the flow rate of each HVS with mass flow controller were calibrated using an orifice calibrator. Initial calibrations of the dust monitoring equipment

were conducted upon installation and prior to commissioning. Five-point calibration was carried out for HVSs using CM-AIR-43 Calibration Kit. HVSs are calibrated on a bi-monthly basis. The calibration record for the HVS is given in *Annex H*.

Wind Data Monitoring

The nearest weather station to Stonecutters Island Production and Riser Shafts is Tsing Yi Station. Average wind data (wind speed and wind direction) during the monitoring period were obtained from the meteorological station at Tsing Yi of the Hong Kong Observatory (HKO) and are presented in *Annex G5*.

Action and Limit Levels

The Action and Limit levels have been established and presented in *Table 7.5.* The baseline air monitoring data (24-hr and 1-hr TSP average) measured under *HATS2A – Provision of Disinfection Facilities at SCISTW* (DF) is also included to establish the Action Level at AM6.

Table 7.5 Action and Limit Levels for Air Quality at Stonecutters Island Production and Riser Shafts

Parameter	Air Monitoring Station	Action Level, μgm^{-3}	Limit Level, μgm^{-3}
24-hour averaged TSP	AM6 (with 24-hr TSP data from DF project)	196	260
1-hour averaged TSP	AM6 (with 1-hr TSP data from DF project)	346	500

Event and Action Plan

The EAP for air quality monitoring is presented in *Annex I.*

7.3.2 Noise Monitoring

Monitoring Location

In accordance with the EM&A Manual, monitoring of construction noise impact should be conducted at the designated monitoring stations. Since access to some of the proposed monitoring locations stated in the EM&A Manual were rejected or not available; alternative locations, therefore, were proposed and agreed by the ER and the IEC. The construction noise monitoring location for this Contract is listed in *Table 7.6* and is shown in *Annex G2*.

Table 7.6 Construction Phase Noise Monitoring Station at Stonecutters Island Production and Riser Shafts

Worksite	Construction Noise Monitoring Station				
	ID in EM&A Manual	ID	Location	Type of Measurement	Remark

Worksite	Construction Noise Monitoring Station				
	ID in EM&A Manual	ID	Location	Type of Measurement	Remark
SCISTW	-	NM5	A Location near the FSD Diving Rescue and Diving Training Centre near the Site Boundary	Free-Field (3dB(A) was added to the measured results)	• Access to FSD Fire Rescue and Diving Training Centre (M11) was declined. • NM5 is located next to the original proposed location.

Monitoring Parameters, Frequency and Programme

Weekly construction noise monitoring was conducted in accordance with the requirements stipulated in the EM&A Manual. Additional noise monitoring were also conducted as per required in the EM&A Manual when works were carried out during restricted periods.

The construction noise levels were measured in terms of A-weighted equivalent continuous sound pressure level (L_{eq}) in decibels dB(A). $L_{Aeq\ (30min)}$ were used as the monitoring parameter for the time period in between 0700 – 1900 hours on normal weekdays, and $L_{Aeq\ (5min)}$ were used as the monitoring parameter for all restricted periods. Supplementary information for data auditing, two statistical sound levels L_{10} and L_{90}; the levels exceeded for 10 and 90 percent of the time respectively, were also recorded during the monitoring for reference. The measured noise levels were logged every 5 minutes throughout the impact monitoring period.

Monitoring Equipment and Methodology

Construction noise measurements were conducted in accordance with the calibration and measurement procedures as stated in *Annex – General Calibration and Measurement Procedures* of *Technical Memorandum on Noise from Construction Work other than Percussive Piling* (*GW-TM*) issued under the *Noise Control Ordinance* (*NCO*) (Cap.400).

The sound level meters and calibrator used for the noise measurement, as listed in *Annex G6*, complies with IEC 651: 1979 and 804:1985 (Type 1) specification. The calibration certificates of the sound level meters are included in *Annex H*.

Immediately prior to and following the noise measurements, the accuracy of the measurement equipment was checked using an acoustic calibrator generating a known sound pressure level at a known frequency.

Measurements were accepted as the calibration level from before and after the noise measurement agree to within 1.0 dB. A correction of +3dB(A) was made to the free field measurement at NM5.

Action and Limit Levels

The action and limit levels for the noise monitoring during different monitoring periods are summarized in *Table 7.7*.

Table 7.7 Action and Limit Levels for Noise Monitoring at Stonecutters Island Production and Riser Shaft

Noise Monitoring Location	Measurement Parameter	Noise Criteria (dB(A))	Remark
NM5	$L_{Aeq\ (30mins)}$	75	Normal working hours during weekdays
	$L_{Aeq\ (5mins)}$	70	Evening (1900-2300); and Sundays and public holidays (0700-2300)
	$L_{Aeq\ (5mins)}$	55	Night-time (2300-0700)

Event and Action Plan

The EAP for noise monitoring is presented in *Annex I*.

7.3.3 Cultural Heritage

No vibration monitoring is required for this reporting period as blasting of tunnel / shaft works was not carried out in the vicinity of the historical buildings listed in EM&A manual.

7.3.4 Landscape and Visual Monitoring

In accordance with the EM&A Manual, landscape and visual monitoring is required to ensure that the design, implementation and maintenance of landscape and visual mitigation measures are fully achieved. The landscape and visual monitoring is carried out on site within the environmental site inspection. The monitoring procedures and criteria as described in the EM&A Manual were adopted.

Event and Action Plan

The Event and Action Plan (EAP) for landscape and visual monitoring is presented in *Annex I*.

7.4 IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS

The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Report, the Environmental Permit and EM&A Manual. The implementation status during the reporting period is summarized in *Annex G4*.

7.5 MONITORING RESULTS

7.5.1 Air Quality

A total of 16 sets of 24-hour and 48 sets of 1-hour averaged TSP measurements were carried out at AM6 during the reporting period. The monitoring data for 24-hour TSP and 1-hour averaged TSP together with wind data and graphical presentations are presented in *Annex G5*.

The weather condition during the monitoring period varied from sunny to cloudy. The local impacts near the monitoring stations of AM6 were mainly associated with vehicle emissions. No exceedance of Action and Limit Levels of 1-hr and 24-hr TSP was recorded during the reporting period.

7.5.2 Noise

A total of 14 sets of 30-minute construction noise measurements were carried out at the monitoring station NM5 during normal weekdays of the reporting period. 13 sets of 3 x 5-minute construction noise measurements were carried out during restricted hours (between 1900 and 0700 hours on weekdays, and any time on Sundays and public holidays) on 4, 10, 16 and 22 September 2014; 5, 14, 19, and 28 October 2014; 2, 11, 16, 25, and 30 November 2014 during the reporting period. The monitoring results together with graphical presentations are presented in *Annex G6*. The local impacts observed near the monitoring stations of NM5 included operations at the Government Dockyard, other construction sites activities and traffic within the SCI STW in the vicinity.

No exceedance of limit level for noise monitoring during both normal and restricted hours was recorded.

7.5.3 Landscape and Visual

Implementation and maintenance of landscape and visual mitigation measures are fully achieved and no major finding was observed during the reporting period.

7.5.4 Cultural Heritage

No vibration monitoring is required for this reporting period as blasting of tunnel / shaft works was not carried out in the vicinity of the historical buildings listed in EM&A manual.

7.5.5 Waste Management

Waste generated from this Project includes inert C&D materials, non-inert C&D materials and marine deposit. Non-inert C&D materials are made up of general refuse, steel and paper/cardboard packaging materials. Steel materials generated from the project are also grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials. No marine deposit requiring type 1, type 2, or type 3 disposal

methods was generated. The inert C&D materials and general refuse generated from the Project were disposed of at Tuen Mun Area 38/Tseung Kwan O Area 137 Fill Bank/Chai Wan Barging Point and SENT Landfill respectively.

The quantity of different types of wastes generated in the reporting period has been shown in the Monthly Summary Waste Flow Table prepared by the Contractor (*Annex J*).

7.6 ENVIRONMENTAL SITE INSPECTION

Weekly site inspections were carried out by the representatives of the Contractor, Engineer and the ET. Site inspections were conducted on 4, 11, 18 and 24 September 2014; 3, 9, 16, 23, and 29 October; 6, 13, 20, and 26 November. The representative of the IEC joined the site inspections on 24 September, 29 October 2014 and 26 November 2014. There was no non-compliance recorded during the site inspections.

Observations during site inspections and follow-up actions in the reporting period are presented in *Annex K*. All the follow-up actions requested by IEC and Contractor's ET during the site inspection were undertaken as reported by the Contractor and confirmed in the following weekly site inspection conducted during the reporting period.

7.7 ENVIRONMENTAL NON-CONFORMANCE

7.7.1 Summary of Monitoring Exceedance

No exceedance of the Action and Limit Levels of 1-hour TSP and 24-hour averaged TSP was recorded at monitoring stations during the reporting period.

No exceedance of Action and Limit Levels for noise monitoring during both normal and restricted hours was recorded.

7.7.2 Summary of Environmental Non-Compliance

No non-compliance event was recorded during the reporting period.

7.7.3 Summary of Environmental Complaint

No complaint was recorded during the reporting period.

The cumulative complaint log is shown in *Annex G7*.

7.7.4 Summary of Environmental Summon and Successful Prosecution

No summon or prosecution was received during the reporting period. The cumulative summon and prosecution log is shown in *Annex G7*.

8 CONCLUSIONS

This Environmental Monitoring and Audit (EM&A) Report presents the EM&A works undertaken during the period from 1 September 2014 to 30 November 2014 in accordance with EM&A Manual and the relevant requirements under EP-322/2008/G. The conclusions for different sites are summarised below.

8.1 NORTH POINT PRODUCTION AND DROP SHAFTS

No exceedance of the Action and Limit Levels of the 1-hour and 24-hour averaged TSP was recorded at the air quality monitoring stations during the reporting period.

No exceedance of Limit Levels for construction noise during normal working hours was recorded at the monitoring station during the reporting period.

No non-compliance event was recorded during the reporting period.

No complaint/summon/prosecution was received during the reporting period.

8.2 WAN CHAI EAST PRODUCTION AND DROP SHAFTS

No exceedance of the Action and Limit Levels of the 1-hour and 24-hour averaged TSP was recorded at the air quality monitoring stations during the reporting period.

No exceedance of noise limit level was recorded during normal working hours but limit level for construction noise was exceeded on 9, 14 and 23 September 2014; 7, 21, and 26 October 2014; and 23 November 2014 during the restricted hour at the monitoring station. The findings of the investigation of exceedance on 9, 14 and 23 September; 7, 21, and 26 October; and 23 November indicated that the exceedances were attributed to other potential noise sources (such as traffic) but not due to this construction as no outdoor construction activity was being carried out during the period.

No non-compliance/event was recorded during the reporting period.

There was no complaint/summon/prosecution received during the reporting period.

8.3 CENTRAL DROP SHAFT

No exceedance of the Action and Limit Levels of the 1-hour and 24-hour averaged TSP was recorded at the air quality monitoring stations during the reporting period.

No exceedance of the Action and Limit Levels for construction noise was recorded at the monitoring stations during the reporting period.

No non-compliance event was recorded during the reporting period.

There was no complaint/summon/prosecution received during the reporting period.

8.4 SAI YING PUN JUNCTION SHAFT

No exceedance of the Action and Limit Levels of the 1-hour and 24-hour average TSP was recorded at the air quality monitoring stations during the reporting period.

No exceedance of Limit Levels for construction noise was recorded at the monitoring station during the reporting period.

No exceedance of maximum limit for safe vibration level (25 mm/s) was recorded during the reporting period.

No non-compliance event was recorded during the reporting period.

8.5 STONECUTTERS ISLAND PRODUCTION AND RISER SHAFTS

No exceedance of the Action and Limit Levels of the 1-hour and 24-hour averaged TSP was recorded at the air quality monitoring stations during the reporting period.

No exceedance of Limit Levels for construction noise was recorded at the monitoring station during the reporting period.

No non-compliance event was recorded during the reporting period.

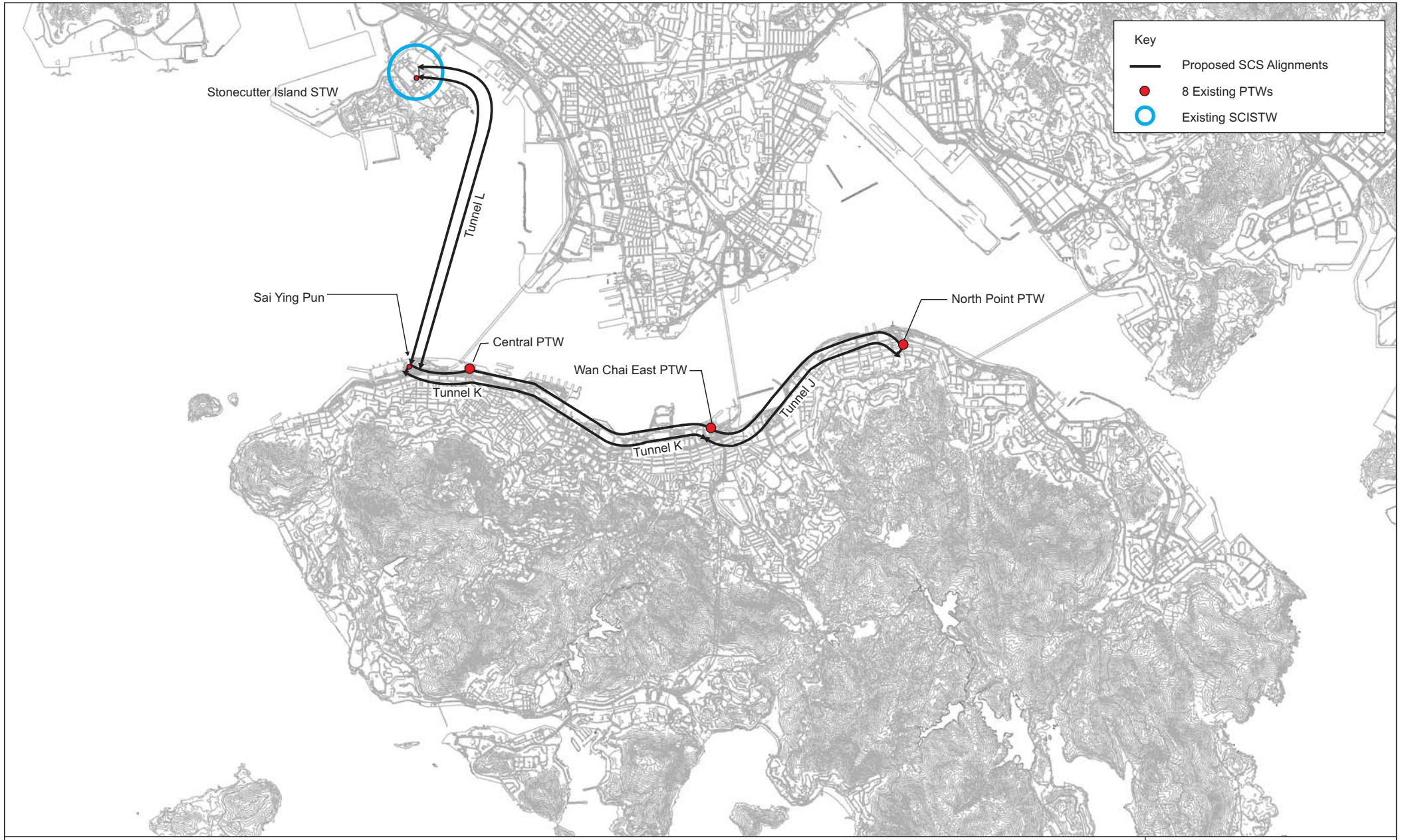
There was no summon/prosecution received during the reporting period.

8.6 OVERALL

The ET has followed the EM&A programme to monitor compliance status of environmental requirements and to verify proper implementation of all necessary mitigation measures.

Annex A

Locations of Works Areas



Annex A

General Layout Plan of HATS Stage 2A

FILE: 0104887h5
DATE: 17/05/2010

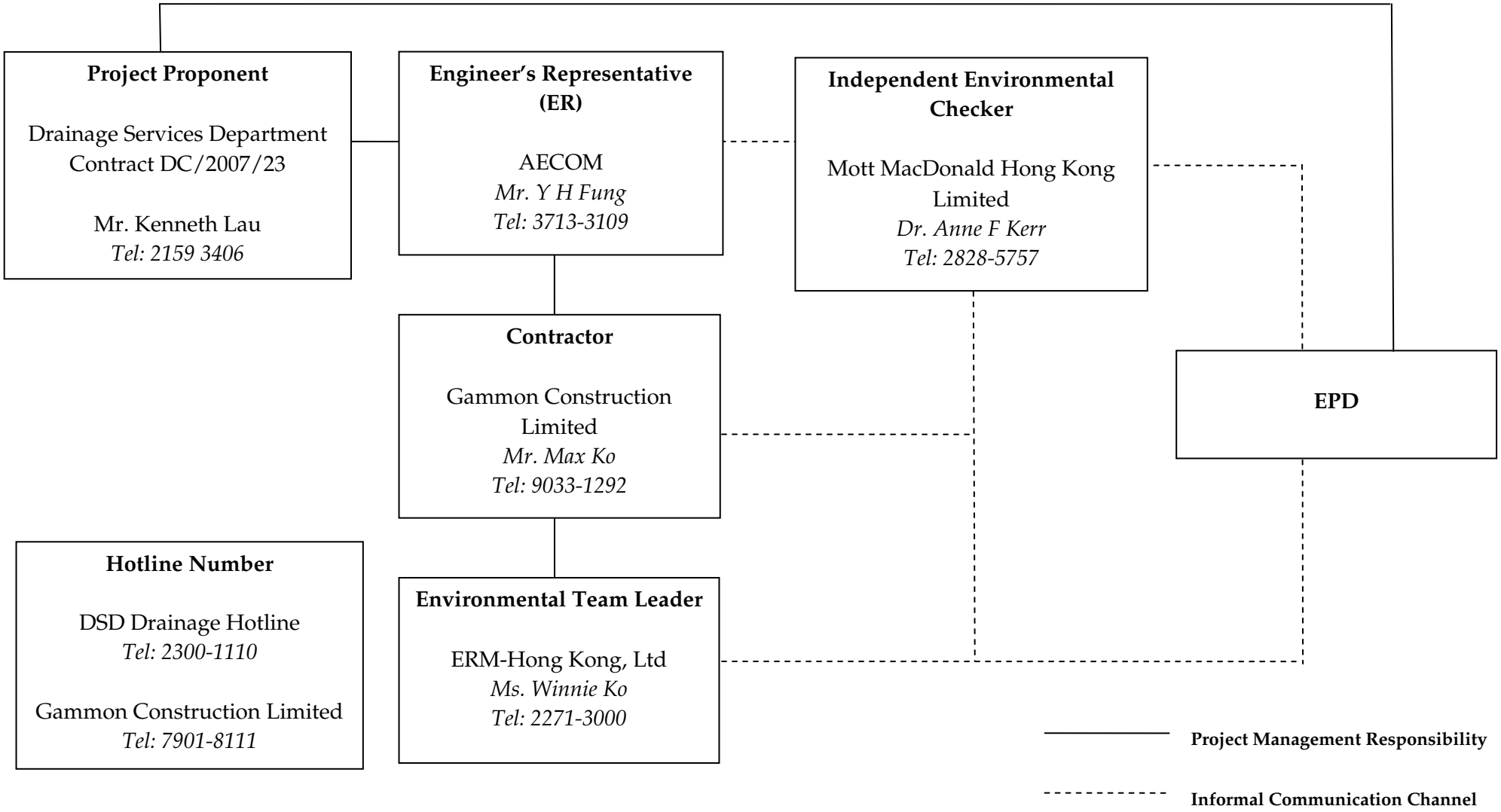
Environmental Resources Management

ERM

Annex B

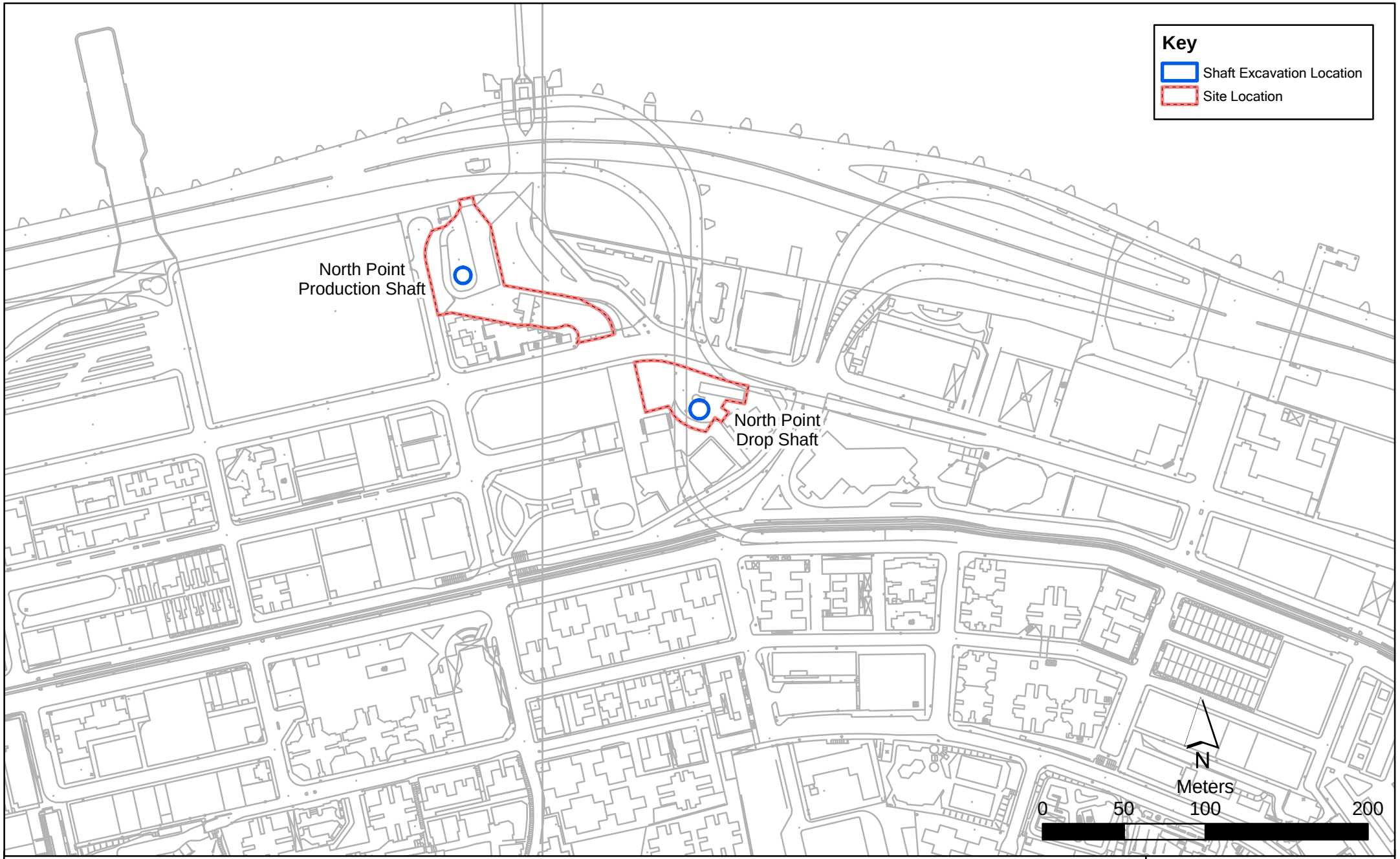
Project Organization Chart and Contact Detail

Project Organization



Annex C

North Point Production and Drop Shafts



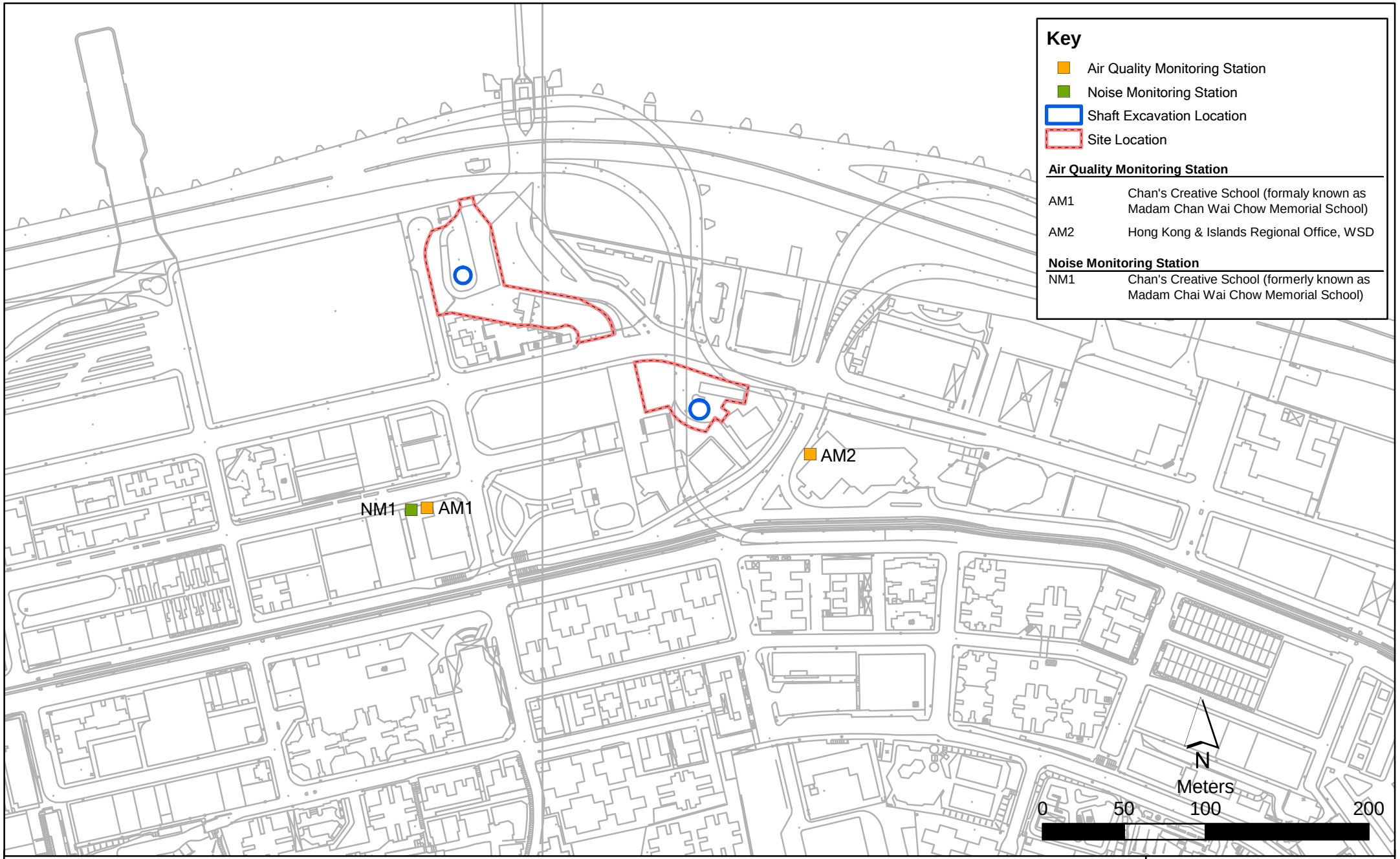
Annex C1

Contract No. DC/2007/23
Harbour Area Treatment Scheme Stage 2A
Construction of Sewage Conveyance System from North Point to Stonecutters Island
Construction Site Locations at North Point

File: EM&A and proposed station\0104887_North Point.mxd
Date: 29/10/2009

Environmental Resources Management

ERM



Annex C2

Contract No. DC/2007/23
Harbour Area Treatment Scheme Stage 2A
Construction of Sewage Conveyance System from North Point to Stonecutters Island
Impact Air Quality & Noise Monitoring Stations (North Point)

File: EM&A and proposed station\0104887_North Point_NMAM.mxd
Date: 03/03/2010

Environmental Resources Management

ERM

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Construction Phase			
Air Quality	The Air Pollution Control (Construction Dust) Regulation shall be implemented and good site practices shall be incorporated in the contract clauses to minimise construction dust impact. Control measures relevant to this Project are listed below: • skip hoist for material transport should be totally enclosed by impervious sheeting; • every vehicle should be washed to remove any dusty materials from its body and wheels before leaving a construction site; • the area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; • where a site boundary adjoins a road, streets or other accessible to the public, hoarding of not less than 2.4 m high from ground level should be provided along the entire length except for a site entrance or exit; • every stock of more than 20 bags of cement should be covered entirely by impervious sheeting placed in an area sheltered on the top and the 3 sides; • regular watering, with complete coverage, to reduce dust emission from exposed site surfaces and unpaved roads, particularly during dry weather; • site enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering should be applied to aggregate fines; • open stock piles should be avoided or covered and prevent placing dusty material storage piles near ASRs if possible; • tarpaulin covering of all dusty vehicle loads transported to, from and between site locations; and • instigation of an environmental monitoring auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Air Quality	The following watering measures for specific site would be required to control the fugitive dust impacts: • watering twice per day within the worksites at North Point PTW; and • watering 8 times per day within worksites at the SCS works area at North Point.	All work sites / during construction	√
Operational Phase			
Air Quality	Good housekeeping for SCISTW and PTWs listed below should be followed to ameliorate any odour impact from the plant and these standard practices should be included in the plant operator manual. • Screens should be cleaned regularly to remove any accumulated organic debris • Grit and screening transfer systems should be flushed regularly with water to remove organic debris and grit • Grit and screened materials should be transferred to closed containers to minimise odour escape • Scum and grease collection wells and troughs should be emptied and flushed regularly to prevent putrefaction of accumulated organics • Skim and remove floating solids and grease from primary clarifiers regularly • Frequent sludge withdrawal from tanks is necessary to prevent the production of gases • Sludge cake should be transferred to closed containers • Sludge containers should be flushed with water regularly	All work sites / during construction	NA. Measures not required until commencement of operational phase
Air Quality	Commissioning tests for all deodorisation system should be included in the Design and Construction Contract Document.	All PTW and SCISTW/ during operational phase	NA. Measures not required until commencement of operational phase
Construction Phase			
Noise	Use of quiet PME, movable barriers and acoustic mats	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Noise	Good Site Practice: • only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program; • silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction program; • mobile plant, if any, should be sited as far from NSRs as possible; • machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • Air compressors should be properly labelled with valid noise emission labels. • plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and • material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities; Environmental audit shall be carried out to ensure that appropriate noise control measures would be properly implemented.	All work sites / during construction	√
Construction Phase			
Water Quality	Construction Site Runoff and General Construction Activities The mitigation measures as outlined in the ProPECC PN 1/94 Construction Site Drainage should be adopted where applicable.	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Effluent Discharge There is a need to apply to EPD for a discharge license for discharge of effluent from the construction site under the WPCO. The discharge quality must meet the requirements specified in the discharge license. If monitoring of the treated effluent quality from the works areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the WPCO license which is under the ambit of regional office (RO) of EPD. Minimum distances of 100 m should be maintained between the discharge points of construction site effluent and the existing saltwater intakes.	All work sites / during construction	√
Water Quality	Accidental Spillage of Chemicals Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	All work sites / during construction	√
Water Quality	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows: • Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport. • Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents. • Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.	All work sites / during construction	<>

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Construction Works in Close Proximity of Storm Drains or Seafront To minimise the potential water quality impacts from the construction works located at or near any watercourse, the practices outlined below should be adopted where applicable. • The use of less or smaller construction plants may be specified to reduce the disturbance to the storm water courses or marine environment. • Temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well away from any water courses during carrying out of the construction works. • Stockpiling of construction materials and dusty materials should be covered and located away from any water courses. • Construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nearby water receivers. • Construction activities, which generate large amount of wastewater, should be carried out in a distance away from the waterfront, where practicable. • Proper shoring may need to be erected in order to prevent soil/mud from slipping into the storm culvert or sea	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Operational Phase			
Water Quality	Dual power supply, standby facilities for the main treatment units and standby equipment parts / accessories should be provided as far as possible at the SCISTW to minimise the chance of emergency discharge.	SCISTW and all the Stage 2 PTWs / Operation Stage	NA. Measures not required until commencement of operational phase
Water Quality	Standby unit(s) and dual (backup) power supply would be provided at all the Stage 2 PTWs to reduce the risk of equipment breakdown at the PTWs.	Stage 2 PTWs / Operation Stage	NA. Measures not required until commencement of operational phase
Construction Phase			
Waste	Reusable steel or concrete panel shutters, fencing and hoarding and signboard should be used as a preferred alternative to items made of wood, to minimise wastage of wood. Attention should be paid to WBTC No. 19/2001 - Metallic Site Hoardings and Signboards to reduce the amount of timber used on construction sites. Metallic alternatives to timber are readily available and should be used rather than new timber. Precast concrete units should be adopted wherever feasible to minimise the use of timber formwork.	All work sites / during the construction period	√
Waste	All waste materials should be segregated into categories covering: • excavated materials suitable for reuse on-site; • excavated materials suitable for public filling facilities; • remaining C&D waste for landfill; • chemical waste; and • general refuse for landfill.	All work sites / during the construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	Recommendations to achieve waste reduction include: • Sort C&D waste from demolition of existing facilities to recover recyclable portions such as metals; • 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; • Encourage collection of aluminium cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force; • Any unused chemicals or those with remaining functional capacity shall be recycled; and • Proper storage and site practices to minimise the potential for damage or contamination of construction materials.	All work sites / during the construction period	√
Waste	Recommendations for good site practices during construction activities include:- • 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 • Develop and provide toolbox talk for on-site sorting of C&D materials to enhance worker's awareness in handling, sorting, reuse and recycling of C&D materials. • Provision of sufficient waste disposal points and regular collection of waste • Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors	All work sites / during the construction period	√
Waste	Bentonite slurries used in diaphragm wall construction should be reconditioned and reused wherever practicable. The disposal of residual used bentonite slurry should follow the good practice guidelines stated in ProPECC PN 1/94 "Construction Site Drainage".	All work sites / during the construction period	NA

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	Adequate number of portable toilets at temporary works areas or the PTWs to ensure that sewage from site staff would be properly collected.	All work sites / during the construction period	√
Waste	General refuse should be stored in enclosed bins, skips or compaction units separating from C&D material and disposed of at designated landfill.	All work sites / during the construction period	<>
Waste	The recyclable component of the municipal waste generated by the workforce, such as aluminium cans, paper and cleansed plastic containers should be separated from other waste. Provision and collection of recycling bins for different types of recyclable waste should be set up by the Contractor. The Contractor should also be responsible for arranging recycling companies to collect these materials.	All work sites / during the construction period	√
Waste	If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidising, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the approved Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	All work sites / during the construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	Prior to excavation of the marine deposit layer, the deposit should be tested in accordance with the ETWB TC(W) No. 34/2002 and the results should be presented in a Preliminary Sediment Quality Report. The marine deposit should be disposed of at the disposal site designated by the Marine Fill Committee (MFC) or Director of Environmental Protection (DEP) depending on the test results.	All work sites / during the construction period	√
Construction Phase			
Landscape & Visual	• Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical. • Existing trees to be retained on site should be carefully protected during construction. • Trees unavoidably affected by the works should be transplanted where practical. • Compensatory tree planting should be provided to compensate for felled trees. • Control of night-time lighting. • Erection of decorative screen hoarding compatible with the surrounding setting.	All the works areas, PTWs and SCISTW/ during the construction period	<>
Operational Phase	•		
Landscape & Visual	• Aesthetic design of the façade of PTW and associated structures to harmonise with the surrounding settings. • Shrub and Climbing Plants to soften proposed structures / Roof Greening. • Buffer Tree and Shrub Planting to screen proposed associated structures. • Reinstated of disturbed area	All the works areas, PTWs and SCISTW/ during the construction period	NA. Measures not required until commencement of operational phase
Construction Phase			

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Cultural Heritage	The construction vibration control limit (ppv of 25mm/s) shall be strictly followed.	Identified historical buildings/structures as mentioned in Tables 15.8 and 15.9. During blasting for tunnel, shafts, effluent conveyance system and disinfection facilities in the vicinity of the buildings/ structures	NA. Vibration monitoring has not been launched during the reporting period.
	Monitoring of vibration limits shall be conducted and reported as a requirement of EM&A programme	Identified historical buildings/structures as mentioned in Tables 15.8 and 15.9. During blasting for tunnel, shafts, effluent conveyance system and disinfection facilities in the vicinity of the buildings/ structures	NA. Vibration monitoring has not been launched during the reporting period.

Remark:
√ Compliance of Mitigation Measures
<> Compliance of Mitigation but need improvement
x Non-compliance of Mitigation Measures
Δ Deficiency of Mitigation Measures but rectified by the Contractor
NA Not Applicable

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Construction Phase			
Air Quality	The Air Pollution Control (Construction Dust) Regulation shall be implemented and good site practices shall be incorporated in the contract clauses to minimise construction dust impact. Control measures relevant to this Project are listed below: • skip hoist for material transport should be totally enclosed by impervious sheeting; • every vehicle should be washed to remove any dusty materials from its body and wheels before leaving a construction site; • the area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; • where a site boundary adjoins a road, streets or other accessible to the public, hoarding of not less than 2.4 m high from ground level should be provided along the entire length except for a site entrance or exit; • every stock of more than 20 bags of cement should be covered entirely by impervious sheeting placed in an area sheltered on the top and the 3 sides; • regular watering, with complete coverage, to reduce dust emission from exposed site surfaces and unpaved roads, particularly during dry weather; • site enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering should be applied to aggregate fines; • open stock piles should be avoided or covered and prevent placing dusty material storage piles near ASRs if possible; • tarpaulin covering of all dusty vehicle loads transported to, from and between site locations; and • instigation of an environmental monitoring auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Air Quality	The following watering measures for specific site would be required to control the fugitive dust impacts: • watering twice per day within the worksites at North Point PTW; and • watering 8 times per day within worksites at the SCS works area at North Point.	All work sites / during construction	√
Operational Phase			
Air Quality	Good housekeeping for SCISTW and PTWs listed below should be followed to ameliorate any odour impact from the plant and these standard practices should be included in the plant operator manual. • Screens should be cleaned regularly to remove any accumulated organic debris • Grit and screening transfer systems should be flushed regularly with water to remove organic debris and grit • Grit and screened materials should be transferred to closed containers to minimise odour escape • Scum and grease collection wells and troughs should be emptied and flushed regularly to prevent putrefaction of accumulated organics • Skim and remove floating solids and grease from primary clarifiers regularly • Frequent sludge withdrawal from tanks is necessary to prevent the production of gases • Sludge cake should be transferred to closed containers • Sludge containers should be flushed with water regularly	All work sites / during construction	NA. Measures not required until commencement of operational phase
Air Quality	Commissioning tests for all deodorisation system should be included in the Design and Construction Contract Document.	All PTW and SCISTW/ during operational phase	NA. Measures not required until commencement of operational phase
Construction Phase			
Noise	Use of quiet PME, movable barriers and acoustic mats	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Noise	Good Site Practice: • only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program; • silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction program; • mobile plant, if any, should be sited as far from NSRs as possible; • machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • Air compressors should be properly labelled with valid noise emission labels. • plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and • material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities; Environmental audit shall be carried out to ensure that appropriate noise control measures would be properly implemented.	All work sites / during construction	√
Construction Phase			
Water Quality	Construction Site Runoff and General Construction Activities The mitigation measures as outlined in the ProPECC PN 1/94 Construction Site Drainage should be adopted where applicable.	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Effluent Discharge There is a need to apply to EPD for a discharge license for discharge of effluent from the construction site under the WPCO. The discharge quality must meet the requirements specified in the discharge license. If monitoring of the treated effluent quality from the works areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the WPCO license which is under the ambit of regional office (RO) of EPD. Minimum distances of 100 m should be maintained between the discharge points of construction site effluent and the existing saltwater intakes.	All work sites / during construction	√
Water Quality	Accidental Spillage of Chemicals Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	All work sites / during construction	√
Water Quality	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows: • Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport. • Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents. • Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.	All work sites / during construction	<>

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Construction Works in Close Proximity of Storm Drains or Seafront To minimise the potential water quality impacts from the construction works located at or near any watercourse, the practices outlined below should be adopted where applicable. • The use of less or smaller construction plants may be specified to reduce the disturbance to the storm water courses or marine environment. • Temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well away from any water courses during carrying out of the construction works. • Stockpiling of construction materials and dusty materials should be covered and located away from any water courses. • Construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nearby water receivers. • Construction activities, which generate large amount of wastewater, should be carried out in a distance away from the waterfront, where practicable. • Proper shoring may need to be erected in order to prevent soil/mud from slipping into the storm culvert or sea	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Operational Phase			
Water Quality	Dual power supply, standby facilities for the main treatment units and standby equipment parts / accessories should be provided as far as possible at the SCISTW to minimise the chance of emergency discharge.	SCISTW and all the Stage 2 PTWs / Operation Stage	NA. Measures not required until commencement of operational phase
Water Quality	Standby unit(s) and dual (backup) power supply would be provided at all the Stage 2 PTWs to reduce the risk of equipment breakdown at the PTWs.	Stage 2 PTWs / Operation Stage	NA. Measures not required until commencement of operational phase
Construction Phase			
Waste	Reusable steel or concrete panel shutters, fencing and hoarding and signboard should be used as a preferred alternative to items made of wood, to minimise wastage of wood. Attention should be paid to WBTC No. 19/2001 - Metallic Site Hoardings and Signboards to reduce the amount of timber used on construction sites. Metallic alternatives to timber are readily available and should be used rather than new timber. Precast concrete units should be adopted wherever feasible to minimise the use of timber formwork.	All work sites / during the construction period	√
Waste	All waste materials should be segregated into categories covering: • excavated materials suitable for reuse on-site; • excavated materials suitable for public filling facilities; • remaining C&D waste for landfill; • chemical waste; and • general refuse for landfill.	All work sites / during the construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	Recommendations to achieve waste reduction include: • Sort C&D waste from demolition of existing facilities to recover recyclable portions such as metals; • 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; • Encourage collection of aluminium cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force; • Any unused chemicals or those with remaining functional capacity shall be recycled; and • Proper storage and site practices to minimise the potential for damage or contamination of construction materials.	All work sites / during the construction period	√
Waste	Recommendations for good site practices during construction activities include:- • 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 • Develop and provide toolbox talk for on-site sorting of C&D materials to enhance worker's awareness in handling, sorting, reuse and recycling of C&D materials. • Provision of sufficient waste disposal points and regular collection of waste • Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors	All work sites / during the construction period	√
Waste	Bentonite slurries used in diaphragm wall construction should be reconditioned and reused wherever practicable. The disposal of residual used bentonite slurry should follow the good practice guidelines stated in ProPECC PN 1/94 "Construction Site Drainage".	All work sites / during the construction period	NA

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	Adequate number of portable toilets at temporary works areas or the PTWs to ensure that sewage from site staff would be properly collected.	All work sites / during the construction period	√
Waste	General refuse should be stored in enclosed bins, skips or compaction units separating from C&D material and disposed of at designated landfill.	All work sites / during the construction period	<>
Waste	The recyclable component of the municipal waste generated by the workforce, such as aluminium cans, paper and cleansed plastic containers should be separated from other waste. Provision and collection of recycling bins for different types of recyclable waste should be set up by the Contractor. The Contractor should also be responsible for arranging recycling companies to collect these materials.	All work sites / during the construction period	√
Waste	If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidising, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the approved Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	All work sites / during the construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	Prior to excavation of the marine deposit layer, the deposit should be tested in accordance with the ETWB TC(W) No. 34/2002 and the results should be presented in a Preliminary Sediment Quality Report. The marine deposit should be disposed of at the disposal site designated by the Marine Fill Committee (MFC) or Director of Environmental Protection (DEP) depending on the test results.	All work sites / during the construction period	√
Construction Phase			
Landscape & Visual	• Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical. • Existing trees to be retained on site should be carefully protected during construction. • Trees unavoidably affected by the works should be transplanted where practical. • Compensatory tree planting should be provided to compensate for felled trees. • Control of night-time lighting. • Erection of decorative screen hoarding compatible with the surrounding setting.	All the works areas, PTWs and SCISTW/ during the construction period	<>
Operational Phase	•		
Landscape & Visual	• Aesthetic design of the façade of PTW and associated structures to harmonise with the surrounding settings. • Shrub and Climbing Plants to soften proposed structures / Roof Greening. • Buffer Tree and Shrub Planting to screen proposed associated structures. • Reinstated of disturbed area	All the works areas, PTWs and SCISTW/ during the construction period	NA. Measures not required until commencement of operational phase
Construction Phase			

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Cultural Heritage	The construction vibration control limit (ppv of 25mm/s) shall be strictly followed.	Identified historical buildings/structures as mentioned in Tables 15.8 and 15.9. During blasting for tunnel, shafts, effluent conveyance system and disinfection facilities in the vicinity of the buildings/ structures	NA. Vibration monitoring has not been launched during the reporting period.
	Monitoring of vibration limits shall be conducted and reported as a requirement of EM&A programme	Identified historical buildings/structures as mentioned in Tables 15.8 and 15.9. During blasting for tunnel, shafts, effluent conveyance system and disinfection facilities in the vicinity of the buildings/ structures	NA. Vibration monitoring has not been launched during the reporting period.

Remark:
√ Compliance of Mitigation Measures
<> Compliance of Mitigation but need improvement
x Non-compliance of Mitigation Measures
Δ Deficiency of Mitigation Measures but rectified by the Contractor
NA Not Applicable

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Construction Phase			
Air Quality	The Air Pollution Control (Construction Dust) Regulation shall be implemented and good site practices shall be incorporated in the contract clauses to minimise construction dust impact. Control measures relevant to this Project are listed below: • skip hoist for material transport should be totally enclosed by impervious sheeting; • every vehicle should be washed to remove any dusty materials from its body and wheels before leaving a construction site; • the area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; • where a site boundary adjoins a road, streets or other accessible to the public, hoarding of not less than 2.4 m high from ground level should be provided along the entire length except for a site entrance or exit; • every stock of more than 20 bags of cement should be covered entirely by impervious sheeting placed in an area sheltered on the top and the 3 sides; • regular watering, with complete coverage, to reduce dust emission from exposed site surfaces and unpaved roads, particularly during dry weather; • site enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering should be applied to aggregate fines; • open stock piles should be avoided or covered and prevent placing dusty material storage piles near ASRs if possible; • tarpaulin covering of all dusty vehicle loads transported to, from and between site locations; and • instigation of an environmental monitoring auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Air Quality	The following watering measures for specific site would be required to control the fugitive dust impacts: • watering twice per day within the worksites at North Point PTW; and • watering 8 times per day within worksites at the SCS works area at North Point.	All work sites / during construction	√
Operational Phase			
Air Quality	Good housekeeping for SCISTW and PTWs listed below should be followed to ameliorate any odour impact from the plant and these standard practices should be included in the plant operator manual. • Screens should be cleaned regularly to remove any accumulated organic debris • Grit and screening transfer systems should be flushed regularly with water to remove organic debris and grit • Grit and screened materials should be transferred to closed containers to minimise odour escape • Scum and grease collection wells and troughs should be emptied and flushed regularly to prevent putrefaction of accumulated organics • Skim and remove floating solids and grease from primary clarifiers regularly • Frequent sludge withdrawal from tanks is necessary to prevent the production of gases • Sludge cake should be transferred to closed containers • Sludge containers should be flushed with water regularly	All work sites / during construction	NA. Measures not required until commencement of operational phase
Air Quality	Commissioning tests for all deodorisation system should be included in the Design and Construction Contract Document.	All PTW and SCISTW/ during operational phase	NA. Measures not required until commencement of operational phase
Construction Phase			
Noise	Use of quiet PME, movable barriers and acoustic mats	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Noise	Good Site Practice: • only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program; • silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction program; • mobile plant, if any, should be sited as far from NSRs as possible; • machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • Air compressors should be properly labelled with valid noise emission labels. • plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and • material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities; Environmental audit shall be carried out to ensure that appropriate noise control measures would be properly implemented.	All work sites / during construction	√
Construction Phase			
Water Quality	Construction Site Runoff and General Construction Activities The mitigation measures as outlined in the ProPECC PN 1/94 Construction Site Drainage should be adopted where applicable.	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Effluent Discharge There is a need to apply to EPD for a discharge license for discharge of effluent from the construction site under the WPCO. The discharge quality must meet the requirements specified in the discharge license. If monitoring of the treated effluent quality from the works areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the WPCO license which is under the ambit of regional office (RO) of EPD. Minimum distances of 100 m should be maintained between the discharge points of construction site effluent and the existing saltwater intakes.	All work sites / during construction	√
Water Quality	Accidental Spillage of Chemicals Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	All work sites / during construction	√
Water Quality	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows: • Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport. • Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents. • Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.	All work sites / during construction	<>

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Construction Works in Close Proximity of Storm Drains or Seafront To minimise the potential water quality impacts from the construction works located at or near any watercourse, the practices outlined below should be adopted where applicable. • The use of less or smaller construction plants may be specified to reduce the disturbance to the storm water courses or marine environment. • Temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well away from any water courses during carrying out of the construction works. • Stockpiling of construction materials and dusty materials should be covered and located away from any water courses. • Construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nearby water receivers. • Construction activities, which generate large amount of wastewater, should be carried out in a distance away from the waterfront, where practicable. • Proper shoring may need to be erected in order to prevent soil/mud from slipping into the storm culvert or sea	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Operational Phase			
Water Quality	Dual power supply, standby facilities for the main treatment units and standby equipment parts / accessories should be provided as far as possible at the SCISTW to minimise the chance of emergency discharge.	SCISTW and all the Stage 2 PTWs / Operation Stage	NA. Measures not required until commencement of operational phase
Water Quality	Standby unit(s) and dual (backup) power supply would be provided at all the Stage 2 PTWs to reduce the risk of equipment breakdown at the PTWs.	Stage 2 PTWs / Operation Stage	NA. Measures not required until commencement of operational phase
Construction Phase			
Waste	Reusable steel or concrete panel shutters, fencing and hoarding and signboard should be used as a preferred alternative to items made of wood, to minimise wastage of wood. Attention should be paid to WBTC No. 19/2001 - Metallic Site Hoardings and Signboards to reduce the amount of timber used on construction sites. Metallic alternatives to timber are readily available and should be used rather than new timber. Precast concrete units should be adopted wherever feasible to minimise the use of timber formwork.	All work sites / during the construction period	√
Waste	All waste materials should be segregated into categories covering: • excavated materials suitable for reuse on-site; • excavated materials suitable for public filling facilities; • remaining C&D waste for landfill; • chemical waste; and • general refuse for landfill.	All work sites / during the construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	Recommendations to achieve waste reduction include: • Sort C&D waste from demolition of existing facilities to recover recyclable portions such as metals; • 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; • Encourage collection of aluminium cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force; • Any unused chemicals or those with remaining functional capacity shall be recycled; and • Proper storage and site practices to minimise the potential for damage or contamination of construction materials.	All work sites / during the construction period	√
Waste	Recommendations for good site practices during construction activities include:- • 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 • Develop and provide toolbox talk for on-site sorting of C&D materials to enhance worker's awareness in handling, sorting, reuse and recycling of C&D materials. • Provision of sufficient waste disposal points and regular collection of waste • Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors	All work sites / during the construction period	√
Waste	Bentonite slurries used in diaphragm wall construction should be reconditioned and reused wherever practicable. The disposal of residual used bentonite slurry should follow the good practice guidelines stated in ProPECC PN 1/94 "Construction Site Drainage".	All work sites / during the construction period	NA

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	Adequate number of portable toilets at temporary works areas or the PTWs to ensure that sewage from site staff would be properly collected.	All work sites / during the construction period	√
Waste	General refuse should be stored in enclosed bins, skips or compaction units separating from C&D material and disposed of at designated landfill.	All work sites / during the construction period	√
Waste	The recyclable component of the municipal waste generated by the workforce, such as aluminium cans, paper and cleansed plastic containers should be separated from other waste. Provision and collection of recycling bins for different types of recyclable waste should be set up by the Contractor. The Contractor should also be responsible for arranging recycling companies to collect these materials.	All work sites / during the construction period	√
Waste	If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidising, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the approved Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	All work sites / during the construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	Prior to excavation of the marine deposit layer, the deposit should be tested in accordance with the ETWB TC(W) No. 34/2002 and the results should be presented in a Preliminary Sediment Quality Report. The marine deposit should be disposed of at the disposal site designated by the Marine Fill Committee (MFC) or Director of Environmental Protection (DEP) depending on the test results.	All work sites / during the construction period	√
Construction Phase			
Landscape & Visual	• Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical. • Existing trees to be retained on site should be carefully protected during construction. • Trees unavoidably affected by the works should be transplanted where practical. • Compensatory tree planting should be provided to compensate for felled trees. • Control of night-time lighting. • Erection of decorative screen hoarding compatible with the surrounding setting.	All the works areas, PTWs and SCISTW/ during the construction period	<>
Operational Phase	•		
Landscape & Visual	• Aesthetic design of the façade of PTW and associated structures to harmonise with the surrounding settings. • Shrub and Climbing Plants to soften proposed structures / Roof Greening. • Buffer Tree and Shrub Planting to screen proposed associated structures. • Reinstated of disturbed area	All the works areas, PTWs and SCISTW/ during the construction period	NA. Measures not required until commencement of operational phase
Construction Phase			

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Cultural Heritage	The construction vibration control limit (ppv of 25mm/s) shall be strictly followed.	Identified historical buildings/structures as mentioned in Tables 15.8 and 15.9. During blasting for tunnel, shafts, effluent conveyance system and disinfection facilities in the vicinity of the buildings/ structures	NA. Vibration monitoring has not been launched during the reporting period.
	Monitoring of vibration limits shall be conducted and reported as a requirement of EM&A programme	Identified historical buildings/structures as mentioned in Tables 15.8 and 15.9. During blasting for tunnel, shafts, effluent conveyance system and disinfection facilities in the vicinity of the buildings/ structures	NA. Vibration monitoring has not been launched during the reporting period.

Remark:
√ Compliance of Mitigation Measures
<> Compliance of Mitigation but need improvement
x Non-compliance of Mitigation Measures
Δ Deficiency of Mitigation Measures but rectified by the Contractor
NA Not Applicable

Annex C5 24-hour and 1-hour TSP Monitoring Results

1-hour TSP Monitoring Results

Station AM1

Date	Start Time	Finish Time	Weather	TSP Concentration ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Site Conditions / Observations / Remarks	Temperature (℃)	Wind Speed * (m/s)	Sampler ID	Filter ID
02-Sep-14	9:42	10:42	Sunny	157	340	500	-	33	<5	GMW GS 2310 (S/N 1808)	4222
	10:44	11:44	Sunny	151	340	500	-	33	<5	GMW GS 2310 (S/N 1808)	4219
	11:46	12:46	Sunny	122	340	500	-	33	<5	GMW GS 2310 (S/N 1808)	4217
08-Sep-14	10:05	11:05	Sunny	95	340	500	-	30	<5	GMW GS 2310 (S/N 1808)	4401
	11:07	12:07	Sunny	83	340	500	-	30	<5	GMW GS 2310 (S/N 1808)	4402
	12:09	13:09	Sunny	91	340	500	-	30	<5	GMW GS 2310 (S/N 1808)	4403
13-Sep-14	9:30	10:30	Sunny	112	340	500	-	31	<5	GMW GS 2310 (S/N 1808)	2452
	10:32	11:32	Sunny	105	340	500	-	31	<5	GMW GS 2310 (S/N 1808)	2451
	11:34	12:34	Sunny	108	340	500	-	31	<5	GMW GS 2310 (S/N 1808)	2449
19-Sep-14	13:50	14:50	Fine	221	340	500	Construction work in progress	32	<5	GMW GS 2310 (S/N 1808)	4203
	14:52	15:52	Fine	257	340	500	Construction work in progress	32	<5	GMW GS 2310 (S/N 1808)	2437
	15:54	16:54	Fine	238	340	500	Construction work in progress	32	<5	GMW GS 2310 (S/N 1808)	2438
25-Sep-14	14:00	15:00	Sunny	184	340	500	-	31	<5	GMW GS 2310 (S/N 1808)	2441
	15:02	16:02	Sunny	198	340	500	-	31	<5	GMW GS 2310 (S/N 1808)	2442
	16:04	17:04	Sunny	195	340	500	-	31	<5	GMW GS 2310 (S/N 1808)	2446
30-Sep-14	10:22	11:22	Sunny	206	340	500	-	32	<5	GMW GS 2310 (S/N 1808)	4433
	11:24	12:24	Sunny	186	340	500	-	32	<5	GMW GS 2310 (S/N 1808)	4434
	12:26	13:26	Sunny	193	340	500	-	32	<5	GMW GS 2310 (S/N 1808)	4435
			Min.	**83**							
			Max.	**257**							
			Average	**161**							

* Wind Speed data is presented in the Meteorological Data table

Annex C5 24-hour and 1-hour TSP Monitoring Results

1-hour TSP Monitoring Results

Station AM2

Date	Start Time	Finish Time	Weather	TSP Concentration ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Site Conditions / Observations / Remarks	Temperature (°C)	Wind Speed * (m/s)	Sampler ID	Filter ID
02-Sep-14	10:00	11:00	Sunny	146	352	500	-	33	<5	GMW GS-2310 (S/N 0145)	4221
	11:02	12:02	Sunny	122	352	500	-	33	<5	GMW GS-2310 (S/N 0145)	4220
	12:04	13:04	Sunny	148	352	500	-	33	<5	GMW GS-2310 (S/N 0145)	4218
08-Sep-14	10:20	11:20	Sunny	107	352	500	-	30	<5	GMW GS-2310 (S/N 0145)	4405
	11:22	12:22	Sunny	91	352	500	-	30	<5	GMW GS-2310 (S/N 0145)	4406
	12:24	13:24	Sunny	96	352	500	-	30	<5	GMW GS-2310 (S/N 0145)	4407
13-Sep-14	9:15	10:15	Sunny	112	352	500	-	31	<5	GMW GS-2310 (S/N 0145)	2453
	10:17	11:17	Sunny	127	352	500	-	31	<5	GMW GS-2310 (S/N 0145)	2436
	11:19	12:19	Sunny	117	352	500	-	31	<5	GMW GS-2310 (S/N 0145)	2450
19-Sep-14	14:10	15:10	Fine	190	352	500	-	32	<5	GMW GS-2310 (S/N 0145)	4204
	15:12	16:12	Fine	240	352	500	-	32	<5	GMW GS-2310 (S/N 0145)	4205
	16:14	17:14	Fine	236	352	500	-	32	<5	GMW GS-2310 (S/N 0145)	4206
25-Sep-14	14:15	15:15	Sunny	180	352	500	-	31	<5	GMW GS-2310 (S/N 0145)	4208
	15:17	16:17	Sunny	182	352	500	-	31	<5	GMW GS-2310 (S/N 0145)	4209
	16:19	17:19	Sunny	186	352	500	-	31	<5	GMW GS-2310 (S/N 0145)	4210
30-Sep-14	10:04	11:04	Sunny	207	352	500	-	32	<5	GMW GS-2310 (S/N 0145)	4211
	11:42	12:42	Sunny	203	352	500	-	32	<5	GMW GS-2310 (S/N 0145)	4212
	12:44	13:44	Sunny	203	352	500	-	32	<5	GMW GS-2310 (S/N 0145)	4213
			Min.	**91**							
			Max.	**240**							
			Average	**161**							

* Wind Speed data is presented in the Meteorological Data table

Annex C5 24-hour and 1-hour TSP Monitoring Results

1-hour TSP Monitoring Results

Station AM1

Date	Start Time	Finish Time	Weather	TSP Concentration ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Site Conditions / Observations / Remarks	Temperature (°C)	Wind Speed * (m/s)	Sampler ID	Filter ID
06-Oct-14	11:06	12:06	Sunny	138	340	500	Construction work in progress	28	<5	GMW GS 2310 (S/N 1808)	4549
	12:08	13:08	Sunny	148	340	500	Construction work in progress	28	<5	GMW GS 2310 (S/N 1808)	4550
	13:10	14:10	Sunny	152	340	500	Construction work in progress	28	<5	GMW GS 2310 (S/N 1808)	4554
11-Oct-14	9:00	10:00	Sunny	227	340	500	Construction work in progress	29	<5	GMW GS 2310 (S/N 1808)	4556
	10:02	11:02	Sunny	156	340	500	Construction work in progress	29	<5	GMW GS 2310 (S/N 1808)	4558
	11:04	12:04	Sunny	168	340	500	Construction work in progress	29	<5	GMW GS 2310 (S/N 1808)	4560
17-Oct-14	10:12	11:12	Sunny	176	340	500	Construction work in progress	27	<5	GMW GS 2310 (S/N 1808)	4565
	11:34	12:34	Sunny	171	340	500	Construction work in progress	27	<5	GMW GS 2310 (S/N 1808)	4566
	12:36	13:36	Sunny	179	340	500	Construction work in progress	27	<5	GMW GS 2310 (S/N 1808)	4569
23-Oct-14	9:33	10:33	Fine	131	340	500	Construction work in progress	27	<5	GMW GS 2310 (S/N 1808)	4454
	10:35	11:35	Fine	149	340	500	Construction work in progress	27	<5	GMW GS 2310 (S/N 1808)	4455
	11:37	12:37	Fine	169	340	500	Construction work in progress	27	<5	GMW GS 2310 (S/N 1808)	4457
29-Oct-14	10:30	11:30	Fine	152	340	500	Construction work in progress	28	<5	GMW GS 2310 (S/N 1808)	4461
	11:33	12:33	Fine	124	340	500	Construction work in progress	28	<5	GMW GS 2310 (S/N 1808)	4462
	12:35	13:35	Fine	161	340	500	Construction work in progress	28	<5	GMW GS 2310 (S/N 1808)	4465
			Min.	**124**							
			Max.	**227**							
			Average	**160**							

* Wind Speed data is presented in the Meteorological Data table

Annex C5 24-hour and 1-hour TSP Monitoring Results

1-hour TSP Monitoring Results

Station AM2

Date	Start Time	Finish Time	Weather	TSP Concentration ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Site Conditions / Observations / Remarks	Temperature (°C)	Wind Speed * (m/s)	Sampler ID	Filter ID
06-Oct-14	10:50	11:50	Sunny	141	352	500	Construction work in progress	28	<5	GMW GS-2310 (S/N 0145)	4444
	11:52	12:52	Sunny	137	352	500	Construction work in progress	28	<5	GMW GS-2310 (S/N 0145)	4551
	12:54	13:54	Sunny	121	352	500	Construction work in progress	28	<5	GMW GS-2310 (S/N 0145)	4552
11-Oct-14	9:20	10:20	Sunny	167	352	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 0145)	4557
	10:22	11:22	Sunny	160	352	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 0145)	4559
	11:24	12:24	Sunny	173	352	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 0145)	4561
17-Oct-14	11:00	12:00	Sunny	161	352	500	Construction work in progress	27	<5	GMW GS-2310 (S/N 0145)	4565
	12:02	13:02	Sunny	160	352	500	Construction work in progress	27	<5	GMW GS-2310 (S/N 0145)	4567
	13:04	14:04	Sunny	169	352	500	Construction work in progress	27	<5	GMW GS-2310 (S/N 0145)	4568
23-Oct-14	9:52	10:52	Fine	136	352	500	Construction work in progress	27	<5	GMW GS-2310 (S/N 0145)	4572
	10:54	11:54	Fine	150	352	500	Construction work in progress	27	<5	GMW GS-2310 (S/N 0145)	4453
	11:56	12:56	Fine	141	352	500	Construction work in progress	27	<5	GMW GS-2310 (S/N 0145)	4456
29-Oct-14	10:10	11:10	Fine	136	352	500	Construction work in progress	28	<5	GMW GS-2310 (S/N 0145)	4460
	11:12	12:12	Fine	141	352	500	Construction work in progress	28	<5	GMW GS-2310 (S/N 0145)	4413
	12:14	13:14	Fine	140	352	500	Construction work in progress	28	<5	GMW GS-2310 (S/N 0145)	4469
			Min.	**121**							
			Max.	**173**							
			Average	**149**							

* Wind Speed data is presented in the Meteorological Data table

Annex C5 24-hour and 1-hour TSP Monitoring Results

1-hour TSP Monitoring Results

Station AM1

Date	Start Time	Finish Time	Weather	TSP Concentration ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Site Conditions / Observations / Remarks	Temperature (°C)	Wind Speed * (m/s)	Sampler ID	Filter ID
04-Nov-14	11:11	12:11	Cloudy	107	340	500	Construction work in progress	26	<5	GMW GS 2310 (S/N 1808)	4824
	12:13	13:13	Cloudy	112	340	500	Construction work in progress	26	<5	GMW GS 2310 (S/N 1808)	4821
	13:15	14:15	Cloudy	124	340	500	Construction work in progress	26	<5	GMW GS 2310 (S/N 1808)	4820
10-Nov-14	9:50	10:50	Cloudy	128	340	500	Construction work in progress	26	<5	GMW GS 2310 (S/N 1808)	4802
	10:52	11:52	Cloudy	72	340	500	Construction work in progress	26	<5	GMW GS 2310 (S/N 1808)	4803
	11:54	12:54	Cloudy	98	340	500	Construction work in progress	26	<5	GMW GS 2310 (S/N 1808)	4806
15-Nov-14	9:30	10:30	Sunny	105	340	500	Construction work in progress	26	<5	GMW GS 2310 (S/N 1808)	4809
	10:32	11:32	Sunny	100	340	500	Construction work in progress	26	<5	GMW GS 2310 (S/N 1808)	4812
	11:34	12:34	Sunny	93	340	500	Construction work in progress	26	<5	GMW GS 2310 (S/N 1808)	4814
21-Nov-14	10:05	11:05	Sunny	81	340	500	Construction work in progress	26	<5	GMW GS 2310 (S/N 1808)	4901
	11:07	12:07	Sunny	99	340	500	Construction work in progress	26	<5	GMW GS 2310 (S/N 1808)	4904
	12:09	13:09	Sunny	95	340	500	Construction work in progress	26	<5	GMW GS 2310 (S/N 1808)	4906
27-Nov-14	9:40	10:40	Fine	102	340	500	Construction work in progress	25	<5	GMW GS 2310 (S/N 1808)	4910
	10:42	11:42	Fine	96	340	500	Construction work in progress	25	<5	GMW GS 2310 (S/N 1808)	4911
	11:44	12:44	Fine	102	340	500	Construction work in progress	25	<5	GMW GS 2310 (S/N 1808)	4914
			Min.	**72**							
			Max.	**128**							
			Average	**101**							

* Wind Speed data is presented in the Meteorological Data table

Annex C5 24-hour and 1-hour TSP Monitoring Results

1-hour TSP Monitoring Results

Station AM2

Date	Start Time	Finish Time	Weather	TSP Concentration ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Site Conditions / Observations / Remarks	Temperature (°C)	Wind Speed * (m/s)	Sampler ID	Filter ID
04-Nov-14	10:40	11:40	Cloudy	92	352	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 0145)	4823
	11:42	12:42	Cloudy	112	352	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 0145)	4822
	12:44	13:44	Cloudy	107	352	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 0145)	4819
10-Nov-14	10:10	11:10	Cloudy	140	352	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 0145)	4801
	11:12	12:12	Cloudy	100	352	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 0145)	4804
	12:14	13:14	Cloudy	93	352	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 0145)	4805
15-Nov-14	9:50	10:50	Sunny	190	352	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 0145)	4810
	10:52	11:52	Sunny	122	352	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 0145)	4811
	11:54	12:54	Sunny	107	352	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 0145)	4813
21-Nov-14	10:20	11:20	Sunny	136	352	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 0145)	4902
	11:22	12:22	Sunny	93	352	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 0145)	4903
	12:24	13:24	Sunny	93	352	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 0145)	4905
27-Nov-14	10:00	11:00	Fine	103	352	500	Construction work in progress	25	<5	GMW GS-2310 (S/N 0145)	4909
	11:02	12:02	Fine	100	352	500	Construction work in progress	25	<5	GMW GS-2310 (S/N 0145)	4912
	12:04	13:04	Fine	102	352	500	Construction work in progress	25	<5	GMW GS-2310 (S/N 0145)	4913
			Min.	**92**							
			Max.	**190**							
			Average	**113**							

* Wind Speed data is presented in the Meteorological Data table

Annex C5 24-hour and 1-hour TSP Monitoring Results

24-hour TSP Monitoring Results

Station AM1

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m^3/min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	(µg/m^3)	(µg/m^3)	(µg/m^3)		ID	ID
02-Sep-14	12:48	03-Sep-14	12:48	Sunny	2.7908	2.9334	18184.03	18208.03	24.00	1.24	1.24	1.24	80	185	260	-	GMW GS 2310 (S/N 1808)	4216
08-Sep-14	13:11	09-Sep-14	13:11	Sunny	2.7192	2.8009	18211.03	18235.03	24.00	1.24	1.24	1.24	46	185	260	-	GMW GS 2310 (S/N 1808)	4404
13-Sep-14	12:36	14-Sep-14	12:36	Sunny	2.7662	2.8500	18238.03	18262.03	24.00	1.24	1.24	1.24	47	185	260	-	GMW GS 2310 (S/N 1808)	2447
19-Sep-14	18:08	20-Sep-14	18:08	Fine	2.7276	2.9017	18265.03	18289.03	24.00	1.22	1.22	1.22	99	185	260	-	GMW GS 2310 (S/N 1808)	2439
25-Sep-14	17:06	26-Sep-14	17:06	Sunny	2.7384	2.9004	18292.03	18316.03	24.00	1.22	1.22	1.22	92	185	260	-	GMW GS 2310 (S/N 1808)	2440
30-Sep-14	13:28	01-Oct-14	13:28	Sunny	2.7542	2.9309	18319.03	18343.03	24.00	1.22	1.22	1.22	101	185	260	-	GMW GS 2310 (S/N 1808)	2443
												Min.	**46**					
												Max.	**101**					
												Average	**77**					

24-hour TSP Monitoring Results

Station AM2

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m^3/min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	(µg/m^3)	(µg/m^3)	(µg/m^3)		ID	ID
02-Sep-14	13:06	03-Sep-14	13:06	Sunny	2.7875	2.9077	13802.93	13826.93	24.00	1.23	1.23	1.23	68	182	260	-	GMW GS 2310 (S/N 0145)	4215
08-Sep-14	13:26	09-Sep-14	13:26	Sunny	2.7069	2.8102	13829.93	13853.93	24.00	1.23	1.23	1.23	58	182	260	-	GMW GS 2310 (S/N 0145)	4408
13-Sep-14	12:22	14-Sep-14	12:22	Sunny	2.7440	2.8419	13856.93	13880.93	24.00	1.23	1.23	1.23	55	182	260	-	GMW GS 2310 (S/N 0145)	2448
19-Sep-14	17:16	20-Sep-14	17:16	Fine	2.7831	2.9800	13883.93	13907.93	24.00	1.23	1.23	1.23	111	182	260	-	GMW GS 2310 (S/N 0145)	4207
25-Sep-14	17:21	26-Sep-14	17:21	Sunny	2.7791	2.9500	13910.93	13934.93	24.00	1.23	1.23	1.23	96	182	260	-	GMW GS 2310 (S/N 0145)	4214
30-Sep-14	13:46	01-Oct-14	13:46	Sunny	2.7492	2.9111	13937.93	13961.93	24.00	1.23	1.23	1.23	91	182	260	-	GMW GS 2310 (S/N 0145)	2444
												Min.	**55**					
												Max.	**111**					
												Average	**80**					

Annex C5 24-hour and 1-hour TSP Monitoring Results

24-hour TSP Monitoring Results

Station AM1

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m^3/min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	(μg/m^3)	(μg/m^3)	(μg/m^3)		ID	ID
06-Oct-14	14:48	07-Oct-14	14:48	Sunny	2.7412	2.8966	18346.03	18370.03	24.00	1.22	1.22	1.22	88	185	260	Construction work in progress	GMW GS 2310 (S/N 1808)	4553
11-Oct-14	12:06	12-Oct-14	12:06	Sunny	2.7291	2.8890	18373.03	18397.03	24.00	1.22	1.22	1.22	91	185	260	Construction work in progress	GMW GS 2310 (S/N 1808)	4563
17-Oct-14	13:38	18-Oct-14	13:38	Sunny	2.7195	2.8812	18400.03	18424.03	24.00	1.22	1.22	1.22	92	185	260	Construction work in progress	GMW GS 2310 (S/N 1808)	4570
23-Oct-14	12:39	24-Oct-14	12:39	Fine	2.7366	2.9003	18427.03	18451.03	24.00	1.22	1.22	1.22	93	185	260	Construction work in progress	GMW GS 2310 (S/N 1808)	4458
29-Oct-14	14:13	30-Oct-14	14:13	Fine	2.7691	2.9014	18454.03	18478.03	24.00	1.22	1.22	1.22	75	185	260	Construction work in progress	GMW GS 2310 (S/N 1808)	4467
												Min.	**75**					
												Max.	**93**					
												Average	**88**					

24-hour TSP Monitoring Results

Station AM2

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m^3/min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	(μg/m^3)	(μg/m^3)	(μg/m^3)		ID	ID
06-Oct-14	13:56	07-Oct-14	13:56	Sunny	2.7311	2.8724	13964.93	13988.93	24.00	1.23	1.23	1.23	80	182	260	Construction work in progress	GMW GS 2310 (S/N 0145)	4555
11-Oct-14	12:30	12-Oct-14	12:30	Sunny	2.7314	2.9027	13991.93	14015.93	24.00	1.23	1.23	1.23	97	182	260	Construction work in progress	GMW GS 2310 (S/N 0145)	4562
17-Oct-14	14:06	18-Oct-14	14:06	Sunny	2.7171	2.8719	14018.93	14042.93	24.00	1.23	1.23	1.23	87	182	260	Construction work in progress	GMW GS 2310 (S/N 0145)	4571
23-Oct-14	12:58	24-Oct-14	12:58	Fine	2.7342	2.8997	14045.93	14069.93	24.00	1.23	1.23	1.23	93	182	260	Construction work in progress	GMW GS 2310 (S/N 0145)	4459
29-Oct-14	13:16	30-Oct-14	13:16	Fine	2.7800	2.9800	14072.93	14096.93	24.00	1.23	1.23	1.23	113	182	260	Construction work in progress	GMW GS 2310 (S/N 0145)	4466
												Min.	**80**					
												Max.	**113**					
												Average	**94**					

Annex C5 24-hour and 1-hour TSP Monitoring Results

24-hour TSP Monitoring Results

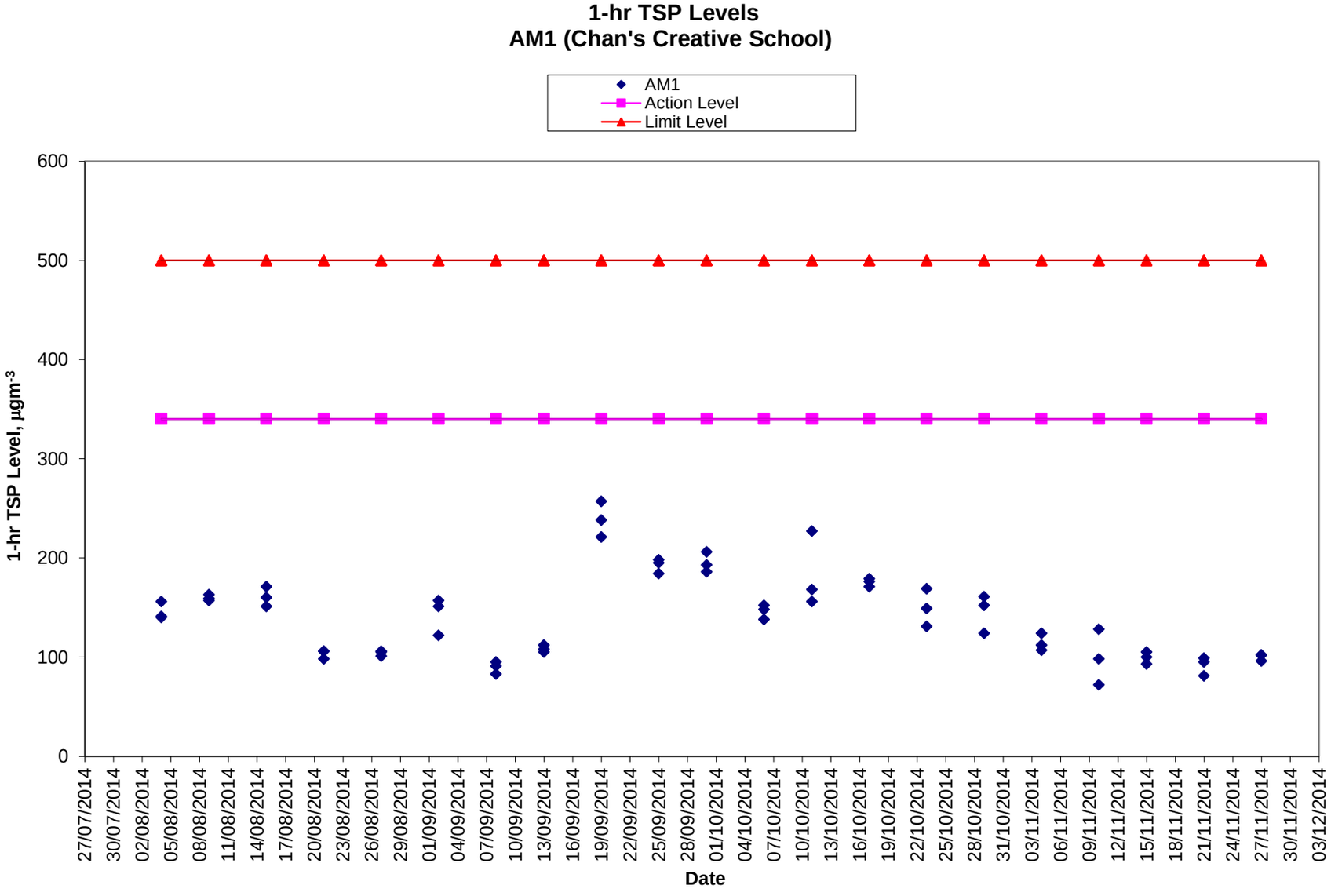
Station AM1

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m^3/min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)		ID	ID
04-Nov-14	14:50	05-Nov-14	14:50	Cloudy	2.8316	2.9809	18481.03	18505.03	24.00	1.22	1.22	1.22	85	185	260	Construction work in progress	GMW GS 2310 (S/N 1808)	4818
10-Nov-14	12:56	11-Nov-14	12:56	Cloudy	2.8305	2.9413	18508.03	18532.03	24.00	1.22	1.22	1.22	63	185	260	Construction work in progress	GMW GS 2310 (S/N 1808)	4808
15-Nov-14	12:36	16-Nov-14	12:36	Sunny	2.8238	2.9299	18535.03	18559.03	24.00	1.22	1.22	1.22	60	185	260	Construction work in progress	GMW GS 2310 (S/N 1808)	4816
21-Nov-14	13:11	22-Nov-14	13:11	Sunny	2.9223	3.0411	18562.03	18586.03	24.00	1.23	1.23	1.23	67	185	260	Construction work in progress	GMW GS 2310 (S/N 1808)	4907
27-Nov-14	12:46	28-Nov-14	12:46	Fine	2.8809	3.0101	18589.03	18613.03	24.00	1.23	1.23	1.23	73	185	260	Construction work in progress	GMW GS 2310 (S/N 1808)	4915
												Min.	**60**					
												Max.	**85**					
												Average	**70**					

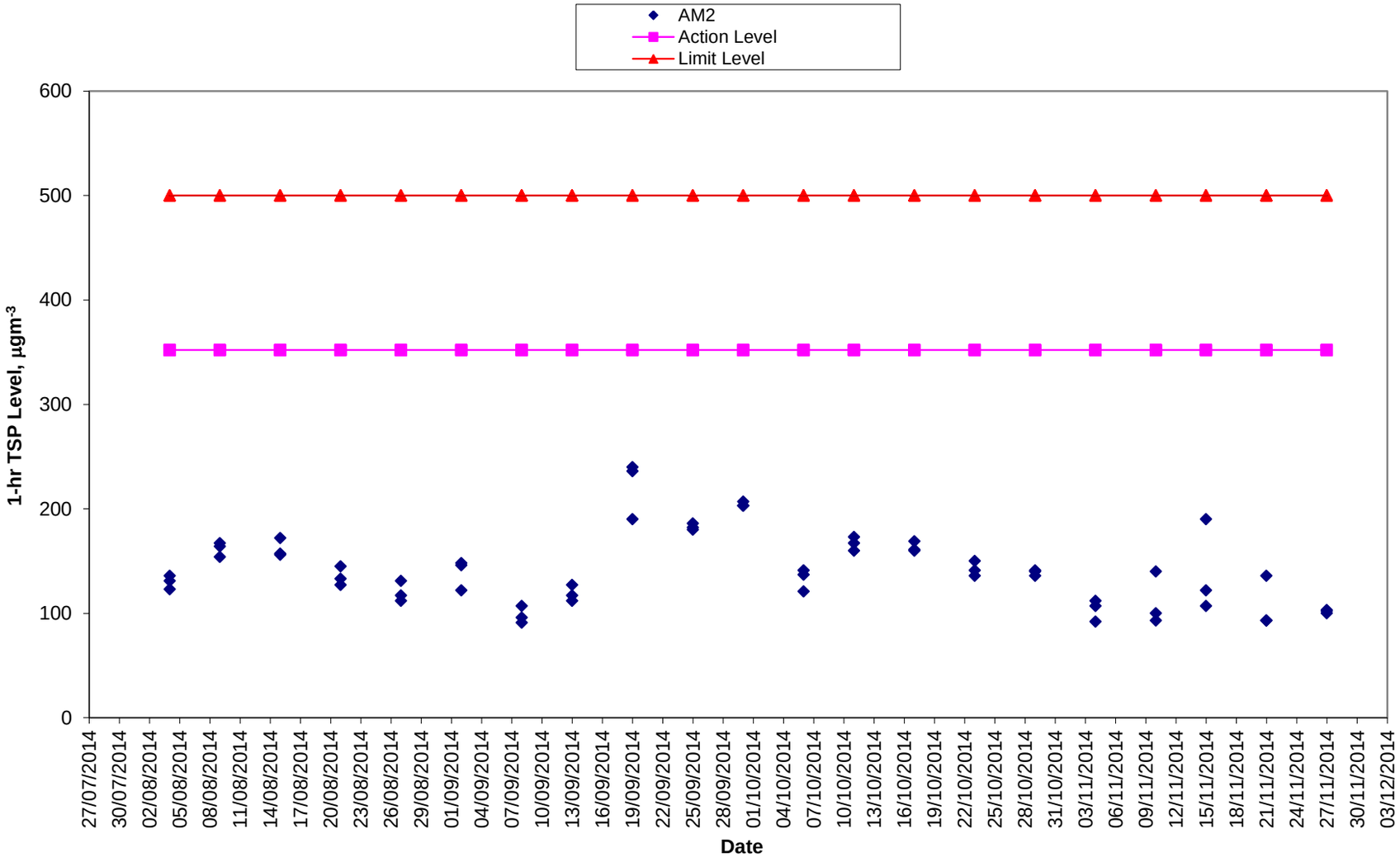
24-hour TSP Monitoring Results

Station AM2

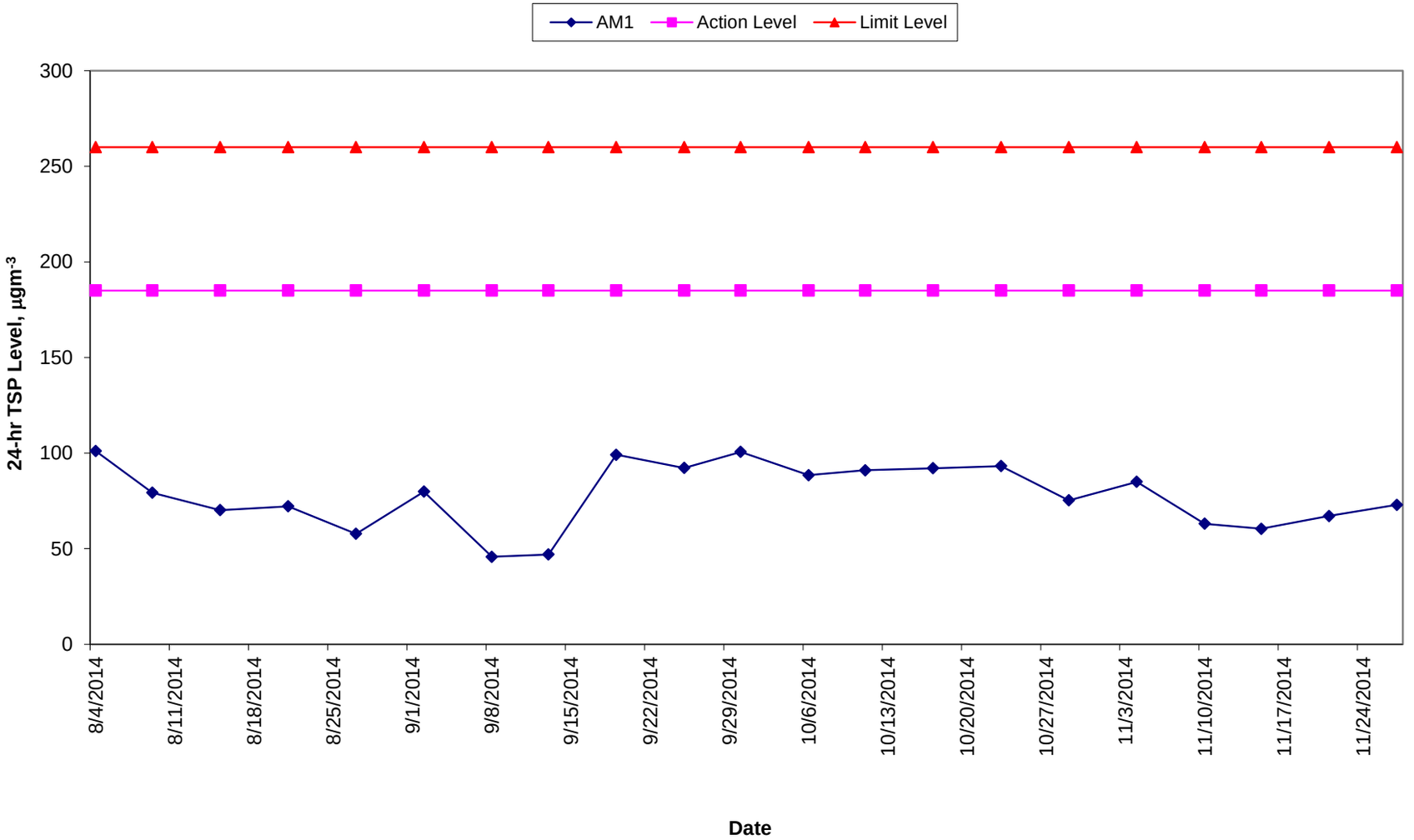
Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m^3/min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)		ID	ID
04-Nov-14	13:46	05-Nov-14	13:46	Cloudy	2.8330	2.9641	14099.93	14123.93	24.00	1.23	1.23	1.23	74	182	260	Construction work in progress	GMW GS 2310 (S/N 0145)	4817
10-Nov-14	13:16	11-Nov-14	13:16	Cloudy	2.8307	2.9300	14126.93	14150.93	24.00	1.23	1.23	1.23	56	182	260	Construction work in progress	GMW GS 2310 (S/N 0145)	4807
15-Nov-14	12:56	16-Nov-14	12:56	Sunny	2.8305	2.9363	14153.93	14177.93	24.00	1.23	1.23	1.23	60	182	260	Construction work in progress	GMW GS 2310 (S/N 0145)	4815
21-Nov-14	13:26	22-Nov-14	13:26	Sunny	2.8901	3.0121	14180.93	14204.93	24.00	1.23	1.23	1.23	69	182	260	Construction work in progress	GMW GS 2310 (S/N 0145)	4908
27-Nov-14	13:06	28-Nov-14	13:06	Fine	2.8815	2.9984	14207.93	14231.93	24.00	1.23	1.23	1.23	66	182	260	Construction work in progress	GMW GS 2310 (S/N 0145)	4916
												Min.	**56**					
												Max.	**74**					
												Average	**65**					


1-hr TSP Levels
AM1 (Chan's Creative School)
AM1
Action Level
Limit Level
1-hr TSP Level, µgm-3
600
500
400
300
200
100
0
27/07/2014
30/07/2014
02/08/2014
05/08/2014
08/08/2014
11/08/2014
14/08/2014
17/08/2014
20/08/2014
23/08/2014
26/08/2014
29/08/2014
01/09/2014
04/09/2014
07/09/2014
10/09/2014
13/09/2014
16/09/2014
19/09/2014
22/09/2014
25/09/2014
28/09/2014
01/10/2014
04/10/2014
07/10/2014
10/10/2014
13/10/2014
16/10/2014
19/10/2014
22/10/2014
25/10/2014
28/10/2014
31/10/2014
03/11/2014
06/11/2014
09/11/2014
12/11/2014
15/11/2014
18/11/2014
21/11/2014
24/11/2014
27/11/2014
30/11/2014
03/12/2014
Date

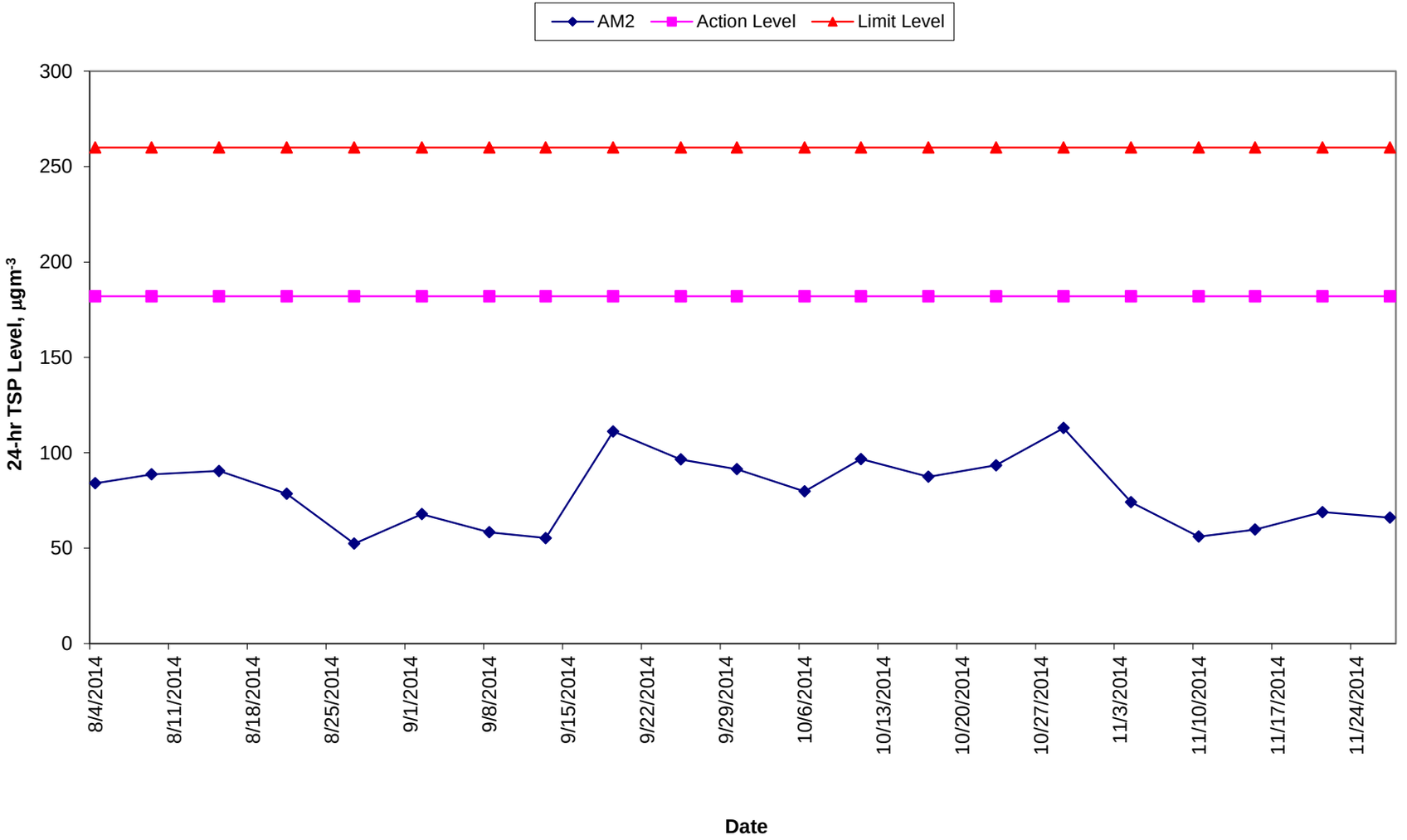
1-hr TSP Levels
AM2 (Hong Kong & Island Regional Office, WSD)



24-hr TSP Levels
AM1 (Chan's Creative School)



24-hr TSP Levels
AM2 (Hong Kong & Island Regional Office, WSD)



Meteorological Data Extracted from the Hong Kong Observatory

		King's Park Station				
Date	Weather	Average Air Temperature (℃)	Average Relative Humidity (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
2014-09-02	Fine	29	59-88	0.0	0-15	NW/W
2014-09-03	Fine	30	56-86	0.0	2-15	NW/W
2014-09-04	Sunny	29	66-87	6.7	0-21	W/SE
2014-09-05	Sunny	29	66-89	Trace	0-15	SE
2014-09-07	Cloudy	30	66-88	0.6	1-23	E/SE
2014-09-08	Sunny	29	72-91	3.0	0-15	SE
2014-09-09	Sunny	30	65-85	0.0	0-15	NW/S
2014-09-10	Sunny	30	59-85	Trace	0-10	NW/S
2014-09-11	Rain	30	60-87	Trace	0-18	SE
2014-09-13	Sunny	29	72-97	6.2	0-17	SE
2014-09-14	Sunny	30	64-92	0.5	0-15	SE
2014-09-16	Cloudy	27	78-96	51.6	5-53	SE
2014-09-17	Fine	28	81-94	7.7	0-20	SE
2014-09-18	Rain	29	68-92	Trace	0-13	NW/W
2014-09-19	Fine	30	64-91	0.3	0-14	NW/W
2014-09-20	Fine	29	56-73	0.0	0-19	NE
2014-09-21	Sunny	27	59-70	0.0	0-15	NE
2014-09-22	Sunny	28	58-76	Trace	0-12	NE
2014-09-23	Fine	28	63-77	0.0	0-9	N
2014-09-25	Sunny	28	66-84	0.0	0-11	S
2014-09-26	Sunny	28	66-84	0.0	0-12	S
2014-09-27	Sunny	29	64-85	0.0	0-14	S
2014-09-28	Fine	29	60-85	0.0	0-12	S
2014-09-30	Sunny	30	61-90	11.4	0-14	SE
2014-10-01	Sunny	28	70-96	26.7	0-23	SE

		Tsing Yi Station				
Date	Weather	Average Air Temperature (℃)	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-09-02	Fine	29	59-88	0.0	0-15	-
2014-09-03	Fine	30	56-86	0.0	0-16	-
2014-09-04	Sunny	28	66-87	6.7	0-35	-
2014-09-05	Sunny	31	66-89	Trace	0-19	-
2014-09-07	Cloudy	30	66-88	0.6	0-20	-
2014-09-08	Sunny	29	72-91	3.0	3-23	-
2014-09-09	Sunny	29	65-85	0.0	0-14	-
2014-09-10	Sunny	29	59-85	Trace	0-15	-
2014-09-11	Rain	30	60-87	Trace	0-18	-
2014-09-13	Sunny	30	72-97	6.2	0-18	-
2014-09-14	Sunny	29	64-92	0.5	0-19	-
2014-09-16	Cloudy	28	78-96	51.6	10-40	-
2014-09-17	Fine	29	81-94	7.7	7-27	-
2014-09-18	Rain	29	68-92	Trace	0-14	-
2014-09-19	Fine	30	64-91	0.3	0-19	-
2014-09-20	Fine	29	56-73	0.0	0-27	-
2014-09-21	Sunny	28	59-70	0.0	0-18	-
2014-09-22	Sunny	27	58-76	Trace	0-13	-
2014-09-23	Fine	27	63-77	0.0	0-15	-
2014-09-25	Sunny	28	66-84	0.0	0-17	-
2014-09-26	Sunny	28	66-84	0.0	0-15	-
2014-09-27	Sunny	28	64-85	0.0	0-15	-
2014-09-28	Fine	28	60-85	0.0	0-14	-
2014-09-30	Sunny	30	61-90	11.4	0-14	-
2014-10-01	Sunny	28	70-96	26.7	0-21	-

		Kai Tak Station				
Date	Weather	Average Air Temperature (℃) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-09-02	Fine	29	59-88	0.0	3-13	SE/W
2014-09-03	Fine	30	56-86	0.0	4-17	W/SW
2014-09-04	Sunny	29	66-87	6.7	0-40	E/W
2014-09-05	Sunny	29	66-89	Trace	0-23	E
2014-09-07	Cloudy	30	66-88	0.6	5-30	E
2014-09-08	Sunny	29	72-91	3.0	4-27	SE
2014-09-09	Sunny	30	65-85	0.0	0-13	SW
2014-09-10	Sunny	30	59-85	Trace	0-18	SE
2014-09-11	Rain	30	60-87	Trace	2-25	E/SE
2014-09-13	Sunny	29	72-97	6.2	4-24	E/SE
2014-09-14	Sunny	30	64-92	0.5	0-19	E/SE
2014-09-16	Cloudy	27	78-96	51.6	24-50	E/SE
2014-09-17	Fine	28	81-94	7.7	10-36	SE
2014-09-18	Rain	29	68-92	Trace	2-20	NW
2014-09-19	Fine	30	64-91	0.3	0-19	S/SW
2014-09-20	Fine	29	56-73	0.0	0-22	NW
2014-09-21	Sunny	27	59-70	0.0	0-26	N
2014-09-22	Sunny	28	58-76	Trace	0-15	NW
2014-09-23	Fine	28	63-77	0.0	0-19	SE
2014-09-25	Sunny	28	66-84	0.0	0-17	SE
2014-09-26	Sunny	28	66-84	0.0	0-17	SE
2014-09-27	Sunny	29	64-85	0.0	0-18	SE
2014-09-28	Fine	29	60-85	0.0	0-18	SE
2014-09-30	Sunny	30	61-90	11.4	0-18	SE
2014-10-01	Sunny	28	70-96	26.7	3-32	SE

		Green Island Station				
Date	Weather	Average Air Temperature (℃) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-09-02	Fine	29	59-88	0.0	0-20	S
2014-09-03	Fine	30	56-86	0.0	0-22	S/SW
2014-09-04	Sunny	29	66-87	6.7	0-49	NE/NW
2014-09-05	Sunny	29	66-89	Trace	3-36	NE
2014-09-07	Cloudy	30	66-88	0.6	12-48	NE
2014-09-08	Sunny	29	72-91	3.0	8-39	S
2014-09-09	Sunny	30	65-85	0.0	6-23	S
2014-09-10	Sunny	30	59-85	Trace	0-22	S
2014-09-11	Rain	30	60-87	Trace	0-45	NE
2014-09-13	Sunny	29	72-97	6.2	4-42	S/NE
2014-09-14	Sunny	30	64-92	0.5	0-25	NE
2014-09-16	Cloudy	27	78-96	51.6	29-83	E/SE
2014-09-17	Fine	28	81-94	7.7	10-44	SE
2014-09-18	Rain	29	68-92	Trace	2-20	S
2014-09-19	Fine	30	64-91	0.3	0-25	NW
2014-09-20	Fine	29	56-73	0.0	7-36	N/NW
2014-09-21	Sunny	27	59-70	0.0	17-33	N/NE
2014-09-22	Sunny	28	58-76	Trace	3-32	N/NW
2014-09-23	Fine	28	63-77	0.0	0-21	S
2014-09-25	Sunny	28	66-84	0.0	0-23	S/SE
2014-09-26	Sunny	28	66-84	0.0	0-27	E
2014-09-27	Sunny	29	64-85	0.0	0-30	S/SE
2014-09-28	Fine	29	60-85	0.0	0-26	S
2014-09-30	Sunny	30	61-90	11.4	0-27	S
2014-10-01	Sunny	28	70-96	26.7	5-55	SE

* King's Park's data
\- Data was not available
\# less than 24 hourly observations per day

Meteorological Data Extracted from the Hong Kong Observatory

Date	Weather	King's Park Station				
		Average Air Temperature (°C)	Average Relative Humidity (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
2014-10-03	Sunny	28	76-92	23.7	0-21	SE
2014-10-04	Sunny	27	75-96	2.6	0-15	SE/E
2014-10-06	Sunny	27	47-78	0.0	1-20	E
2014-10-07	Sunny	26	54-72	Trace	0-18	SE/E
2014-10-08	Sunny	26	48-73	0.0	0-17	S/SE
2014-10-09	Sunny	27	48-71	0.0	0-14	N
2014-10-11	Sunny	28	49-72	0.0	0-15	E
2014-10-12	Sunny	27	42-79	0.0	0-20	NE
2014-10-14	Sunny	26	51-71	Trace	0-18	E/NE
2014-10-15	Sunny	25	56-74	0.0	0-20	SE
2014-10-17	Sunny	25	53-74	0.0	4-21	SE
2014-10-18	Sunny	25	51-78	0.0	1-20	SE/E
2014-10-20	Sunny	27	66-83	0.0	0-12	SE
2014-10-21	Sunny	27	50-84	Trace	0-11	NW/W
2014-10-23	Fine	24	75-95	0.2	1-18	SE/E
2014-10-24	Fine	24	70-80	0.0	3-16	SE/E
2014-10-25	Cloudy	25	76-83	0.0	1-18	SE
2014-10-26	Sunny	26	68-87	0.1	0-14	SE/E
2014-10-28	Sunny	25	59-78	Trace	6-24	SE/E
2014-10-29	Fine	25	62-82	Trace	1-22	SE
2014-10-30	Fine	26	70-86	0.0	1-18	E
2014-10-31	Sunny	26	70-87	0.0	0-14	N
2014-11-01	Sunny	26	70-86	0.0	0-13	SE/E

Date	Weather	Tsing Yi Station				
		Average Air Temperature (°C)	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-10-03	Sunny	27	76-92	23.7	0-21	-
2014-10-04	Sunny	27	75-96	2.6	0-20	-
2014-10-06	Sunny	27	47-78	0.0	0-14	-
2014-10-07	Sunny	27	54-72	Trace	0-18	-
2014-10-08	Sunny	26	48-73	0.0	0-13	-
2014-10-09	Sunny	26	48-71	0.0	0-14	N
2014-10-11	Sunny	28	49-72	0.0	0-12	SE/E
2014-10-12	Sunny	27	42-79	0.0	0-20	N/NW
2014-10-14	Sunny	26	51-71	Trace	1-15	N
2014-10-15	Sunny	25	56-74	0.0	0-17	E
2014-10-17	Sunny	26	53-74	0.0	3-20	SE/E
2014-10-18	Sunny	26	51-78	0.0	3-21	SE/E
2014-10-20	Sunny	28	66-83	0.0	1-18	SE/E
2014-10-21	Sunny	27	50-84	Trace	0-12	S/SE
2014-10-23	Fine	25	75-95	0.2	1-12	SE/E
2014-10-24	Fine	25	70-80	0.0	0-17	E
2014-10-25	Cloudy	26	76-83	0.0	1-15	SE/E
2014-10-26	Sunny	27	68-87	0.1	0-15	E
2014-10-28	Sunny	26	59-78	Trace	6-24	SE/E
2014-10-29	Fine	27	62-82	Trace	6-23	SE/E
2014-10-30	Fine	27	70-86	0.0	2-17	E/NE
2014-10-31	Sunny	26	70-87	0.0	0-15	NE
2014-11-01	Sunny	26	70-86	0.0	0-13	E

Date	Weather	Kai Tak Station				
		Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-10-03	Sunny	28	76-92	23.7	0-23	SE
2014-10-04	Sunny	27	75-96	2.6	0-21	E
2014-10-06	Sunny	27	47-78	0.0	2-23	E
2014-10-07	Sunny	26	54-72	Trace	3-26	E
2014-10-08	Sunny	26	48-73	0.0	2-16	N/NE
2014-10-09	Sunny	27	48-71	0.0	0-18	SE
2014-10-11	Sunny	28	49-72	0.0	0-16	SE/E
2014-10-12	Sunny	27	42-79	0.0	1-21	N
2014-10-14	Sunny	26	51-71	Trace	3-19	NE
2014-10-15	Sunny	25	56-74	0.0	0-19	E
2014-10-17	Sunny	25	53-74	0.0	9-25	E
2014-10-18	Sunny	25	51-78	0.0	5-24	E/NE
2014-10-20	Sunny	27	66-83	0.0	0-19	SE/E
2014-10-21	Sunny	27	50-84	Trace	0-15	SE
2014-10-23	Fine	24	75-95	0.2	9-25	E
2014-10-24	Fine	24	70-80	0.0	3-21	SE/E
2014-10-25	Cloudy	25	76-83	0.0	6-22	E
2014-10-26	Sunny	26	68-87	0.1	3-17	S/SE
2014-10-28	Sunny	25	59-78	Trace	12-30	E
2014-10-29	Fine	25	62-82	Trace	7-29	E
2014-10-30	Fine	26	70-86	0.0	6-24	E/NE
2014-10-31	Sunny	26	70-87	0.0	5-19	-
2014-11-01	Sunny	26	70-86	0.0	0-20	SE

Date	Weather	Green Island Station				
		Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-10-03	Sunny	28	76-92	23.7	0-40	E/NE
2014-10-04	Sunny	27	75-96	2.6	2-27	E
2014-10-06	Sunny	27	47-78	0.0	12-42	NE
2014-10-07	Sunny	26	54-72	Trace	10-45	E/NE
2014-10-08	Sunny	26	48-73	0.0	6-37	NE
2014-10-09	Sunny	27	48-71	0.0	0-22	SW
2014-10-11	Sunny	28	49-72	0.0	0-35	S
2014-10-12	Sunny	27	42-79	0.0	0-41	NE/N
2014-10-14	Sunny	26	51-71	Trace	2-39	NE/N
2014-10-15	Sunny	25	56-74	0.0	6-29	E/NE
2014-10-17	Sunny	25	53-74	0.0	5-43	E/NE
2014-10-18	Sunny	25	51-78	0.0	8-37	E/NE
2014-10-20	Sunny	27	66-83	0.0	0-33	NE
2014-10-21	Sunny	27	50-84	Trace	0-21	NW/W
2014-10-23	Fine	24	75-95	0.2	5-46	NE
2014-10-24	Fine	24	70-80	0.0	12-39	NE
2014-10-25	Cloudy	25	76-83	0.0	14-33	NE
2014-10-26	Sunny	26	68-87	0.1	0-33	NE
2014-10-28	Sunny	25	59-78	Trace	28-65	NE
2014-10-29	Fine	25	62-82	Trace	15-52	NE
2014-10-30	Fine	26	70-86	0.0	6-47	NE
2014-10-31	Sunny	26	70-87	0.0	0-33	E/NE
2014-11-01	Sunny	26	70-86	0.0	0-27	SE

* King's Park's data
\- Data was not available
\# less than 24 hourly observations per day

Meteorological Data Extracted from the Hong Kong Observatory

Date	Weather	King's Park Station				
		Average Air Temperature (°C)	Average Relative Humidity (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
2014-11-02	Sunny	25	61-85	Trace	0-15	NE
2014-11-04	Cloudy	22	72-81	Trace	0-15	SE/E
2014-11-05	Cloudy	24	74-81	Trace	2-16	SE/E
2014-11-06	Sunny	24	74-87	0.1	0-14	SE/E
2014-11-07	Sunny	23	82-97	11.8	0-18	SE
2014-11-09	Cloudy	22	75-86	Trace	0-19	SE
2014-11-10	Cloudy	24	72-84	Trace	0-20	SE/E
2014-11-11	Cloudy	24	76-85	0.0	0-15	SE/E
2014-11-12	Cloudy	25	74-88	Trace	0-13	E/NE
2014-11-13	Cloudy	19	72-88	Trace	0-17	NE/N
2014-11-15	Sunny	22	65-85	0.4	0-19	-
2014-11-16	Sunny	23	61-85	0.0	0-14	NE/N
2014-11-18	Sunny	21	57-72	Trace	0-16	NE
2014-11-19	Sunny	22	58-78	Trace	0-12	SE/E
2014-11-21	Sunny	23	62-83	0.0	0-18	SE/E
2014-11-22	Sunny	23	68-88	0.0	0-19	SE/E
2014-11-23	Sunny	23	70-88	0.0	2-18	SE
2014-11-24	Sunny	24	67-88	0.0	0-14	SE
2014-11-25	Sunny	24	65-92	0.0	0-12	N
2014-11-27	Fine	22	77-90	0.4	0-18	SE/E
2014-11-28	Cloudy	24	75-88	Trace	0-13	SE
2014-11-29	Cloudy	23	78-94	0.2	0-19	SE/E
2014-11-30	Sunny	25	82-96	0.2	0-12	SE

Date	Weather	Tsing Yi Station				
		Average Air Temperature (°C)	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-11-02	Sunny	26	61-85	Trace	1-18	N
2014-11-04	Cloudy	23	72-81	Trace	0-14	E
2014-11-05	Cloudy	25	74-81	Trace	4-16	E
2014-11-06	Sunny	24	74-87	0.1	1-11	SE/E
2014-11-07	Sunny	24	82-97	11.8	0-21	NE/E
2014-11-09	Cloudy	22	75-86	Trace	0-18	NE
2014-11-10	Cloudy	24	72-84	Trace	0-14	NW
2014-11-11	Cloudy	25	76-85	0.0	0-15	N
2014-11-12	Cloudy	22	74-88	Trace	0-20	NW
2014-11-13	Cloudy	20	72-88	Trace	0-13	NW
2014-11-15	Sunny	23	65-85	0.4	2-23	E
2014-11-16	Sunny	23	61-85	0.0	0-14	N
2014-11-18	Sunny	21	57-72	Trace	0-15	SE/E
2014-11-19	Sunny	22	58-78	Trace	1-14	NE/E
2014-11-21	Sunny	24	62-83	0.0	0-18	NE/E
2014-11-22	Sunny	23	68-88	0.0	0-19	-
2014-11-23	Sunny	25	70-88	0.0	1-23	E
2014-11-24	Sunny	25	67-88	0.0	0-15	-
2014-11-25	Sunny	24	65-92	0.0	0-12	NW
2014-11-27	Fine	23	77-90	0.4	3-18	E
2014-11-28	Cloudy	25	75-88	Trace	0-15	SE/E
2014-11-29	Cloudy	25	78-94	0.2	3-21	E
2014-11-30	Sunny	26	82-96	0.2	0-12	W

Date	Weather	Kai Tak Station				
		Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-11-02	Sunny	25	61-85	Trace	3-21	N/NW
2014-11-04	Cloudy	22	72-81	Trace	3-21	E
2014-11-05	Cloudy	24	74-81	Trace	4-22	SE/E
2014-11-06	Sunny	24	74-87	0.1	0-21	E
2014-11-07	Sunny	23	82-97	11.8	8-26	E
2014-11-09	Cloudy	22	75-86	Trace	0-24	E
2014-11-10	Cloudy	24	72-84	Trace	4-25	E
2014-11-11	Cloudy	24	76-85	0.0	0-21	N/NW
2014-11-12	Cloudy	25	74-88	Trace	0-15	SW/S
2014-11-13	Cloudy	19	72-88	Trace	0-18	E
2014-11-15	Sunny	22	65-85	0.4	2-25	SE/E
2014-11-16	Sunny	23	61-85	0.0	0-20	E
2014-11-18	Sunny	21	57-72	Trace	3-18	NE
2014-11-19	Sunny	22	58-78	Trace	4-18	E
2014-11-21	Sunny	23	62-83	0.0	0-22	NE/N
2014-11-22	Sunny	23	68-88	0.0	0-26	SE/E
2014-11-23	Sunny	23	70-88	0.0	5-24	E
2014-11-24	Sunny	24	67-88	0.0	0-21	SE
2014-11-25	Sunny	24	65-92	0.0	0-14	SW/W
2014-11-27	Fine	22	77-90	0.4	3-24	SE/E
2014-11-28	Cloudy	24	75-88	Trace	3-18	SE/E
2014-11-29	Cloudy	23	78-94	0.2	6-19	SE/E
2014-11-30	Sunny	25	82-96	0.2	4-19	SE/E

Date	Weather	Green Island Station				
		Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-11-02	Sunny	25	61-85	Trace	11-38	NE/N
2014-11-04	Cloudy	22	72-81	Trace	5-37	NE
2014-11-05	Cloudy	24	74-81	Trace	2-36	NE
2014-11-06	Sunny	24	74-87	0.1	0-35	NE
2014-11-07	Sunny	23	82-97	11.8	24-50	NE
2014-11-09	Cloudy	22	75-86	Trace	17-45	NE/N
2014-11-10	Cloudy	24	72-84	Trace	5-45	NE
2014-11-11	Cloudy	24	76-85	0.0	12-41	NE
2014-11-12	Cloudy	25	74-88	Trace	11-35	NE/N
2014-11-13	Cloudy	19	72-88	Trace	16-35	N
2014-11-15	Sunny	22	65-85	0.4	15-57	NE
2014-11-16	Sunny	23	61-85	0.0	0-32	NE/N
2014-11-18	Sunny	21	57-72	Trace	2-39	NE/N
2014-11-19	Sunny	22	58-78	Trace	0-31	NE
2014-11-21	Sunny	23	62-83	0.0	0-40	NE
2014-11-22	Sunny	23	68-88	0.0	6-46	NE
2014-11-23	Sunny	23	70-88	0.0	-	-
2014-11-24	Sunny	24	67-88	0.0	0-40	NE
2014-11-25	Sunny	24	65-92	0.0	0-20	NW
2014-11-27	Fine	22	77-90	0.4	13-45	NE
2014-11-28	Cloudy	24	75-88	Trace	2-40	NE
2014-11-29	Cloudy	23	78-94	0.2	20-41	NE
2014-11-30	Sunny	25	82-96	0.2	1-31	NE

* King's Park's data
\- Data was not available
\# less than 24 hourly observations per day

Annex C6 Noise Monitoring Results

Daytime Noise Monitoring Results

Station NM1

Date	Start Time	End Time	Weather	Noise level (dB(A)), 30 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (℃)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
2-Sep-14	9:10	9:40	Sunny	70	71	67	Noise from nearby site	Traffic noise	-	29	0.2	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
8-Sep-14	9:30	10:00	Sunny	69	71	66	Noise from nearby site	Traffic noise	-	29	0.3	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
19-Sep-14	13:18	13:48	Fine	67	71	69	Noise from nearby playground	Traffic noise	-	30	0.5	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
25-Sep-14	13:26	13:56	Sunny	68	72	70	Noise from nearby site	Traffic noise	-	28	0.3	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
30-Sep-14	9:49	10:19	Sunny	67	70	69	Noise from nearby site	Traffic noise	-	30	0.3	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
			Min.	**67**									
			Max.	**70**									

Annex C6 Noise Monitoring Results

Daytime Noise Monitoring Results

Station NM1

Date	Start Time	End Time	Weather	Noise level (dB(A)), 30 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
06-Oct-14	14:14	14:44	Sunny	68	69	65	Noise from Nearby Site	Traffic noise	-	28	0.5	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
17-Oct-14	10:00	10:30	Sunny	68	70	66	Noise from Nearby Site	Traffic noise	-	27	0.4	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
23-Oct-14	9:00	9:30	Fine	70	73	67	Noise from Nearby Site	Traffic noise	-	27	0.3	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
29-Oct-14	13:40	14:10	Fine	67	69	65	Noise from Nearby Site	Traffic noise	-	28	0.3	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
			Min.	**67**									
			Max.	**70**									

Annex C6 Noise Monitoring Results

Daytime Noise Monitoring Results

Station NM1

Date	Start Time	End Time	Weather	Noise level (dB(A)), 30 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
04-Nov-14	14:17	14:47	Cloudy	68	70	66	Noise from Nearby Site	Traffic noise	-	22	0.5	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
10-Nov-14	9:18	9:48	Cloudy	67	69	65	Noise from Nearby Site	Traffic noise	-	24	0.3	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
21-Nov-14	9:32	10:02	Sunny	67	69	64	Noise from Nearby Site	Traffic noise	-	23	0.5	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
27-Nov-14	9:08	9:38	Fine	67	69	64	Noise from Nearby Site	Traffic noise	-	22	0.3	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
			Min.	**67**									
			Max.	**68**									

Annex C6 Noise Monitoring Results

Restricted Hours Noise Monitoring Results [1]

Station NM1

Date	Start Time	End Time	Weather	Noise level (dB(A)), 5 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (℃)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
9-Sep-14	19:00	19:05	Fine	70	71	67	Noise from nearby playground	Traffic noise	-	#REF!	0.3	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
	19:05	19:10	Fine	69	71	68			-				
	19:10	19:15	Fine	70	72	68			-				
	19:00	19:15	Fine	70	71	68			-				
14-Sep-14	9:55	10:00	Sunny	70	72	67	-	Traffic noise	-	#REF!	0.3	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
	10:00	10:05	Sunny	69	72	68			-				
	10:05	10:10	Sunny	69	71	67			-				
	9:55	10:10	Sunny	69	72	67			-				
23-Sep-14	19:12	19:17	Fine	69	70	66	Noise from nearby playground	Traffic noise	-	#REF!	0.3	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
	19:17	19:22	Fine	69	71	66			-				
	19:22	19:27	Fine	69	70	67			-				
	19:12	19:27	Fine	69	71	66			-				
28-Sep-14	11:05	11:10	Fine	70	71	67	Noise from nearby playground	Traffic noise	-	#REF!	0.3	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
	11:10	11:15	Fine	68	71	67			-				
	11:15	11:20	Fine	69	71	67			-				
	11:05	11:20	Fine	69	71	67			-				
			Min.	**68**									
			Max.	**70**									

[1] No class was held at the school during all the measurement period.

Annex C6 Noise Monitoring Results

Restricted Hours Noise Monitoring Results [1]

Station NM1

Date	Start Time	End Time	Weather	Noise level (dB(A)), 5 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
07-Oct-14	21:45	21:50	Fine	69	72	67	Noise from playground	Traffic Noise	-	31	0.3	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
	21:50	21:55	Fine	70	72	67			-				
	21:55	22:00	Fine	70	70	68			-				
	21:45	22:00	Fine	70	72	67			-				
12-Oct-14	10:00	10:05	Sunny	69	70	66	Noise from playground	Traffic Noise	-	27	0.3	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
	10:05	10:10	Sunny	69	71	67			-				
	10:10	10:15	Sunny	69	70	66			-				
	10:00	10:15	Sunny	69	71	67							
21-Oct-14	19:00	19:05	Fine	69	71	65	Noise from playground	Traffic Noise	-	27	0.2	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
	19:05	19:10	Fine	68	71	66			-				
	19:15	19:20	Fine	68	71	65			-				
	19:00	19:15	Fine	68	71	66			-				
26-Oct-14	16:20	16:25	Sunny	68	70	66	Noise from playground	Traffic Noise	-	26	0.2	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
	16:25	16:30	Sunny	67	69	66			-				
	16:30	16:35	Sunny	68	71	66			-				
	16:20	16:35	Sunny	68	70	67			-				
			Min.	**67**									
			Max.	**70**									

[1] No class was held at the school during all the measurement period.

Annex C6 Noise Monitoring Results

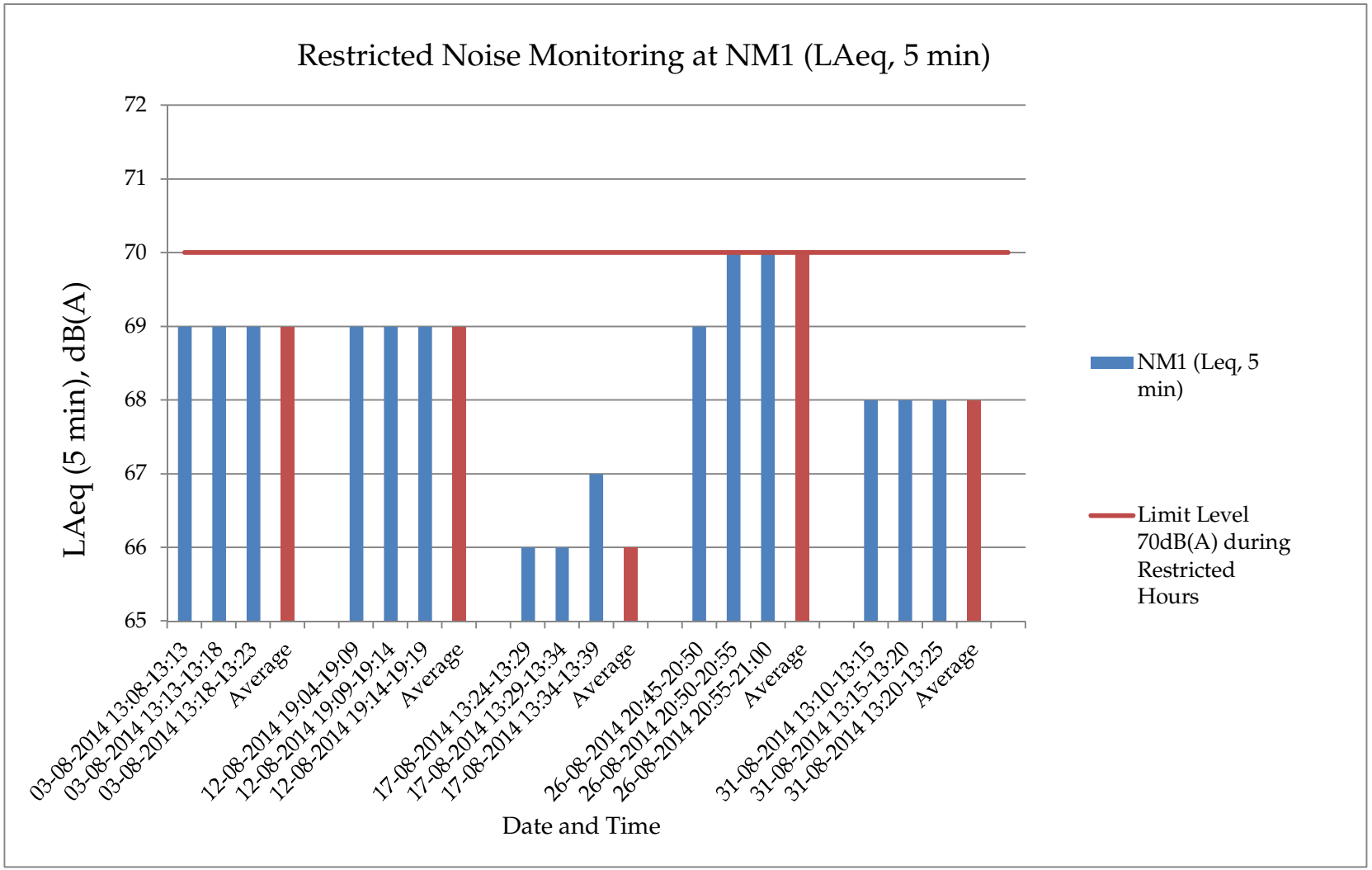
Restricted Hours Noise Monitoring Results [1]

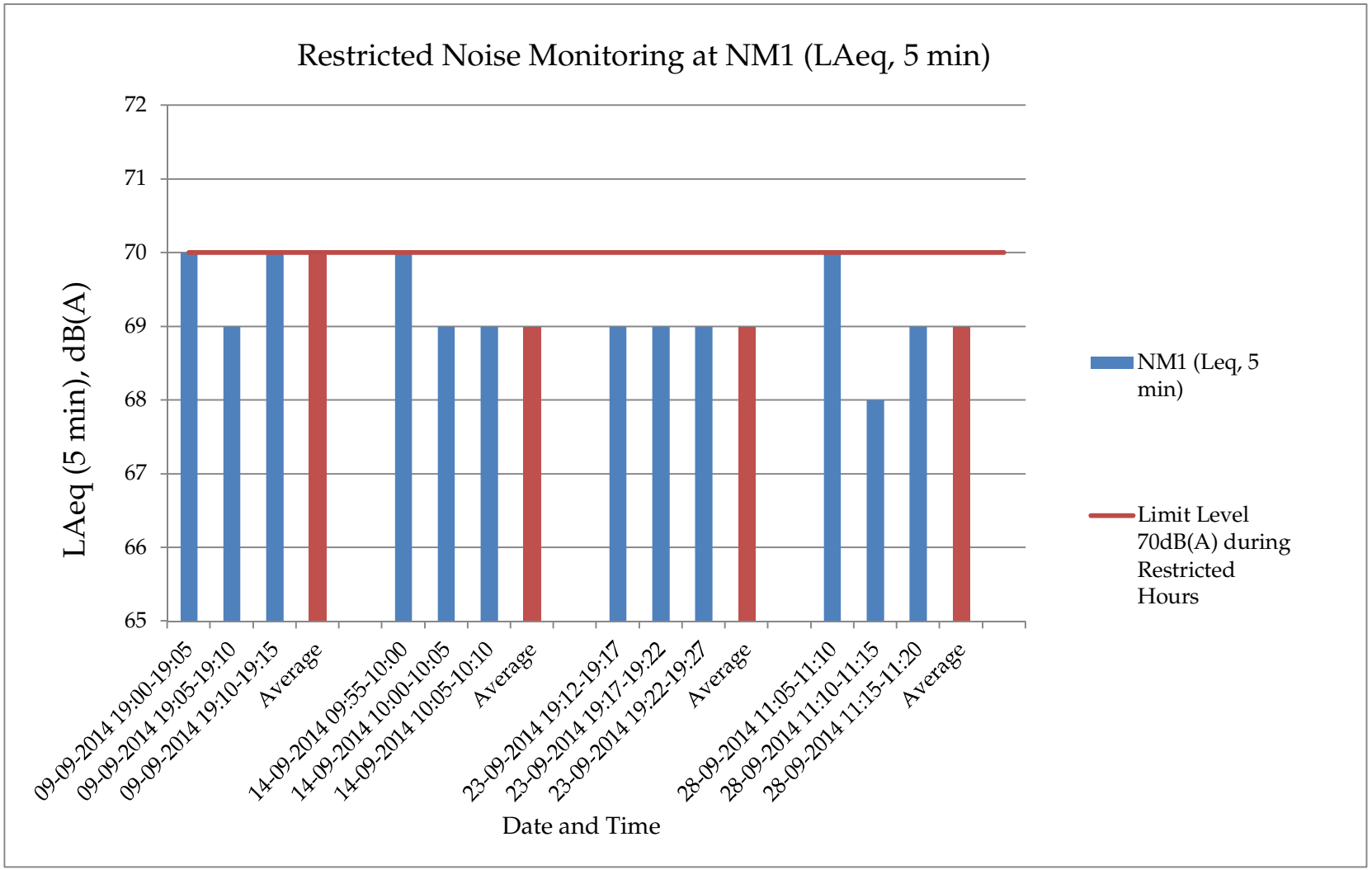
Station NM1

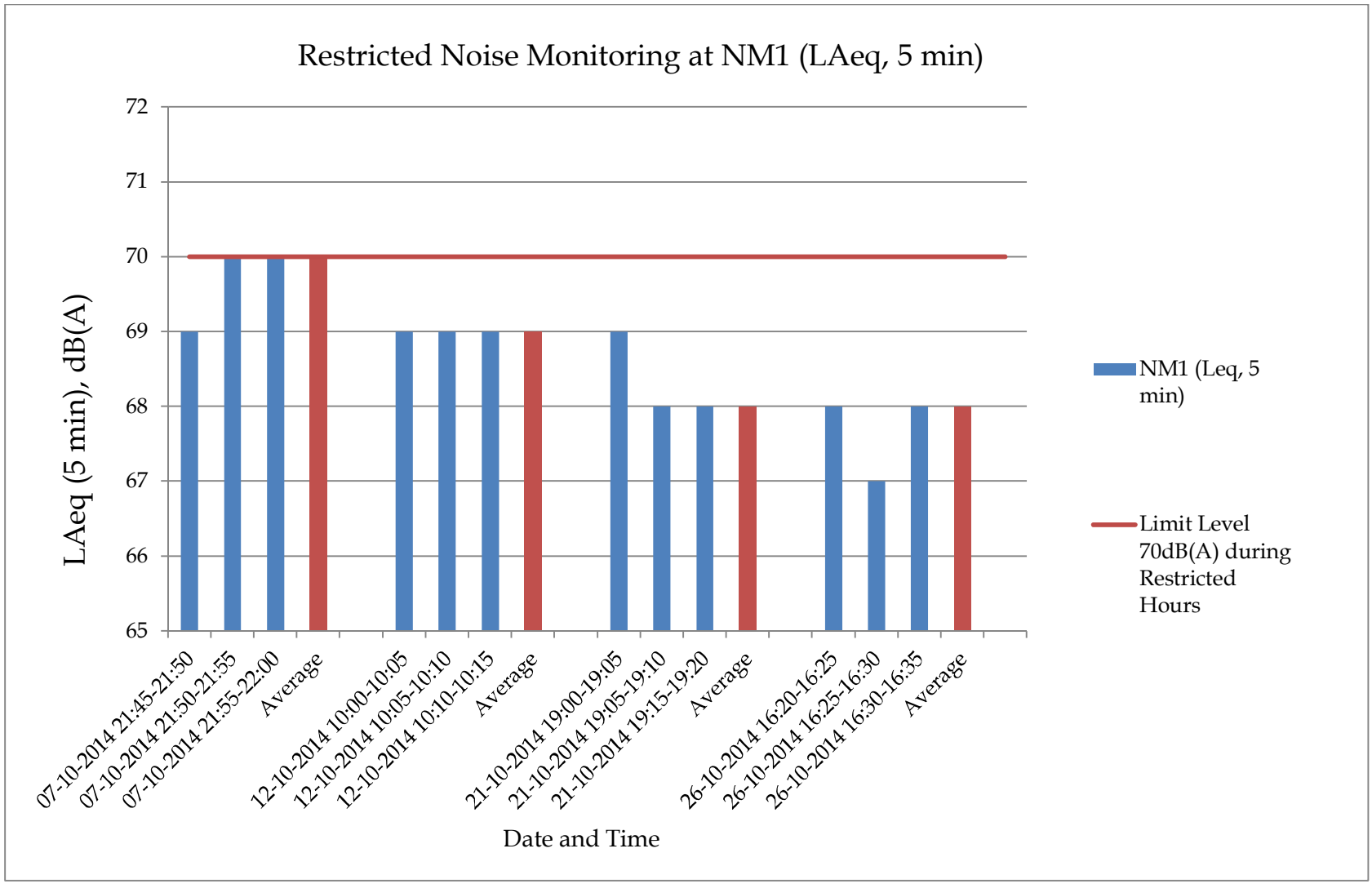
Date	Start Time	End Time	Weather	Noise level (dB(A)), 5 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
04-Nov-14	21:21	21:26	Fine	69	72	65	-	Noise from nearby playground, Traffic noise	-	22	0.3	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
	21:26	21:31	Fine	69	72	66			-				
	21:31	21:36	Fine	69	72	65			-				
	21:21	21:36	Fine	69	72	66			-				
09-Nov-14	11:30	11:35	Cloudy	67	72	65	Noise from playground	Traffic Noise	-	22	0.3	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
	11:35	11:40	Cloudy	67	71	64			-				
	11:40	11:45	Cloudy	68	72	65			-				
	11:30	11:45	Cloudy	68	72	65							
18-Nov-14	21:35	21:40	Fine	69	72	66	-	Traffic Noise	-	21	0.3	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
	21:40	21:45	Fine	69	73	67			-				
	21:45	21:50	Fine	70	73	67			-				
	21:35	21:50	Fine	69	73	67			-				
23-Nov-14	15:40	15:45	Sunny	69	71	66	Noise from playground	Traffic Noise	-	23	0.3	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
	15:45	15:50	Sunny	69	70	66			-				
	15:50	15:55	Sunny	69	71	67			-				
	15:40	15:55	Sunny	69	71	66			-				
			Min.	**67**									
			Max.	**70**									

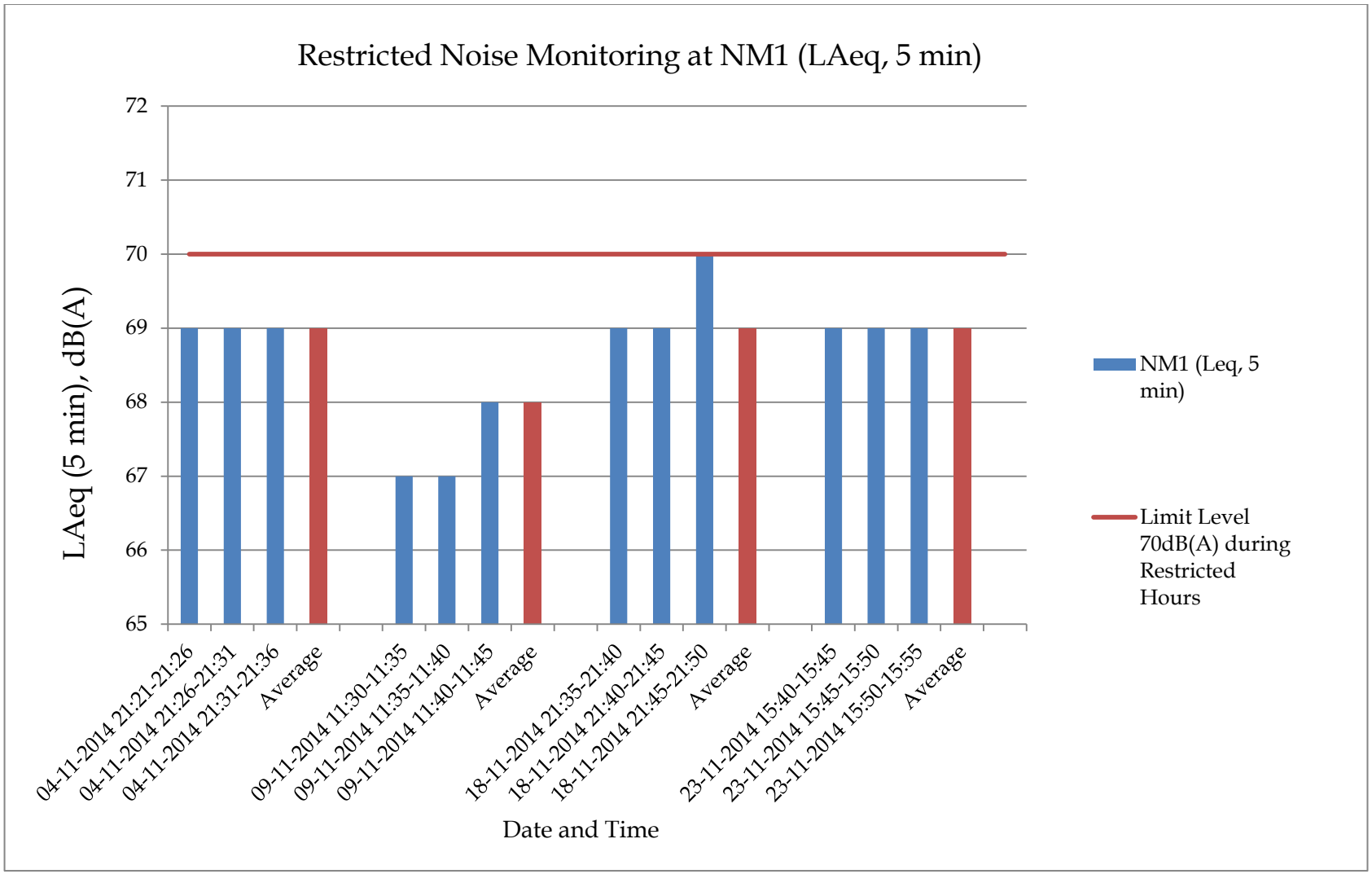
[1] No class was held at the school during all the measurement period.

Remark:
- 70 dB(A) was adopted as the Limit Level during school normal teaching period in the reporting period
- 75 dB(A) was adopted as the Limit Level during school holiday in the reporting period


Restricted Noise Monitoring at NM1 (LAeq, 5 min)
LAeq (5 min), dB(A)
72
71
70
69
68
67
66
65
03-08-2014 13:08-13:13
03-08-2014 13:13-13:18
03-08-2014 13:18-13:23
Average
12-08-2014 19:04-19:09
12-08-2014 19:09-19:14
12-08-2014 19:14-19:19
Average
17-08-2014 13:24-13:29
17-08-2014 13:29-13:34
17-08-2014 13:34-13:39
Average
26-08-2014 20:45-20:50
26-08-2014 20:50-20:55
26-08-2014 20:55-21:00
Average
31-08-2014 13:10-13:15
31-08-2014 13:15-13:20
31-08-2014 13:20-13:25
Average
Date and Time
NM1 (Leq, 5 min)
Limit Level 70dB(A) during Restricted Hours


Restricted Noise Monitoring at NM1 (LAeq, 5 min)
LAeq (5 min), dB(A)
72
71
70
69
68
67
66
65
09-09-2014 19:00-19:05
09-09-2014 19:05-19:10
09-09-2014 19:10-19:15
Average
14-09-2014 09:55-10:00
14-09-2014 10:00-10:05
14-09-2014 10:05-10:10
Average
23-09-2014 19:12-19:17
23-09-2014 19:17-19:22
23-09-2014 19:22-19:27
Average
28-09-2014 11:05-11:10
28-09-2014 11:10-11:15
28-09-2014 11:15-11:20
Average
Date and Time
NM1 (Leq, 5 min)
Limit Level 70dB(A) during Restricted Hours


Restricted Noise Monitoring at NM1 (LAeq, 5 min)
LAeq (5 min), dB(A)
72
71
70
69
68
67
66
65
07-10-2014 21:45-21:50
07-10-2014 21:50-21:55
07-10-2014 21:55-22:00
Average
12-10-2014 10:00-10:05
12-10-2014 10:05-10:10
12-10-2014 10:10-10:15
Average
21-10-2014 19:00-19:05
21-10-2014 19:05-19:10
21-10-2014 19:15-19:20
Average
26-10-2014 16:20-16:25
26-10-2014 16:25-16:30
26-10-2014 16:30-16:35
Average
Date and Time
NM1 (Leq, 5 min)
Limit Level 70dB(A) during Restricted Hours


Restricted Noise Monitoring at NM1 (LAeq, 5 min)
LAeq (5 min), dB(A)
72
71
70
69
68
67
66
65
04-11-2014 21:21-21:26
04-11-2014 21:26-21:31
04-11-2014 21:31-21:36
Average
09-11-2014 11:30-11:35
09-11-2014 11:35-11:40
09-11-2014 11:40-11:45
Average
18-11-2014 21:35-21:40
18-11-2014 21:40-21:45
18-11-2014 21:45-21:50
Average
23-11-2014 15:40-15:45
23-11-2014 15:45-15:50
23-11-2014 15:50-15:55
Average
Date and Time
NM1 (Leq, 5 min)
Limit Level 70dB(A) during Restricted Hours

Annex C7 Cumulative Complaint and Summons/Prosecutions Log

Reporting Month	Number of Complaints in Reporting Month	Number of Summons/Prosecutions in Reporting Month
December 2009	0	0
January 2010	0	0
February 2010	0	0
March 2010	0	0
April 2010	0	0
May 2010	0	0
June 2010	0	0
July 2010	0	0
August 2010	0	0
September 2010	0	0
October 2010	0	0
November 2010	0	0
December 2010	0	0
January 2011	0	0
February 2011	0	0
March 2011	0	0
April 2011	0	0
May 2011	0	0

Annex C7 Cumulative Complaint and Summons/Prosecutions Log

Reporting Month	Number of Complaints in Reporting Month	Number of Summons/Prosecutions in Reporting Month
June 2011	0	0
July 2011	0	0
August 2011	0	0
September 2011	0	0
October 2011	0	0
November 2011	0	0
December 2011	0	0
January 2012	0	0
February 2012	0	0
March 2012	0	0
April 2012	0	0
May 2012	0	0
June 2012	0	0
July 2012	0	0
August 2012	0	0
September 2012	0	0
October 2012	0	0
November 2012	0	0

Annex C7 Cumulative Complaint and Summons/Prosecutions Log

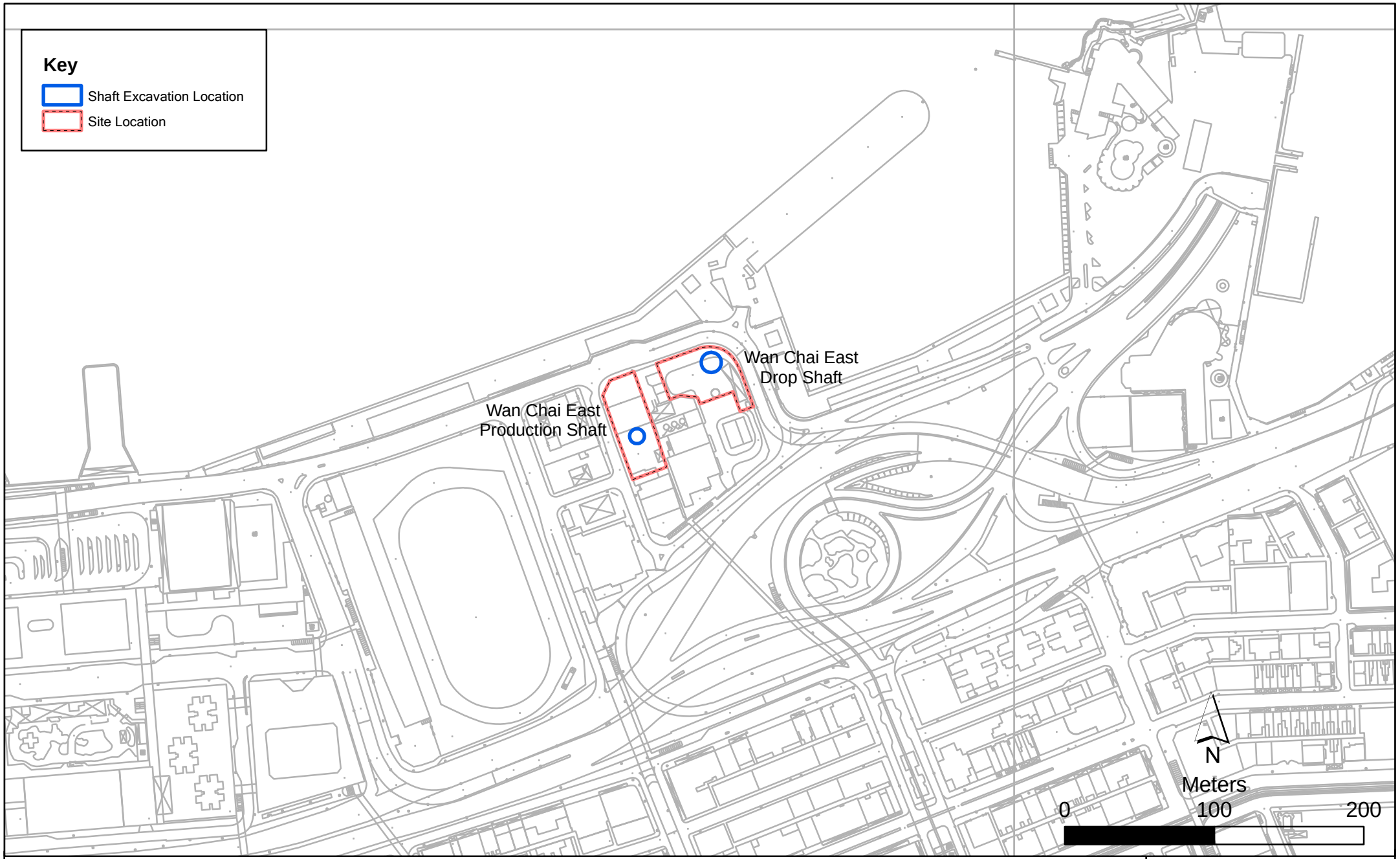
Reporting Month	Number of Complaints in Reporting Month	Number of Summons/Prosecutions in Reporting Month
December 2012	0	0
January 2013	0	0
February 2013	0	0
March 2013	0	0
April 2013	0	0
May 2013	0	0
June 2013	0	0
July 2013	0	0
August 2013	0	0
September 2013	0	0
October 2013	0	0
November 2013	0	0
December 2013	0	0
January 2014	0	0
February 2014	0	0
March 2014	0	0
April 2014	0	0
May 2014	0	0

Annex C7 Cumulative Complaint and Summons/Prosecutions Log

Reporting Month	Number of Complaints in Reporting Month	Number of Summons/Prosecutions in Reporting Month
June 2014	0	0
July 2014	0	0
August 2014	0	0
September 2014	0	0
October 2014	0	0
November 2014	0	0
Overall Total	0	0

Annex D

Wan Chai East Production and Drop Shafts



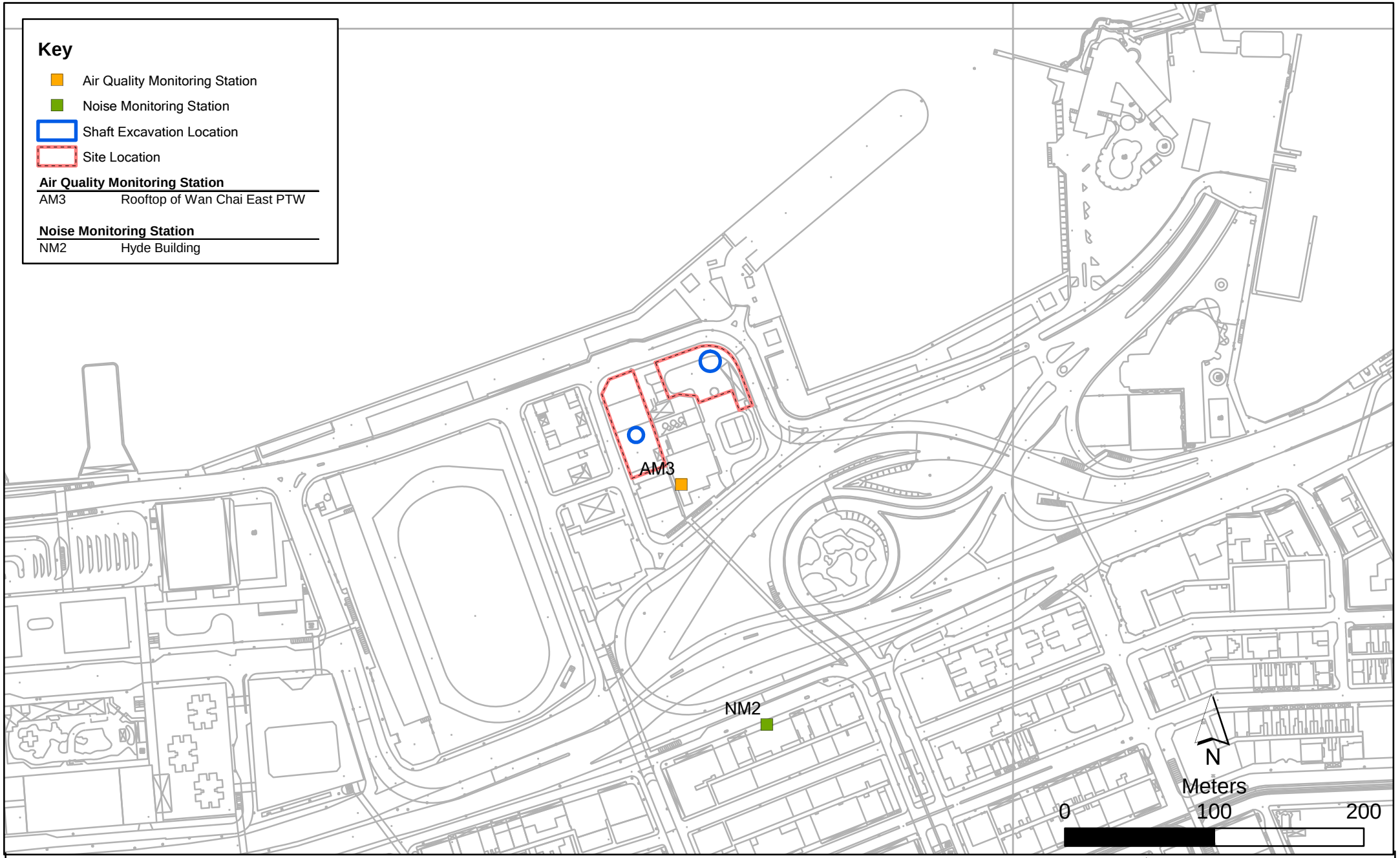
Annex D1

Contract No. DC/2007/23
Harbour Area Treatment Scheme Stage 2A
Construction of Sewage Conveyance System from North Point to Stonecutters Island
Construction Site Locations at Wai Chai East

File: EM&A and proposed station\0104887_Wan Chai.mxd
Date: 29/10/2009

Environmental Resources Management

ERM



Annex D2

Contract No. DC/2007/23
Harbour Area Treatment Scheme Stage 2A
Construction of Sewage Conveyance System from North Point to Stonecutters Island
Impact Air Quality & Noise Monitoring Stations (Wan Chai East)

File: EM&A and proposed station\0104887_Wan Chai_NMAM.mxd
Date: 03/03/2010

Environmental Resources Management

ERM

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Construction Phase			
Air Quality	The Air Pollution Control (Construction Dust) Regulation shall be implemented and good site practices shall be incorporated in the contract clauses to minimise construction dust impact. Control measures relevant to this Project are listed below: • skip hoist for material transport should be totally enclosed by impervious sheeting; • every vehicle should be washed to remove any dusty materials from its body and wheels before leaving a construction site; • the area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; • where a site boundary adjoins a road, streets or other accessible to the public, hoarding of not less than 2.4 m high from ground level should be provided along the entire length except for a site entrance or exit; • every stock of more than 20 bags of cement should be covered entirely by impervious sheeting placed in an area sheltered on the top and the 3 sides; • regular watering, with complete coverage, to reduce dust emission from exposed site surfaces and unpaved roads, particularly during dry weather; • site enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering should be applied to aggregate fines; • open stock piles should be avoided or covered and prevent placing dusty material storage piles near ASRs if possible; • tarpaulin covering of all dusty vehicle loads transported to, from and between site locations; and • instigation of an environmental monitoring auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Air Quality	The following watering measures for specific site would be required to control the fugitive dust impacts: • watering twice per day within the worksites at Wan Chai East PTW; • the barging points should be continuous watering throughout the whole unloading process; and • watering 8 times per day within worksites at the SCS works area at Wan Chai East.	All work sites / during construction	√
Operational Phase			
Air Quality	Good housekeeping for SCISTW and PTWs listed below should be followed to ameliorate any odour impact from the plant and these standard practices should be included in the plant operator manual. • Screens should be cleaned regularly to remove any accumulated organic debris • Grit and screening transfer systems should be flushed regularly with water to remove organic debris and grit • Grit and screened materials should be transferred to closed containers to minimise odour escape • Scum and grease collection wells and troughs should be emptied and flushed regularly to prevent putrefaction of accumulated organics • Skim and remove floating solids and grease from primary clarifiers regularly • Frequent sludge withdrawal from tanks is necessary to prevent the production of gases • Sludge cake should be transferred to closed containers • Sludge containers should be flushed with water regularly	All work sites / during construction	NA. Measures not required until commencement of operational phase
Air Quality	Commissioning tests for all deodorisation system should be included in the Design and Construction Contract Document.	All PTW and SCISTW/ during operational phase	NA. Measures not required until commencement of operational phase
Construction Phase			
Noise	Use of quiet PME, movable barriers and acoustic mats	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Noise	Good Site Practice: • only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program; • silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction program; • mobile plant, if any, should be sited as far from NSRs as possible; • machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and • material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities; Environmental audit shall be carried out to ensure that appropriate noise control measures would be properly implemented.	All work sites / during construction	√
Construction Phase			
Water Quality	Construction Site Runoff and General Construction Activities The mitigation measures as outlined in the ProPECC PN 1/94 Construction Site Drainage should be adopted where applicable.	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Effluent Discharge There is a need to apply to EPD for a discharge license for discharge of effluent from the construction site under the WPCO. The discharge quality must meet the requirements specified in the discharge license. If monitoring of the treated effluent quality from the works areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the WPCO license which is under the ambit of regional office (RO) of EPD. Minimum distances of 100 m should be maintained between the discharge points of construction site effluent and the existing saltwater intakes.	All work sites / during construction	√
Water Quality	Accidental Spillage of Chemicals Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	All work sites / during construction	√
Water Quality	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows: • Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport. • Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents. • Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.	All work sites / during construction	<>

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Construction Works in Close Proximity of Storm Drains or Seafront To minimise the potential water quality impacts from the construction works located at or near any watercourse, the practices outlined below should be adopted where applicable. • The use of less or smaller construction plants may be specified to reduce the disturbance to the storm water courses or marine environment. • Temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well away from any water courses during carrying out of the construction works. • Stockpiling of construction materials and dusty materials should be covered and located away from any water courses. • Construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nearby water receivers. • Construction activities, which generate large amount of wastewater, should be carried out in a distance away from the waterfront, where practicable. • Proper shoring may need to be erected in order to prevent soil/mud from slipping into the storm culvert or sea	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Operational Phase			
Water Quality	Dual power supply, standby facilities for the main treatment units and standby equipment parts / accessories should be provided as far as possible at the SCISTW to minimise the chance of emergency discharge.	SCISTW and all the Stage 2 PTWs / Operation Stage	NA. Measures not required until commencement of operational phase
Water Quality	Standby unit(s) and dual (backup) power supply would be provided at all the Stage 2 PTWs to reduce the risk of equipment breakdown at the PTWs.	Stage 2 PTWs / Operation Stage	NA. Measures not required until commencement of operational phase
Construction Phase			
Waste	Reusable steel or concrete panel shutters, fencing and hoarding and signboard should be used as a preferred alternative to items made of wood, to minimise wastage of wood. Attention should be paid to WBTC No. 19/2001 - Metallic Site Hoardings and Signboards to reduce the amount of timber used on construction sites. Metallic alternatives to timber are readily available and should be used rather than new timber. Precast concrete units should be adopted wherever feasible to minimise the use of timber formwork.	All work sites / during the construction period	√
Waste	All waste materials should be segregated into categories covering: • excavated materials suitable for reuse on-site; • excavated materials suitable for public filling facilities; • remaining C&D waste for landfill; • chemical waste; and • general refuse for landfill.	All work sites / during the construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	Recommendations to achieve waste reduction include: • Sort C&D waste from demolition of existing facilities to recover recyclable portions such as metals; • 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; • Encourage collection of aluminium cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force; • Any unused chemicals or those with remaining functional capacity shall be recycled; and • Proper storage and site practices to minimise the potential for damage or contamination of construction materials.	All work sites / during the construction period	√
Waste	Recommendations for good site practices during construction activities include:- • 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 • Develop and provide toolbox talk for on-site sorting of C&D materials to enhance worker's awareness in handling, sorting, reuse and recycling of C&D materials. • Provision of sufficient waste disposal points and regular collection of waste • Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors	All work sites / during the construction period	√
Waste	Bentonite slurries used in diaphragm wall construction should be reconditioned and reused wherever practicable. The disposal of residual used bentonite slurry should follow the good practice guidelines stated in ProPECC PN 1/94 "Construction Site Drainage".	All work sites / during the construction period	NA

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	Adequate number of portable toilets at temporary works areas or the PTWs to ensure that sewage from site staff would be properly collected.	All work sites / during the construction period	√
Waste	General refuse should be stored in enclosed bins, skips or compaction units separating from C&D material and disposed of at designated landfill.	All work sites / during the construction period	<>
Waste	The recyclable component of the municipal waste generated by the workforce, such as aluminium cans, paper and cleansed plastic containers should be separated from other waste. Provision and collection of recycling bins for different types of recyclable waste should be set up by the Contractor. The Contractor should also be responsible for arranging recycling companies to collect these materials.	All work sites / during the construction period	√
Waste	If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidising, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the approved Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	All work sites / during the construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	Prior to excavation of the marine deposit layer, the deposit should be tested in accordance with the ETWB TC(W) No. 34/2002 and the results should be presented in a Preliminary Sediment Quality Report. The marine deposit should be disposed of at the disposal site designated by the Marine Fill Committee (MFC) or Director of Environmental Protection (DEP) depending on the test results.	All work sites / during the construction period	√
Construction Phase			
Landscape & Visual	• Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical. • Existing trees to be retained on site should be carefully protected during construction. • Trees unavoidably affected by the works should be transplanted where practical. • Compensatory tree planting should be provided to compensate for felled trees. • Control of night-time lighting. • Erection of decorative screen hoarding compatible with the surrounding setting.	All the works areas, PTWs and SCISTW/ during the construction period	√
Operational Phase	•		
Landscape & Visual	• Aesthetic design of the façade of PTW and associated structures to harmonise with the surrounding settings. • Shrub and Climbing Plants to soften proposed structures / Roof Greening. • Buffer Tree and Shrub Planting to screen proposed associated structures. • Reinstated of disturbed area	All the works areas, PTWs and SCISTW/ during the construction period	NA. Measures not required until commencement of operational phase
Construction Phase			

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Cultural Heritage	The construction vibration control limit (ppv of 25mm/s) shall be strictly followed.	Identified historical buildings/structures as mentioned in Tables 15.8 and 15.9. During blasting for tunnel, shafts, effluent conveyance system and disinfection facilities in the vicinity of the buildings/ structures	NA. Vibration monitoring has not been launched during the reporting period.
	Monitoring of vibration limits shall be conducted and reported as a requirement of EM&A programme	Identified historical buildings/structures as mentioned in Tables 15.8 and 15.9. During blasting for tunnel, shafts, effluent conveyance system and disinfection facilities in the vicinity of the buildings/ structures	NA. Vibration monitoring has not been launched during the reporting period.

Remark:
√ Compliance of Mitigation Measures
<> Compliance of Mitigation but need improvement
x Non-compliance of Mitigation Measures
Δ Deficiency of Mitigation Measures but rectified by Gammon Construction Limited
NA Not Applicable

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Construction Phase			
Air Quality	The Air Pollution Control (Construction Dust) Regulation shall be implemented and good site practices shall be incorporated in the contract clauses to minimise construction dust impact. Control measures relevant to this Project are listed below: • skip hoist for material transport should be totally enclosed by impervious sheeting; • every vehicle should be washed to remove any dusty materials from its body and wheels before leaving a construction site; • the area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; • where a site boundary adjoins a road, streets or other accessible to the public, hoarding of not less than 2.4 m high from ground level should be provided along the entire length except for a site entrance or exit; • every stock of more than 20 bags of cement should be covered entirely by impervious sheeting placed in an area sheltered on the top and the 3 sides; • regular watering, with complete coverage, to reduce dust emission from exposed site surfaces and unpaved roads, particularly during dry weather; • site enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering should be applied to aggregate fines; • open stock piles should be avoided or covered and prevent placing dusty material storage piles near ASRs if possible; • tarpaulin covering of all dusty vehicle loads transported to, from and between site locations; and • instigation of an environmental monitoring auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Air Quality	The following watering measures for specific site would be required to control the fugitive dust impacts: • watering twice per day within the worksites at Wan Chai East PTW; • the barging points should be continuous watering throughout the whole unloading process; and • watering 8 times per day within worksites at the SCS works area at Wan Chai East.	All work sites / during construction	√
Operational Phase			
Air Quality	Good housekeeping for SCISTW and PTWs listed below should be followed to ameliorate any odour impact from the plant and these standard practices should be included in the plant operator manual. • Screens should be cleaned regularly to remove any accumulated organic debris • Grit and screening transfer systems should be flushed regularly with water to remove organic debris and grit • Grit and screened materials should be transferred to closed containers to minimise odour escape • Scum and grease collection wells and troughs should be emptied and flushed regularly to prevent putrefaction of accumulated organics • Skim and remove floating solids and grease from primary clarifiers regularly • Frequent sludge withdrawal from tanks is necessary to prevent the production of gases • Sludge cake should be transferred to closed containers • Sludge containers should be flushed with water regularly	All work sites / during construction	NA. Measures not required until commencement of operational phase
Air Quality	Commissioning tests for all deodorisation system should be included in the Design and Construction Contract Document.	All PTW and SCISTW/ during operational phase	NA. Measures not required until commencement of operational phase
Construction Phase			
Noise	Use of quiet PME, movable barriers and acoustic mats	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Noise	Good Site Practice: • only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program; • silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction program; • mobile plant, if any, should be sited as far from NSRs as possible; • machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and • material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities; Environmental audit shall be carried out to ensure that appropriate noise control measures would be properly implemented.	All work sites / during construction	√
Construction Phase			
Water Quality	Construction Site Runoff and General Construction Activities The mitigation measures as outlined in the ProPECC PN 1/94 Construction Site Drainage should be adopted where applicable.	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Effluent Discharge There is a need to apply to EPD for a discharge license for discharge of effluent from the construction site under the WPCO. The discharge quality must meet the requirements specified in the discharge license. If monitoring of the treated effluent quality from the works areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the WPCO license which is under the ambit of regional office (RO) of EPD. Minimum distances of 100 m should be maintained between the discharge points of construction site effluent and the existing saltwater intakes.	All work sites / during construction	√
Water Quality	Accidental Spillage of Chemicals Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	All work sites / during construction	√
Water Quality	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows: • Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport. • Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents. • Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.	All work sites / during construction	<>

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Construction Works in Close Proximity of Storm Drains or Seafront To minimise the potential water quality impacts from the construction works located at or near any watercourse, the practices outlined below should be adopted where applicable. • The use of less or smaller construction plants may be specified to reduce the disturbance to the storm water courses or marine environment. • Temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well away from any water courses during carrying out of the construction works. • Stockpiling of construction materials and dusty materials should be covered and located away from any water courses. • Construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nearby water receivers. • Construction activities, which generate large amount of wastewater, should be carried out in a distance away from the waterfront, where practicable. • Proper shoring may need to be erected in order to prevent soil/mud from slipping into the storm culvert or sea	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Operational Phase			
Water Quality	Dual power supply, standby facilities for the main treatment units and standby equipment parts / accessories should be provided as far as possible at the SCISTW to minimise the chance of emergency discharge.	SCISTW and all the Stage 2 PTWs / Operation Stage	NA. Measures not required until commencement of operational phase
Water Quality	Standby unit(s) and dual (backup) power supply would be provided at all the Stage 2 PTWs to reduce the risk of equipment breakdown at the PTWs.	Stage 2 PTWs / Operation Stage	NA. Measures not required until commencement of operational phase
Construction Phase			
Waste	Reusable steel or concrete panel shutters, fencing and hoarding and signboard should be used as a preferred alternative to items made of wood, to minimise wastage of wood. Attention should be paid to WBTC No. 19/2001 - Metallic Site Hoardings and Signboards to reduce the amount of timber used on construction sites. Metallic alternatives to timber are readily available and should be used rather than new timber. Precast concrete units should be adopted wherever feasible to minimise the use of timber formwork.	All work sites / during the construction period	√
Waste	All waste materials should be segregated into categories covering: • excavated materials suitable for reuse on-site; • excavated materials suitable for public filling facilities; • remaining C&D waste for landfill; • chemical waste; and • general refuse for landfill.	All work sites / during the construction period	<>

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	Recommendations to achieve waste reduction include: • Sort C&D waste from demolition of existing facilities to recover recyclable portions such as metals; • 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; • Encourage collection of aluminium cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force; • Any unused chemicals or those with remaining functional capacity shall be recycled; and • Proper storage and site practices to minimise the potential for damage or contamination of construction materials.	All work sites / during the construction period	√
Waste	Recommendations for good site practices during construction activities include:- • 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 • Develop and provide toolbox talk for on-site sorting of C&D materials to enhance worker's awareness in handling, sorting, reuse and recycling of C&D materials. • Provision of sufficient waste disposal points and regular collection of waste • Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors	All work sites / during the construction period	√
Waste	Bentonite slurries used in diaphragm wall construction should be reconditioned and reused wherever practicable. The disposal of residual used bentonite slurry should follow the good practice guidelines stated in ProPECC PN 1/94 "Construction Site Drainage".	All work sites / during the construction period	NA

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	Adequate number of portable toilets at temporary works areas or the PTWs to ensure that sewage from site staff would be properly collected.	All work sites / during the construction period	√
Waste	General refuse should be stored in enclosed bins, skips or compaction units separating from C&D material and disposed of at designated landfill.	All work sites / during the construction period	<>
Waste	The recyclable component of the municipal waste generated by the workforce, such as aluminium cans, paper and cleansed plastic containers should be separated from other waste. Provision and collection of recycling bins for different types of recyclable waste should be set up by the Contractor. The Contractor should also be responsible for arranging recycling companies to collect these materials.	All work sites / during the construction period	√
Waste	If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidising, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the approved Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	All work sites / during the construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	Prior to excavation of the marine deposit layer, the deposit should be tested in accordance with the ETWB TC(W) No. 34/2002 and the results should be presented in a Preliminary Sediment Quality Report. The marine deposit should be disposed of at the disposal site designated by the Marine Fill Committee (MFC) or Director of Environmental Protection (DEP) depending on the test results.	All work sites / during the construction period	√
Construction Phase			
Landscape & Visual	• Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical. • Existing trees to be retained on site should be carefully protected during construction. • Trees unavoidably affected by the works should be transplanted where practical. • Compensatory tree planting should be provided to compensate for felled trees. • Control of night-time lighting. • Erection of decorative screen hoarding compatible with the surrounding setting.	All the works areas, PTWs and SCISTW/ during the construction period	√
Operational Phase	•		
Landscape & Visual	• Aesthetic design of the façade of PTW and associated structures to harmonise with the surrounding settings. • Shrub and Climbing Plants to soften proposed structures / Roof Greening. • Buffer Tree and Shrub Planting to screen proposed associated structures. • Reinstated of disturbed area	All the works areas, PTWs and SCISTW/ during the construction period	NA. Measures not required until commencement of operational phase
Construction Phase			

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Cultural Heritage	The construction vibration control limit (ppv of 25mm/s) shall be strictly followed.	Identified historical buildings/structures as mentioned in Tables 15.8 and 15.9. During blasting for tunnel, shafts, effluent conveyance system and disinfection facilities in the vicinity of the buildings/ structures	NA. Vibration monitoring has not been launched during the reporting period.
	Monitoring of vibration limits shall be conducted and reported as a requirement of EM&A programme	Identified historical buildings/structures as mentioned in Tables 15.8 and 15.9. During blasting for tunnel, shafts, effluent conveyance system and disinfection facilities in the vicinity of the buildings/ structures	NA. Vibration monitoring has not been launched during the reporting period.

Remark:
√ Compliance of Mitigation Measures
<> Compliance of Mitigation but need improvement
x Non-compliance of Mitigation Measures
Δ Deficiency of Mitigation Measures but rectified by Gammon Construction Limited
NA Not Applicable

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Construction Phase			
Air Quality	The Air Pollution Control (Construction Dust) Regulation shall be implemented and good site practices shall be incorporated in the contract clauses to minimise construction dust impact. Control measures relevant to this Project are listed below: • skip hoist for material transport should be totally enclosed by impervious sheeting; • every vehicle should be washed to remove any dusty materials from its body and wheels before leaving a construction site; • the area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; • where a site boundary adjoins a road, streets or other accessible to the public, hoarding of not less than 2.4 m high from ground level should be provided along the entire length except for a site entrance or exit; • every stock of more than 20 bags of cement should be covered entirely by impervious sheeting placed in an area sheltered on the top and the 3 sides; • regular watering, with complete coverage, to reduce dust emission from exposed site surfaces and unpaved roads, particularly during dry weather; • site enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering should be applied to aggregate fines; • open stock piles should be avoided or covered and prevent placing dusty material storage piles near ASRs if possible; • tarpaulin covering of all dusty vehicle loads transported to, from and between site locations; and • instigation of an environmental monitoring auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Air Quality	The following watering measures for specific site would be required to control the fugitive dust impacts: • watering twice per day within the worksites at Wan Chai East PTW; • the barging points should be continuous watering throughout the whole unloading process; and • watering 8 times per day within worksites at the SCS works area at Wan Chai East.	All work sites / during construction	√
Operational Phase			
Air Quality	Good housekeeping for SCISTW and PTWs listed below should be followed to ameliorate any odour impact from the plant and these standard practices should be included in the plant operator manual. • Screens should be cleaned regularly to remove any accumulated organic debris • Grit and screening transfer systems should be flushed regularly with water to remove organic debris and grit • Grit and screened materials should be transferred to closed containers to minimise odour escape • Scum and grease collection wells and troughs should be emptied and flushed regularly to prevent putrefaction of accumulated organics • Skim and remove floating solids and grease from primary clarifiers regularly • Frequent sludge withdrawal from tanks is necessary to prevent the production of gases • Sludge cake should be transferred to closed containers • Sludge containers should be flushed with water regularly	All work sites / during construction	NA. Measures not required until commencement of operational phase
Air Quality	Commissioning tests for all deodorisation system should be included in the Design and Construction Contract Document.	All PTW and SCISTW/ during operational phase	NA. Measures not required until commencement of operational phase
Construction Phase			
Noise	Use of quiet PME, movable barriers and acoustic mats	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Noise	Good Site Practice: • only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program; • silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction program; • mobile plant, if any, should be sited as far from NSRs as possible; • machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and • material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities; Environmental audit shall be carried out to ensure that appropriate noise control measures would be properly implemented.	All work sites / during construction	√
Construction Phase			
Water Quality	Construction Site Runoff and General Construction Activities The mitigation measures as outlined in the ProPECC PN 1/94 Construction Site Drainage should be adopted where applicable.	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Effluent Discharge There is a need to apply to EPD for a discharge license for discharge of effluent from the construction site under the WPCO. The discharge quality must meet the requirements specified in the discharge license. If monitoring of the treated effluent quality from the works areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the WPCO license which is under the ambit of regional office (RO) of EPD. Minimum distances of 100 m should be maintained between the discharge points of construction site effluent and the existing saltwater intakes.	All work sites / during construction	√
Water Quality	Accidental Spillage of Chemicals Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	All work sites / during construction	√
Water Quality	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows: • Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport. • Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents. • Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.	All work sites / during construction	<>

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Construction Works in Close Proximity of Storm Drains or Seafront To minimise the potential water quality impacts from the construction works located at or near any watercourse, the practices outlined below should be adopted where applicable. • The use of less or smaller construction plants may be specified to reduce the disturbance to the storm water courses or marine environment. • Temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well away from any water courses during carrying out of the construction works. • Stockpiling of construction materials and dusty materials should be covered and located away from any water courses. • Construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nearby water receivers. • Construction activities, which generate large amount of wastewater, should be carried out in a distance away from the waterfront, where practicable. • Proper shoring may need to be erected in order to prevent soil/mud from slipping into the storm culvert or sea	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Operational Phase			
Water Quality	Dual power supply, standby facilities for the main treatment units and standby equipment parts / accessories should be provided as far as possible at the SCISTW to minimise the chance of emergency discharge.	SCISTW and all the Stage 2 PTWs / Operation Stage	NA. Measures not required until commencement of operational phase
Water Quality	Standby unit(s) and dual (backup) power supply would be provided at all the Stage 2 PTWs to reduce the risk of equipment breakdown at the PTWs.	Stage 2 PTWs / Operation Stage	NA. Measures not required until commencement of operational phase
Construction Phase			
Waste	Reusable steel or concrete panel shutters, fencing and hoarding and signboard should be used as a preferred alternative to items made of wood, to minimise wastage of wood. Attention should be paid to WBTC No. 19/2001 - Metallic Site Hoardings and Signboards to reduce the amount of timber used on construction sites. Metallic alternatives to timber are readily available and should be used rather than new timber. Precast concrete units should be adopted wherever feasible to minimise the use of timber formwork.	All work sites / during the construction period	√
Waste	All waste materials should be segregated into categories covering: • excavated materials suitable for reuse on-site; • excavated materials suitable for public filling facilities; • remaining C&D waste for landfill; • chemical waste; and • general refuse for landfill.	All work sites / during the construction period	<>

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	Recommendations to achieve waste reduction include: • Sort C&D waste from demolition of existing facilities to recover recyclable portions such as metals; • 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; • Encourage collection of aluminium cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force; • Any unused chemicals or those with remaining functional capacity shall be recycled; and • Proper storage and site practices to minimise the potential for damage or contamination of construction materials.	All work sites / during the construction period	√
Waste	Recommendations for good site practices during construction activities include:- • 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 • Develop and provide toolbox talk for on-site sorting of C&D materials to enhance worker's awareness in handling, sorting, reuse and recycling of C&D materials. • Provision of sufficient waste disposal points and regular collection of waste • Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors	All work sites / during the construction period	√
Waste	Bentonite slurries used in diaphragm wall construction should be reconditioned and reused wherever practicable. The disposal of residual used bentonite slurry should follow the good practice guidelines stated in ProPECC PN 1/94 "Construction Site Drainage".	All work sites / during the construction period	NA

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	Adequate number of portable toilets at temporary works areas or the PTWs to ensure that sewage from site staff would be properly collected.	All work sites / during the construction period	√
Waste	General refuse should be stored in enclosed bins, skips or compaction units separating from C&D material and disposed of at designated landfill.	All work sites / during the construction period	<>
Waste	The recyclable component of the municipal waste generated by the workforce, such as aluminium cans, paper and cleansed plastic containers should be separated from other waste. Provision and collection of recycling bins for different types of recyclable waste should be set up by the Contractor. The Contractor should also be responsible for arranging recycling companies to collect these materials.	All work sites / during the construction period	√
Waste	If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidising, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the approved Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	All work sites / during the construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	Prior to excavation of the marine deposit layer, the deposit should be tested in accordance with the ETWB TC(W) No. 34/2002 and the results should be presented in a Preliminary Sediment Quality Report. The marine deposit should be disposed of at the disposal site designated by the Marine Fill Committee (MFC) or Director of Environmental Protection (DEP) depending on the test results.	All work sites / during the construction period	√
Construction Phase			
Landscape & Visual	• Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical. • Existing trees to be retained on site should be carefully protected during construction. • Trees unavoidably affected by the works should be transplanted where practical. • Compensatory tree planting should be provided to compensate for felled trees. • Control of night-time lighting. • Erection of decorative screen hoarding compatible with the surrounding setting.	All the works areas, PTWs and SCISTW/ during the construction period	√
Operational Phase	•		
Landscape & Visual	• Aesthetic design of the façade of PTW and associated structures to harmonise with the surrounding settings. • Shrub and Climbing Plants to soften proposed structures / Roof Greening. • Buffer Tree and Shrub Planting to screen proposed associated structures. • Reinstated of disturbed area	All the works areas, PTWs and SCISTW/ during the construction period	NA. Measures not required until commencement of operational phase
Construction Phase			

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Cultural Heritage	The construction vibration control limit (ppv of 25mm/s) shall be strictly followed.	Identified historical buildings/structures as mentioned in Tables 15.8 and 15.9. During blasting for tunnel, shafts, effluent conveyance system and disinfection facilities in the vicinity of the buildings/ structures	NA. Vibration monitoring has not been launched during the reporting period.
	Monitoring of vibration limits shall be conducted and reported as a requirement of EM&A programme	Identified historical buildings/structures as mentioned in Tables 15.8 and 15.9. During blasting for tunnel, shafts, effluent conveyance system and disinfection facilities in the vicinity of the buildings/ structures	NA. Vibration monitoring has not been launched during the reporting period.

Remark:
√ Compliance of Mitigation Measures
<> Compliance of Mitigation but need improvement
x Non-compliance of Mitigation Measures
Δ Deficiency of Mitigation Measures but rectified by Gammon Construction Limited
NA Not Applicable

Annex D5 24-hour and 1-hour TSP Monitoring Results

1-hour TSP Monitoring Results

Station AM3

Date	Start Time	Finish Time	Weather	TSP Concentration ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Site Conditions / Observations / Remarks	Temperature (℃)	Wind Speed * (m/s)	Sampler ID	Filter ID
02-Sep-14	8:00	9:00	Sunny	102	355	500	Construction work in progress	33	<5	GMW GS-2310 (S/N 0481)	4069
	9:02	10:02	Sunny	110	355	500	Construction work in progress	33	<5	GMW GS-2310 (S/N 0481)	4070
	10:04	11:04	Sunny	106	355	500	Construction work in progress	33	<5	GMW GS-2310 (S/N 0481)	4071
08-Sep-14	8:00	9:00	Sunny	95	355	500	Construction work in progress	30	<5	GMW GS-2310 (S/N 0481)	2593
	9:02	10:02	Sunny	111	355	500	Construction work in progress	30	<5	GMW GS-2310 (S/N 0481)	2594
	10:04	11:04	Sunny	96	355	500	Construction work in progress	30	<5	GMW GS-2310 (S/N 0481)	2595
13-Sep-14	11:50	12:50	Sunny	102	355	500	Construction work in progress	31	<5	GMW GS-2310 (S/N 0481)	2431
	12:52	13:52	Sunny	114	355	500	Construction work in progress	31	<5	GMW GS-2310 (S/N 0481)	4202
	13:54	14:54	Sunny	107	355	500	Construction work in progress	31	<5	GMW GS-2310 (S/N 0481)	2433
19-Sep-14	12:00	13:00	Fine	217	355	500	Construction work in progress	32	<5	GMW GS-2310 (S/N 0481)	4413
	13:02	14:02	Fine	202	355	500	Construction work in progress	32	<5	GMW GS-2310 (S/N 0481)	4414
	14:04	15:04	Fine	189	355	500	Construction work in progress	32	<5	GMW GS-2310 (S/N 0481)	4415
25-Sep-14	12:00	13:00	Sunny	197	355	500	Construction work in progress	31	<5	GMW GS-2310 (S/N 0481)	4421
	13:02	14:02	Sunny	179	355	500	Construction work in progress	31	<5	GMW GS-2310 (S/N 0481)	4422
	14:04	15:04	Sunny	210	355	500	Construction work in progress	31	<5	GMW GS-2310 (S/N 0481)	4423
30-Sep-14	8:00	9:00	Sunny	156	355	500	Construction work in progress	32	<5	GMW GS-2310 (S/N 0481)	4425
	9:02	10:02	Sunny	168	355	500	Construction work in progress	32	<5	GMW GS-2310 (S/N 0481)	4426
	10:04	11:04	Sunny	176	355	500	Construction work in progress	32	<5	GMW GS-2310 (S/N 0481)	4427
			Min.	**95**							
			Max.	**217**							
			Average	**147**							

* Wind Speed data is presented in the Meteorological Data table

Annex D5 24-hour and 1-hour TSP Monitoring Results

1-hour TSP Monitoring Results

Station AM3

Date	Start Time	Finish Time	Weather	TSP Concentration ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Site Conditions / Observations / Remarks	Temperature (°C)	Wind Speed * (m/s)	Sampler ID	Filter ID
06-Oct-14	11:50	12:50	Sunny	120	355	500	Construction work in progress	28	<5	GMW GS-2310 (S/N 0481)	4440
	12:52	13:52	Sunny	123	355	500	Construction work in progress	28	<5	GMW GS-2310 (S/N 0481)	4441
	13:54	14:54	Sunny	124	355	500	Construction work in progress	28	<5	GMW GS-2310 (S/N 0481)	4442
11-Oct-14	8:00	9:00	Sunny	184	355	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 0481)	4445
	9:02	10:02	Sunny	183	355	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 0481)	4446
	10:04	11:04	Sunny	189	355	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 0481)	4447
17-Oct-14	8:00	9:00	Sunny	147	355	500	Construction work in progress	27	<5	GMW GS-2310 (S/N 0481)	4481
	9:02	10:02	Sunny	184	355	500	Construction work in progress	27	<5	GMW GS-2310 (S/N 0481)	4482
	10:04	11:04	Sunny	176	355	500	Construction work in progress	27	<5	GMW GS-2310 (S/N 0481)	4483
23-Oct-14	8:00	9:00	Fine	144	355	500	Construction work in progress	27	<5	GMW GS-2310 (S/N 0481)	4489
	9:02	10:02	Fine	126	355	500	Construction work in progress	27	<5	GMW GS-2310 (S/N 0481)	4490
	10:04	11:04	Fine	140	355	500	Construction work in progress	27	<5	GMW GS-2310 (S/N 0481)	4491
29-Oct-14	12:00	13:00	Fine	159	355	500	Construction work in progress	28	<5	GMW GS-2310 (S/N 0481)	4493
	13:02	14:02	Fine	164	355	500	Construction work in progress	28	<5	GMW GS-2310 (S/N 0481)	4494
	14:04	15:04	Fine	142	355	500	Construction work in progress	28	<5	GMW GS-2310 (S/N 0481)	4495
			Min.	**120**							
			Max.	**189**							
			Average	**154**							

* Wind Speed data is presented in the Meteorological Data table

Annex D5 24-hour and 1-hour TSP Monitoring Results

1-hour TSP Monitoring Results

Station AM3

Date	Start Time	Finish Time	Weather	TSP Concentration ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Site Conditions / Observations / Remarks	Temperature (°C)	Wind Speed * (m/s)	Sampler ID	Filter ID
04-Nov-14	11:40	12:40	Cloudy	130	355	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 0481)	4681
	12:42	13:42	Cloudy	144	355	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 0481)	4682
	13:15	14:15	Cloudy	140	355	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 0481)	4683
10-Nov-14	8:00	9:00	Cloudy	106	355	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 0481)	4689
	9:02	10:02	Cloudy	115	355	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 0481)	4690
	10:04	11:04	Cloudy	119	355	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 0481)	4691
15-Nov-14	8:00	9:00	Sunny	181	355	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 0481)	4697
	9:02	10:02	Sunny	118	355	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 0481)	4698
	10:04	11:04	Sunny	130	355	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 0481)	4699
21-Nov-14	8:30	9:30	Sunny	106	355	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 0481)	4472
	9:33	10:33	Sunny	112	355	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 0481)	4473
	10:35	11:35	Sunny	107	355	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 0481)	4474
27-Nov-14	8:00	9:00	Fine	168	355	500	Construction work in progress	25	<5	GMW GS-2310 (S/N 0481)	4976
	9:02	10:02	Fine	140	355	500	Construction work in progress	25	<5	GMW GS-2310 (S/N 0481)	4977
	10:04	11:04	Fine	123	355	500	Construction work in progress	25	<5	GMW GS-2310 (S/N 0481)	4978
			Min.	**106**							
			Max.	**181**							
			Average	**129**							

* Wind Speed data is presented in the Meteorological Data table

Annex D5 24-hour and 1-hour TSP Monitoring Results

24-hour TSP Monitoring Results

Station AM3

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m^3/min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	(μg/m^3)	(μg/m^3)	(μg/m^3)		ID	ID
02-Sep-14	11:06	03-Sep-14	11:06	Sunny	2.7782	2.9011	10463.32	10487.32	24.00	1.23	1.23	1.23	69	181	260	-	GMW GS 2310 (S/N 0481)	4072
08-Sep-14	11:06	09-Sep-14	11:06	Sunny	2.7258	2.8211	10490.32	10514.32	24.00	1.23	1.23	1.23	54	181	260	-	GMW GS 2310 (S/N 0481)	4596
13-Sep-14	14:58	14-Sep-14	14:58	Sunny	2.7741	2.8600	10517.32	10541.32	24.00	1.23	1.23	1.23	48	181	260	-	GMW GS 2310 (S/N 0481)	2435
19-Sep-14	15:06	20-Sep-14	15:06	Fine	2.7092	2.9769	10544.32	10568.32	24.00	1.26	1.26	1.26	148	181	260	-	GMW GS 2310 (S/N 0481)	4416
25-Sep-14	15:20	26-Sep-14	15:20	Sunny	2.7469	2.9311	10571.32	10595.32	24.00	1.26	1.26	1.26	102	181	260	-	GMW GS 2310 (S/N 0481)	4424
30-Sep-14	11:06	01-Oct-14	11:06	Sunny	2.7272	2.8897	10598.32	10622.32	24.00	1.26	1.26	1.26	90	181	260	-	GMW GS 2310 (S/N 0481)	4428
												Min.	**48**					
												Max.	**148**					
												Average	**85**					

Annex D5 24-hour and 1-hour TSP Monitoring Results

24-hour TSP Monitoring Results

Station AM3

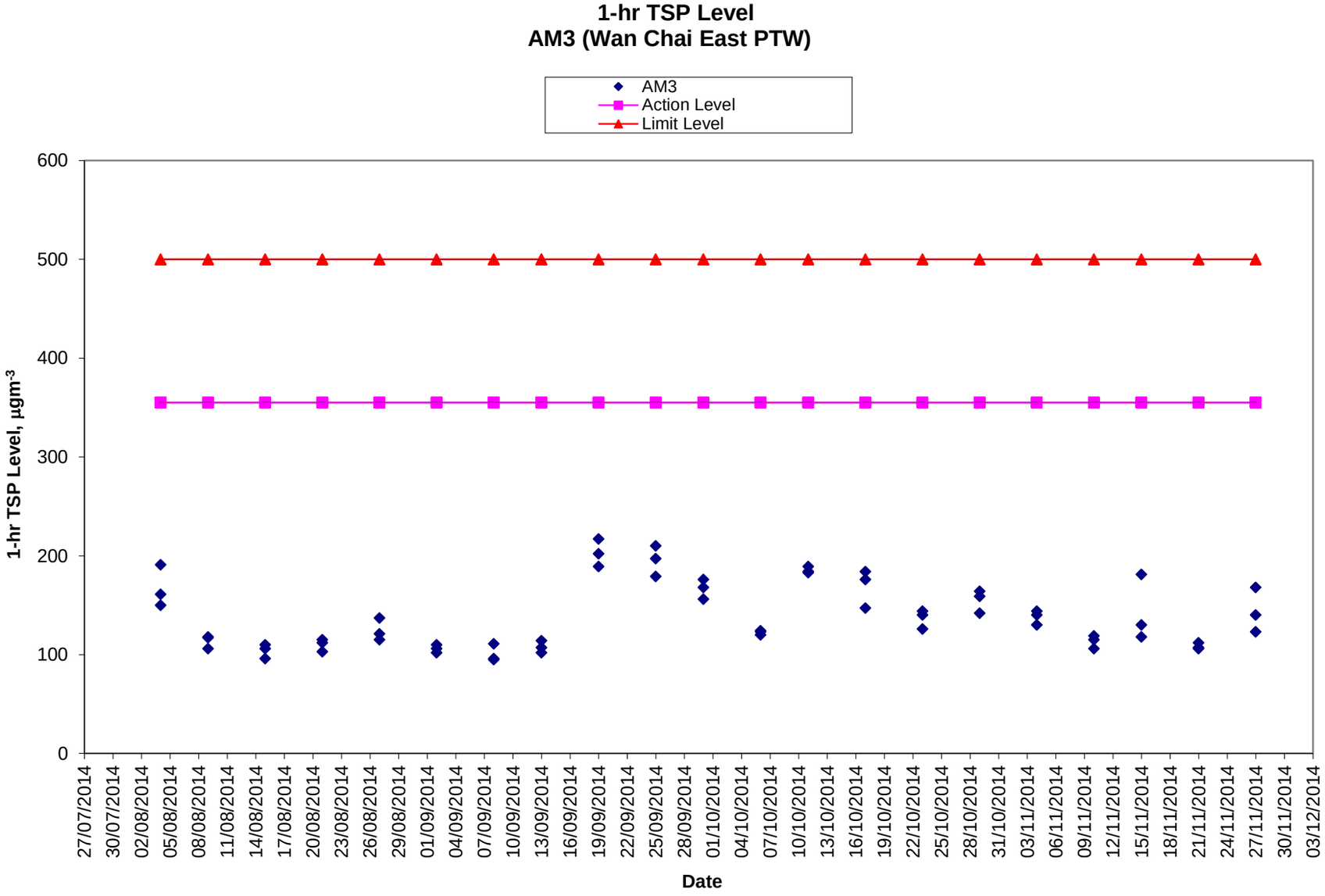
Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m^3/min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	(μg/m^3)	(μg/m^3)	(μg/m^3)		ID	ID
06-Oct-14	15:00	07-Oct-14	15:00	Sunny	2.7209	2.8879	10625.32	10649.32	24.00	1.26	1.26	1.26	92	181	260	construction work in progress	GMW GS 2310 (S/N 0481)	4443
11-Oct-14	11:06	12-Oct-14	11:06	Sunny	2.7022	2.8907	10652.32	10676.32	24.00	1.26	1.26	1.26	104	181	260	construction work in progress	GMW GS 2310 (S/N 0481)	4448
17-Oct-14	11:06	18-Oct-14	11:06	Sunny	2.7269	2.8810	10679.32	10703.32	24.00	1.26	1.26	1.26	85	181	260	construction work in progress	GMW GS 2310 (S/N 0481)	4484
23-Oct-14	11:06	24-Oct-14	11:06	Fine	2.7286	2.8894	10706.32	10730.32	24.00	1.26	1.26	1.26	89	181	260	construction work in progress	GMW GS 2310 (S/N 0481)	4492
29-Oct-14	15:07	30-Oct-14	15:07	Fine	2.8247	2.9661	10733.32	10757.32	24.00	1.26	1.26	1.26	78	181	260	construction work in progress	GMW GS 2310 (S/N 0481)	4496
												Min.	**78**					
												Max.	**104**					
												Average	**89**					

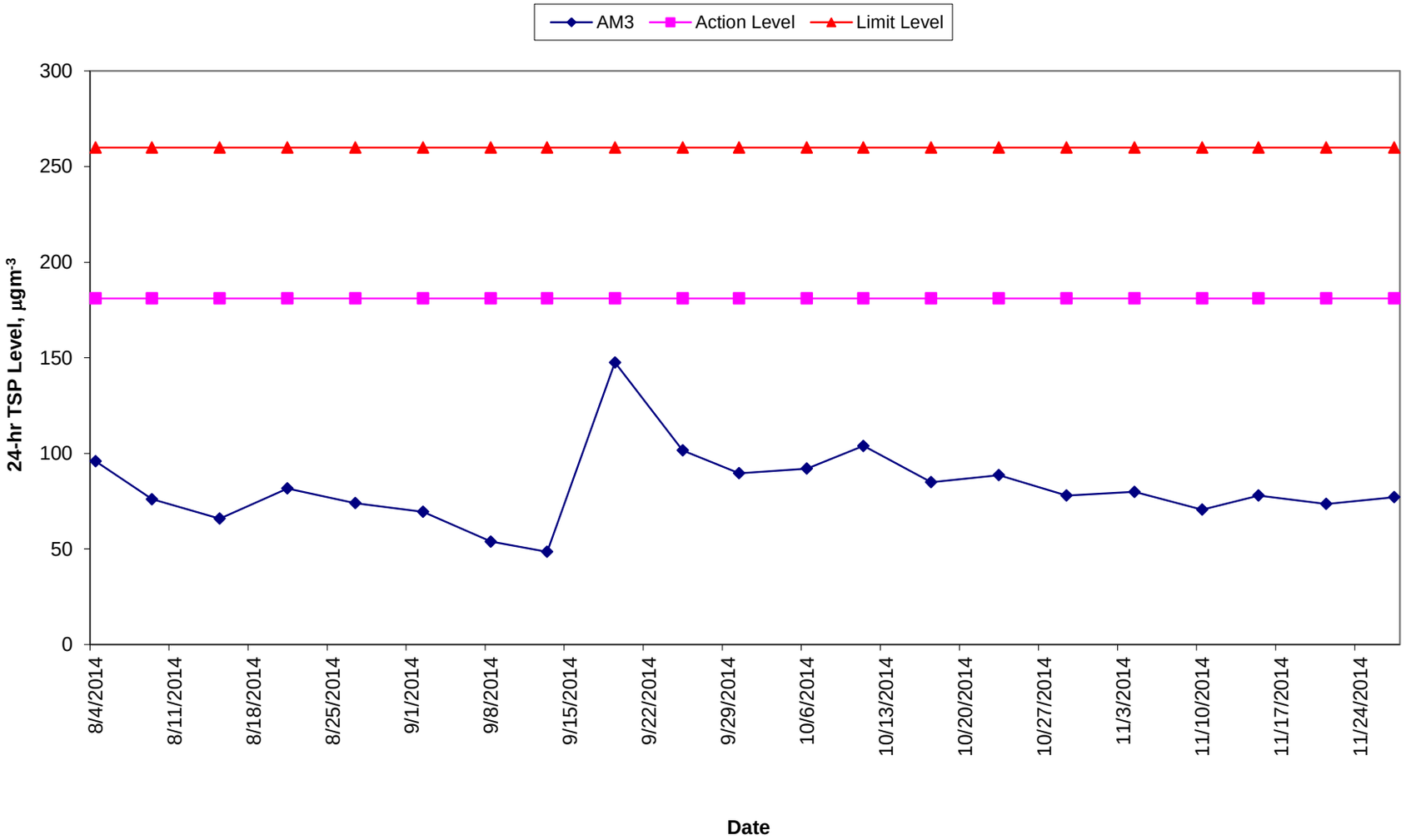
Annex D5 24-hour and 1-hour TSP Monitoring Results

24-hour TSP Monitoring Results

Station AM3

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m^3/min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	(μg/m^3)	(μg/m^3)	(μg/m^3)		ID	ID
04-Nov-14	14:47	05-Nov-14	14:47	Cloudy	2.8071	2.9520	10760.32	10784.32	24.00	1.26	1.26	1.26	80	181	260	construction work in progress	GMW GS 2310 (S/N 0481)	4684
10-Nov-14	11:10	11-Nov-14	11:10	Cloudy	2.7942	2.9221	10787.32	10811.32	24.00	1.26	1.26	1.26	70	181	260	construction work in progress	GMW GS 2310 (S/N 0481)	4692
15-Nov-14	11:06	16-Nov-14	11:06	Sunny	2.7997	2.9411	10814.32	10838.32	24.00	1.26	1.26	1.26	78	181	260	construction work in progress	GMW GS 2310 (S/N 0481)	4700
21-Nov-14	11:40	22-Nov-14	11:40	Sunny	2.8619	2.9900	10841.32	10865.32	24.00	1.21	1.21	1.21	74	181	260	construction work in progress	GMW GS 2310 (S/N 0481)	4475
27-Nov-14	11:06	28-Nov-14	11:06	Fine	2.8988	3.0331	10868.32	10892.32	24.00	1.21	1.21	1.21	77	181	260	construction work in progress	GMW GS 2310 (S/N 0481)	4979
												Min.	**70**					
												Max.	**80**					
												Average	**76**					


1-hr TSP Level
AM3 (Wan Chai East PTW)
AM3
Action Level
Limit Level
1-hr TSP Level, µgm-3
600
500
400
300
200
100
0
27/07/2014
30/07/2014
02/08/2014
05/08/2014
08/08/2014
11/08/2014
14/08/2014
17/08/2014
20/08/2014
23/08/2014
26/08/2014
29/08/2014
01/09/2014
04/09/2014
07/09/2014
10/09/2014
13/09/2014
16/09/2014
19/09/2014
22/09/2014
25/09/2014
28/09/2014
01/10/2014
04/10/2014
07/10/2014
10/10/2014
13/10/2014
16/10/2014
19/10/2014
22/10/2014
25/10/2014
28/10/2014
31/10/2014
03/11/2014
06/11/2014
09/11/2014
12/11/2014
15/11/2014
18/11/2014
21/11/2014
24/11/2014
27/11/2014
30/11/2014
03/12/2014
Date


24-hr TSP Level
AM3 (Wan Chai East PTW)
AM3
Action Level
Limit Level
300
250
200
150
100
50
0
24-hr TSP Level, µgm-3
8/4/2014
8/11/2014
8/18/2014
8/25/2014
9/1/2014
9/8/2014
9/15/2014
9/22/2014
9/29/2014
10/6/2014
10/13/2014
10/20/2014
10/27/2014
11/3/2014
11/10/2014
11/17/2014
11/24/2014
Date

Meteorological Data Extracted from the Hong Kong Observatory

		King's Park Station				
Date	Weather	Average Air Temperature (℃)	Average Relative Humidity (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
2014-09-02	Fine	29	59-88	0.0	0-15	NW/W
2014-09-03	Fine	30	56-86	0.0	2-15	NW/W
2014-09-04	Sunny	29	66-87	6.7	0-21	W/SE
2014-09-05	Sunny	29	66-89	Trace	0-15	SE
2014-09-07	Cloudy	30	66-88	0.6	1-23	E/SE
2014-09-08	Sunny	29	72-91	3.0	0-15	SE
2014-09-09	Sunny	30	65-85	0.0	0-15	NW/S
2014-09-10	Sunny	30	59-85	Trace	0-10	NW/S
2014-09-11	Rain	30	60-87	Trace	0-18	SE
2014-09-13	Sunny	29	72-97	6.2	0-17	SE
2014-09-14	Sunny	30	64-92	0.5	0-15	SE
2014-09-16	Cloudy	27	78-96	51.6	5-53	SE
2014-09-17	Fine	28	81-94	7.7	0-20	SE
2014-09-18	Rain	29	68-92	Trace	0-13	NW/W
2014-09-19	Fine	30	64-91	0.3	0-14	NW/W
2014-09-20	Fine	29	56-73	0.0	0-19	NE
2014-09-21	Sunny	27	59-70	0.0	0-15	NE
2014-09-22	Sunny	28	58-76	Trace	0-12	NE
2014-09-23	Fine	28	63-77	0.0	0-9	N
2014-09-25	Sunny	28	66-84	0.0	0-11	S
2014-09-26	Sunny	28	66-84	0.0	0-12	S
2014-09-27	Sunny	29	64-85	0.0	0-14	S
2014-09-28	Fine	29	60-85	0.0	0-12	S
2014-09-30	Sunny	30	61-90	11.4	0-14	SE
2014-10-01	Sunny	28	70-96	26.7	0-23	SE

		Tsing Yi Station				
Date	Weather	Average Air Temperature (℃)	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-09-02	Fine	29	59-88	0.0	0-15	-
2014-09-03	Fine	30	56-86	0.0	0-16	-
2014-09-04	Sunny	28	66-87	6.7	0-35	-
2014-09-05	Sunny	31	66-89	Trace	0-19	-
2014-09-07	Cloudy	30	66-88	0.6	0-20	-
2014-09-08	Sunny	29	72-91	3.0	3-23	-
2014-09-09	Sunny	29	65-85	0.0	0-14	-
2014-09-10	Sunny	29	59-85	Trace	0-15	-
2014-09-11	Rain	30	60-87	Trace	0-18	-
2014-09-13	Sunny	30	72-97	6.2	0-18	-
2014-09-14	Sunny	29	64-92	0.5	0-19	-
2014-09-16	Cloudy	28	78-96	51.6	10-40	-
2014-09-17	Fine	29	81-94	7.7	7-27	-
2014-09-18	Rain	29	68-92	Trace	0-14	-
2014-09-19	Fine	30	64-91	0.3	0-19	-
2014-09-20	Fine	29	56-73	0.0	0-27	-
2014-09-21	Sunny	28	59-70	0.0	0-18	-
2014-09-22	Sunny	27	58-76	Trace	0-13	-
2014-09-23	Fine	27	63-77	0.0	0-15	-
2014-09-25	Sunny	28	66-84	0.0	0-17	-
2014-09-26	Sunny	28	66-84	0.0	0-15	-
2014-09-27	Sunny	28	64-85	0.0	0-15	-
2014-09-28	Fine	28	60-85	0.0	0-14	-
2014-09-30	Sunny	30	61-90	11.4	0-14	-
2014-10-01	Sunny	28	70-96	26.7	0-21	-

		Kai Tak Station				
Date	Weather	Average Air Temperature (℃) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-09-02	Fine	29	59-88	0.0	3-13	SE/W
2014-09-03	Fine	30	56-86	0.0	4-17	W/SW
2014-09-04	Sunny	29	66-87	6.7	0-40	E/W
2014-09-05	Sunny	29	66-89	Trace	0-23	E
2014-09-07	Cloudy	30	66-88	0.6	5-30	E
2014-09-08	Sunny	29	72-91	3.0	4-27	SE
2014-09-09	Sunny	30	65-85	0.0	0-13	SW
2014-09-10	Sunny	30	59-85	Trace	0-18	SE
2014-09-11	Rain	30	60-87	Trace	2-25	E/SE
2014-09-13	Sunny	29	72-97	6.2	4-24	E/SE
2014-09-14	Sunny	30	64-92	0.5	0-19	E/SE
2014-09-16	Cloudy	27	78-96	51.6	24-50	E/SE
2014-09-17	Fine	28	81-94	7.7	10-36	SE
2014-09-18	Rain	29	68-92	Trace	2-20	NW
2014-09-19	Fine	30	64-91	0.3	0-19	S/SW
2014-09-20	Fine	29	56-73	0.0	0-22	NW
2014-09-21	Sunny	27	59-70	0.0	0-26	N
2014-09-22	Sunny	28	58-76	Trace	0-15	NW
2014-09-23	Fine	28	63-77	0.0	0-19	SE
2014-09-25	Sunny	28	66-84	0.0	0-17	SE
2014-09-26	Sunny	28	66-84	0.0	0-17	SE
2014-09-27	Sunny	29	64-85	0.0	0-18	SE
2014-09-28	Fine	29	60-85	0.0	0-18	SE
2014-09-30	Sunny	30	61-90	11.4	0-18	SE
2014-10-01	Sunny	28	70-96	26.7	3-32	SE

		Green Island Station				
Date	Weather	Average Air Temperature (℃) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-09-02	Fine	29	59-88	0.0	0-20	S
2014-09-03	Fine	30	56-86	0.0	0-22	S/SW
2014-09-04	Sunny	29	66-87	6.7	0-49	NE/NW
2014-09-05	Sunny	29	66-89	Trace	3-36	NE
2014-09-07	Cloudy	30	66-88	0.6	12-48	NE
2014-09-08	Sunny	29	72-91	3.0	8-39	S
2014-09-09	Sunny	30	65-85	0.0	6-23	S
2014-09-10	Sunny	30	59-85	Trace	0-22	S
2014-09-11	Rain	30	60-87	Trace	0-45	NE
2014-09-13	Sunny	29	72-97	6.2	4-42	S/NE
2014-09-14	Sunny	30	64-92	0.5	0-25	NE
2014-09-16	Cloudy	27	78-96	51.6	29-83	E/SE
2014-09-17	Fine	28	81-94	7.7	10-44	SE
2014-09-18	Rain	29	68-92	Trace	2-20	S
2014-09-19	Fine	30	64-91	0.3	0-25	NW
2014-09-20	Fine	29	56-73	0.0	7-36	N/NW
2014-09-21	Sunny	27	59-70	0.0	17-33	N/NE
2014-09-22	Sunny	28	58-76	Trace	3-32	N/NW
2014-09-23	Fine	28	63-77	0.0	0-21	S
2014-09-25	Sunny	28	66-84	0.0	0-23	S/SE
2014-09-26	Sunny	28	66-84	0.0	0-27	E
2014-09-27	Sunny	29	64-85	0.0	0-30	S/SE
2014-09-28	Fine	29	60-85	0.0	0-26	S
2014-09-30	Sunny	30	61-90	11.4	0-27	S
2014-10-01	Sunny	28	70-96	26.7	5-55	SE

* King's Park's data
\- Data was not available
\# less than 24 hourly observations per day

Meteorological Data Extracted from the Hong Kong Observatory

Date	Weather	King's Park Station				
		Average Air Temperature (°C)	Average Relative Humidity (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
2014-10-03	Sunny	28	76-92	23.7	0-21	SE
2014-10-04	Sunny	27	75-96	2.6	0-15	SE/E
2014-10-06	Sunny	27	47-78	0.0	1-20	E
2014-10-07	Sunny	26	54-72	Trace	0-18	SE/E
2014-10-08	Sunny	26	48-73	0.0	0-17	S/SE
2014-10-09	Sunny	27	48-71	0.0	0-14	N
2014-10-11	Sunny	28	49-72	0.0	0-15	E
2014-10-12	Sunny	27	42-79	0.0	0-20	NE
2014-10-14	Sunny	26	51-71	Trace	0-18	E/NE
2014-10-15	Sunny	25	56-74	0.0	0-20	SE
2014-10-17	Sunny	25	53-74	0.0	4-21	SE
2014-10-18	Sunny	25	51-78	0.0	1-20	SE/E
2014-10-20	Sunny	27	66-83	0.0	0-12	SE
2014-10-21	Sunny	27	50-84	Trace	0-11	NW/W
2014-10-23	Fine	24	75-95	0.2	1-18	SE/E
2014-10-24	Fine	24	70-80	0.0	3-16	SE/E
2014-10-25	Cloudy	25	76-83	0.0	1-18	SE
2014-10-26	Sunny	26	68-87	0.1	0-14	SE/E
2014-10-28	Sunny	25	59-78	Trace	6-24	SE/E
2014-10-29	Fine	25	62-82	Trace	1-22	SE
2014-10-30	Fine	26	70-86	0.0	1-18	E
2014-10-31	Sunny	26	70-87	0.0	0-14	N
2014-11-01	Sunny	26	70-86	0.0	0-13	SE/E

Date	Weather	Tsing Yi Station				
		Average Air Temperature (°C)	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-10-03	Sunny	27	76-92	23.7	0-21	-
2014-10-04	Sunny	27	75-96	2.6	0-20	-
2014-10-06	Sunny	27	47-78	0.0	0-14	-
2014-10-07	Sunny	27	54-72	Trace	0-18	-
2014-10-08	Sunny	26	48-73	0.0	0-13	-
2014-10-09	Sunny	26	48-71	0.0	0-14	N
2014-10-11	Sunny	28	49-72	0.0	0-12	SE/E
2014-10-12	Sunny	27	42-79	0.0	0-20	N/NW
2014-10-14	Sunny	26	51-71	Trace	1-15	N
2014-10-15	Sunny	25	56-74	0.0	0-17	E
2014-10-17	Sunny	26	53-74	0.0	3-20	SE/E
2014-10-18	Sunny	26	51-78	0.0	3-21	SE/E
2014-10-20	Sunny	28	66-83	0.0	1-18	SE/E
2014-10-21	Sunny	27	50-84	Trace	0-12	S/SE
2014-10-23	Fine	25	75-95	0.2	1-12	SE/E
2014-10-24	Fine	25	70-80	0.0	0-17	E
2014-10-25	Cloudy	26	76-83	0.0	1-15	SE/E
2014-10-26	Sunny	27	68-87	0.1	0-15	E
2014-10-28	Sunny	26	59-78	Trace	6-24	SE/E
2014-10-29	Fine	27	62-82	Trace	6-23	SE/E
2014-10-30	Fine	27	70-86	0.0	2-17	E/NE
2014-10-31	Sunny	26	70-87	0.0	0-15	NE
2014-11-01	Sunny	26	70-86	0.0	0-13	E

Date	Weather	Kai Tak Station				
		Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-10-03	Sunny	28	76-92	23.7	0-23	SE
2014-10-04	Sunny	27	75-96	2.6	0-21	E
2014-10-06	Sunny	27	47-78	0.0	2-23	E
2014-10-07	Sunny	26	54-72	Trace	3-26	E
2014-10-08	Sunny	26	48-73	0.0	2-16	N/NE
2014-10-09	Sunny	27	48-71	0.0	0-18	SE
2014-10-11	Sunny	28	49-72	0.0	0-16	SE/E
2014-10-12	Sunny	27	42-79	0.0	1-21	N
2014-10-14	Sunny	26	51-71	Trace	3-19	NE
2014-10-15	Sunny	25	56-74	0.0	0-19	E
2014-10-17	Sunny	25	53-74	0.0	9-25	E
2014-10-18	Sunny	25	51-78	0.0	5-24	E/NE
2014-10-20	Sunny	27	66-83	0.0	0-19	SE/E
2014-10-21	Sunny	27	50-84	Trace	0-15	SE
2014-10-23	Fine	24	75-95	0.2	9-25	E
2014-10-24	Fine	24	70-80	0.0	3-21	SE/E
2014-10-25	Cloudy	25	76-83	0.0	6-22	E
2014-10-26	Sunny	26	68-87	0.1	3-17	S/SE
2014-10-28	Sunny	25	59-78	Trace	12-30	E
2014-10-29	Fine	25	62-82	Trace	7-29	E
2014-10-30	Fine	26	70-86	0.0	6-24	E/NE
2014-10-31	Sunny	26	70-87	0.0	5-19	-
2014-11-01	Sunny	26	70-86	0.0	0-20	SE

Date	Weather	Green Island Station				
		Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-10-03	Sunny	28	76-92	23.7	0-40	E/NE
2014-10-04	Sunny	27	75-96	2.6	2-27	E
2014-10-06	Sunny	27	47-78	0.0	12-42	NE
2014-10-07	Sunny	26	54-72	Trace	10-45	E/NE
2014-10-08	Sunny	26	48-73	0.0	6-37	NE
2014-10-09	Sunny	27	48-71	0.0	0-22	SW
2014-10-11	Sunny	28	49-72	0.0	0-35	S
2014-10-12	Sunny	27	42-79	0.0	0-41	NE/N
2014-10-14	Sunny	26	51-71	Trace	2-39	NE/N
2014-10-15	Sunny	25	56-74	0.0	6-29	E/NE
2014-10-17	Sunny	25	53-74	0.0	5-43	E/NE
2014-10-18	Sunny	25	51-78	0.0	8-37	E/NE
2014-10-20	Sunny	27	66-83	0.0	0-33	NE
2014-10-21	Sunny	27	50-84	Trace	0-21	NW/W
2014-10-23	Fine	24	75-95	0.2	5-46	NE
2014-10-24	Fine	24	70-80	0.0	12-39	NE
2014-10-25	Cloudy	25	76-83	0.0	14-33	NE
2014-10-26	Sunny	26	68-87	0.1	0-33	NE
2014-10-28	Sunny	25	59-78	Trace	28-65	NE
2014-10-29	Fine	25	62-82	Trace	15-52	NE
2014-10-30	Fine	26	70-86	0.0	6-47	NE
2014-10-31	Sunny	26	70-87	0.0	0-33	E/NE
2014-11-01	Sunny	26	70-86	0.0	0-27	SE

* King's Park's data
\- Data was not available
\# less than 24 hourly observations per day

Meteorological Data Extracted from the Hong Kong Observatory

Date	Weather	King's Park Station				
		Average Air Temperature (°C)	Average Relative Humidity (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
2014-11-02	Sunny	25	61-85	Trace	0-15	NE
2014-11-04	Cloudy	22	72-81	Trace	0-15	SE/E
2014-11-05	Cloudy	24	74-81	Trace	2-16	SE/E
2014-11-06	Sunny	24	74-87	0.1	0-14	SE/E
2014-11-07	Sunny	23	82-97	11.8	0-18	SE
2014-11-09	Cloudy	22	75-86	Trace	0-19	SE
2014-11-10	Cloudy	24	72-84	Trace	0-20	SE/E
2014-11-11	Cloudy	24	76-85	0.0	0-15	SE/E
2014-11-12	Cloudy	25	74-88	Trace	0-13	E/NE
2014-11-13	Cloudy	19	72-88	Trace	0-17	NE/N
2014-11-15	Sunny	22	65-85	0.4	0-19	-
2014-11-16	Sunny	23	61-85	0.0	0-14	NE/N
2014-11-18	Sunny	21	57-72	Trace	0-16	NE
2014-11-19	Sunny	22	58-78	Trace	0-12	SE/E
2014-11-21	Sunny	23	62-83	0.0	0-18	SE/E
2014-11-22	Sunny	23	68-88	0.0	0-19	SE/E
2014-11-23	Sunny	23	70-88	0.0	2-18	SE
2014-11-24	Sunny	24	67-88	0.0	0-14	SE
2014-11-25	Sunny	24	65-92	0.0	0-12	N
2014-11-27	Fine	22	77-90	0.4	0-18	SE/E
2014-11-28	Cloudy	24	75-88	Trace	0-13	SE
2014-11-29	Cloudy	23	78-94	0.2	0-19	SE/E
2014-11-30	Sunny	25	82-96	0.2	0-12	SE

Date	Weather	Tsing Yi Station				
		Average Air Temperature (°C)	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-11-02	Sunny	26	61-85	Trace	1-18	N
2014-11-04	Cloudy	23	72-81	Trace	0-14	E
2014-11-05	Cloudy	25	74-81	Trace	4-16	E
2014-11-06	Sunny	24	74-87	0.1	1-11	SE/E
2014-11-07	Sunny	24	82-97	11.8	0-21	NE/E
2014-11-09	Cloudy	22	75-86	Trace	0-18	NE
2014-11-10	Cloudy	24	72-84	Trace	0-14	NW
2014-11-11	Cloudy	25	76-85	0.0	0-15	N
2014-11-12	Cloudy	22	74-88	Trace	0-20	NW
2014-11-13	Cloudy	20	72-88	Trace	0-13	NW
2014-11-15	Sunny	23	65-85	0.4	2-23	E
2014-11-16	Sunny	23	61-85	0.0	0-14	N
2014-11-18	Sunny	21	57-72	Trace	0-15	SE/E
2014-11-19	Sunny	22	58-78	Trace	1-14	NE/E
2014-11-21	Sunny	24	62-83	0.0	0-18	NE/E
2014-11-22	Sunny	23	68-88	0.0	0-19	-
2014-11-23	Sunny	25	70-88	0.0	1-23	E
2014-11-24	Sunny	25	67-88	0.0	0-15	-
2014-11-25	Sunny	24	65-92	0.0	0-12	NW
2014-11-27	Fine	23	77-90	0.4	3-18	E
2014-11-28	Cloudy	25	75-88	Trace	0-15	SE/E
2014-11-29	Cloudy	25	78-94	0.2	3-21	E
2014-11-30	Sunny	26	82-96	0.2	0-12	W

Date	Weather	Kai Tak Station				
		Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-11-02	Sunny	25	61-85	Trace	3-21	N/NW
2014-11-04	Cloudy	22	72-81	Trace	3-21	E
2014-11-05	Cloudy	24	74-81	Trace	4-22	SE/E
2014-11-06	Sunny	24	74-87	0.1	0-21	E
2014-11-07	Sunny	23	82-97	11.8	8-26	E
2014-11-09	Cloudy	22	75-86	Trace	0-24	E
2014-11-10	Cloudy	24	72-84	Trace	4-25	E
2014-11-11	Cloudy	24	76-85	0.0	0-21	N/NW
2014-11-12	Cloudy	25	74-88	Trace	0-15	SW/S
2014-11-13	Cloudy	19	72-88	Trace	0-18	E
2014-11-15	Sunny	22	65-85	0.4	2-25	SE/E
2014-11-16	Sunny	23	61-85	0.0	0-20	E
2014-11-18	Sunny	21	57-72	Trace	3-18	NE
2014-11-19	Sunny	22	58-78	Trace	4-18	E
2014-11-21	Sunny	23	62-83	0.0	0-22	NE/N
2014-11-22	Sunny	23	68-88	0.0	0-26	SE/E
2014-11-23	Sunny	23	70-88	0.0	5-24	E
2014-11-24	Sunny	24	67-88	0.0	0-21	SE
2014-11-25	Sunny	24	65-92	0.0	0-14	SW/W
2014-11-27	Fine	22	77-90	0.4	3-24	SE/E
2014-11-28	Cloudy	24	75-88	Trace	3-18	SE/E
2014-11-29	Cloudy	23	78-94	0.2	6-19	SE/E
2014-11-30	Sunny	25	82-96	0.2	4-19	SE/E

Date	Weather	Green Island Station				
		Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-11-02	Sunny	25	61-85	Trace	11-38	NE/N
2014-11-04	Cloudy	22	72-81	Trace	5-37	NE
2014-11-05	Cloudy	24	74-81	Trace	2-36	NE
2014-11-06	Sunny	24	74-87	0.1	0-35	NE
2014-11-07	Sunny	23	82-97	11.8	24-50	NE
2014-11-09	Cloudy	22	75-86	Trace	17-45	NE/N
2014-11-10	Cloudy	24	72-84	Trace	5-45	NE
2014-11-11	Cloudy	24	76-85	0.0	12-41	NE
2014-11-12	Cloudy	25	74-88	Trace	11-35	NE/N
2014-11-13	Cloudy	19	72-88	Trace	16-35	N
2014-11-15	Sunny	22	65-85	0.4	15-57	NE
2014-11-16	Sunny	23	61-85	0.0	0-32	NE/N
2014-11-18	Sunny	21	57-72	Trace	2-39	NE/N
2014-11-19	Sunny	22	58-78	Trace	0-31	NE
2014-11-21	Sunny	23	62-83	0.0	0-40	NE
2014-11-22	Sunny	23	68-88	0.0	6-46	NE
2014-11-23	Sunny	23	70-88	0.0	-	-
2014-11-24	Sunny	24	67-88	0.0	0-40	NE
2014-11-25	Sunny	24	65-92	0.0	0-20	NW
2014-11-27	Fine	22	77-90	0.4	13-45	NE
2014-11-28	Cloudy	24	75-88	Trace	2-40	NE
2014-11-29	Cloudy	23	78-94	0.2	20-41	NE
2014-11-30	Sunny	25	82-96	0.2	1-31	NE

* King's Park's data
\- Data was not available
\# less than 24 hourly observations per day

Annex D6 Noise Monitoring Results

Daytime Noise Monitoring Results

Station NM2

Date	Start Time	End Time	Weather	Noise level (dB(A)), 30 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (℃)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
2-Sep-14	8:19	8:49	Sunny	73	74	71	Lifting	Traffic noise	-	29	0.2	RION- NL52 (S/N 00131627)	RION-NC73 (S/N 10997142)
8-Sep-14	8:15	8:45	Sunny	73	74	71	Lifting	Noise from nearby site (DSD), Traffic noise	-	29	0.3	RION- NL52 (S/N 00131627)	RION-NC73 (S/N 10997142)
19-Sep-14	15:20	15:50	Fine	71	74	72	Lifting	Noise from nearby site (DSD), Traffic noise	-	30	0.5	RION- NL52 (S/N 00131627)	RION-NC73 (S/N 10997142)
25-Sep-14	14:20	14:50	Sunny	71	74	73	Noise from nearby site	Traffic noise	-	28	0.3	RION- NL52 (S/N 00131627)	RION-NC73 (S/N 10997142)
30-Sep-14	8:20	8:50	Sunny	71	74	72	Noise from nearby site	Traffic noise	-	30	0.3	RION- NL52 (S/N 00131627)	RION-NC73 (S/N 10997142)
			Min.	**71**									
			Max.	**73**									

Annex D6 Noise Monitoring Results

Daytime Noise Monitoring Results

Station NM2

Date	Start Time	End Time	Weather	Noise level (dB(A)), 30 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
06-Oct-14	13:03	13:33	Sunny	73	74	72	Lifting, Noise from nearby site	Traffic noise	-	28	0.5	RION- NL52 (S/N 00131627)	RION-NC73 (S/N 10997142)
17-Oct-14	8:15	8:45	Sunny	73	74	71	Lifting, Noise from nearby site (DSD)	Traffic noise	-	27	0.5	RION- NL52 (S/N 00131627)	RION-NC73 (S/N 10997142)
23-Oct-14	10:20	10:50	Fine	73	74	71	Lifting, Noise from nearby site	Traffic noise	-	27	0.3	RION- NL52 (S/N 00131627)	RION-NC73 (S/N 10997142)
29-Oct-14	15:30	16:00	Fine	72	74	71	Lifting, Noise from nearby site	Traffic noise	-	28	0.3	RION- NL52 (S/N 00131627)	RION-NC73 (S/N 10997142)
			Min.	**72**									
			Max.	**73**									

Annex D6 Noise Monitoring Results

Daytime Noise Monitoring Results

Station NM2

Date	Start Time	End Time	Weather	Noise level (dB(A)), 30 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
04-Nov-14	13:00	13:30	Cloudy	72	74	71	Lifting, Noise from nearby site	Traffic noise	-	22	0.3	RION- NL52 (S/N 00131627)	RION-NC73 (S/N 10997142)
10-Nov-14	10:20	10:50	Cloudy	73	74	71	Lifting, Noise from nearby site	Traffic noise	-	24	0.3	RION- NL52 (S/N 00131627)	RION-NC73 (S/N 10997142)
21-Nov-14	10:50	11:20	Sunny	73	74	71	Lifting, Noise from nearby site	Traffic noise	-	23	0.3	RION- NL52 (S/N 00131627)	RION-NC73 (S/N 10997142)
27-Nov-14	10:20	10:50	Fine	72	73	71	Lifting, Noise from nearby site	Traffic noise	-	22	0.3	RION- NL52 (S/N 00131627)	RION-NC73 (S/N 10997142)
			Min.	**72**									
			Max.	**73**									

Annex D6 Noise Monitoring Results

Restricted Hours Noise Monitoring Results

Station NM2

Date	Start Time	End Time	Weather	Noise level (dB(A)), 5 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (℃)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
9-Sep-14	20:13	20:18	Fine	71	72	69	-	Traffic noise	-	#REF!	0.3	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
	20:18	20:23	Fine	71	73	70			-				
	20:23	20:28	Fine	70	72	69			-				
	20:13	20:28	Fine	71	72	69			-				
14-Sep-14	16:46	16:51	Sunny	71	72	70	-	Traffic noise	-	#REF!	0.2	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
	16:51	16:56	Sunny	71	72	70			-				
	16:56	17:01	Sunny	71	72	70			-				
	16:46	17:01	Sunny	71	72	70			-				
23-Sep-14	21:07	21:12	Fine	70	72	70	-	Traffic noise	-	#REF!	0.5	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
	21:12	21:17	Fine	71	73	71			-				
	21:17	21:22	Fine	70	71	70			-				
	21:07	21:22	Fine	70	72	70			-				
28-Sep-14	17:30	17:35	Fine	68	69	66	Minimal road traffic due to "Occupy Central Campaign"	Traffic noise	-	#REF!	0.3	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
	17:35	17:40	Fine	68	69	66			-				
	17:40	17:45	Fine	68	70	66			-				
	17:30	17:45	Fine	68	69	66			-				
			Min.	**68**									
			Max.	**71**									

Annex D6 Noise Monitoring Results

Restricted Hours Noise Monitoring Results

Station NM2

Date	Start Time	End Time	Weather	Noise level (dB(A)), 5 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
07-Oct-14	19:27	19:32	Fine	71	72	68	-	Traffic noise	-	31	0.5	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
	19:32	19:37	Fine	69	72	68			-				
	19:37	19:42	Fine	70	72	68			-				
	19:27	19:42	Fine	70	71	68			-				
12-Oct-14	18:00	18:05	Sunny	69	70	67	-	Traffic noise	-	27	0.5	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
	18:05	18:10	Sunny	69	70	67			-				
	18:15	18:20	Sunny	69	70	67			-				
	18:00	18:15	Sunny	69	70	67			-				
21-Oct-14	21:10	21:15	Fine	69	71	68	-	Traffic noise	-	27	0.3	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
	21:15	21:20	Fine	70	71	68			-				
	21:20	21:25	Fine	71	72	69			-				
	21:10	21:25	Fine	70	71	69			-				
26-Oct-14	15:16	15:21	Sunny	71	72	68	-	Traffic noise	-	26	0.3	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
	15:21	15:26	Sunny	70	71	68			-				
	15:26	15:31	Sunny	70	71	69			-				
	15:16	15:31	Sunny	70	72	68			-				
			Min.	**69**									
			Max.	**71**									

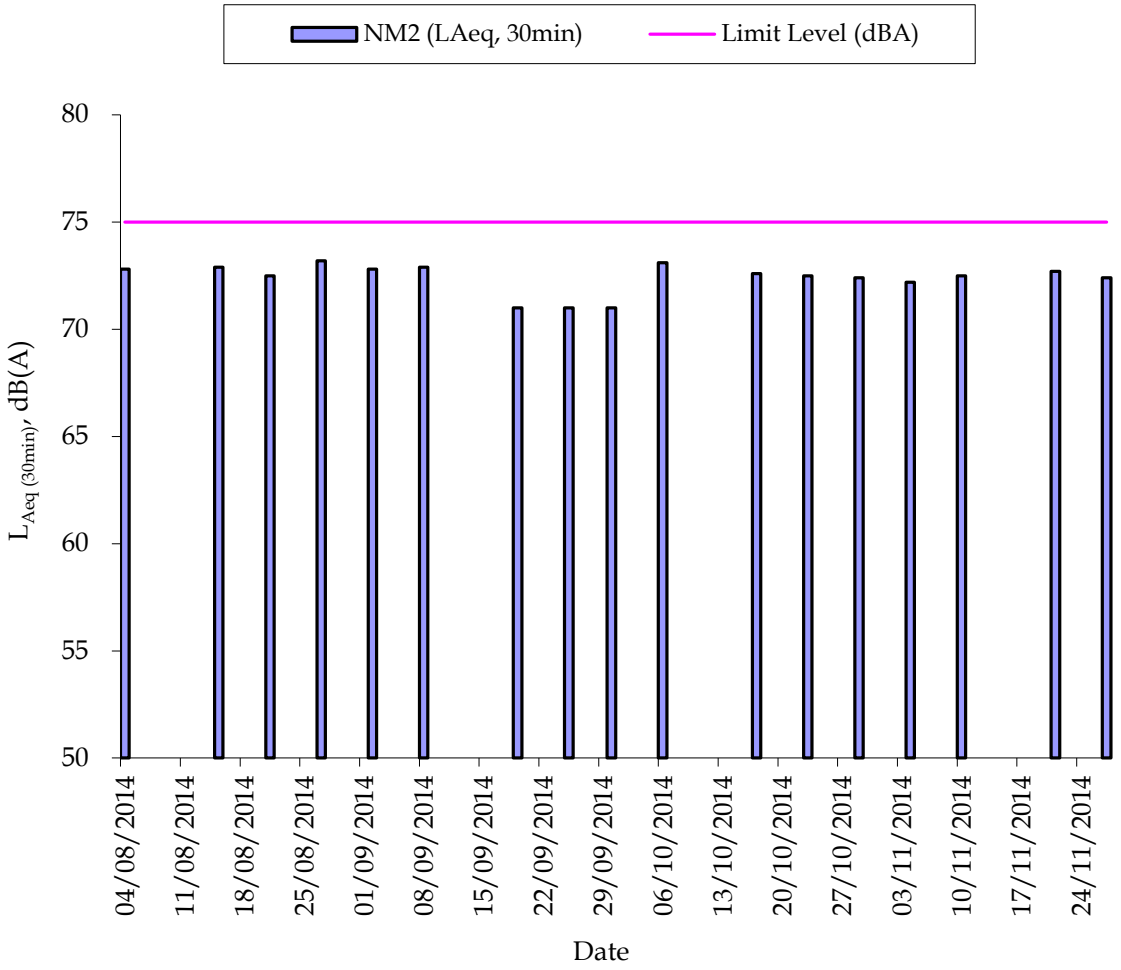
Annex D6 Noise Monitoring Results

Restricted Hours Noise Monitoring Results

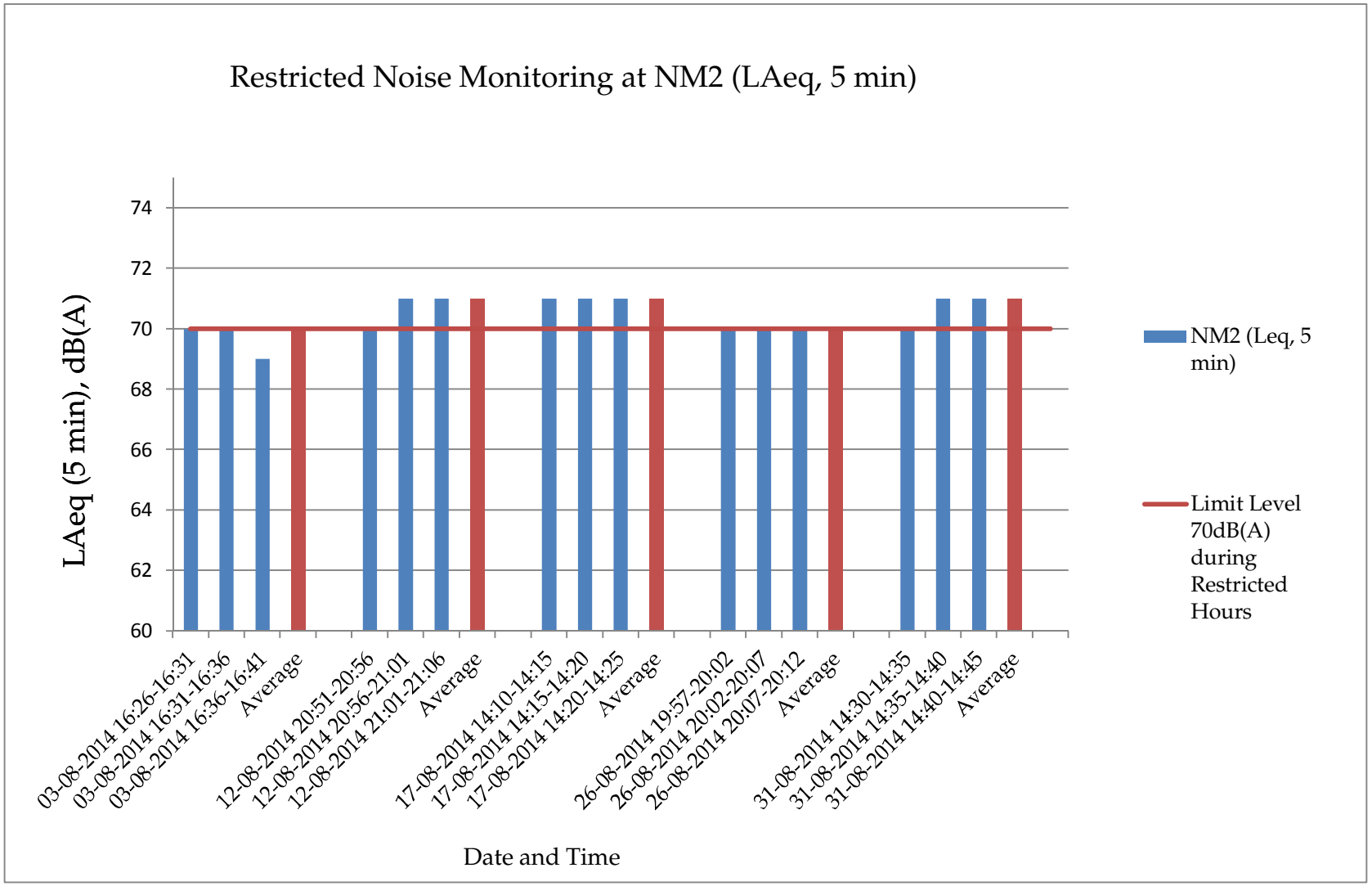
Station NM2

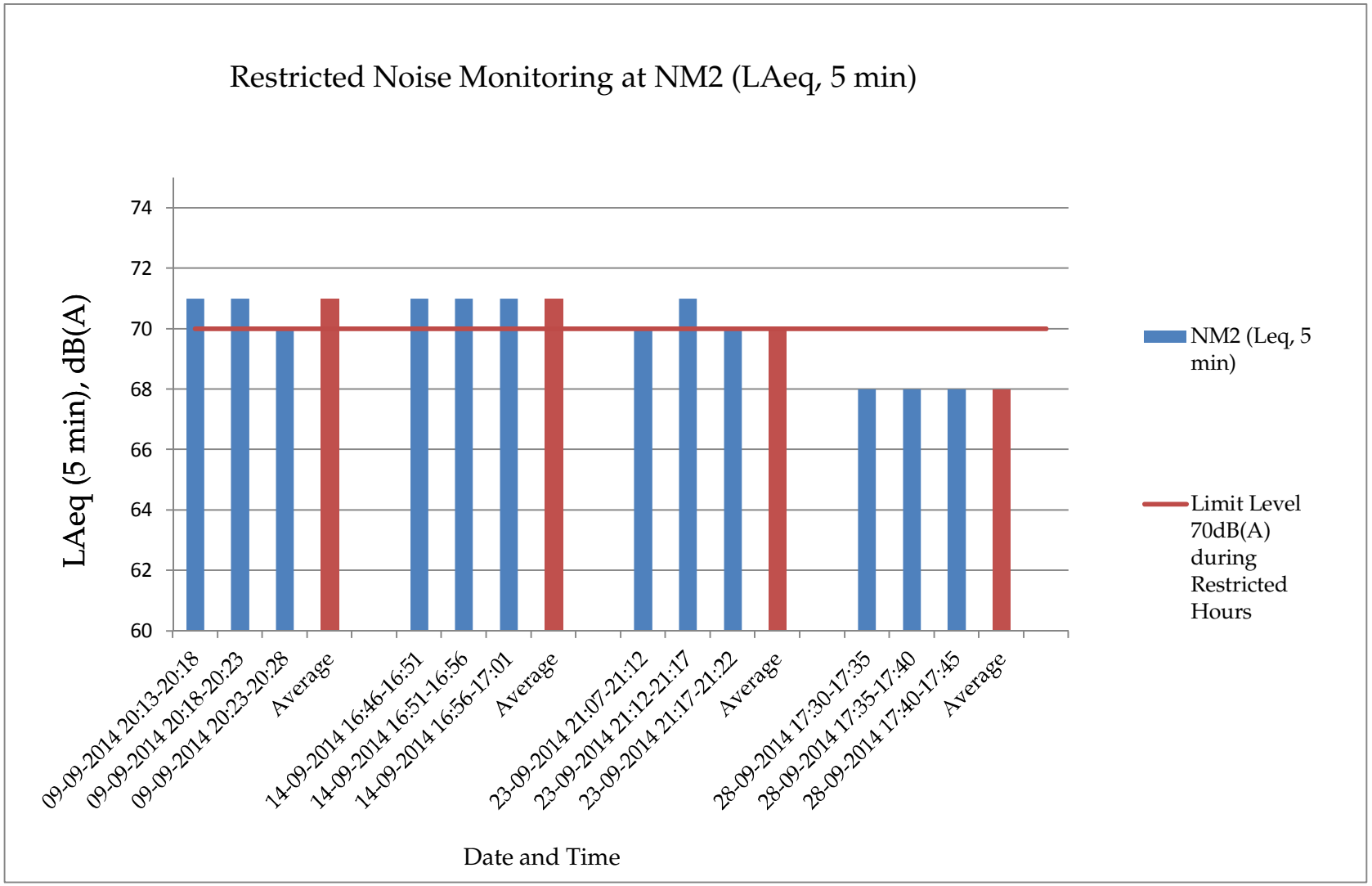
Date	Start Time	End Time	Weather	Noise level (dB(A)), 5 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
04-Nov-14	20:20	20:25	Fine	68	69	66	-	Traffic noise	-	22	0.5	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
	20:25	20:30	Fine	68	69	67			-				
	20:30	20:35	Fine	68	70	67			-				
	20:20	20:35	Fine	68	69	67			-				
09-Nov-14	14:25	14:30	Cloudy	69	70	67	Noise from nearby playground	Traffic noise	-	22	0.5	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
	14:30	14:35	Cloudy	69	70	67			-				
	14:35	14:40	Cloudy	68	69	67			-				
	14:25	14:40	Cloudy	69	70	67			-				
18-Nov-14	20:45	20:50	Fine	70	71	69	-	Traffic noise	-	21	0.3	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
	21:15	21:20	Fine	70	71	68			-				
	21:20	21:25	Fine	70	71	69			-				
	21:10	21:25	Fine	70	71	69			-				
23-Nov-14	14:50	14:55	Sunny	71	72	68	-	Traffic noise	-	23	0.5	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
	14:55	15:00	Sunny	71	72	69			-				
	15:00	15:05	Sunny	70	71	69			-				
	14:50	15:05	Sunny	71	72	69			-				
			Min.	**68**									
			Max.	**71**									

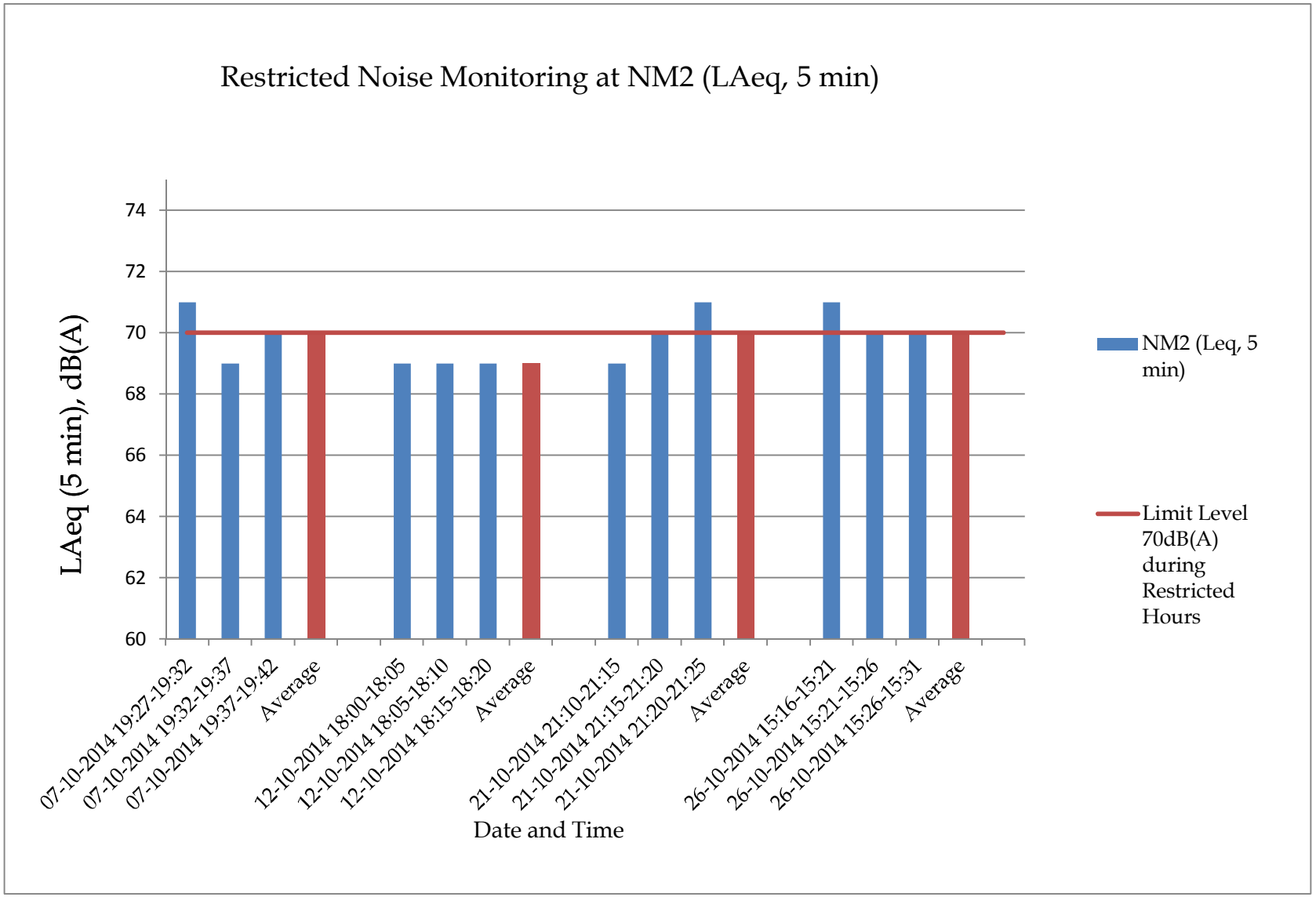
Normal Weekdays Noise Monitoring Results at NM2 ($L_{Aeq, 30min}$)

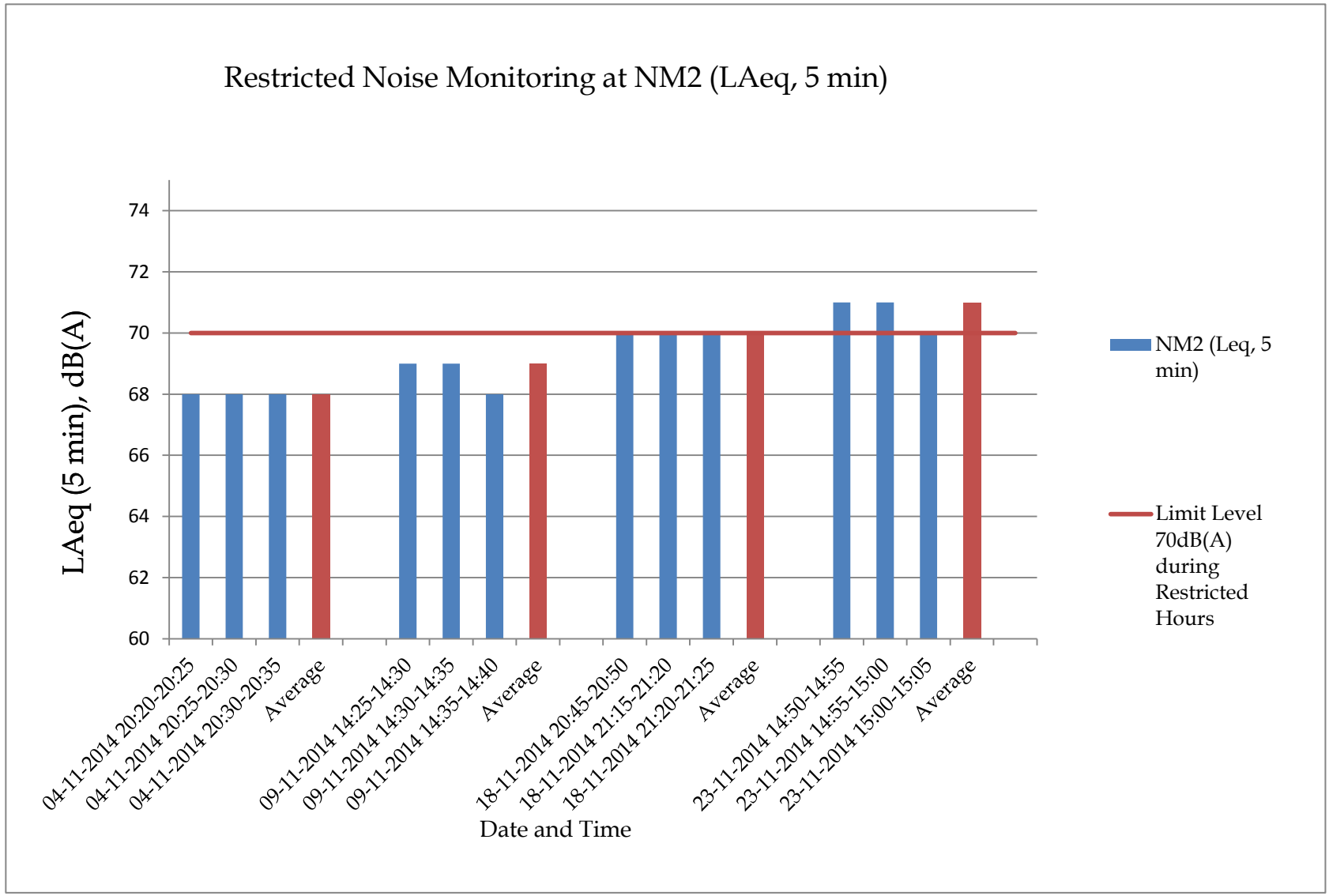


Remark:
- 75dB(A) was adopted as the Limit Level during normal weekdays in the reporting period


Restricted Noise Monitoring at NM2 (LAeq, 5 min)
LAeq (5 min), dB(A)
74
72
70
68
66
64
62
60
03-08-2014 16:26-16:31
03-08-2014 16:31-16:36
03-08-2014 16:36-16:41
Average
12-08-2014 20:51-20:56
12-08-2014 20:56-21:01
12-08-2014 21:01-21:06
Average
17-08-2014 14:10-14:15
17-08-2014 14:15-14:20
17-08-2014 14:20-14:25
Average
26-08-2014 19:57-20:02
26-08-2014 20:02-20:07
26-08-2014 20:07-20:12
Average
31-08-2014 14:30-14:35
31-08-2014 14:35-14:40
31-08-2014 14:40-14:45
Average
Date and Time
NM2 (Leq, 5 min)
Limit Level 70dB(A) during Restricted Hours


Restricted Noise Monitoring at NM2 (LAeq, 5 min)
LAeq (5 min), dB(A)
74
72
70
68
66
64
62
60
09-09-2014 20:13-20:18
09-09-2014 20:18-20:23
09-09-2014 20:23-20:28
Average
14-09-2014 16:46-16:51
14-09-2014 16:51-16:56
14-09-2014 16:56-17:01
Average
23-09-2014 21:07-21:12
23-09-2014 21:12-21:17
23-09-2014 21:17-21:22
Average
28-09-2014 17:30-17:35
28-09-2014 17:35-17:40
28-09-2014 17:40-17:45
Average
Date and Time
NM2 (Leq, 5 min)
Limit Level 70dB(A) during Restricted Hours


Restricted Noise Monitoring at NM2 (LAeq, 5 min)
LAeq (5 min), dB(A)
74
72
70
68
66
64
62
60
07-10-2014 19:27-19:32
07-10-2014 19:32-19:37
07-10-2014 19:37-19:42
Average
12-10-2014 18:00-18:05
12-10-2014 18:05-18:10
12-10-2014 18:15-18:20
Average
21-10-2014 21:10-21:15
21-10-2014 21:15-21:20
21-10-2014 21:20-21:25
Average
26-10-2014 15:16-15:21
26-10-2014 15:21-15:26
26-10-2014 15:26-15:31
Average
Date and Time
NM2 (Leq, 5 min)
Limit Level 70dB(A) during Restricted Hours


Restricted Noise Monitoring at NM2 (LAeq, 5 min)
LAeq (5 min), dB(A)
74
72
70
68
66
64
62
60
04-11-2014 20:20-20:25
04-11-2014 20:25-20:30
04-11-2014 20:30-20:35
Average
09-11-2014 14:25-14:30
09-11-2014 14:30-14:35
09-11-2014 14:35-14:40
Average
18-11-2014 20:45-20:50
18-11-2014 21:15-21:20
18-11-2014 21:20-21:25
Average
23-11-2014 14:50-14:55
23-11-2014 14:55-15:00
23-11-2014 15:00-15:05
Average
Date and Time
NM2 (Leq, 5 min)
Limit Level 70dB(A) during Restricted Hours

Annex D7

Summary of Exceedance Investigation

Harbour Area Treatment Scheme (HATS) Stage 2A
Contract No. DC/2007/23
Construction of Sewage Conveyance from North Point to Stonecutters Island

NOTIFICATION OF EXCEEDANCE and INVESTIGATION REPORT

Log No.	**2007/23/Noise/238**
Date	9 September 2014 (Tuesday) (2013 – 2018, 2018 – 2023)
Monitoring Station	NM2 (Wan Chai East)
Worksite	Wan Chai East Production and Drop Shafts
Parameter	$L_{Aeq\ (5min)}$
Action Level	Not applicable for construction works during restricted hours
Limit Level	70dB
Measured Levels	70.5 dB (A) – (2013 – 2018) 71.2 dB (A) – (2018 – 2023)
Possible Reason for Action or Limit Level Non-compliance	According to the works summary provided by the Contractor, no works had been performed outside the noise enclosure. Other activities that took place during the noise monitoring session included drilling and bolting for sandy pump concrete pipe bracket anchor; removing 2 sets of track rails; installation of track rails to newly blinded portion, laying double rails to raise up and join the elevated rails in fiber shotcreted invert portion; tally control room, alimak operations, installing and maintaining electrical systems, gantry crane operations, kibble winder, lifting operations, repairing equipment, cleaning, servicing and maintenance, and fabrication at TK4. These activities were carried out inside the noise enclosure. It was observed no outdoor construction activities at the Wan Chai East Production and Drop Shafts during the noise monitoring session. This is consistent with the works summary provided by the Contractor showing no outdoor construction activities that have taken place during the same period. Other potential noise source was also identified in the vicinity (i.e., traffic) to contribute to the measured noise level. In view of no outdoor construction works was carried out and contribution from other potential noise source in vicinity (i.e. traffic), it is considered that the exceedance was not due to the Contract 23 construction works.
Actions Taken / To Be Taken	Since the exceedance was not attributable to the Contract 23 construction works, no action is therefore required. However, a number of residential buildings and other noise sensitive receivers are located near the Site, the Contractor is reminded to adhere strictly to the Construction Noise Mitigation Plan and to implement all relevant noise mitigation measures recommended or specified in the EIA, EM&A Manual, EMP, Method Statements, General and Particular Specifications of this Project to avoid exceedance of noise limit levels or causing noise nuisance. The Contractor is also reminded to ensure that the construction plant deployed for the works during restricted hours is in strict compliance with the relevant Construction Noise Permit (CNP) granted.
Remarks	-

Harbour Area Treatment Scheme (HATS) Stage 2A
Contract No. DC/2007/23
Construction of Sewage Conveyance from North Point to Stonecutters Island

NOTIFICATION OF EXCEEDANCE and INVESTIGATION REPORT

Log No.	**2007/23/Noise/239**
Date	14 September 2014 (Sunday) (1646 – 1651, 1651 – 1656, 1656 - 1701)
Monitoring Station	NM2 (Wan Chai East)
Worksite	Wan Chai East Production and Drop Shafts
Parameter	$L_{Aeq\ (5min)}$
Action Level	Not applicable for construction works during restricted hours
Limit Level	70dB
Measured Levels	71.1 dB (A) – (1646 – 1651) 71.1 dB (A) – (1651 – 1656) 71.2 dB (A) – (1656 – 1701)
Possible Reason for Action or Limit Level Non-compliance	According to the works summary provided by the Contractor, no works had been performed outside the noise enclosure. Other activities that took place during the noise monitoring session included preparation works for cutting & core D-wall at Drop Shaft; setting up of shutter forms including leveling, placement of vertical, horizontal and inclined struts and rectification of soldier lengths to accommodate shorter heights, installing pins down track, breaking the underbreaks, replacing the leaking drop pipes at TK4; lifting and loading to flat car the second and third vault big forms, CDS small beam, moving to shaft bottom and sending up to surface at TJ5 and shaft; hauled concrete pipes and installed concrete pipe line; extended sany pump (SYP) concrete pipes; shutter installation: aligned, joined and bolted invert shutter form (big shutter form); breaking of under break; tally control room, alimak operations, installing and maintaining electrical systems, gantry crane operations, kibble winder, lifting operations, repairing equipment, cleaning, servicing and maintenance, and fabrication. These activities were carried out inside the noise enclosure. It was observed no outdoor construction activities at the Wan Chai East Production and Drop Shafts during the noise monitoring session. This is consistent with the works summary provided by the Contractor showing no outdoor construction activities that have taken place during the same period. Other potential noise source was also identified in the vicinity (i.e., traffic) to contribute to the measured noise level. In view of no outdoor construction works was carried out and contribution from other potential noise source in vicinity (i.e. traffic), it is considered that the exceedance was not due to the Contract 23 construction works.

Actions Taken / To Be Taken	Since the exceedance was not attributable to the Contract 23 construction works, no action is therefore required. However, a number of residential buildings and other noise sensitive receivers are located near the Site, the Contractor is reminded to adhere strictly to the Construction Noise Mitigation Plan and to implement all relevant noise mitigation measures recommended or specified in the EIA, EM&A Manual, EMP, Method Statements, General and Particular Specifications of this Project to avoid exceedance of noise limit levels or causing noise nuisance. The Contractor is also reminded to ensure that the construction plant deployed for the works during restricted hours is in strict compliance with the relevant Construction Noise Permit (CNP) granted.
Remarks	-

Harbour Area Treatment Scheme (HATS) Stage 2A
Contract No. DC/2007/23
Construction of Sewage Conveyance from North Point to Stonecutters Island

NOTIFICATION OF EXCEEDANCE and INVESTIGATION REPORT

Log No.	**2007/23/Noise/240**
Date	23 September 2014 (Tuesday) (2112-2117)
Monitoring Station	NM2 (Wan Chai East)
Worksite	Wan Chai East Production and Drop Shafts
Parameter	$L_{Aeq\ (5min)}$
Action Level	Not applicable for construction works during restricted hours
Limit Level	70dB
Measured Levels	70.9 dB (A) – (2112-2117)
Possible Reason for Action or Limit Level Non-compliance	According to the works summary provided by the Contractor, no works had been performed outside the noise enclosure. Other activities that took place during the noise monitoring session included driving in and placing small shutters #3, #2 and #1 and pulling them, connecting big vault shutters, re-installing horizontal adjustable screw props, installing hydraulic jacks, connecting hydraulic hoses; small vault shutter works, installing connector rings, setting, aligning, bolting and connecting vault formworks; lifting stop end to bottom shaft to a flat car and moving to TK4 double track; cleaning of built up concrete at the bottom and sides of agitator; and trimming underbreaks at TK4; tally control room, alimak operations, installing and maintaining electrical systems, gantry crane operations, kibble winder, lifting operations, repairing equipment, cleaning, servicing and maintenance, and fabrication. These activities were carried out inside the noise enclosure. It was observed no outdoor construction activities at the Wan Chai East Production and Drop Shafts during the noise monitoring session. This is consistent with the works summary provided by the Contractor showing no outdoor construction activities that have taken place during the same period. Other potential noise source was also identified in the vicinity (i.e., traffic) to contribute to the measured noise level. In view of no outdoor construction works was carried out and contribution from other potential noise source in vicinity (i.e. traffic), it is considered that the exceedance was not due to the Contract 23 construction works.
Actions Taken / To Be Taken	Since the exceedance was not attributable to the Contract 23 construction works, no action is therefore required. However, a number of residential buildings and other noise sensitive receivers are located near the Site, the Contractor is reminded to adhere strictly to the Construction Noise Mitigation Plan and to implement all relevant noise mitigation measures recommended or specified in the EIA, EM&A Manual, EMP, Method Statements, General and Particular Specifications of this Project to avoid exceedance of noise limit levels or causing noise nuisance. The Contractor is also reminded to ensure that the construction plant deployed for the works during restricted hours is in strict compliance with the relevant Construction Noise Permit (CNP) granted.
Remarks	-

Harbour Area Treatment Scheme (HATS) Stage 2A
Contract No. DC/2007/23
Construction of Sewage Conveyance from North Point to Stonecutters Island

NOTIFICATION OF EXCEEDANCE and INVESTIGATION REPORT

Log No.	**2007/23/Noise/241**
Date	7 October 2014 (Tuesday) (1927 - 1932)
Monitoring Station	NM2 (Wan Chai East)
Worksite	Wan Chai East Production and Drop Shafts
Parameter	$L_{Aeq\ (5min)}$
Action Level	Not applicable for construction works during restricted hours
Limit Level	70dB
Measured Levels	70.6 dB (A) – (1516 - 1521)
Possible Reason for Action or Limit Level Non-compliance	According to the works summary provided by the Contractor, no works had been performed outside the noise enclosure. Other activities that took place during the noise monitoring session included cutting the 16mm thick plates/lowering down and shifting to Shutter Area to reinforce the slots, installing pins to tie down tracks, bolting down pipes support brackets and install rubber strips in the omega clamps, drilling for anchors, and vault shutter works at TK4; kibble winder, lifting operations, tally control room, gantry crane operations, repairing equipment, cleaning, servicing and maintenance. These activities were carried out inside the noise enclosure. It was observed no outdoor construction activities at the Wan Chai East Production and Drop Shafts during the noise monitoring session. This is consistent with the works summary provided by the Contractor showing no outdoor construction activities that have taken place during the same period. Other potential noise source was also identified in the vicinity (i.e., traffic) to contribute to the measured noise level. In view of no outdoor construction works was carried out and contribution from other potential noise source in vicinity (i.e. traffic), it is considered that the exceedance was not due to the Contract 23 construction works.
Actions Taken / To Be Taken	Since the exceedance was not attributable to the Contract 23 construction works, no action is therefore required. However, a number of residential buildings and other noise sensitive receivers are located near the Site, the Contractor is reminded to adhere strictly to the Construction Noise Mitigation Plan and to implement all relevant noise mitigation measures recommended or specified in the EIA, EM&A Manual, EMP, Method Statements, General and Particular Specifications of this Project to avoid exceedance of noise limit levels or causing noise nuisance. The Contractor is also reminded to ensure that the construction plant deployed for the works during restricted hours is in strict compliance with the relevant Construction Noise Permit (CNP) granted.
Remarks	-

Harbour Area Treatment Scheme (HATS) Stage 2A
Contract No. DC/2007/23
Construction of Sewage Conveyance from North Point to Stonecutters Island

NOTIFICATION OF EXCEEDANCE and INVESTIGATION REPORT

Log No.	**2007/23/Noise/242**
Date	21 October 2014 (Tuesday) (2120 - 2125)
Monitoring Station	NM2 (Wan Chai East)
Worksite	Wan Chai East Production and Drop Shafts
Parameter	$L_{Aeq\ (5min)}$
Action Level	Not applicable for construction works during restricted hours
Limit Level	70dB
Measured Levels	70.5 dB (A) – (2120 - 2125)
Possible Reason for Action or Limit Level Non-compliance	According to the works summary provided by the Contractor, no works had been performed outside the noise enclosure. Other activities that took place during the noise monitoring session included vault concreting, rail rectification, invert carrier wheel fix, and housekeeping at TK4; tally control room, alimak operations, installing and maintaining electrical systems, gantry crane operations, kibble winder, lifting operations, repairing equipment, cleaning, servicing and maintenance, and fabrication. These activities were carried out inside the noise enclosure. It was observed no outdoor construction activities at the Wan Chai East Production and Drop Shafts during the noise monitoring session. This is consistent with the works summary provided by the Contractor showing no outdoor construction activities that have taken place during the same period. Other potential noise source was also identified in the vicinity (i.e., traffic) to contribute to the measured noise level. In view of no outdoor construction works was carried out and contribution from other potential noise source in vicinity (i.e. traffic), it is considered that the exceedance was not due to the Contract 23 construction works.
Actions Taken / To Be Taken	Since the exceedance was not attributable to the Contract 23 construction works, no action is therefore required. However, a number of residential buildings and other noise sensitive receivers are located near the Site, the Contractor is reminded to adhere strictly to the Construction Noise Mitigation Plan and to implement all relevant noise mitigation measures recommended or specified in the EIA, EM&A Manual, EMP, Method Statements, General and Particular Specifications of this Project to avoid exceedance of noise limit levels or causing noise nuisance. The Contractor is also reminded to ensure that the construction plant deployed for the works during restricted hours is in strict compliance with the relevant Construction Noise Permit (CNP) granted.
Remarks	-

Harbour Area Treatment Scheme (HATS) Stage 2A
Contract No. DC/2007/23
Construction of Sewage Conveyance from North Point to Stonecutters Island

NOTIFICATION OF EXCEEDANCE and INVESTIGATION REPORT

Log No.	**2007/23/Noise/243**
Date	26 October 2014 (Sunday) (1516 – 1521)
Monitoring Station	NM2 (Wan Chai East)
Worksite	Wan Chai East Production and Drop Shafts
Parameter	$L_{Aeq\ (5min)}$
Action Level	Not applicable for construction works during restricted hours
Limit Level	70dB
Measured Levels	70.9 dB (A) – (1516 - 1521)
Possible Reason for Action or Limit Level Non-compliance	According to the works summary provided by the Contractor, no works had been performed outside the noise enclosure. Other activities that took place during the noise monitoring session included invert shutter side supports removal, removing tital bolts and concrete pipes, invert shutter shifting preparation, vault shutter alignment, and grout pump works at TK4; tally control room, alimak operations, installing and maintaining electrical systems, gantry crane operations, kibble winder, lifting operations, repairing equipment, cleaning, servicing and maintenance, and fabrication. These activities were carried out inside the noise enclosure. It was observed no outdoor construction activities at the Wan Chai East Production and Drop Shafts during the noise monitoring session. This is consistent with the works summary provided by the Contractor showing no outdoor construction activities that have taken place during the same period. Other potential noise source was also identified in the vicinity (i.e., traffic) to contribute to the measured noise level. In view of no outdoor construction works was carried out and contribution from other potential noise source in vicinity (i.e. traffic), it is considered that the exceedance was not due to the Contract 23 construction works.
Actions Taken / To Be Taken	Since the exceedance was not attributable to the Contract 23 construction works, no action is therefore required. However, a number of residential buildings and other noise sensitive receivers are located near the Site, the Contractor is reminded to adhere strictly to the Construction Noise Mitigation Plan and to implement all relevant noise mitigation measures recommended or specified in the EIA, EM&A Manual, EMP, Method Statements, General and Particular Specifications of this Project to avoid exceedance of noise limit levels or causing noise nuisance. The Contractor is also reminded to ensure that the construction plant deployed for the works during restricted hours is in strict compliance with the relevant Construction Noise Permit (CNP) granted.
Remarks	-

Harbour Area Treatment Scheme (HATS) Stage 2A
Contract No. DC/2007/23
Construction of Sewage Conveyance from North Point to Stonecutters Island

NOTIFICATION OF EXCEEDANCE and INVESTIGATION REPORT

Log No.	**2007/23/Noise/244**
Date	23 November 2014 (Sunday) (1450 – 1455, 1455 - 1500)
Monitoring Station	NM2 (Wan Chai East)
Worksite	Wan Chai East Production and Drop Shafts
Parameter	$L_{Aeq\ (5min)}$
Action Level	Not applicable for construction works during restricted hours
Limit Level	70dB
Measured Levels	71.2 dB (A) – (1450 - 1455) 70.8 dB (A) – (1455 - 1500)
Possible Reason for Action or Limit Level Non-compliance	According to the works summary provided by the Contractor, no works had been performed outside the noise enclosure. Other activities that took place during the noise monitoring session included loading and unloading materials, service maintenance for lower lining, and repairing and maintaining equipemnt at TK4; tally control room, alimak operations, materials handling, installing and maintaining electrical systems, gantry crane operations, kibble winder, lifting operations, repairing equipment, cleaning, servicing and maintenance, and fabrication. These activities were carried out inside the noise enclosure. It was observed no outdoor construction activities at the Wan Chai East Production and Drop Shafts during the noise monitoring session. This is consistent with the works summary provided by the Contractor showing no outdoor construction activities that have taken place during the same period. Other potential noise source was also identified in the vicinity (i.e., traffic) to contribute to the measured noise level. In view of no outdoor construction works was carried out and contribution from other potential noise source in vicinity (i.e. traffic), it is considered that the exceedance was not due to the Contract 23 construction works.
Actions Taken / To Be Taken	Since the exceedance was not attributable to the Contract 23 construction works, no action is therefore required. However, a number of residential buildings and other noise sensitive receivers are located near the Site, the Contractor is reminded to adhere strictly to the Construction Noise Mitigation Plan and to implement all relevant noise mitigation measures recommended or specified in the EIA, EM&A Manual, EMP, Method Statements, General and Particular Specifications of this Project to avoid exceedance of noise limit levels or causing noise nuisance. The Contractor is also reminded to ensure that the construction plant deployed for the works during restricted hours is in strict compliance with the relevant Construction Noise Permit (CNP) granted.
Remarks	-

Annex D8 Cumulative Complaint and Summons/Prosecutions Log

Reporting Month	Number of Complaints in Reporting Month	Number of Summons/Prosecutions in Reporting Month
December 2009	0	0
January 2010	0	0
February 2010	0	0
March 2010	0	0
April 2010	0	0
May 2010	0	0
June 2010	0	0
July 2010	0	0
August 2010	0	0
September 2010	0	0
October 2010	0	0
November 2010	0	0
December 2010	0	0
January 2011	0	0
February 2011	0	0
March 2011	0	0
April 2011	0	0
May 2011	0	0

Annex D8 Cumulative Complaint and Summons/Prosecutions Log

Reporting Month	Number of Complaints in Reporting Month	Number of Summons/Prosecutions in Reporting Month
June 2011	0	0
July 2011	0	0
August 2011	0	0
September 2011	0	0
October 2011	0	0
November 2011	1	0
December 2011	0	0
January 2012	0	0
February 2012	0	0
March 2012	0	0
April 2012	0	0
May 2012	0	0
June 2012	0	0
July 2012	0	0
August 2012	0	0
September 2012	0	0
October 2012	0	0
November 2012	0	0

Annex D8 Cumulative Complaint and Summons/Prosecutions Log

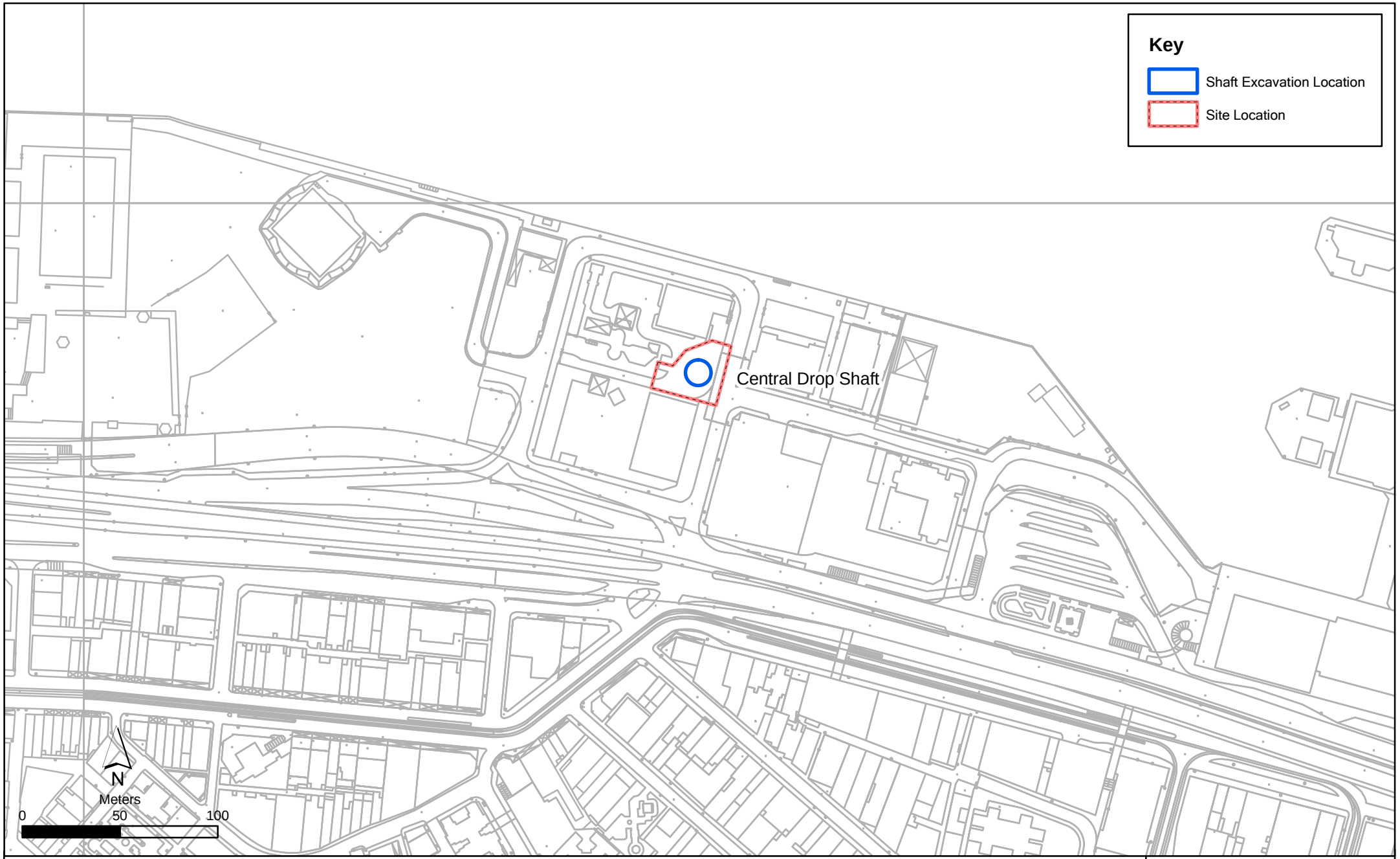
Reporting Month	Number of Complaints in Reporting Month	Number of Summons/Prosecutions in Reporting Month
December 2012	0	0
January 2013	0	0
February 2013	0	0
March 2013	0	0
April 2013	0	0
May 2013	0	0
June 2013	0	0
July 2013	0	0
August 2013	0	0
September 2013	0	0
October 2013	0	0
November 2013	0	0
December 2013	0	0
January 2014	0	0
February 2014	0	0
March 2014	0	0
April 2014	0	0
May 2014	0	0

Annex D8 Cumulative Complaint and Summons/Prosecutions Log

Reporting Month	Number of Complaints in Reporting Month	Number of Summons/Prosecutions in Reporting Month
June 2014	0	0
July 2014	0	0
August 2014	0	0
September 2014	0	0
October 2014	0	0
November 2014	0	0
Overall Total	1	0

Annex E

Central Drop Shaft



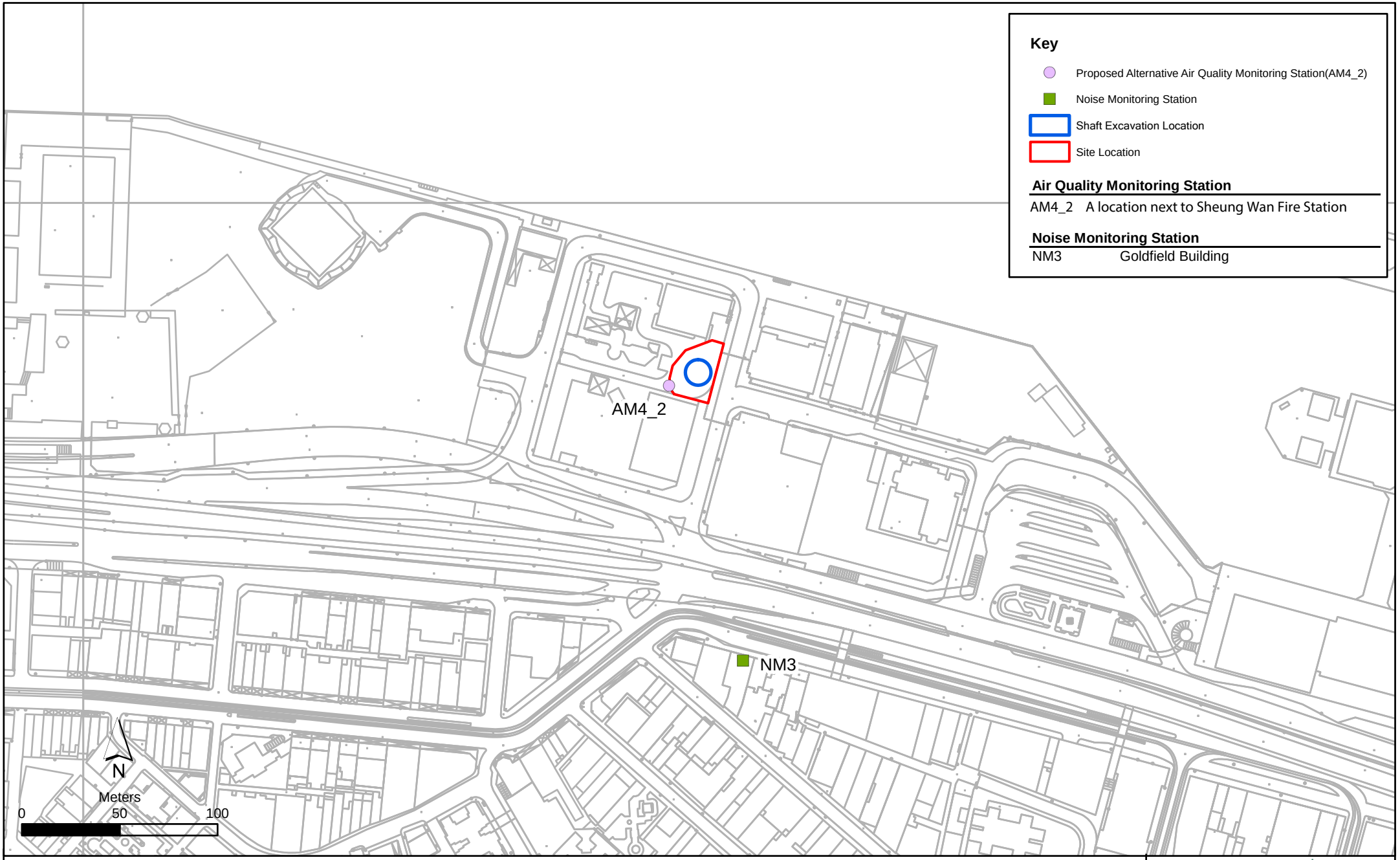
Annex E1

Contract No. DC/2007/23
Harbour Area Treatment Scheme Stage 2A
Construction of Sewage Conveyance System from North Point to Stonecutters Island
Construction Site Locations at Central

File: EM&A and proposed station\0104887_Central.mxd
Date: 03/03/2010

Environmental Resources Management

ERM



Annex E2

Contract No. DC/2007/23
Harbour Area Treatment Scheme Stage 2A
Construction of Sewage Conveyance System from North Point to Stonecutters Island
Impact Air Quality & Noise Monitoring Stations (Central)

File: EM&A and proposed stations\
0104887_Centra_NMAM_Annex_Oct2012.mxd
Date: 10-Oct-12

Environmental Resources Management

ERM

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Construction Phase			
Air Quality	The Air Pollution Control (Construction Dust) Regulation shall be implemented and good site practices shall be incorporated in the contract clauses to minimise construction dust impact. Control measures relevant to this Project are listed below: • skip hoist for material transport should be totally enclosed by impervious sheeting; • every vehicle should be washed to remove any dusty materials from its body and wheels before leaving a construction site; • the area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; • where a site boundary adjoins a road, streets or other accessible to the public, hoarding of not less than 2.4 m high from ground level should be provided along the entire length except for a site entrance or exit; • every stock of more than 20 bags of cement should be covered entirely by impervious sheeting placed in an area sheltered on the top and the 3 sides; • regular watering, with complete coverage, to reduce dust emission from exposed site surfaces and unpaved roads, particularly during dry weather; • site enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering should be applied to aggregate fines; • open stock piles should be avoided or covered and prevent placing dusty material storage piles near ASRs if possible; • tarpaulin covering of all dusty vehicle loads transported to, from and between site locations; and • instigation of an environmental monitoring auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.	All work sites / during construction	√
Air Quality	The following watering measures for specific site would be required to control the fugitive dust impacts: • watering four times per day within worksites at the Central PTW.	All work sites / during construction	√
Operational Phase			

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Air Quality	Good housekeeping for SCISTW and PTWs listed below should be followed to ameliorate any odour impact from the plant and these standard practices should be included in the plant operator manual. • Screens should be cleaned regularly to remove any accumulated organic debris • Grit and screening transfer systems should be flushed regularly with water to remove organic debris and grit • Grit and screened materials should be transferred to closed containers to minimise odour escape • Scum and grease collection wells and troughs should be emptied and flushed regularly to prevent putrefaction of accumulated organics • Skim and remove floating solids and grease from primary clarifiers regularly • Frequent sludge withdrawal from tanks is necessary to prevent the production of gases • Sludge cake should be transferred to closed containers • Sludge containers should be flushed with water regularly	All work sites / during construction	NA. Measures not required until commencement of operational phase
Air Quality	Commissioning tests for all deodorisation system should be included in the Design and Construction Contract Document.	All PTW and SCISTW/ during operational phase	NA. Measures not required until commencement of operational phase
Construction Phase			
Noise	Use of quiet PME, movable barriers and acoustic mats	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Noise	Good Site Practice: • only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program; • silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction program; • mobile plant, if any, should be sited as far from NSRs as possible; • machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and • material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities; Environmental audit shall be carried out to ensure that appropriate noise control measures would be properly implemented.	All work sites / during construction	√
Construction Phase			
Water Quality	Construction Site Runoff and General Construction Activities The mitigation measures as outlined in the ProPECC PN 1/94 Construction Site Drainage should be adopted where applicable.	All work sites / during construction	√
Water Quality	Effluent Discharge There is a need to apply to EPD for a discharge licence for discharge of effluent from the construction site under the WPCO. The discharge quality must meet the requirements specified in the discharge licence. If monitoring of the treated effluent quality from the works areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the WPCO license which is under the ambit of regional office (RO) of EPD. Minimum distances of 100 m should be maintained between the discharge points of construction site effluent and the existing saltwater intakes.	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Accidental Spillage of Chemicals Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	All work sites / during construction	√
Water Quality	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	All work sites / during construction	√
Water Quality	Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows: • Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport. • Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents. • Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.	All work sites / during construction	<>

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Construction Works in Close Proximity of Storm Drains or Seafront To minimise the potential water quality impacts from the construction works located at or near any watercourse, the practices outlined below should be adopted where applicable. • The use of less or smaller construction plants may be specified to reduce the disturbance to the storm water courses or marine environment. • Temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well away from any water courses during carrying out of the construction works. • Stockpiling of construction materials and dusty materials should be covered and located away from any water courses. • Construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nearby water receivers. • Construction activities, which generate large amount of wastewater, should be carried out in a distance away from the waterfront, where practicable. • Proper shoring may need to be erected in order to prevent soil/mud from slipping into the storm culvert or sea	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Operational Phase			
Water Quality	Dual power supply, standby facilities for the main treatment units and standby equipment parts / accessories should be provided as far as possible at the SCISTW to minimise the chance of emergency discharge.	SCISTW and all the Stage 2 PTWs / Operation Stage	NA. Measures not required until commencement of operational phase
Water Quality	Standby unit(s) and dual (backup) power supply would be provided at all the Stage 2 PTWs to reduce the risk of equipment breakdown at the PTWs.	Stage 2 PTWs / Operation Stage	NA. Measures not required until commencement of operational phase
Construction Phase			
Waste	Reusable steel or concrete panel shutters, fencing and hoarding and signboard should be used as a preferred alternative to items made of wood, to minimise wastage of wood. Attention should be paid to WBTC No. 19/2001 - Metallic Site Hoardings and Signboards to reduce the amount of timber used on construction sites. Metallic alternatives to timber are readily available and should be used rather than new timber. Precast concrete units should be adopted wherever feasible to minimise the use of timber formwork.	All work sites / during the construction period	√
Waste	All waste materials should be segregated into categories covering: • excavated materials suitable for reuse on-site; • excavated materials suitable for public filling facilities; • remaining C&D waste for landfill; • chemical waste; and • general refuse for landfill.	All work sites / during the construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	Recommendations to achieve waste reduction include: • Sort C&D waste from demolition of existing facilities to recover recyclable portions such as metals; • 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; • Encourage collection of aluminium cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force; • Any unused chemicals or those with remaining functional capacity shall be recycled; and • Proper storage and site practices to minimise the potential for damage or contamination of construction materials.	All work sites / during the construction period	√
Waste	Recommendations for good site practices during construction activities include:- • 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 • Develop and provide toolbox talk for on-site sorting of C&D materials to enhance worker's awareness in handling, sorting, reuse and recycling of C&D materials. • Provision of sufficient waste disposal points and regular collection of waste • Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors	All work sites / during the construction period	√
Waste	Bentonite slurries used in diaphragm wall construction should be reconditioned and reused wherever practicable. The disposal of residual used bentonite slurry should follow the good practice guidelines stated in ProPECC PN 1/94 "Construction Site Drainage".	All work sites / during the construction period	NA
Waste	Adequate number of portable toilets at temporary works areas or the PTWs to ensure that sewage from site staff would be properly collected.	All work sites / during the construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	General refuse should be stored in enclosed bins, skips or compaction units separating from C&D material and disposed of at designated landfill.	All work sites / during the construction period	√
Waste	The recyclable component of the municipal waste generated by the workforce, such as aluminium cans, paper and cleansed plastic containers should be separated from other waste. Provision and collection of recycling bins for different types of recyclable waste should be set up by the Contractor. The Contractor should also be responsible for arranging recycling companies to collect these materials.	All work sites / during the construction period	√
Waste	If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidising, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the approved Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	All work sites / during the construction period	√
Waste	Prior to excavation of the marine deposit layer, the deposit should be tested in accordance with the ETWB TC(W) No. 34/2002 and the results should be presented in a Preliminary Sediment Quality Report. The marine deposit should be disposed of at the disposal site designated by the Marine Fill Committee (MFC) or Director of Environmental Protection (DEP) depending on the test results.	All work sites / during the construction period	√
Construction Phase			

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Landscape & Visual	• Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical. • Existing trees to be retained on site should be carefully protected during construction. • Trees unavoidably affected by the works should be transplanted where practical. • Compensatory tree planting should be provided to compensate for felled trees. • Control of night-time lighting. • Erection of decorative screen hoarding compatible with the surrounding setting.	All the works areas, PTWs and SCISTW/ during the construction period	<>
Operational Phase	•		
Landscape & Visual	• Aesthetic design of the façade of PTW and associated structures to harmonise with the surrounding settings. • Shrub and Climbing Plants to soften proposed structures / Roof Greening. • Buffer Tree and Shrub Planting to screen proposed associated structures. • Reinstated of disturbed area	All the works areas, PTWs and SCISTW/ during the construction period	NA. Measures not required until commencement of operational phase
Construction Phase			
Cultural Heritage	The construction vibration control limit (ppv of 25mm/s) shall be strictly followed.	Identified historical buildings/structures as mentioned in Tables 15.8 and 15.9. During blasting for tunnel, shafts, effluent conveyance system and disinfection facilities in the vicinity of the buildings/ structures	NA. Vibration monitoring has not been launched during the reporting period.

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	Monitoring of vibration limits shall be conducted and reported as a requirement of EM&A programme	Identified historical buildings/structures as mentioned in Tables 15.8 and 15.9. During blasting for tunnel, shafts, effluent conveyance system and disinfection facilities in the vicinity of the buildings/ structures	NA. Vibration monitoring has not been launched during the reporting period.

Remark:

√ Compliance of Mitigation Measures
<> Compliance of Mitigation but need improvement
x Non-compliance of Mitigation Measures
Δ Deficiency of Mitigation Measures but rectified by Gammon Construction Limited
NA Not Applicable

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Construction Phase			
Air Quality	The Air Pollution Control (Construction Dust) Regulation shall be implemented and good site practices shall be incorporated in the contract clauses to minimise construction dust impact. Control measures relevant to this Project are listed below: • skip hoist for material transport should be totally enclosed by impervious sheeting; • every vehicle should be washed to remove any dusty materials from its body and wheels before leaving a construction site; • the area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; • where a site boundary adjoins a road, streets or other accessible to the public, hoarding of not less than 2.4 m high from ground level should be provided along the entire length except for a site entrance or exit; • every stock of more than 20 bags of cement should be covered entirely by impervious sheeting placed in an area sheltered on the top and the 3 sides; • regular watering, with complete coverage, to reduce dust emission from exposed site surfaces and unpaved roads, particularly during dry weather; • site enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering should be applied to aggregate fines; • open stock piles should be avoided or covered and prevent placing dusty material storage piles near ASRs if possible; • tarpaulin covering of all dusty vehicle loads transported to, from and between site locations; and • instigation of an environmental monitoring auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.	All work sites / during construction	√
Air Quality	The following watering measures for specific site would be required to control the fugitive dust impacts: • watering four times per day within worksites at the Central PTW.	All work sites / during construction	√
Operational Phase			

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Air Quality	Good housekeeping for SCISTW and PTWs listed below should be followed to ameliorate any odour impact from the plant and these standard practices should be included in the plant operator manual. • Screens should be cleaned regularly to remove any accumulated organic debris • Grit and screening transfer systems should be flushed regularly with water to remove organic debris and grit • Grit and screened materials should be transferred to closed containers to minimise odour escape • Scum and grease collection wells and troughs should be emptied and flushed regularly to prevent putrefaction of accumulated organics • Skim and remove floating solids and grease from primary clarifiers regularly • Frequent sludge withdrawal from tanks is necessary to prevent the production of gases • Sludge cake should be transferred to closed containers • Sludge containers should be flushed with water regularly	All work sites / during construction	NA. Measures not required until commencement of operational phase
Air Quality	Commissioning tests for all deodorisation system should be included in the Design and Construction Contract Document.	All PTW and SCISTW/ during operational phase	NA. Measures not required until commencement of operational phase
Construction Phase			
Noise	Use of quiet PME, movable barriers and acoustic mats	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Noise	Good Site Practice: • only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program; • silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction program; • mobile plant, if any, should be sited as far from NSRs as possible; • machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and • material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities; Environmental audit shall be carried out to ensure that appropriate noise control measures would be properly implemented.	All work sites / during construction	√
Construction Phase			
Water Quality	Construction Site Runoff and General Construction Activities The mitigation measures as outlined in the ProPECC PN 1/94 Construction Site Drainage should be adopted where applicable.	All work sites / during construction	√
Water Quality	Effluent Discharge There is a need to apply to EPD for a discharge licence for discharge of effluent from the construction site under the WPCO. The discharge quality must meet the requirements specified in the discharge licence. If monitoring of the treated effluent quality from the works areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the WPCO license which is under the ambit of regional office (RO) of EPD. Minimum distances of 100 m should be maintained between the discharge points of construction site effluent and the existing saltwater intakes.	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Accidental Spillage of Chemicals Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	All work sites / during construction	√
Water Quality	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	All work sites / during construction	√
Water Quality	Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows: • Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport. • Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents. • Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Construction Works in Close Proximity of Storm Drains or Seafront To minimise the potential water quality impacts from the construction works located at or near any watercourse, the practices outlined below should be adopted where applicable. • The use of less or smaller construction plants may be specified to reduce the disturbance to the storm water courses or marine environment. • Temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well away from any water courses during carrying out of the construction works. • Stockpiling of construction materials and dusty materials should be covered and located away from any water courses. • Construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nearby water receivers. • Construction activities, which generate large amount of wastewater, should be carried out in a distance away from the waterfront, where practicable. • Proper shoring may need to be erected in order to prevent soil/mud from slipping into the storm culvert or sea	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Operational Phase			
Water Quality	Dual power supply, standby facilities for the main treatment units and standby equipment parts / accessories should be provided as far as possible at the SCISTW to minimise the chance of emergency discharge.	SCISTW and all the Stage 2 PTWs / Operation Stage	NA. Measures not required until commencement of operational phase
Water Quality	Standby unit(s) and dual (backup) power supply would be provided at all the Stage 2 PTWs to reduce the risk of equipment breakdown at the PTWs.	Stage 2 PTWs / Operation Stage	NA. Measures not required until commencement of operational phase
Construction Phase			
Waste	Reusable steel or concrete panel shutters, fencing and hoarding and signboard should be used as a preferred alternative to items made of wood, to minimise wastage of wood. Attention should be paid to WBTC No. 19/2001 - Metallic Site Hoardings and Signboards to reduce the amount of timber used on construction sites. Metallic alternatives to timber are readily available and should be used rather than new timber. Precast concrete units should be adopted wherever feasible to minimise the use of timber formwork.	All work sites / during the construction period	√
Waste	All waste materials should be segregated into categories covering: • excavated materials suitable for reuse on-site; • excavated materials suitable for public filling facilities; • remaining C&D waste for landfill; • chemical waste; and • general refuse for landfill.	All work sites / during the construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	Recommendations to achieve waste reduction include: • Sort C&D waste from demolition of existing facilities to recover recyclable portions such as metals; • 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; • Encourage collection of aluminium cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force; • Any unused chemicals or those with remaining functional capacity shall be recycled; and • Proper storage and site practices to minimise the potential for damage or contamination of construction materials.	All work sites / during the construction period	√
Waste	Recommendations for good site practices during construction activities include:- • 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 • Develop and provide toolbox talk for on-site sorting of C&D materials to enhance worker's awareness in handling, sorting, reuse and recycling of C&D materials. • Provision of sufficient waste disposal points and regular collection of waste • Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors	All work sites / during the construction period	√
Waste	Bentonite slurries used in diaphragm wall construction should be reconditioned and reused wherever practicable. The disposal of residual used bentonite slurry should follow the good practice guidelines stated in ProPECC PN 1/94 "Construction Site Drainage".	All work sites / during the construction period	NA
Waste	Adequate number of portable toilets at temporary works areas or the PTWs to ensure that sewage from site staff would be properly collected.	All work sites / during the construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	General refuse should be stored in enclosed bins, skips or compaction units separating from C&D material and disposed of at designated landfill.	All work sites / during the construction period	√
Waste	The recyclable component of the municipal waste generated by the workforce, such as aluminium cans, paper and cleansed plastic containers should be separated from other waste. Provision and collection of recycling bins for different types of recyclable waste should be set up by the Contractor. The Contractor should also be responsible for arranging recycling companies to collect these materials.	All work sites / during the construction period	√
Waste	If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidising, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the approved Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	All work sites / during the construction period	√
Waste	Prior to excavation of the marine deposit layer, the deposit should be tested in accordance with the ETWB TC(W) No. 34/2002 and the results should be presented in a Preliminary Sediment Quality Report. The marine deposit should be disposed of at the disposal site designated by the Marine Fill Committee (MFC) or Director of Environmental Protection (DEP) depending on the test results.	All work sites / during the construction period	√
Construction Phase			

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Landscape & Visual	• Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical. • Existing trees to be retained on site should be carefully protected during construction. • Trees unavoidably affected by the works should be transplanted where practical. • Compensatory tree planting should be provided to compensate for felled trees. • Control of night-time lighting. • Erection of decorative screen hoarding compatible with the surrounding setting.	All the works areas, PTWs and SCISTW/ during the construction period	<>
Operational Phase	•		
Landscape & Visual	• Aesthetic design of the façade of PTW and associated structures to harmonise with the surrounding settings. • Shrub and Climbing Plants to soften proposed structures / Roof Greening. • Buffer Tree and Shrub Planting to screen proposed associated structures. • Reinstated of disturbed area	All the works areas, PTWs and SCISTW/ during the construction period	NA. Measures not required until commencement of operational phase
Construction Phase			
Cultural Heritage	The construction vibration control limit (ppv of 25mm/s) shall be strictly followed.	Identified historical buildings/structures as mentioned in Tables 15.8 and 15.9. During blasting for tunnel, shafts, effluent conveyance system and disinfection facilities in the vicinity of the buildings/ structures	NA. Vibration monitoring has not been launched during the reporting period.

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	Monitoring of vibration limits shall be conducted and reported as a requirement of EM&A programme	Identified historical buildings/structures as mentioned in Tables 15.8 and 15.9. During blasting for tunnel, shafts, effluent conveyance system and disinfection facilities in the vicinity of the buildings/ structures	NA. Vibration monitoring has not been launched during the reporting period.

Remark:
√ Compliance of Mitigation Measures
<> Compliance of Mitigation but need improvement
x Non-compliance of Mitigation Measures
Δ Deficiency of Mitigation Measures but rectified by Gammon Construction Limited
NA Not Applicable

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Construction Phase			
Air Quality	The Air Pollution Control (Construction Dust) Regulation shall be implemented and good site practices shall be incorporated in the contract clauses to minimise construction dust impact. Control measures relevant to this Project are listed below: • skip hoist for material transport should be totally enclosed by impervious sheeting; • every vehicle should be washed to remove any dusty materials from its body and wheels before leaving a construction site; • the area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; • where a site boundary adjoins a road, streets or other accessible to the public, hoarding of not less than 2.4 m high from ground level should be provided along the entire length except for a site entrance or exit; • every stock of more than 20 bags of cement should be covered entirely by impervious sheeting placed in an area sheltered on the top and the 3 sides; • regular watering, with complete coverage, to reduce dust emission from exposed site surfaces and unpaved roads, particularly during dry weather; • site enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering should be applied to aggregate fines; • open stock piles should be avoided or covered and prevent placing dusty material storage piles near ASRs if possible; • tarpaulin covering of all dusty vehicle loads transported to, from and between site locations; and • instigation of an environmental monitoring auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.	All work sites / during construction	√
Air Quality	The following watering measures for specific site would be required to control the fugitive dust impacts: • watering four times per day within worksites at the Central PTW.	All work sites / during construction	√
Operational Phase			

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Air Quality	Good housekeeping for SCISTW and PTWs listed below should be followed to ameliorate any odour impact from the plant and these standard practices should be included in the plant operator manual. • Screens should be cleaned regularly to remove any accumulated organic debris • Grit and screening transfer systems should be flushed regularly with water to remove organic debris and grit • Grit and screened materials should be transferred to closed containers to minimise odour escape • Scum and grease collection wells and troughs should be emptied and flushed regularly to prevent putrefaction of accumulated organics • Skim and remove floating solids and grease from primary clarifiers regularly • Frequent sludge withdrawal from tanks is necessary to prevent the production of gases • Sludge cake should be transferred to closed containers • Sludge containers should be flushed with water regularly	All work sites / during construction	NA. Measures not required until commencement of operational phase
Air Quality	Commissioning tests for all deodorisation system should be included in the Design and Construction Contract Document.	All PTW and SCISTW/ during operational phase	NA. Measures not required until commencement of operational phase
Construction Phase			
Noise	Use of quiet PME, movable barriers and acoustic mats	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Noise	Good Site Practice: • only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program; • silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction program; • mobile plant, if any, should be sited as far from NSRs as possible; • machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and • material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities; Environmental audit shall be carried out to ensure that appropriate noise control measures would be properly implemented.	All work sites / during construction	√
Construction Phase			
Water Quality	Construction Site Runoff and General Construction Activities The mitigation measures as outlined in the ProPECC PN 1/94 Construction Site Drainage should be adopted where applicable.	All work sites / during construction	√
Water Quality	Effluent Discharge There is a need to apply to EPD for a discharge licence for discharge of effluent from the construction site under the WPCO. The discharge quality must meet the requirements specified in the discharge licence. If monitoring of the treated effluent quality from the works areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the WPCO license which is under the ambit of regional office (RO) of EPD. Minimum distances of 100 m should be maintained between the discharge points of construction site effluent and the existing saltwater intakes.	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Accidental Spillage of Chemicals Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	All work sites / during construction	√
Water Quality	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	All work sites / during construction	√
Water Quality	Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows: • Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport. • Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents. • Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Construction Works in Close Proximity of Storm Drains or Seafront To minimise the potential water quality impacts from the construction works located at or near any watercourse, the practices outlined below should be adopted where applicable. • The use of less or smaller construction plants may be specified to reduce the disturbance to the storm water courses or marine environment. • Temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well away from any water courses during carrying out of the construction works. • Stockpiling of construction materials and dusty materials should be covered and located away from any water courses. • Construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nearby water receivers. • Construction activities, which generate large amount of wastewater, should be carried out in a distance away from the waterfront, where practicable. • Proper shoring may need to be erected in order to prevent soil/mud from slipping into the storm culvert or sea	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Operational Phase			
Water Quality	Dual power supply, standby facilities for the main treatment units and standby equipment parts / accessories should be provided as far as possible at the SCISTW to minimise the chance of emergency discharge.	SCISTW and all the Stage 2 PTWs / Operation Stage	NA. Measures not required until commencement of operational phase
Water Quality	Standby unit(s) and dual (backup) power supply would be provided at all the Stage 2 PTWs to reduce the risk of equipment breakdown at the PTWs.	Stage 2 PTWs / Operation Stage	NA. Measures not required until commencement of operational phase
Construction Phase			
Waste	Reusable steel or concrete panel shutters, fencing and hoarding and signboard should be used as a preferred alternative to items made of wood, to minimise wastage of wood. Attention should be paid to WBTC No. 19/2001 - Metallic Site Hoardings and Signboards to reduce the amount of timber used on construction sites. Metallic alternatives to timber are readily available and should be used rather than new timber. Precast concrete units should be adopted wherever feasible to minimise the use of timber formwork.	All work sites / during the construction period	√
Waste	All waste materials should be segregated into categories covering: • excavated materials suitable for reuse on-site; • excavated materials suitable for public filling facilities; • remaining C&D waste for landfill; • chemical waste; and • general refuse for landfill.	All work sites / during the construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	Recommendations to achieve waste reduction include: • Sort C&D waste from demolition of existing facilities to recover recyclable portions such as metals; • 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; • Encourage collection of aluminium cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force; • Any unused chemicals or those with remaining functional capacity shall be recycled; and • Proper storage and site practices to minimise the potential for damage or contamination of construction materials.	All work sites / during the construction period	√
Waste	Recommendations for good site practices during construction activities include:- • 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 • Develop and provide toolbox talk for on-site sorting of C&D materials to enhance worker's awareness in handling, sorting, reuse and recycling of C&D materials. • Provision of sufficient waste disposal points and regular collection of waste • Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors	All work sites / during the construction period	√
Waste	Bentonite slurries used in diaphragm wall construction should be reconditioned and reused wherever practicable. The disposal of residual used bentonite slurry should follow the good practice guidelines stated in ProPECC PN 1/94 "Construction Site Drainage".	All work sites / during the construction period	NA
Waste	Adequate number of portable toilets at temporary works areas or the PTWs to ensure that sewage from site staff would be properly collected.	All work sites / during the construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	General refuse should be stored in enclosed bins, skips or compaction units separating from C&D material and disposed of at designated landfill.	All work sites / during the construction period	√
Waste	The recyclable component of the municipal waste generated by the workforce, such as aluminium cans, paper and cleansed plastic containers should be separated from other waste. Provision and collection of recycling bins for different types of recyclable waste should be set up by the Contractor. The Contractor should also be responsible for arranging recycling companies to collect these materials.	All work sites / during the construction period	√
Waste	If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidising, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the approved Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	All work sites / during the construction period	√
Waste	Prior to excavation of the marine deposit layer, the deposit should be tested in accordance with the ETWB TC(W) No. 34/2002 and the results should be presented in a Preliminary Sediment Quality Report. The marine deposit should be disposed of at the disposal site designated by the Marine Fill Committee (MFC) or Director of Environmental Protection (DEP) depending on the test results.	All work sites / during the construction period	√
Construction Phase			

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Landscape & Visual	• Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical. • Existing trees to be retained on site should be carefully protected during construction. • Trees unavoidably affected by the works should be transplanted where practical. • Compensatory tree planting should be provided to compensate for felled trees. • Control of night-time lighting. • Erection of decorative screen hoarding compatible with the surrounding setting.	All the works areas, PTWs and SCISTW/ during the construction period	<>
Operational Phase	•		
Landscape & Visual	• Aesthetic design of the façade of PTW and associated structures to harmonise with the surrounding settings. • Shrub and Climbing Plants to soften proposed structures / Roof Greening. • Buffer Tree and Shrub Planting to screen proposed associated structures. • Reinstated of disturbed area	All the works areas, PTWs and SCISTW/ during the construction period	NA. Measures not required until commencement of operational phase
Construction Phase			
Cultural Heritage	The construction vibration control limit (ppv of 25mm/s) shall be strictly followed.	Identified historical buildings/structures as mentioned in Tables 15.8 and 15.9. During blasting for tunnel, shafts, effluent conveyance system and disinfection facilities in the vicinity of the buildings/ structures	NA. Vibration monitoring has not been launched during the reporting period.

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	Monitoring of vibration limits shall be conducted and reported as a requirement of EM&A programme	Identified historical buildings/structures as mentioned in Tables 15.8 and 15.9. During blasting for tunnel, shafts, effluent conveyance system and disinfection facilities in the vicinity of the buildings/ structures	NA. Vibration monitoring has not been launched during the reporting period.

Remark:

√ Compliance of Mitigation Measures

<> Compliance of Mitigation but need improvement

x Non-compliance of Mitigation Measures

Δ Deficiency of Mitigation Measures but rectified by Gammon Construction Limited

NA Not Applicable

Annex E5 24-hour and 1-hour TSP Monitoring Results

1-hour TSP Monitoring Results

Station AM4_2

Date	Start Time	Finish Time	Weather	TSP Concentration ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Site Conditions / Observations / Remarks	Temperature (℃)	Wind Speed * (m/s)	Sampler ID	Filter ID
02-Sep-14	11:42	12:42	Sunny	171	393	500	-	33	<5	GMW GS-2310 (S/N 9315)	2589
	12:44	13:44	Sunny	149	393	500	-	33	<5	GMW GS-2310 (S/N 9315)	2590
	13:46	14:46	Sunny	135	393	500	-	33	<5	GMW GS-2310 (S/N 9315)	2591
08-Sep-14	11:42	12:42	Sunny	112	393	500	-	30	<5	GMW GS-2310 (S/N 9315)	2597
	12:44	13:44	Sunny	106	393	500	-	30	<5	GMW GS-2310 (S/N 9315)	2598
	13:50	14:50	Sunny	98	393	500	-	30	<5	GMW GS-2310 (S/N 9315)	2599
13-Sep-14	8:00	9:00	Sunny	103	393	500	-	31	<5	GMW GS-2310 (S/N 9315)	2432
	9:02	10:02	Sunny	107	393	500	-	31	<5	GMW GS-2310 (S/N 9315)	4201
	10:04	11:04	Sunny	132	393	500	-	31	<5	GMW GS-2310 (S/N 9315)	2434
19-Sep-14	8:00	9:00	Fine	244	393	500	-	32	<5	GMW GS-2310 (S/N 9315)	4409
	9:02	10:02	Fine	245	393	500	-	32	<5	GMW GS-2310 (S/N 9315)	4410
	10:10	11:10	Fine	220	393	500	-	32	<5	GMW GS-2310 (S/N 9315)	4411
25-Sep-14	8:00	9:00	Sunny	185	393	500	-	31	<5	GMW GS-2310 (S/N 9315)	4417
	9:02	10:02	Sunny	197	393	500	-	31	<5	GMW GS-2310 (S/N 9315)	4418
	10:04	11:04	Sunny	189	393	500	-	31	<5	GMW GS-2310 (S/N 9315)	4419
30-Sep-14	11:50	12:50	Sunny	183	393	500	Construction work in progress	32	<5	GMW GS-2310 (S/N 9315)	4429
	12:52	13:52	Sunny	193	393	500	Construction work in progress	32	<5	GMW GS-2310 (S/N 9315)	4430
	14:02	15:02	Sunny	189	393	500	Construction work in progress	32	<5	GMW GS-2310 (S/N 9315)	4431
			Min.	**98**							
			Max.	**245**							
			Average	**164**							

* Wind Speed data is presented in the Meteorological Data table

Annex E5 24-hour and 1-hour TSP Monitoring Results

1-hour TSP Monitoring Results

Station AM4_2

Date	Start Time	Finish Time	Weather	TSP Concentration ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Site Conditions / Observations / Remarks	Temperature (°C)	Wind Speed * (m/s)	Sampler ID	Filter ID
06-Oct-14	8:00	9:00	Sunny	124	393	500	Construction work in progress	28	<5	GMW GS-2310 (S/N 9315)	4436
	9:02	10:02	Sunny	119	393	500	Construction work in progress	28	<5	GMW GS-2310 (S/N 9315)	4437
	10:08	11:08	Sunny	137	393	500	Construction work in progress	28	<5	GMW GS-2310 (S/N 9315)	4438
11-Oct-14	11:42	12:42	Sunny	157	393	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 9315)	4449
	12:44	13:44	Sunny	164	393	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 9315)	4450
	13:46	14:46	Sunny	181	393	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 9315)	4451
17-Oct-14	11:50	12:50	Sunny	175	393	500	Construction work in progress	27	<5	GMW GS-2310 (S/N 9315)	4477
	12:52	13:52	Sunny	161	393	500	Construction work in progress	27	<5	GMW GS-2310 (S/N 9315)	4478
	13:55	14:55	Sunny	188	393	500	Construction work in progress	27	<5	GMW GS-2310 (S/N 9315)	4479
23-Oct-14	12:00	13:00	Fine	180	393	500	Construction work in progress	27	<5	GMW GS-2310 (S/N 9315)	4485
	13:02	14:02	Fine	169	393	500	Construction work in progress	27	<5	GMW GS-2310 (S/N 9315)	4486
	14:04	15:04	Fine	177	393	500	Construction work in progress	27	<5	GMW GS-2310 (S/N 9315)	4487
29-Oct-14	8:00	9:00	Fine	177	393	500	Construction work in progress	28	<5	GMW GS-2310 (S/N 9315)	4497
	9:02	10:02	Fine	172	393	500	Construction work in progress	28	<5	GMW GS-2310 (S/N 9315)	4498
	10:05	11:05	Fine	175	393	500	Construction work in progress	28	<5	GMW GS-2310 (S/N 9315)	4499
			Min.	**119**							
			Max.	**188**							
			Average	**164**							

* Wind Speed data is presented in the Meteorological Data table

Annex E5 24-hour and 1-hour TSP Monitoring Results

1-hour TSP Monitoring Results

Station AM4_2

Date	Start Time	Finish Time	Weather	TSP Concentration ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Site Conditions / Observations / Remarks	Temperature (°C)	Wind Speed * (m/s)	Sampler ID	Filter ID
04-Nov-14	8:00	9:00	Cloudy	164	393	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 9315)	4685
	9:02	10:02	Cloudy	177	393	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 9315)	4686
	10:04	11:04	Cloudy	184	393	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 9315)	4687
10-Nov-14	11:40	12:40	Cloudy	140	393	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 9315)	4693
	12:42	13:42	Cloudy	148	393	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 9315)	4694
	13:45	14:45	Cloudy	164	393	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 9315)	4695
15-Nov-14	11:40	12:40	Sunny	197	393	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 9315)	4468
	12:42	13:42	Sunny	151	393	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 9315)	4469
	13:44	14:44	Sunny	168	393	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 9315)	4470
21-Nov-14	12:10	13:10	Sunny	119	393	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 9315)	4476
	13:30	14:30	Sunny	108	393	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 9315)	4973
	14:35	15:35	Sunny	129	393	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 9315)	4974
27-Nov-14	11:50	12:50	Fine	145	393	500	Construction work in progress	25	<5	GMW GS-2310 (S/N 9315)	4980
	12:52	13:52	Fine	173	393	500	Construction work in progress	25	<5	GMW GS-2310 (S/N 9315)	4981
	13:54	14:54	Fine	168	393	500	Construction work in progress	25	<5	GMW GS-2310 (S/N 9315)	4982
			Min.	**108**							
			Max.	**197**							
			Average	**156**							

* Wind Speed data is presented in the Meteorological Data table

Annex E5 24-hour and 1-hour TSP Monitoring Results

24-hour TSP Monitoring Results

Station AM4_2

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m^3/min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	(µg/m^3)	(µg/m^3)	(µg/m^3)		ID	ID
02-Sep-14	15:00	03-Sep-14	15:00	Sunny	2.7172	2.8525	16635.85	16659.85	24.00	1.21	1.21	1.21	78	211	260	-	GMW GS 2310 (S/N 9315)	2592
08-Sep-14	14:55	09-Sep-14	14:55	Sunny	2.7088	2.8249	16662.85	16686.85	24.00	1.21	1.21	1.21	67	211	260	-	GMW GS 2310 (S/N 9315)	2600
13-Sep-14	11:06	14-Sep-14	11:06	Sunny	2.7741	2.8599	16689.85	16713.85	24.00	1.21	1.21	1.21	49	211	260	-	GMW GS 2310 (S/N 9315)	2454
19-Sep-14	11:15	20-Sep-14	11:15	Fine	2.7195	2.9227	16716.85	16740.85	24.00	1.25	1.25	1.25	113	211	260	-	GMW GS 2310 (S/N 9315)	4412
25-Sep-14	11:14	26-Sep-14	11:14	Sunny	2.7099	2.8991	16743.85	16767.85	24.00	1.25	1.25	1.25	105	211	260	-	GMW GS 2310 (S/N 9315)	4420
30-Sep-14	15:05	01-Oct-14	15:05	Sunny	2.7282	2.8921	16670.85	16694.85	24.00	1.25	1.25	1.25	91	211	260		GMW GS 2310 (S/N 9315)	4432
												Min.	**49**					
												Max.	**113**					
												Average	**84**					

Annex E5 24-hour and 1-hour TSP Monitoring Results

24-hour TSP Monitoring Results

Station AM4_2

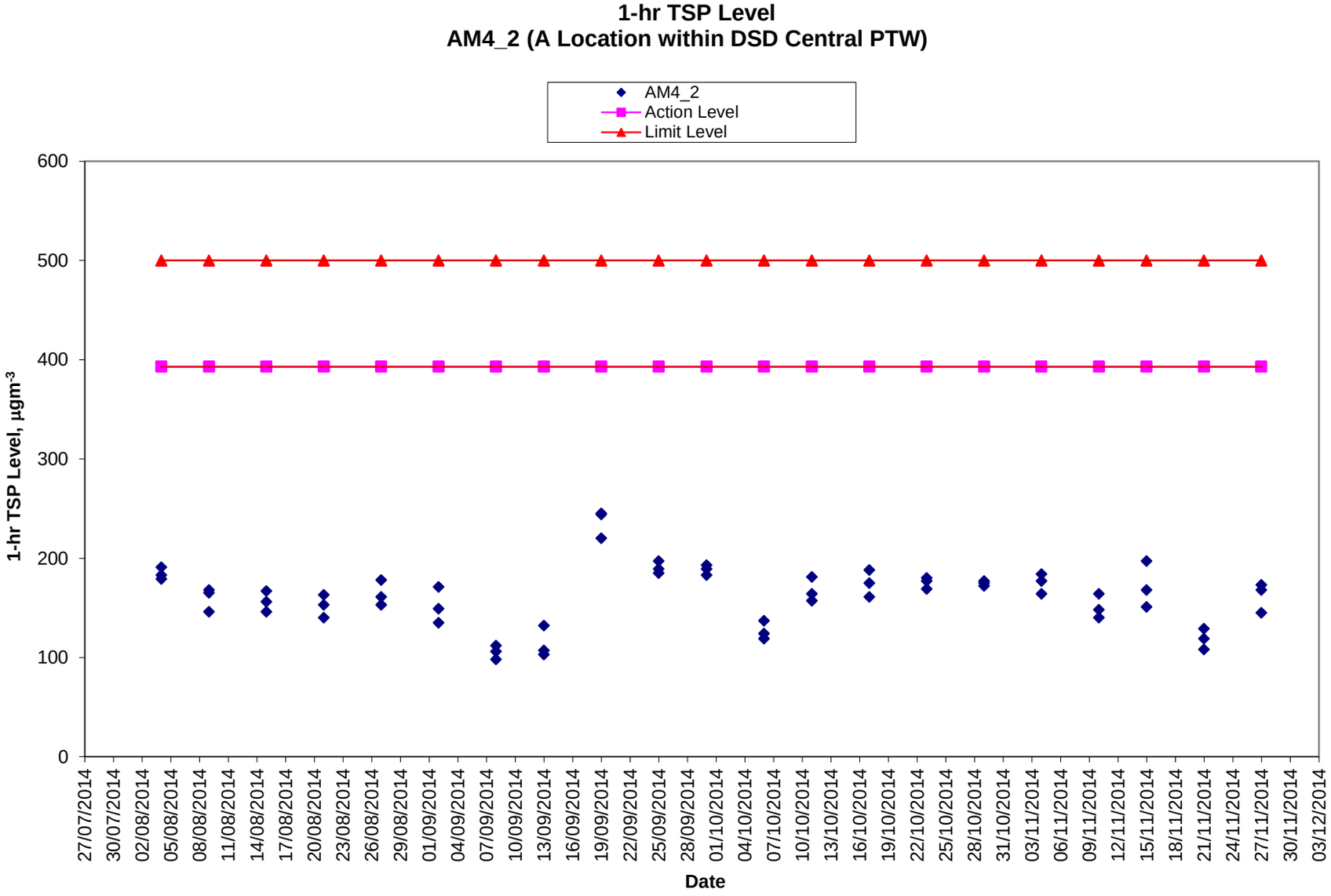
Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m^3/min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	(μg/m^3)	(μg/m^3)	(μg/m^3)		ID	ID
06-Oct-14	11:10	07-Oct-14	11:10	Sunny	2.7389	2.8972	16797.85	16821.85	24.00	1.25	1.25	1.25	88	211	260	construction work in progress	GMW GS 2310 (S/N 9315)	4439
11-Oct-14	14:50	12-Oct-14	14:50	Sunny	2.7298	2.8797	16824.85	16848.85	24.00	1.25	1.25	1.25	83	211	260	construction work in progress	GMW GS 2310 (S/N 9315)	4452
17-Oct-14	15:10	18-Oct-14	15:10	Sunny	2.7240	2.8797	16851.85	16875.85	24.00	1.25	1.25	1.25	87	211	260	construction work in progress	GMW GS 2310 (S/N 9315)	4480
23-Oct-14	15:20	24-Oct-14	15:20	Fine	2.7339	2.9071	16878.85	16902.85	24.00	1.25	1.25	1.25	96	211	260	construction work in progress	GMW GS 2310 (S/N 9315)	4488
29-Oct-14	11:15	30-Oct-14	11:15	Fine	2.8129	2.9911	16905.85	16929.85	24.00	1.25	1.25	1.25	99	211	260	construction work in progress	GMW GS 2310 (S/N 0481)	4500
												Min.	**83**					
												Max.	**99**					
												Average	**91**					

Annex E5 24-hour and 1-hour TSP Monitoring Results

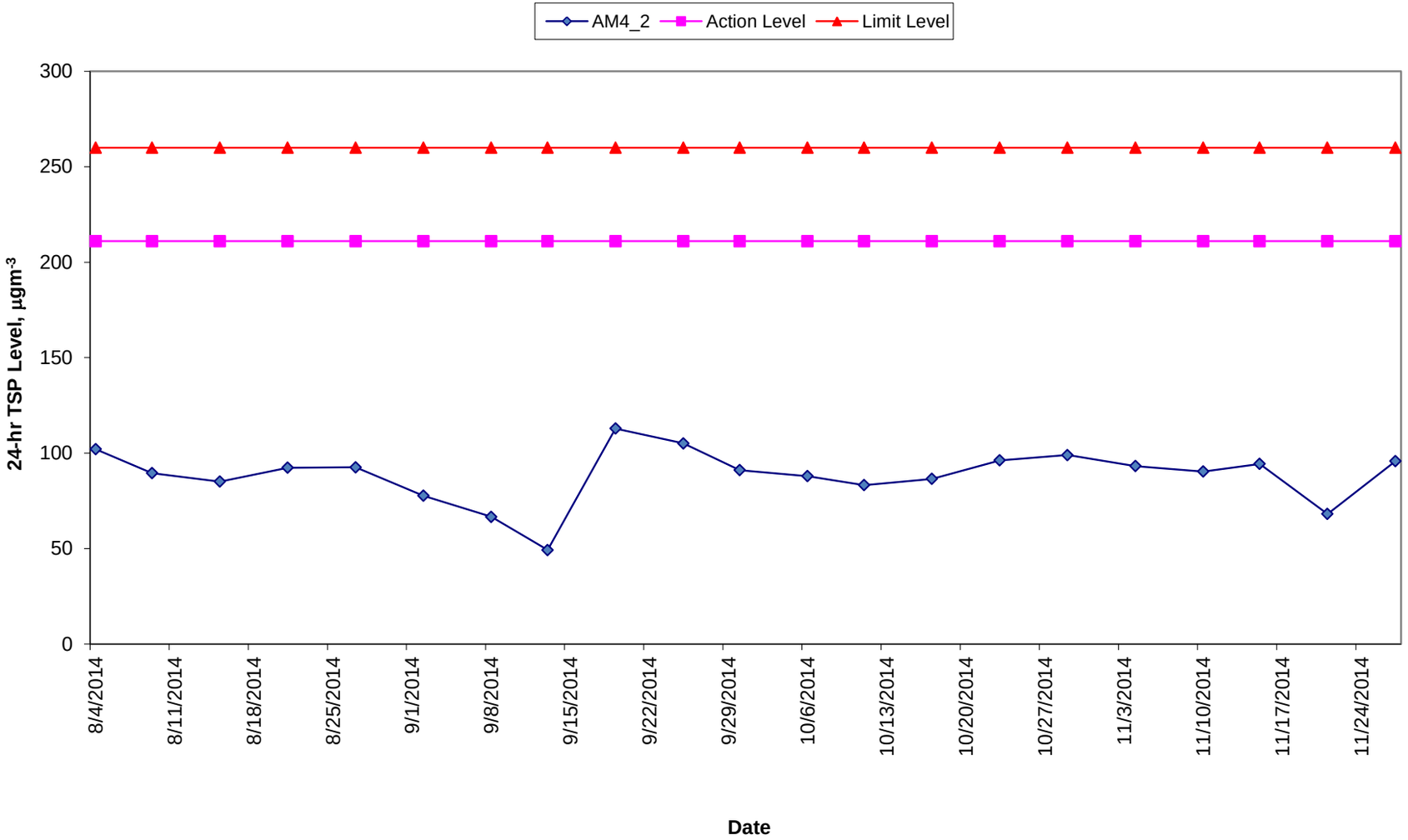
24-hour TSP Monitoring Results

Station AM4_2

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m^3/min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	(μg/m^3)	(μg/m^3)	(μg/m^3)		ID	ID
04-Nov-14	11:15	05-Nov-14	11:15	Cloudy	2.8291	2.9969	16932.85	16956.85	24.00	1.25	1.25	1.25	93	211	260	construction work in progress	GMW GS 2310 (S/N 9315)	4688
10-Nov-14	15:00	11-Nov-14	15:00	Cloudy	2.8001	2.9627	16959.85	16983.85	24.00	1.25	1.25	1.25	90	211	260	construction work in progress	GMW GS 2310 (S/N 9315)	4696
15-Nov-14	14:46	16-Nov-14	14:46	Sunny	2.7861	2.9559	16986.85	17010.85	24.00	1.25	1.25	1.25	94	211	260	construction work in progress	GMW GS 2310 (S/N 9315)	4471
21-Nov-14	15:45	22-Nov-14	15:45	Sunny	2.8737	2.9944	17013.85	17037.85	24.00	1.23	1.23	1.23	68	211	260	construction work in progress	GMW GS 2310 (S/N 9315)	4975
27-Nov-14	15:00	28-Nov-14	15:00	Fine	2.8825	3.0521	17040.85	17064.85	24.00	1.23	1.23	1.23	96	211	260	construction work in progress	GMW GS 2310 (S/N 0481)	4983
												Min.	**68**					
												Max.	**96**					
												Average	**88**					


1-hr TSP Level
AM4_2 (A Location within DSD Central PTW)
AM4_2
Action Level
Limit Level
1-hr TSP Level, µgm-3
600
500
400
300
200
100
0
27/07/2014
30/07/2014
02/08/2014
05/08/2014
08/08/2014
11/08/2014
14/08/2014
17/08/2014
20/08/2014
23/08/2014
26/08/2014
29/08/2014
01/09/2014
04/09/2014
07/09/2014
10/09/2014
13/09/2014
16/09/2014
19/09/2014
22/09/2014
25/09/2014
28/09/2014
01/10/2014
04/10/2014
07/10/2014
10/10/2014
13/10/2014
16/10/2014
19/10/2014
22/10/2014
25/10/2014
28/10/2014
31/10/2014
03/11/2014
06/11/2014
09/11/2014
12/11/2014
15/11/2014
18/11/2014
21/11/2014
24/11/2014
27/11/2014
30/11/2014
03/12/2014
Date

24-hr TSP Level
AM4_2 (A Location within DSD Central PTW)



Meteorological Data Extracted from the Hong Kong Observatory

		King's Park Station				
Date	Weather	Average Air Temperature (℃)	Average Relative Humidity (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
2014-09-02	Fine	29	59-88	0.0	0-15	NW/W
2014-09-03	Fine	30	56-86	0.0	2-15	NW/W
2014-09-04	Sunny	29	66-87	6.7	0-21	W/SE
2014-09-05	Sunny	29	66-89	Trace	0-15	SE
2014-09-07	Cloudy	30	66-88	0.6	1-23	E/SE
2014-09-08	Sunny	29	72-91	3.0	0-15	SE
2014-09-09	Sunny	30	65-85	0.0	0-15	NW/S
2014-09-10	Sunny	30	59-85	Trace	0-10	NW/S
2014-09-11	Rain	30	60-87	Trace	0-18	SE
2014-09-13	Sunny	29	72-97	6.2	0-17	SE
2014-09-14	Sunny	30	64-92	0.5	0-15	SE
2014-09-16	Cloudy	27	78-96	51.6	5-53	SE
2014-09-17	Fine	28	81-94	7.7	0-20	SE
2014-09-18	Rain	29	68-92	Trace	0-13	NW/W
2014-09-19	Fine	30	64-91	0.3	0-14	NW/W
2014-09-20	Fine	29	56-73	0.0	0-19	NE
2014-09-21	Sunny	27	59-70	0.0	0-15	NE
2014-09-22	Sunny	28	58-76	Trace	0-12	NE
2014-09-23	Fine	28	63-77	0.0	0-9	N
2014-09-25	Sunny	28	66-84	0.0	0-11	S
2014-09-26	Sunny	28	66-84	0.0	0-12	S
2014-09-27	Sunny	29	64-85	0.0	0-14	S
2014-09-28	Fine	29	60-85	0.0	0-12	S
2014-09-30	Sunny	30	61-90	11.4	0-14	SE
2014-10-01	Sunny	28	70-96	26.7	0-23	SE

		Tsing Yi Station				
Date	Weather	Average Air Temperature (℃)	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-09-02	Fine	29	59-88	0.0	0-15	-
2014-09-03	Fine	30	56-86	0.0	0-16	-
2014-09-04	Sunny	28	66-87	6.7	0-35	-
2014-09-05	Sunny	31	66-89	Trace	0-19	-
2014-09-07	Cloudy	30	66-88	0.6	0-20	-
2014-09-08	Sunny	29	72-91	3.0	3-23	-
2014-09-09	Sunny	29	65-85	0.0	0-14	-
2014-09-10	Sunny	29	59-85	Trace	0-15	-
2014-09-11	Rain	30	60-87	Trace	0-18	-
2014-09-13	Sunny	30	72-97	6.2	0-18	-
2014-09-14	Sunny	29	64-92	0.5	0-19	-
2014-09-16	Cloudy	28	78-96	51.6	10-40	-
2014-09-17	Fine	29	81-94	7.7	7-27	-
2014-09-18	Rain	29	68-92	Trace	0-14	-
2014-09-19	Fine	30	64-91	0.3	0-19	-
2014-09-20	Fine	29	56-73	0.0	0-27	-
2014-09-21	Sunny	28	59-70	0.0	0-18	-
2014-09-22	Sunny	27	58-76	Trace	0-13	-
2014-09-23	Fine	27	63-77	0.0	0-15	-
2014-09-25	Sunny	28	66-84	0.0	0-17	-
2014-09-26	Sunny	28	66-84	0.0	0-15	-
2014-09-27	Sunny	28	64-85	0.0	0-15	-
2014-09-28	Fine	28	60-85	0.0	0-14	-
2014-09-30	Sunny	30	61-90	11.4	0-14	-
2014-10-01	Sunny	28	70-96	26.7	0-21	-

		Kai Tak Station				
Date	Weather	Average Air Temperature (℃) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-09-02	Fine	29	59-88	0.0	3-13	SE/W
2014-09-03	Fine	30	56-86	0.0	4-17	W/SW
2014-09-04	Sunny	29	66-87	6.7	0-40	E/W
2014-09-05	Sunny	29	66-89	Trace	0-23	E
2014-09-07	Cloudy	30	66-88	0.6	5-30	E
2014-09-08	Sunny	29	72-91	3.0	4-27	SE
2014-09-09	Sunny	30	65-85	0.0	0-13	SW
2014-09-10	Sunny	30	59-85	Trace	0-18	SE
2014-09-11	Rain	30	60-87	Trace	2-25	E/SE
2014-09-13	Sunny	29	72-97	6.2	4-24	E/SE
2014-09-14	Sunny	30	64-92	0.5	0-19	E/SE
2014-09-16	Cloudy	27	78-96	51.6	24-50	E/SE
2014-09-17	Fine	28	81-94	7.7	10-36	SE
2014-09-18	Rain	29	68-92	Trace	2-20	NW
2014-09-19	Fine	30	64-91	0.3	0-19	S/SW
2014-09-20	Fine	29	56-73	0.0	0-22	NW
2014-09-21	Sunny	27	59-70	0.0	0-26	N
2014-09-22	Sunny	28	58-76	Trace	0-15	NW
2014-09-23	Fine	28	63-77	0.0	0-19	SE
2014-09-25	Sunny	28	66-84	0.0	0-17	SE
2014-09-26	Sunny	28	66-84	0.0	0-17	SE
2014-09-27	Sunny	29	64-85	0.0	0-18	SE
2014-09-28	Fine	29	60-85	0.0	0-18	SE
2014-09-30	Sunny	30	61-90	11.4	0-18	SE
2014-10-01	Sunny	28	70-96	26.7	3-32	SE

		Green Island Station				
Date	Weather	Average Air Temperature (℃) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-09-02	Fine	29	59-88	0.0	0-20	S
2014-09-03	Fine	30	56-86	0.0	0-22	S/SW
2014-09-04	Sunny	29	66-87	6.7	0-49	NE/NW
2014-09-05	Sunny	29	66-89	Trace	3-36	NE
2014-09-07	Cloudy	30	66-88	0.6	12-48	NE
2014-09-08	Sunny	29	72-91	3.0	8-39	S
2014-09-09	Sunny	30	65-85	0.0	6-23	S
2014-09-10	Sunny	30	59-85	Trace	0-22	S
2014-09-11	Rain	30	60-87	Trace	0-45	NE
2014-09-13	Sunny	29	72-97	6.2	4-42	S/NE
2014-09-14	Sunny	30	64-92	0.5	0-25	NE
2014-09-16	Cloudy	27	78-96	51.6	29-83	E/SE
2014-09-17	Fine	28	81-94	7.7	10-44	SE
2014-09-18	Rain	29	68-92	Trace	2-20	S
2014-09-19	Fine	30	64-91	0.3	0-25	NW
2014-09-20	Fine	29	56-73	0.0	7-36	N/NW
2014-09-21	Sunny	27	59-70	0.0	17-33	N/NE
2014-09-22	Sunny	28	58-76	Trace	3-32	N/NW
2014-09-23	Fine	28	63-77	0.0	0-21	S
2014-09-25	Sunny	28	66-84	0.0	0-23	S/SE
2014-09-26	Sunny	28	66-84	0.0	0-27	E
2014-09-27	Sunny	29	64-85	0.0	0-30	S/SE
2014-09-28	Fine	29	60-85	0.0	0-26	S
2014-09-30	Sunny	30	61-90	11.4	0-27	S
2014-10-01	Sunny	28	70-96	26.7	5-55	SE

* King's Park's data
\- Data was not available
\# less than 24 hourly observations per day

Meteorological Data Extracted from the Hong Kong Observatory

Date	Weather	King's Park Station				
		Average Air Temperature (°C)	Average Relative Humidity (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
2014-10-03	Sunny	28	76-92	23.7	0-21	SE
2014-10-04	Sunny	27	75-96	2.6	0-15	SE/E
2014-10-06	Sunny	27	47-78	0.0	1-20	E
2014-10-07	Sunny	26	54-72	Trace	0-18	SE/E
2014-10-08	Sunny	26	48-73	0.0	0-17	S/SE
2014-10-09	Sunny	27	48-71	0.0	0-14	N
2014-10-11	Sunny	28	49-72	0.0	0-15	E
2014-10-12	Sunny	27	42-79	0.0	0-20	NE
2014-10-14	Sunny	26	51-71	Trace	0-18	E/NE
2014-10-15	Sunny	25	56-74	0.0	0-20	SE
2014-10-17	Sunny	25	53-74	0.0	4-21	SE
2014-10-18	Sunny	25	51-78	0.0	1-20	SE/E
2014-10-20	Sunny	27	66-83	0.0	0-12	SE
2014-10-21	Sunny	27	50-84	Trace	0-11	NW/W
2014-10-23	Fine	24	75-95	0.2	1-18	SE/E
2014-10-24	Fine	24	70-80	0.0	3-16	SE/E
2014-10-25	Cloudy	25	76-83	0.0	1-18	SE
2014-10-26	Sunny	26	68-87	0.1	0-14	SE/E
2014-10-28	Sunny	25	59-78	Trace	6-24	SE/E
2014-10-29	Fine	25	62-82	Trace	1-22	SE
2014-10-30	Fine	26	70-86	0.0	1-18	E
2014-10-31	Sunny	26	70-87	0.0	0-14	N
2014-11-01	Sunny	26	70-86	0.0	0-13	SE/E

Date	Weather	Tsing Yi Station				
		Average Air Temperature (°C)	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-10-03	Sunny	27	76-92	23.7	0-21	-
2014-10-04	Sunny	27	75-96	2.6	0-20	-
2014-10-06	Sunny	27	47-78	0.0	0-14	-
2014-10-07	Sunny	27	54-72	Trace	0-18	-
2014-10-08	Sunny	26	48-73	0.0	0-13	-
2014-10-09	Sunny	26	48-71	0.0	0-14	N
2014-10-11	Sunny	28	49-72	0.0	0-12	SE/E
2014-10-12	Sunny	27	42-79	0.0	0-20	N/NW
2014-10-14	Sunny	26	51-71	Trace	1-15	N
2014-10-15	Sunny	25	56-74	0.0	0-17	E
2014-10-17	Sunny	26	53-74	0.0	3-20	SE/E
2014-10-18	Sunny	26	51-78	0.0	3-21	SE/E
2014-10-20	Sunny	28	66-83	0.0	1-18	SE/E
2014-10-21	Sunny	27	50-84	Trace	0-12	S/SE
2014-10-23	Fine	25	75-95	0.2	1-12	SE/E
2014-10-24	Fine	25	70-80	0.0	0-17	E
2014-10-25	Cloudy	26	76-83	0.0	1-15	SE/E
2014-10-26	Sunny	27	68-87	0.1	0-15	E
2014-10-28	Sunny	26	59-78	Trace	6-24	SE/E
2014-10-29	Fine	27	62-82	Trace	6-23	SE/E
2014-10-30	Fine	27	70-86	0.0	2-17	E/NE
2014-10-31	Sunny	26	70-87	0.0	0-15	NE
2014-11-01	Sunny	26	70-86	0.0	0-13	E

Date	Weather	Kai Tak Station				
		Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-10-03	Sunny	28	76-92	23.7	0-23	SE
2014-10-04	Sunny	27	75-96	2.6	0-21	E
2014-10-06	Sunny	27	47-78	0.0	2-23	E
2014-10-07	Sunny	26	54-72	Trace	3-26	E
2014-10-08	Sunny	26	48-73	0.0	2-16	N/NE
2014-10-09	Sunny	27	48-71	0.0	0-18	SE
2014-10-11	Sunny	28	49-72	0.0	0-16	SE/E
2014-10-12	Sunny	27	42-79	0.0	1-21	N
2014-10-14	Sunny	26	51-71	Trace	3-19	NE
2014-10-15	Sunny	25	56-74	0.0	0-19	E
2014-10-17	Sunny	25	53-74	0.0	9-25	E
2014-10-18	Sunny	25	51-78	0.0	5-24	E/NE
2014-10-20	Sunny	27	66-83	0.0	0-19	SE/E
2014-10-21	Sunny	27	50-84	Trace	0-15	SE
2014-10-23	Fine	24	75-95	0.2	9-25	E
2014-10-24	Fine	24	70-80	0.0	3-21	SE/E
2014-10-25	Cloudy	25	76-83	0.0	6-22	E
2014-10-26	Sunny	26	68-87	0.1	3-17	S/SE
2014-10-28	Sunny	25	59-78	Trace	12-30	E
2014-10-29	Fine	25	62-82	Trace	7-29	E
2014-10-30	Fine	26	70-86	0.0	6-24	E/NE
2014-10-31	Sunny	26	70-87	0.0	5-19	-
2014-11-01	Sunny	26	70-86	0.0	0-20	SE

Date	Weather	Green Island Station				
		Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-10-03	Sunny	28	76-92	23.7	0-40	E/NE
2014-10-04	Sunny	27	75-96	2.6	2-27	E
2014-10-06	Sunny	27	47-78	0.0	12-42	NE
2014-10-07	Sunny	26	54-72	Trace	10-45	E/NE
2014-10-08	Sunny	26	48-73	0.0	6-37	NE
2014-10-09	Sunny	27	48-71	0.0	0-22	SW
2014-10-11	Sunny	28	49-72	0.0	0-35	S
2014-10-12	Sunny	27	42-79	0.0	0-41	NE/N
2014-10-14	Sunny	26	51-71	Trace	2-39	NE/N
2014-10-15	Sunny	25	56-74	0.0	6-29	E/NE
2014-10-17	Sunny	25	53-74	0.0	5-43	E/NE
2014-10-18	Sunny	25	51-78	0.0	8-37	E/NE
2014-10-20	Sunny	27	66-83	0.0	0-33	NE
2014-10-21	Sunny	27	50-84	Trace	0-21	NW/W
2014-10-23	Fine	24	75-95	0.2	5-46	NE
2014-10-24	Fine	24	70-80	0.0	12-39	NE
2014-10-25	Cloudy	25	76-83	0.0	14-33	NE
2014-10-26	Sunny	26	68-87	0.1	0-33	NE
2014-10-28	Sunny	25	59-78	Trace	28-65	NE
2014-10-29	Fine	25	62-82	Trace	15-52	NE
2014-10-30	Fine	26	70-86	0.0	6-47	NE
2014-10-31	Sunny	26	70-87	0.0	0-33	E/NE
2014-11-01	Sunny	26	70-86	0.0	0-27	SE

* King's Park's data
\- Data was not available
\# less than 24 hourly observations per day

Meteorological Data Extracted from the Hong Kong Observatory

Date	Weather	King's Park Station				
		Average Air Temperature (°C)	Average Relative Humidity (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
2014-11-02	Sunny	25	61-85	Trace	0-15	NE
2014-11-04	Cloudy	22	72-81	Trace	0-15	SE/E
2014-11-05	Cloudy	24	74-81	Trace	2-16	SE/E
2014-11-06	Sunny	24	74-87	0.1	0-14	SE/E
2014-11-07	Sunny	23	82-97	11.8	0-18	SE
2014-11-09	Cloudy	22	75-86	Trace	0-19	SE
2014-11-10	Cloudy	24	72-84	Trace	0-20	SE/E
2014-11-11	Cloudy	24	76-85	0.0	0-15	SE/E
2014-11-12	Cloudy	25	74-88	Trace	0-13	E/NE
2014-11-13	Cloudy	19	72-88	Trace	0-17	NE/N
2014-11-15	Sunny	22	65-85	0.4	0-19	-
2014-11-16	Sunny	23	61-85	0.0	0-14	NE/N
2014-11-18	Sunny	21	57-72	Trace	0-16	NE
2014-11-19	Sunny	22	58-78	Trace	0-12	SE/E
2014-11-21	Sunny	23	62-83	0.0	0-18	SE/E
2014-11-22	Sunny	23	68-88	0.0	0-19	SE/E
2014-11-23	Sunny	23	70-88	0.0	2-18	SE
2014-11-24	Sunny	24	67-88	0.0	0-14	SE
2014-11-25	Sunny	24	65-92	0.0	0-12	N
2014-11-27	Fine	22	77-90	0.4	0-18	SE/E
2014-11-28	Cloudy	24	75-88	Trace	0-13	SE
2014-11-29	Cloudy	23	78-94	0.2	0-19	SE/E
2014-11-30	Sunny	25	82-96	0.2	0-12	SE

Date	Weather	Tsing Yi Station				
		Average Air Temperature (°C)	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-11-02	Sunny	26	61-85	Trace	1-18	N
2014-11-04	Cloudy	23	72-81	Trace	0-14	E
2014-11-05	Cloudy	25	74-81	Trace	4-16	E
2014-11-06	Sunny	24	74-87	0.1	1-11	SE/E
2014-11-07	Sunny	24	82-97	11.8	0-21	NE/E
2014-11-09	Cloudy	22	75-86	Trace	0-18	NE
2014-11-10	Cloudy	24	72-84	Trace	0-14	NW
2014-11-11	Cloudy	25	76-85	0.0	0-15	N
2014-11-12	Cloudy	22	74-88	Trace	0-20	NW
2014-11-13	Cloudy	20	72-88	Trace	0-13	NW
2014-11-15	Sunny	23	65-85	0.4	2-23	E
2014-11-16	Sunny	23	61-85	0.0	0-14	N
2014-11-18	Sunny	21	57-72	Trace	0-15	SE/E
2014-11-19	Sunny	22	58-78	Trace	1-14	NE/E
2014-11-21	Sunny	24	62-83	0.0	0-18	NE/E
2014-11-22	Sunny	23	68-88	0.0	0-19	-
2014-11-23	Sunny	25	70-88	0.0	1-23	E
2014-11-24	Sunny	25	67-88	0.0	0-15	-
2014-11-25	Sunny	24	65-92	0.0	0-12	NW
2014-11-27	Fine	23	77-90	0.4	3-18	E
2014-11-28	Cloudy	25	75-88	Trace	0-15	SE/E
2014-11-29	Cloudy	25	78-94	0.2	3-21	E
2014-11-30	Sunny	26	82-96	0.2	0-12	W

Date	Weather	Kai Tak Station				
		Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-11-02	Sunny	25	61-85	Trace	3-21	N/NW
2014-11-04	Cloudy	22	72-81	Trace	3-21	E
2014-11-05	Cloudy	24	74-81	Trace	4-22	SE/E
2014-11-06	Sunny	24	74-87	0.1	0-21	E
2014-11-07	Sunny	23	82-97	11.8	8-26	E
2014-11-09	Cloudy	22	75-86	Trace	0-24	E
2014-11-10	Cloudy	24	72-84	Trace	4-25	E
2014-11-11	Cloudy	24	76-85	0.0	0-21	N/NW
2014-11-12	Cloudy	25	74-88	Trace	0-15	SW/S
2014-11-13	Cloudy	19	72-88	Trace	0-18	E
2014-11-15	Sunny	22	65-85	0.4	2-25	SE/E
2014-11-16	Sunny	23	61-85	0.0	0-20	E
2014-11-18	Sunny	21	57-72	Trace	3-18	NE
2014-11-19	Sunny	22	58-78	Trace	4-18	E
2014-11-21	Sunny	23	62-83	0.0	0-22	NE/N
2014-11-22	Sunny	23	68-88	0.0	0-26	SE/E
2014-11-23	Sunny	23	70-88	0.0	5-24	E
2014-11-24	Sunny	24	67-88	0.0	0-21	SE
2014-11-25	Sunny	24	65-92	0.0	0-14	SW/W
2014-11-27	Fine	22	77-90	0.4	3-24	SE/E
2014-11-28	Cloudy	24	75-88	Trace	3-18	SE/E
2014-11-29	Cloudy	23	78-94	0.2	6-19	SE/E
2014-11-30	Sunny	25	82-96	0.2	4-19	SE/E

Date	Weather	Green Island Station				
		Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-11-02	Sunny	25	61-85	Trace	11-38	NE/N
2014-11-04	Cloudy	22	72-81	Trace	5-37	NE
2014-11-05	Cloudy	24	74-81	Trace	2-36	NE
2014-11-06	Sunny	24	74-87	0.1	0-35	NE
2014-11-07	Sunny	23	82-97	11.8	24-50	NE
2014-11-09	Cloudy	22	75-86	Trace	17-45	NE/N
2014-11-10	Cloudy	24	72-84	Trace	5-45	NE
2014-11-11	Cloudy	24	76-85	0.0	12-41	NE
2014-11-12	Cloudy	25	74-88	Trace	11-35	NE/N
2014-11-13	Cloudy	19	72-88	Trace	16-35	N
2014-11-15	Sunny	22	65-85	0.4	15-57	NE
2014-11-16	Sunny	23	61-85	0.0	0-32	NE/N
2014-11-18	Sunny	21	57-72	Trace	2-39	NE/N
2014-11-19	Sunny	22	58-78	Trace	0-31	NE
2014-11-21	Sunny	23	62-83	0.0	0-40	NE
2014-11-22	Sunny	23	68-88	0.0	6-46	NE
2014-11-23	Sunny	23	70-88	0.0	-	-
2014-11-24	Sunny	24	67-88	0.0	0-40	NE
2014-11-25	Sunny	24	65-92	0.0	0-20	NW
2014-11-27	Fine	22	77-90	0.4	13-45	NE
2014-11-28	Cloudy	24	75-88	Trace	2-40	NE
2014-11-29	Cloudy	23	78-94	0.2	20-41	NE
2014-11-30	Sunny	25	82-96	0.2	1-31	NE

* King's Park's data
\- Data was not available
\# less than 24 hourly observations per day

Annex E6 Noise Monitoring Results

Daytime Noise Monitoring Results

Station NM3

Date	Start Time	End Time	Weather	Noise level (dB(A)), 30 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (℃)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
2-Sep-14	13:30	14:00	Sunny	75	76	74	Lifting	Lifting (DSD site), Traffic noise	-	29	0.2	RION- NL52 (S/N 00131627)	RION-NL73 (S/N 10997142)
8-Sep-14	14:06	14:36	Sunny	75	76	74	Lifting	Noise from nearby site (DSD), Traffic noise	-	29	0.3	RION- NL52 (S/N 00131627)	RION-NL73 (S/N 10997142)
19-Sep-14	10:25	10:55	Fine	74	76	75	Lifting	Noise from nearby site (DSD), Traffic noise	-	30	0.5	RION- NL52 (S/N 00131627)	RION-NL73 (S/N 10997142)
25-Sep-14	9:17	9:47	Sunny	74	76	75	Noise from nearby site	Traffic noise	-	28	0.2	RION- NL52 (S/N 00131627)	RION-NL73 (S/N 10997142)
30-Sep-14	14:20	14:50	Sunny	73	76	74	Lifting, Noise from nearby site	Traffic noise		30	0.3	RION- NL52 (S/N 00131627)	RION-NL73 (S/N 10997142)
			Min.	**73**									
			Max.	**75**									

Annex E6 Noise Monitoring Results

Daytime Noise Monitoring Results

Station NM3

Date	Start Time	End Time	Weather	Noise level (dB(A)), 30 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
06-Oct-14	10:23	10:53	Sunny	75	76	74	Noise from nearby site	Traffic noise	-	28	0.5	RION- NL52 (S/N 00131627)	RION-NL73 (S/N 10997142)
17-Oct-14	13:05	13:35	Sunny	75	76	73	Lifting, Noise from nearby site (DSD)	Traffic noise	-	27	0.3	RION- NL52 (S/N 00131627)	RION-NL73 (S/N 10997142)
23-Oct-14	13:17	13:47	Sunny	75	76	75	Lifting, Noise from nearby site (DSD)	Traffic noise	-	27	0.3	RION- NL52 (S/N 00131627)	RION-NL73 (S/N 10997142)
29-Oct-14	9:20	9:50	Fine	74	76	73	Lifting, Noise from nearby site	Traffic noise	-	28	0.3	RION- NL52 (S/N 00131627)	RION-NL73 (S/N 10997142)
			Min.	**74**									
			Max.	**75**									

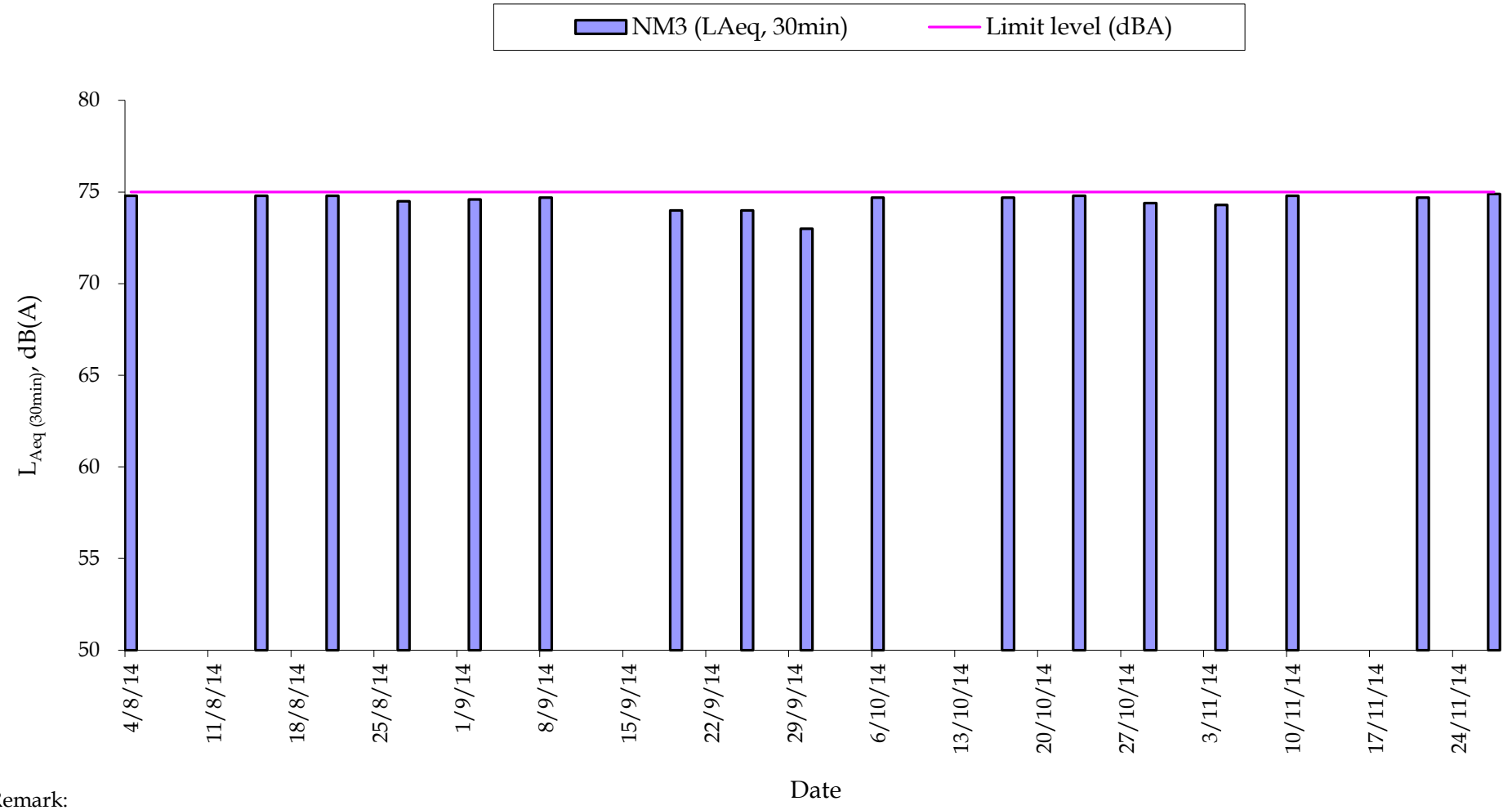
Annex E6 Noise Monitoring Results

Daytime Noise Monitoring Results

Station NM3

Date	Start Time	End Time	Weather	Noise level (dB(A)), 30 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
04-Nov-14	9:15	9:45	Cloudy	74	76	73	Lifting, Noise from nearby site	Traffic noise	-	22	0.3	RION- NL52 (S/N 00131627)	RION-NL73 (S/N 10997142)
10-Nov-14	13:00	13:30	Cloudy	75	76	74	Lifting, Noise from nearby site	Traffic noise	-	24	0.3	RION- NL52 (S/N 00131627)	RION-NL73 (S/N 10997142)
21-Nov-14	13:50	14:20	Sunny	75	76	73	Lifting, Noise from nearby site (DSD)	Traffic noise	-	23	0.5	RION- NL52 (S/N 00131627)	RION-NL73 (S/N 10997142)
27-Nov-14	13:05	13:35	Fine	75	76	73	Lifting, Noise from nearby site	Traffic noise	-	22	0.2	RION- NL52 (S/N 00131627)	RION-NL73 (S/N 10997142)
			Min.	**74**									
			Max.	**75**									

Normal Weekdays Noise Monitoring Results at NM3 ($L_{Aeq, 30min}$)



Remark:

- 75dB(A) was adopted as the Limit Level during normal weekdays in the reporting period

Annex E7 Cumulative Complaint and Summons/Prosecutions Log

Reporting Month	Number of Complaints in Reporting Month	Number of Summons/Prosecutions in Reporting Month
December 2009	0	0
January 2010	0	0
February 2010	0	0
March 2010	0	0
April 2010	0	0
May 2010	0	0
June 2010	0	0
July 2010	0	0
August 2010	0	0
September 2010	0	0
October 2010	0	0
November 2010	0	0
December 2010	0	0
January 2011	0	0
February 2011	0	0
March 2011	0	0
April 2011	0	0
May 2011	0	0

Annex E7 Cumulative Complaint and Summons/Prosecutions Log

Reporting Month	Number of Complaints in Reporting Month	Number of Summons/Prosecutions in Reporting Month
June 2011	0	0
July 2011	0	0
August 2011	0	0
September 2011	0	0
October 2011	0	0
November 2011	0	0
December 2011	0	0
January 2012	0	0
February 2012	0	0
March 2012	0	0
April 2012	0	0
May 2012	0	0
June 2012	0	0
July 2012	0	0
August 2012	0	0
September 2012	0	0
October 2012	0	0
November 2012	0	0

Annex E7 Cumulative Complaint and Summons/Prosecutions Log

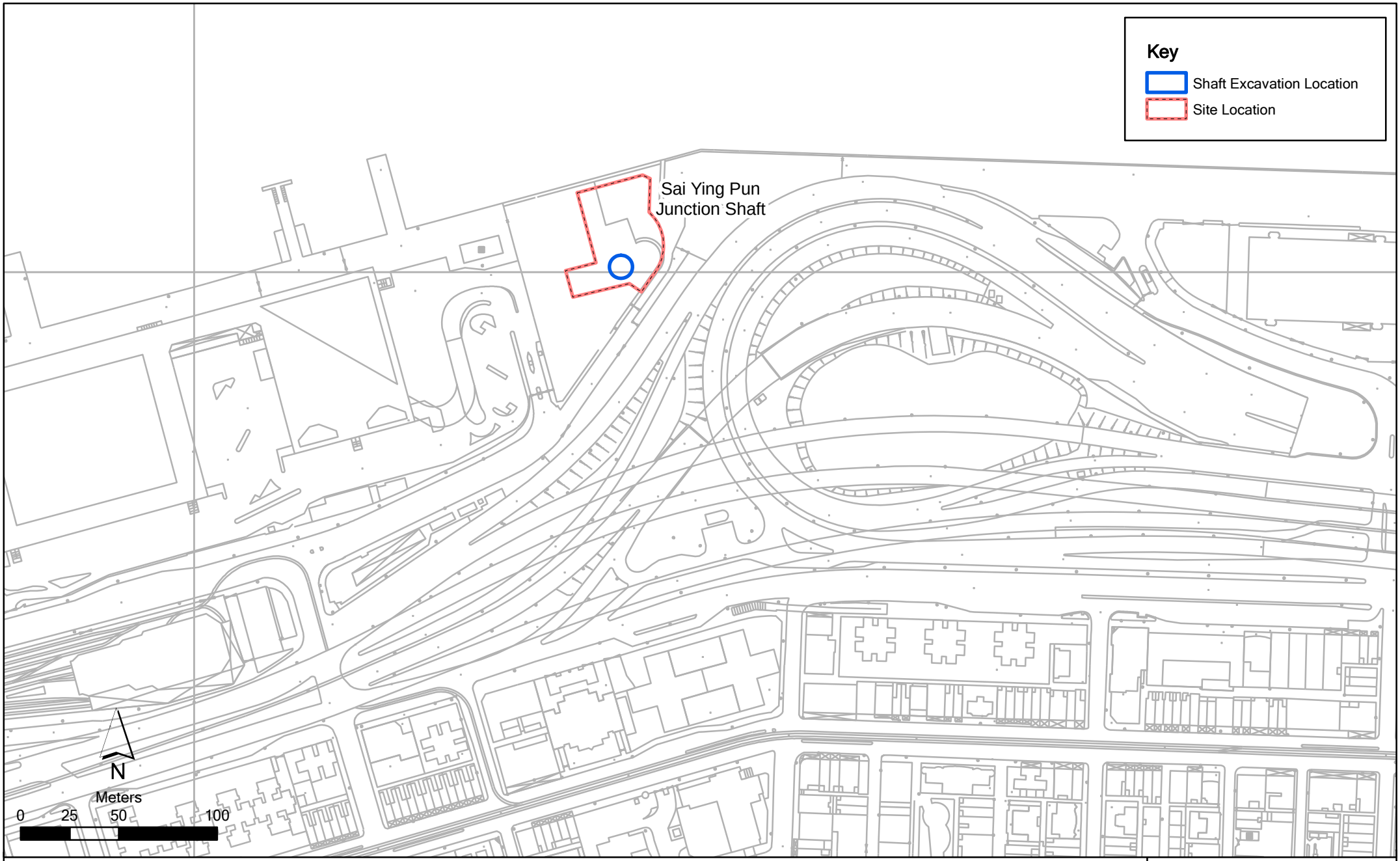
Reporting Month	Number of Complaints in Reporting Month	Number of Summons/Prosecutions in Reporting Month
December 2012	0	0
January 2013	0	0
February 2013	0	0
March 2013	0	0
April 2013	0	0
May 2013	0	0
June 2013	0	0
July 2013	0	0
August 2013	0	0
September 2013	0	0
October 2013	0	0
November 2013	0	0
December 2013	0	0
January 2014	0	0
February 2014	0	0
March 2014	0	0
April 2014	0	0
May 2014	0	0

Annex E7 Cumulative Complaint and Summons/Prosecutions Log

Reporting Month	Number of Complaints in Reporting Month	Number of Summons/Prosecutions in Reporting Month
June 2014	0	0
July 2014	0	0
August 2014	0	0
September 2014	0	0
October 2014	0	0
November 2014	0	0
Overall Total	0	0

Annex F

Sai Ying Pun Junction Shaft



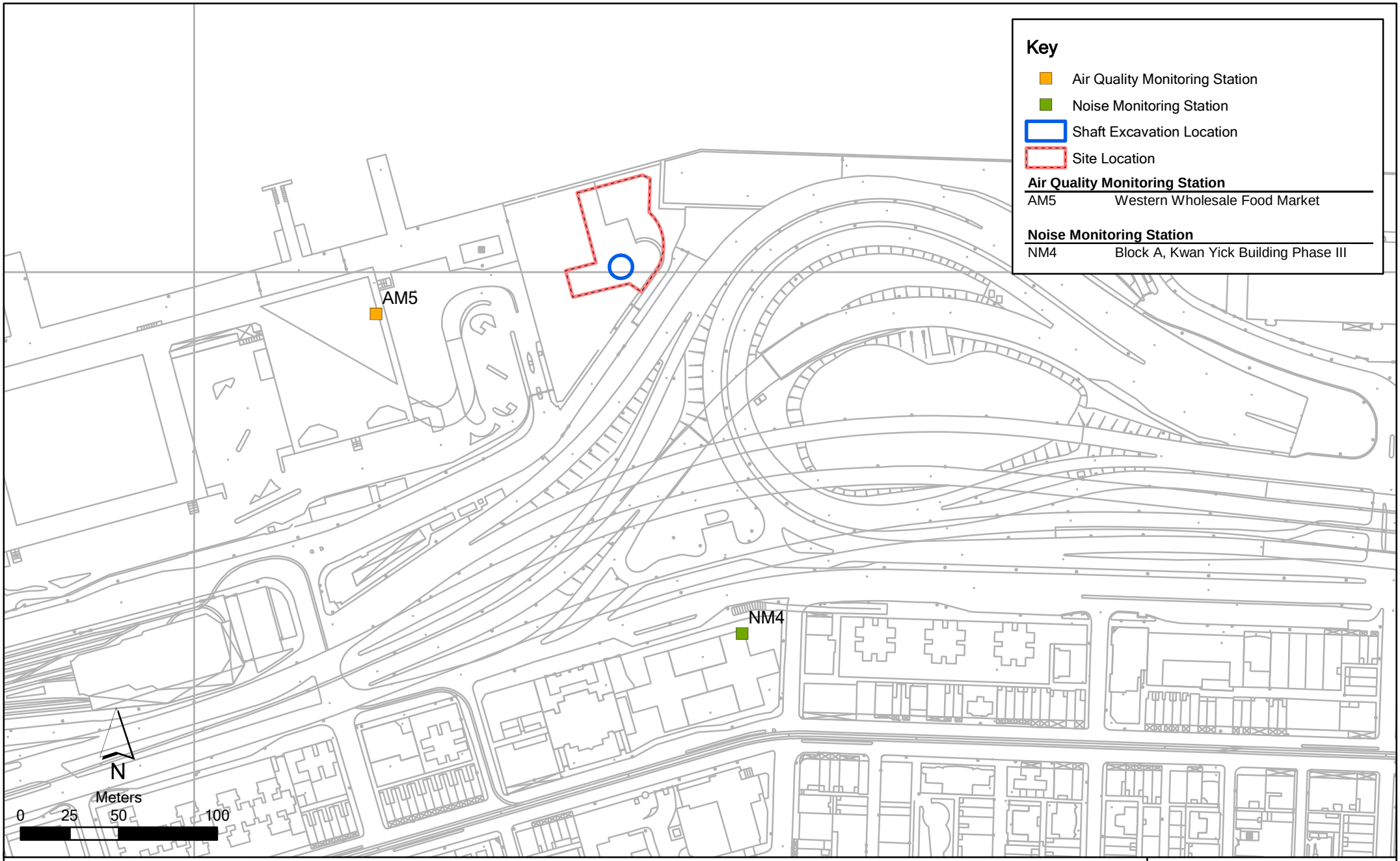
Annex F1

Contract No. DC/2007/23
Harbour Area Treatment Scheme Stage 2A
Construction of Sewage Conveyance System from North Point to Stonecutters Island
Construction Site Locations at Sai Ying Pun

File: EM&A and proposed station\0104887_Sai Ying Pun.mxd
Date: 03/03/2010

Environmental Resources Management

ERM



Annex F2

Contract No. DC/2007/23
Harbour Area Treatment Scheme Stage 2A
Construction of Sewage Conveyance System from North Point to Stonecutters Island
Impact Air Quality & Noise Monitoring Stations (Fung Mat Road)

File: EM&A and proposed station\
0104887_Sai Ting Pun_NMAM.mxd
Date: 03/03/2010

Environmental Resources Management

ERM

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Construction Phase			
Air Quality	The Air Pollution Control (Construction Dust) Regulation shall be implemented and good site practices shall be incorporated in the contract clauses to minimise construction dust impact. Control measures relevant to this Project are listed below: • skip hoist for material transport should be totally enclosed by impervious sheeting; • every vehicle should be washed to remove any dusty materials from its body and wheels before leaving a construction site; • the area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; • where a site boundary adjoins a road, streets or other accessible to the public, hoarding of not less than 2.4 m high from ground level should be provided along the entire length except for a site entrance or exit; • every stock of more than 20 bags of cement should be covered entirely by impervious sheeting placed in an area sheltered on the top and the 3 sides; • regular watering, with complete coverage, to reduce dust emission from exposed site surfaces and unpaved roads, particularly during dry weather; • site enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering should be applied to aggregate fines; • open stock piles should be avoided or covered and prevent placing dusty material storage piles near ASRs if possible; • tarpaulin covering of all dusty vehicle loads transported to, from and between site locations; and • instigation of an environmental monitoring auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Air Quality	The following watering measures for specific site would be required to control the fugitive dust impacts: • watering twice per day within the worksites at Fung Mat Road Site; • the barging points should be continuous watering throughout the whole unloading process.	All work sites / during construction	√
Operational Phase			
Air Quality	Good housekeeping for SCISTW and PTWs listed below should be followed to ameliorate any odour impact from the plant and these standard practices should be included in the plant operator manual. • Screens should be cleaned regularly to remove any accumulated organic debris • Grit and screening transfer systems should be flushed regularly with water to remove organic debris and grit • Grit and screened materials should be transferred to closed containers to minimise odour escape • Scum and grease collection wells and troughs should be emptied and flushed regularly to prevent putrefaction of accumulated organics • Skim and remove floating solids and grease from primary clarifiers regularly • Frequent sludge withdrawal from tanks is necessary to prevent the production of gases • Sludge cake should be transferred to closed containers • Sludge containers should be flushed with water regularly	All work sites / during construction	NA. Measures not required until commencement of operational phase
Air Quality	Commissioning tests for all deodorisation system should be included in the Design and Construction Contract Document.	All PTW and SCISTW/ during operational phase	NA. Measures not required until commencement of operational phase
Construction Phase			
Noise	Use of quiet PME, movable barriers and acoustic mats	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Noise	Good Site Practice: • only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program; • silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction program; • mobile plant, if any, should be sited as far from NSRs as possible; • machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and • material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities; Environmental audit shall be carried out to ensure that appropriate noise control measures would be properly implemented.	All work sites / during construction	√
Construction Phase			
Water Quality	Construction Site Runoff and General Construction Activities The mitigation measures as outlined in the ProPECC PN 1/94 Construction Site Drainage should be adopted where applicable.	All work sites / during construction	√
Water Quality	Effluent Discharge There is a need to apply to EPD for a discharge licence for discharge of effluent from the construction site under the WPCO. The discharge quality must meet the requirements specified in the discharge licence. If monitoring of the treated effluent quality from the works areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the WPCO license which is under the ambit of regional office (RO) of EPD. Minimum distances of 100 m should be maintained between the discharge points of construction site effluent and the existing saltwater intakes.	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Accidental Spillage of Chemicals Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	All work sites / during construction	√
Water Quality	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	All work sites / during construction	√
Water Quality	Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows: • Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport. • Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents. • Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.	All work sites / during construction	<>

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Construction Works in Close Proximity of Storm Drains or Seafront To minimise the potential water quality impacts from the construction works located at or near any watercourse, the practices outlined below should be adopted where applicable. • The use of less or smaller construction plants may be specified to reduce the disturbance to the storm water courses or marine environment. • Temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well away from any water courses during the construction works. • Stockpiles of construction materials and dusty materials should be covered and located away from any water courses. • Construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nearby water receivers. • Construction activities, which generate a large amount of wastewater, should be carried out in a distance away from the waterfront, where practicable. • Proper shoring may need to be erected in order to prevent soil/mud from slipping into the storm culvert or sea	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Operational Phase			
Water Quality	Dual power supply, standby facilities for the main treatment units and standby equipment parts / accessories should be provided as far as possible at the SCISTW to minimise the chance of emergency discharge.	SCISTW and all the Stage 2 PTWs / Operation Stage	NA. Measures not required until commencement of operational phase
Water Quality	Standby unit(s) and dual (backup) power supply would be provided at all the Stage 2 PTWs to reduce the risk of equipment breakdown at the PTWs.	Stage 2 PTWs / Operation Stage	NA. Measures not required until commencement of operational phase
Construction Phase			
Waste	Reusable steel or concrete panel shutters, fencing and hoarding and signboard should be used as a preferred alternative to items made of wood, to minimise wastage of wood. Attention should be paid to WBTC No. 19/2001 - Metallic Site Hoardings and Signboards to reduce the amount of timber used on construction sites. Metallic alternatives to timber are readily available and should be used rather than new timber. Precast concrete units should be adopted wherever feasible to minimise the use of timber formwork.	All work sites / during the construction period	√
Waste	All waste materials should be segregated into categories covering: • excavated materials suitable for reuse on-site; • excavated materials suitable for public filling facilities; • remaining C&D waste for landfill; • chemical waste; and • general refuse for landfill.	All work sites / during the construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	Recommendations to achieve waste reduction include: • Sort C&D waste from demolition of existing facilities to recover recyclable portions such as metals; • 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; • Encourage collection of aluminium cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force; • Any unused chemicals or those with remaining functional capacity shall be recycled; and • Proper storage and site practices to minimise the potential for damage or contamination of construction materials.	All work sites / during the construction period	√
Waste	Recommendations for good site practices during construction activities include:- • 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 • Develop and provide toolbox talk for on-site sorting of C&D materials to enhance worker's awareness in handling, sorting, reuse and recycling of C&D materials. • Provision of sufficient waste disposal points and regular collection of waste • Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors	All work sites / during the construction period	√
Waste	Bentonite slurries used in diaphragm wall construction should be reconditioned and reused wherever practicable. The disposal of residual used bentonite slurry should follow the good practice guidelines stated in ProPECC PN 1/94 "Construction Site Drainage".	All work sites / during the construction period	NA
Waste	Adequate number of portable toilets at temporary works areas or the PTWs to ensure that sewage from site staff would be properly collected.	All work sites / during the construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	General refuse should be stored in enclosed bins, skips or compaction units separating from C&D material and disposed of at designated landfill.	All work sites / during the construction period	<>
Waste	The recyclable component of the municipal waste generated by the workforce, such as aluminium cans, paper and cleansed plastic containers should be separated from other waste. Provision and collection of recycling bins for different types of recyclable waste should be set up by the Contractor. The Contractor should also be responsible for arranging recycling companies to collect these materials.	All work sites / during the construction period	√
Waste	If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidising, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the approved Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	All work sites / during the construction period	√
Waste	Prior to excavation of the marine deposit layer, the deposit should be tested in accordance with the ETWB TC(W) No. 34/2002 and the results should be presented in a Preliminary Sediment Quality Report. The marine deposit should be disposed of at the disposal site designated by the Marine Fill Committee (MFC) or Director of Environmental Protection (DEP) depending on the test results.	All work sites / during the construction period	√
Construction Phase			

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Landscape & Visual	• Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical. • Existing trees to be retained on site should be carefully protected during construction. • Trees unavoidably affected by the works should be transplanted where practical. • Compensatory tree planting should be provided to compensate for felled trees. • Control of night-time lighting. • Erection of decorative screen hoarding compatible with the surrounding setting.	All the works areas, PTWs and SCISTW/ during the construction period	<>
Operational Phase	•		
Landscape & Visual	• Aesthetic design of the façade of PTW and associated structures to harmonise with the surrounding settings. • Shrub and Climbing Plants to soften proposed structures / Roof Greening. • Buffer Tree and Shrub Planting to screen proposed associated structures. • Reinstated of disturbed area	All the works areas, PTWs and SCISTW/ during the construction period	NA. Measures not required until commencement of operational phase
Construction Phase			
Cultural Heritage	The construction vibration control limit (ppv of 25mm/s) shall be strictly followed.	Identified historical buildings/structures as mentioned in Tables 15.8 and 15.9. During blasting for tunnel, shafts, effluent conveyance system and disinfection facilities in the vicinity of the buildings/ structures	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	Monitoring of vibration limits shall be conducted and reported as a requirement of EM&A programme	Identified historical buildings/structures as mentioned in Tables 15.8 and 15.9. During blasting for tunnel, shafts, effluent conveyance system and disinfection facilities in the vicinity of the buildings/ structures	√

Remark:

√ Compliance of Mitigation Measures
<> Compliance of Mitigation but need improvement
x Non-compliance of Mitigation Measures
Δ Deficiency of Mitigation Measures but rectified by Gammon Construction Limited
NA Not Applicable

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Construction Phase			
Air Quality	The Air Pollution Control (Construction Dust) Regulation shall be implemented and good site practices shall be incorporated in the contract clauses to minimise construction dust impact. Control measures relevant to this Project are listed below: • skip hoist for material transport should be totally enclosed by impervious sheeting; • every vehicle should be washed to remove any dusty materials from its body and wheels before leaving a construction site; • the area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; • where a site boundary adjoins a road, streets or other accessible to the public, hoarding of not less than 2.4 m high from ground level should be provided along the entire length except for a site entrance or exit; • every stock of more than 20 bags of cement should be covered entirely by impervious sheeting placed in an area sheltered on the top and the 3 sides; • regular watering, with complete coverage, to reduce dust emission from exposed site surfaces and unpaved roads, particularly during dry weather; • site enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering should be applied to aggregate fines; • open stock piles should be avoided or covered and prevent placing dusty material storage piles near ASRs if possible; • tarpaulin covering of all dusty vehicle loads transported to, from and between site locations; and • instigation of an environmental monitoring auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Air Quality	The following watering measures for specific site would be required to control the fugitive dust impacts: • watering twice per day within the worksites at Fung Mat Road Site; • the barging points should be continuous watering throughout the whole unloading process.	All work sites / during construction	√
Operational Phase			
Air Quality	Good housekeeping for SCISTW and PTWs listed below should be followed to ameliorate any odour impact from the plant and these standard practices should be included in the plant operator manual. • Screens should be cleaned regularly to remove any accumulated organic debris • Grit and screening transfer systems should be flushed regularly with water to remove organic debris and grit • Grit and screened materials should be transferred to closed containers to minimise odour escape • Scum and grease collection wells and troughs should be emptied and flushed regularly to prevent putrefaction of accumulated organics • Skim and remove floating solids and grease from primary clarifiers regularly • Frequent sludge withdrawal from tanks is necessary to prevent the production of gases • Sludge cake should be transferred to closed containers • Sludge containers should be flushed with water regularly	All work sites / during construction	NA. Measures not required until commencement of operational phase
Air Quality	Commissioning tests for all deodorisation system should be included in the Design and Construction Contract Document.	All PTW and SCISTW/ during operational phase	NA. Measures not required until commencement of operational phase
Construction Phase			
Noise	Use of quiet PME, movable barriers and acoustic mats	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Noise	Good Site Practice: • only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program; • silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction program; • mobile plant, if any, should be sited as far from NSRs as possible; • machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and • material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities; Environmental audit shall be carried out to ensure that appropriate noise control measures would be properly implemented.	All work sites / during construction	√
Construction Phase			
Water Quality	Construction Site Runoff and General Construction Activities The mitigation measures as outlined in the ProPECC PN 1/94 Construction Site Drainage should be adopted where applicable.	All work sites / during construction	√
Water Quality	Effluent Discharge There is a need to apply to EPD for a discharge licence for discharge of effluent from the construction site under the WPCO. The discharge quality must meet the requirements specified in the discharge licence. If monitoring of the treated effluent quality from the works areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the WPCO license which is under the ambit of regional office (RO) of EPD. Minimum distances of 100 m should be maintained between the discharge points of construction site effluent and the existing saltwater intakes.	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Accidental Spillage of Chemicals Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	All work sites / during construction	√
Water Quality	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	All work sites / during construction	√
Water Quality	Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows: • Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport. • Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents. • Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.	All work sites / during construction	<>

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Construction Works in Close Proximity of Storm Drains or Seafront To minimise the potential water quality impacts from the construction works located at or near any watercourse, the practices outlined below should be adopted where applicable. • The use of less or smaller construction plants may be specified to reduce the disturbance to the storm water courses or marine environment. • Temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well away from any water courses during the construction works. • Stockpiles of construction materials and dusty materials should be covered and located away from any water courses. • Construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nearby water receivers. • Construction activities, which generate a large amount of wastewater, should be carried out in a distance away from the waterfront, where practicable. • Proper shoring may need to be erected in order to prevent soil/mud from slipping into the storm culvert or sea	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Operational Phase			
Water Quality	Dual power supply, standby facilities for the main treatment units and standby equipment parts / accessories should be provided as far as possible at the SCISTW to minimise the chance of emergency discharge.	SCISTW and all the Stage 2 PTWs / Operation Stage	NA. Measures not required until commencement of operational phase
Water Quality	Standby unit(s) and dual (backup) power supply would be provided at all the Stage 2 PTWs to reduce the risk of equipment breakdown at the PTWs.	Stage 2 PTWs / Operation Stage	NA. Measures not required until commencement of operational phase
Construction Phase			
Waste	Reusable steel or concrete panel shutters, fencing and hoarding and signboard should be used as a preferred alternative to items made of wood, to minimise wastage of wood. Attention should be paid to WBTC No. 19/2001 - Metallic Site Hoardings and Signboards to reduce the amount of timber used on construction sites. Metallic alternatives to timber are readily available and should be used rather than new timber. Precast concrete units should be adopted wherever feasible to minimise the use of timber formwork.	All work sites / during the construction period	√
Waste	All waste materials should be segregated into categories covering: • excavated materials suitable for reuse on-site; • excavated materials suitable for public filling facilities; • remaining C&D waste for landfill; • chemical waste; and • general refuse for landfill.	All work sites / during the construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	Recommendations to achieve waste reduction include: • Sort C&D waste from demolition of existing facilities to recover recyclable portions such as metals; • 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; • Encourage collection of aluminium cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force; • Any unused chemicals or those with remaining functional capacity shall be recycled; and • Proper storage and site practices to minimise the potential for damage or contamination of construction materials.	All work sites / during the construction period	√
Waste	Recommendations for good site practices during construction activities include:- • 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 • Develop and provide toolbox talk for on-site sorting of C&D materials to enhance worker's awareness in handling, sorting, reuse and recycling of C&D materials. • Provision of sufficient waste disposal points and regular collection of waste • Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors	All work sites / during the construction period	√
Waste	Bentonite slurries used in diaphragm wall construction should be reconditioned and reused wherever practicable. The disposal of residual used bentonite slurry should follow the good practice guidelines stated in ProPECC PN 1/94 "Construction Site Drainage".	All work sites / during the construction period	NA
Waste	Adequate number of portable toilets at temporary works areas or the PTWs to ensure that sewage from site staff would be properly collected.	All work sites / during the construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	General refuse should be stored in enclosed bins, skips or compaction units separating from C&D material and disposed of at designated landfill.	All work sites / during the construction period	<>
Waste	The recyclable component of the municipal waste generated by the workforce, such as aluminium cans, paper and cleansed plastic containers should be separated from other waste. Provision and collection of recycling bins for different types of recyclable waste should be set up by the Contractor. The Contractor should also be responsible for arranging recycling companies to collect these materials.	All work sites / during the construction period	√
Waste	If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidising, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the approved Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	All work sites / during the construction period	√
Waste	Prior to excavation of the marine deposit layer, the deposit should be tested in accordance with the ETWB TC(W) No. 34/2002 and the results should be presented in a Preliminary Sediment Quality Report. The marine deposit should be disposed of at the disposal site designated by the Marine Fill Committee (MFC) or Director of Environmental Protection (DEP) depending on the test results.	All work sites / during the construction period	√
Construction Phase			

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Landscape & Visual	• Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical. • Existing trees to be retained on site should be carefully protected during construction. • Trees unavoidably affected by the works should be transplanted where practical. • Compensatory tree planting should be provided to compensate for felled trees. • Control of night-time lighting. • Erection of decorative screen hoarding compatible with the surrounding setting.	All the works areas, PTWs and SCISTW/ during the construction period	<>
Operational Phase	•		
Landscape & Visual	• Aesthetic design of the façade of PTW and associated structures to harmonise with the surrounding settings. • Shrub and Climbing Plants to soften proposed structures / Roof Greening. • Buffer Tree and Shrub Planting to screen proposed associated structures. • Reinstated of disturbed area	All the works areas, PTWs and SCISTW/ during the construction period	NA. Measures not required until commencement of operational phase
Construction Phase			
Cultural Heritage	The construction vibration control limit (ppv of 25mm/s) shall be strictly followed.	Identified historical buildings/structures as mentioned in Tables 15.8 and 15.9. During blasting for tunnel, shafts, effluent conveyance system and disinfection facilities in the vicinity of the buildings/ structures	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	Monitoring of vibration limits shall be conducted and reported as a requirement of EM&A programme	Identified historical buildings/structures as mentioned in Tables 15.8 and 15.9. During blasting for tunnel, shafts, effluent conveyance system and disinfection facilities in the vicinity of the buildings/ structures	√

Remark:

√ Compliance of Mitigation Measures
<> Compliance of Mitigation but need improvement
x Non-compliance of Mitigation Measures
Δ Deficiency of Mitigation Measures but rectified by Gammon Construction Limited
NA Not Applicable

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Construction Phase			
Air Quality	The Air Pollution Control (Construction Dust) Regulation shall be implemented and good site practices shall be incorporated in the contract clauses to minimise construction dust impact. Control measures relevant to this Project are listed below: • skip hoist for material transport should be totally enclosed by impervious sheeting; • every vehicle should be washed to remove any dusty materials from its body and wheels before leaving a construction site; • the area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; • where a site boundary adjoins a road, streets or other accessible to the public, hoarding of not less than 2.4 m high from ground level should be provided along the entire length except for a site entrance or exit; • every stock of more than 20 bags of cement should be covered entirely by impervious sheeting placed in an area sheltered on the top and the 3 sides; • regular watering, with complete coverage, to reduce dust emission from exposed site surfaces and unpaved roads, particularly during dry weather; • site enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering should be applied to aggregate fines; • open stock piles should be avoided or covered and prevent placing dusty material storage piles near ASRs if possible; • tarpaulin covering of all dusty vehicle loads transported to, from and between site locations; and • instigation of an environmental monitoring auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Air Quality	The following watering measures for specific site would be required to control the fugitive dust impacts: • watering twice per day within the worksites at Fung Mat Road Site; • the barging points should be continuous watering throughout the whole unloading process.	All work sites / during construction	√
Operational Phase			
Air Quality	Good housekeeping for SCISTW and PTWs listed below should be followed to ameliorate any odour impact from the plant and these standard practices should be included in the plant operator manual. • Screens should be cleaned regularly to remove any accumulated organic debris • Grit and screening transfer systems should be flushed regularly with water to remove organic debris and grit • Grit and screened materials should be transferred to closed containers to minimise odour escape • Scum and grease collection wells and troughs should be emptied and flushed regularly to prevent putrefaction of accumulated organics • Skim and remove floating solids and grease from primary clarifiers regularly • Frequent sludge withdrawal from tanks is necessary to prevent the production of gases • Sludge cake should be transferred to closed containers • Sludge containers should be flushed with water regularly	All work sites / during construction	NA. Measures not required until commencement of operational phase
Air Quality	Commissioning tests for all deodorisation system should be included in the Design and Construction Contract Document.	All PTW and SCISTW/ during operational phase	NA. Measures not required until commencement of operational phase
Construction Phase			
Noise	Use of quiet PME, movable barriers and acoustic mats	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Noise	Good Site Practice: • only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program; • silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction program; • mobile plant, if any, should be sited as far from NSRs as possible; • machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and • material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities; Environmental audit shall be carried out to ensure that appropriate noise control measures would be properly implemented.	All work sites / during construction	√
Construction Phase			
Water Quality	Construction Site Runoff and General Construction Activities The mitigation measures as outlined in the ProPECC PN 1/94 Construction Site Drainage should be adopted where applicable.	All work sites / during construction	√
Water Quality	Effluent Discharge There is a need to apply to EPD for a discharge licence for discharge of effluent from the construction site under the WPCO. The discharge quality must meet the requirements specified in the discharge licence. If monitoring of the treated effluent quality from the works areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the WPCO license which is under the ambit of regional office (RO) of EPD. Minimum distances of 100 m should be maintained between the discharge points of construction site effluent and the existing saltwater intakes.	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Accidental Spillage of Chemicals Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	All work sites / during construction	√
Water Quality	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	All work sites / during construction	√
Water Quality	Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows: • Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport. • Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents. • Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.	All work sites / during construction	<>

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Construction Works in Close Proximity of Storm Drains or Seafront To minimise the potential water quality impacts from the construction works located at or near any watercourse, the practices outlined below should be adopted where applicable. • The use of less or smaller construction plants may be specified to reduce the disturbance to the storm water courses or marine environment. • Temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well away from any water courses during the construction works. • Stockpiles of construction materials and dusty materials should be covered and located away from any water courses. • Construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nearby water receivers. • Construction activities, which generate a large amount of wastewater, should be carried out in a distance away from the waterfront, where practicable. • Proper shoring may need to be erected in order to prevent soil/mud from slipping into the storm culvert or sea	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Operational Phase			
Water Quality	Dual power supply, standby facilities for the main treatment units and standby equipment parts / accessories should be provided as far as possible at the SCISTW to minimise the chance of emergency discharge.	SCISTW and all the Stage 2 PTWs / Operation Stage	NA. Measures not required until commencement of operational phase
Water Quality	Standby unit(s) and dual (backup) power supply would be provided at all the Stage 2 PTWs to reduce the risk of equipment breakdown at the PTWs.	Stage 2 PTWs / Operation Stage	NA. Measures not required until commencement of operational phase
Construction Phase			
Waste	Reusable steel or concrete panel shutters, fencing and hoarding and signboard should be used as a preferred alternative to items made of wood, to minimise wastage of wood. Attention should be paid to WBTC No. 19/2001 - Metallic Site Hoardings and Signboards to reduce the amount of timber used on construction sites. Metallic alternatives to timber are readily available and should be used rather than new timber. Precast concrete units should be adopted wherever feasible to minimise the use of timber formwork.	All work sites / during the construction period	√
Waste	All waste materials should be segregated into categories covering: • excavated materials suitable for reuse on-site; • excavated materials suitable for public filling facilities; • remaining C&D waste for landfill; • chemical waste; and • general refuse for landfill.	All work sites / during the construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	Recommendations to achieve waste reduction include: • Sort C&D waste from demolition of existing facilities to recover recyclable portions such as metals; • 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; • Encourage collection of aluminium cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force; • Any unused chemicals or those with remaining functional capacity shall be recycled; and • Proper storage and site practices to minimise the potential for damage or contamination of construction materials.	All work sites / during the construction period	√
Waste	Recommendations for good site practices during construction activities include:- • 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 • Develop and provide toolbox talk for on-site sorting of C&D materials to enhance worker's awareness in handling, sorting, reuse and recycling of C&D materials. • Provision of sufficient waste disposal points and regular collection of waste • Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors	All work sites / during the construction period	√
Waste	Bentonite slurries used in diaphragm wall construction should be reconditioned and reused wherever practicable. The disposal of residual used bentonite slurry should follow the good practice guidelines stated in ProPECC PN 1/94 "Construction Site Drainage".	All work sites / during the construction period	NA
Waste	Adequate number of portable toilets at temporary works areas or the PTWs to ensure that sewage from site staff would be properly collected.	All work sites / during the construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	General refuse should be stored in enclosed bins, skips or compaction units separating from C&D material and disposed of at designated landfill.	All work sites / during the construction period	<>
Waste	The recyclable component of the municipal waste generated by the workforce, such as aluminium cans, paper and cleansed plastic containers should be separated from other waste. Provision and collection of recycling bins for different types of recyclable waste should be set up by the Contractor. The Contractor should also be responsible for arranging recycling companies to collect these materials.	All work sites / during the construction period	√
Waste	If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidising, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the approved Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	All work sites / during the construction period	√
Waste	Prior to excavation of the marine deposit layer, the deposit should be tested in accordance with the ETWB TC(W) No. 34/2002 and the results should be presented in a Preliminary Sediment Quality Report. The marine deposit should be disposed of at the disposal site designated by the Marine Fill Committee (MFC) or Director of Environmental Protection (DEP) depending on the test results.	All work sites / during the construction period	√
Construction Phase			

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Landscape & Visual	• Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical. • Existing trees to be retained on site should be carefully protected during construction. • Trees unavoidably affected by the works should be transplanted where practical. • Compensatory tree planting should be provided to compensate for felled trees. • Control of night-time lighting. • Erection of decorative screen hoarding compatible with the surrounding setting.	All the works areas, PTWs and SCISTW/ during the construction period	<>
Operational Phase	•		
Landscape & Visual	• Aesthetic design of the façade of PTW and associated structures to harmonise with the surrounding settings. • Shrub and Climbing Plants to soften proposed structures / Roof Greening. • Buffer Tree and Shrub Planting to screen proposed associated structures. • Reinstated of disturbed area	All the works areas, PTWs and SCISTW/ during the construction period	NA. Measures not required until commencement of operational phase
Construction Phase			
Cultural Heritage	The construction vibration control limit (ppv of 25mm/s) shall be strictly followed.	Identified historical buildings/structures as mentioned in Tables 15.8 and 15.9. During blasting for tunnel, shafts, effluent conveyance system and disinfection facilities in the vicinity of the buildings/ structures	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
	Monitoring of vibration limits shall be conducted and reported as a requirement of EM&A programme	Identified historical buildings/structures as mentioned in Tables 15.8 and 15.9. During blasting for tunnel, shafts, effluent conveyance system and disinfection facilities in the vicinity of the buildings/ structures	√

Remark:

√ Compliance of Mitigation Measures
<> Compliance of Mitigation but need improvement
x Non-compliance of Mitigation Measures
Δ Deficiency of Mitigation Measures but rectified by Gammon Construction Limited
NA Not Applicable

Annex F5 24-hour and 1-hour TSP Monitoring Results

1-hour TSP Monitoring Results

Station AM5

Date	Start Time	Finish Time	Weather	TSP Concentration (µg/m3)	Action Level (µg/m3)	Limit Level (µg/m3)	Site Conditions / Observations / Remarks	Temperature (℃)	Wind Speed (m/s)	Sampler ID	Filter ID
04-Sep-14	9:36	10:36	Sunny	152	332	500	Loading concrete	29	<5	Western Wholesale Food Market	2020
	10:40	11:40	Sunny	190	332	500	Loading concrete	29	<5	Western Wholesale Food Market	2021
	13:00	14:00	Sunny	209	332	500	Loading concrete	29	<5	Western Wholesale Food Market	2022
10-Sep-14	8:00	9:00	Sunny	254	332	500	Loading concrete	30	<5	Western Wholesale Food Market	2024
	15:30	16:30	Sunny	53	332	500	Loading concrete	30	<5	Western Wholesale Food Market	2025
	16:10	17:10	Sunny	55	332	500	Loading concrete	30	<5	Western Wholesale Food Market	2026
17-Sep-14	11:00	12:00	Fine	54	332	500	Loading concrete	28	<5	Western Wholesale Food Market	2028
	13:00	14:00	Fine	50	332	500	Loading concrete	28	<5	Western Wholesale Food Market	2029
	14:10	15:10	Fine	51	332	500	Loading concrete	28	<5	Western Wholesale Food Market	2030
22-Sep-14	13:40	14:40	Sunny	119	332	500	Loading concrete	27	<5	Western Wholesale Food Market	2032
	14:50	15:50	Sunny	210	332	500	Loading concrete	27	<5	Western Wholesale Food Market	2033
	16:00	17:00	Sunny	177	332	500	Loading concrete	27	<5	Western Wholesale Food Market	2034
26-Sep-14	9:20	10:20	Sunny	175	332	500	Loading concrete	28	<5	Western Wholesale Food Market	2036
	10:30	11:30	Sunny	192	332	500	No major construction works	28	<5	Western Wholesale Food Market	2037
	13:00	14:00	Sunny	156	332	500	Loading concrete	28	<5	Western Wholesale Food Market	2038
30-Sep-14	13:00	14:00	Sunny	273	332	500	Loading concrete	30	<5	Western Wholesale Food Market	2040
	14:10	15:10	Sunny	165	332	500	Loading Concrete	30	<5	Western Wholesale Food Market	2041
	15:30	16:30	Sunny	157	332	500	Loading concrete	30	<5	Western Wholesale Food Market	2042
			Min.	**50**							
			Max.	**273**							
			Average	**150**							

* Wind Speed data is presented in the Meteorological Data table

Annex F5 24-hour and 1-hour TSP Monitoring Results

1-hour TSP Monitoring Results

Station AM5

Date	Start Time	Finish Time	Weather	TSP Concentration (µg/m3)	Action Level (µg/m3)	Limit Level (µg/m3)	Site Conditions / Observations / Remarks	Temperature (°C)	Wind Speed (m/s)	Sampler ID	Filter ID
06-Oct-14	13:46	14:46	Sunny	104	332	500	Loading concrete and operation of crane lorry	27	<5	Western Wholesale Food Market	2044
	14:55	15:55	Sunny	118	332	500	Loading concrete and operation of crane lorry	27	<5	Western Wholesale Food Market	2045
	16:00	17:00	Sunny	115	332	500	Construction works inside noise enclosure	27	<5	Western Wholesale Food Market	2046
10-Oct-14	8:00	9:00	Sunny	170	332	500	Loading concrete and operation of crane lorry	27	<5	Western Wholesale Food Market	2048
	9:17	10:17	Sunny	117	332	500	Loading concrete and operation of crane lorry	27	<5	Western Wholesale Food Market	2049
	10:40	11:40	Sunny	121	332	500	Loading concrete and operation of crane lorry	27	<5	Western Wholesale Food Market	2050
16-Oct-14	13:25	14:25	Sunny	133	332	500	Operation of crane lorry	25	<5	Western Wholesale Food Market	2052
	14:40	15:40	Sunny	108	332	500	Operation of crane lorry	25	<5	Western Wholesale Food Market	2053
	16:00	17:00	Sunny	107	332	500	Loading concrete	25	<5	Western Wholesale Food Market	2054
22-Oct-14	9:17	10:17	Sunny	134	332	500	Loading	27	<5	Western Wholesale Food Market	2056
	10:24	11:24	Sunny	132	332	500	Loading	27	<5	Western Wholesale Food Market	2057
	13:00	14:00	Sunny	157	332	500	Loading	27	<5	Western Wholesale Food Market	2058
28-Oct-14	13:00	14:00	Fine	130	332	500	Lifting	25	<5	Western Wholesale Food Market	2060
	14:15	15:15	Fine	121	332	500	Lifting	25	<5	Western Wholesale Food Market	2061
	15:30	16:30	Fine	135	332	500	Lifting	25	<5	Western Wholesale Food Market	2062
			Min.	**104**							
			Max.	**170**							
			Average	**127**							

* Wind Speed data is presented in the Meteorological Data table

Annex F5 24-hour and 1-hour TSP Monitoring Results

1-hour TSP Monitoring Results

Station AM5

Date	Start Time	Finish Time	Weather	TSP Concentration (μg/m3)	Action Level (μg/m3)	Limit Level (μg/m3)	Site Conditions / Observations / Remarks	Temperature (°C)	Wind Speed (m/s)	Sampler ID	Filter ID
03-Nov-14	9:15	10:15	Fine	163	332	500	Demolition of noise enclosure	22	<5	Western Wholesale Food Market	2064
	10:35	11:35	Fine	135	332	500	Demolition of noise enclosure	22	<5	Western Wholesale Food Market	2065
	13:00	14:00	Fine	131	332	500	Demolition of noise enclosure	22	<5	Western Wholesale Food Market	2066
07-Nov-14	8:00	9:00	Cloudy	287	332	500	Demolition of noise enclosure	23	<5	Western Wholesale Food Market	2068
	15:26	16:26	Cloudy	106	332	500	Demolition of noise enclosure	23	<5	Western Wholesale Food Market	2069
	16:36	17:36	Cloudy	116	332	500	Demolition of noise enclosure	23	<5	Western Wholesale Food Market	2070
13-Nov-14	9:37	10:37	Sunny	78	332	500	Demolition of noise enclosure	20	<5	Western Wholesale Food Market	2072
	10:55	11:55	Sunny	53	332	500	Demolition of noise enclosure	20	<5	Western Wholesale Food Market	2073
	13:00	14:00	Sunny	72	332	500	Demolition of noise enclosure	20	<5	Western Wholesale Food Market	2074
19-Nov-14	9:40	10:40	Fine	126	332	500	Demolition of noise enclosure	21	<5	Western Wholesale Food Market	2076
	10:50	11:50	Fine	109	332	500	Demolition of noise enclosure	21	<5	Western Wholesale Food Market	2077
	13:00	14:00	Fine	155	332	500	Demolition of noise enclosure	21	<5	Western Wholesale Food Market	2078
25-Nov-14	13:16	14:16	Fine	73	332	500	Operation of mobile crane, lifting	24	<5	Western Wholesale Food Market	2080
	14:30	15:30	Fine	90	332	500	Operation of mobile crane, lifting	24	<5	Western Wholesale Food Market	2081
	15:40	16:40	Fine	77	332	500	Operation of mobile crane, lifting	24	<5	Western Wholesale Food Market	2082
			Min.	**53**							
			Max.	**287**							
			Average	**118**							

* Wind Speed data is presented in the Meteorological Data table

Annex F5 24-hour and 1-hour TSP Monitoring Results

24-hour TSP Monitoring Results

Station AM5

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m^3/min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	(µg/m^3)	(µg/m^3)	(µg/m^3)		ID	ID
04-Sep-14	14:10	05-Sep-14	14:10	Sunny	2.8062	2.9514	1878.92	1902.92	24.00	1.23	1.23	1.23	82	189	260	Concrete loading	Western Wholesale Food Market	2023
10-Sep-14	17:20	11-Sep-14	17:20	Sunny	2.8055	2.8999	1905.97	1929.97	24.00	1.07	1.07	1.07	62	189	260	Concrete loading	Western Wholesale Food Market	2027
17-Sep-14	15:20	18-Sep-14	15:20	Fine	2.8496	3.0007	1932.97	1956.97	24.00	1.24	1.24	1.24	85	189	260	Concrete loading	Western Wholesale Food Market	2031
22-Sep-14	17:10	23-Sep-14	17:10	Sunny	2.8218	2.9944	1959.97	1983.97	24.00	1.14	1.14	1.14	105	189	260	Concrete loading	Western Wholesale Food Market	2035
26-Sep-14	14:10	27-Sep-14	14:10	Sunny	2.8117	2.9214	1986.97	2010.97	24.00	1.12	1.12	1.12	68	189	260	Concrete loading	Western Wholesale Food Market	2039
30-Sep-14	16:45	01-Oct-14	16:45	Sunny	2.7902	2.9189	2013.97	2037.97	24.00	1.16	1.16	1.16	77	189	260	Concrete loading	Western Wholesale Food Market	2043
												Min.	**62**					
												Max.	**105**					
												Average	**80**					

Annex F5 24-hour and 1-hour TSP Monitoring Results

24-hour TSP Monitoring Results

Station AM5

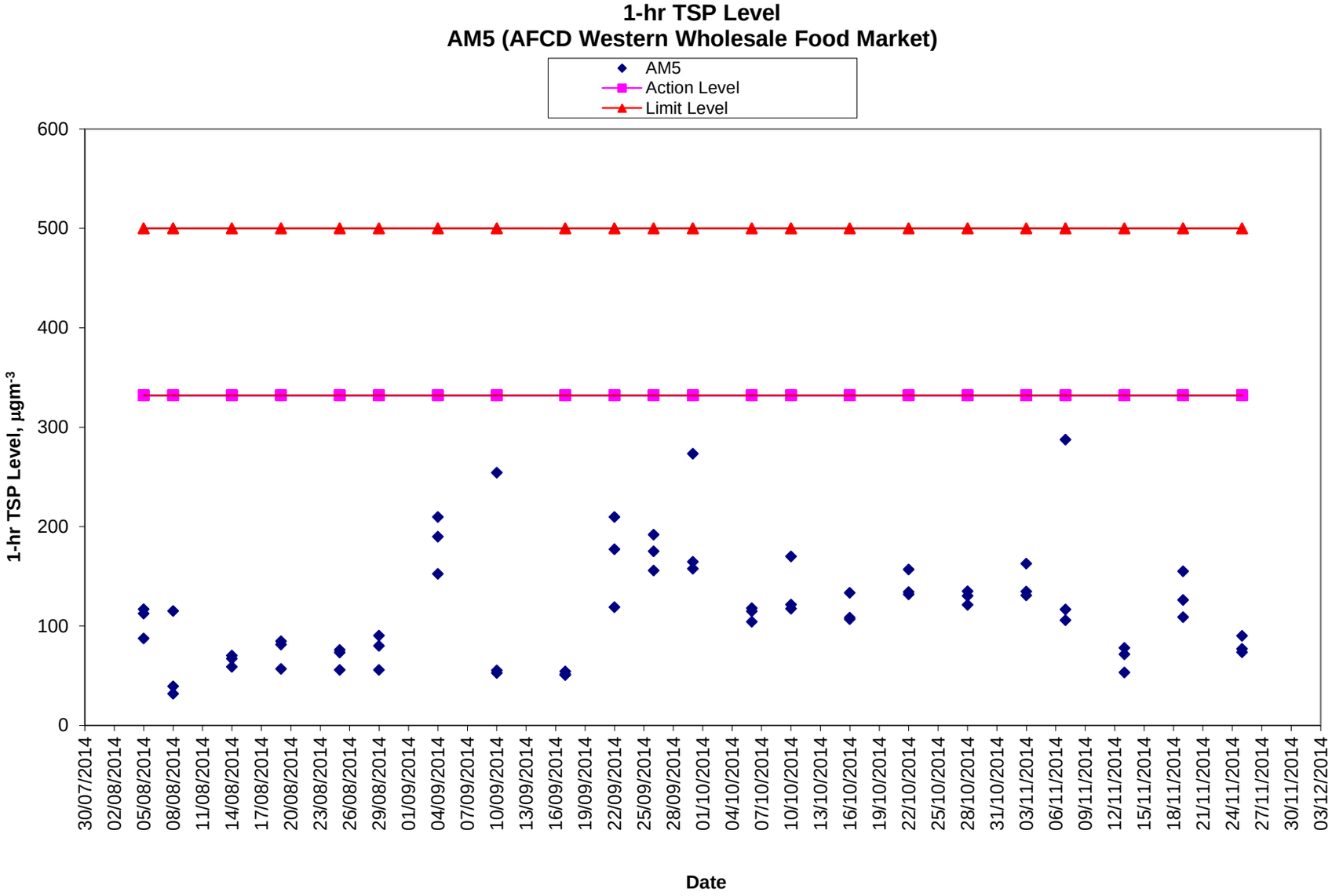
Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m^3/min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	(μg/m^3)	(μg/m^3)	(μg/m^3)		ID	ID
06-Oct-14	17:10	07-Oct-14	17:10	Fine	2.7763	2.9703	2040.98	2064.98	24.00	1.1716	1.1716	1.1716	115.0	189	260	Concrete loading and lifting	Western Wholesale Food Market	2047
10-Oct-14	13:00	11-Oct-14	13:00	Sunny	2.7828	2.9885	2067.98	2091.98	24.00	1.0706	1.0706	1.0706	133.4	189	260	Concrete loading and lifting	Western Wholesale Food Market	2051
16-Oct-14	17:15	17-Oct-14	17:15	Sunny	2.7893	2.9946	2094.98	2118.98	24.00	1.3235	1.3235	1.32347	107.7	189	260	Concrete loading and lifting	Western Wholesale Food Market	2055
22-Oct-14	14:09	23-Oct-14	14:09	Fine	2.8085	3.0159	2121.98	2145.98	24.00	1.1708	1.1708	1.1708	123.0	189	260	Lifting	Western Wholesale Food Market	2059
28-Oct-14	16:45	29-Oct-14	16:45	Fine	2.8093	2.9773	2148.98	2172.98	24.00	1.2741	1.2741	1.2741	91.6	189	260	Lifting	Western Wholesale Food Market	2063
												Min.	**108**					
												Max.	**133**					
												Average	**114**					

Annex F5 24-hour and 1-hour TSP Monitoring Results

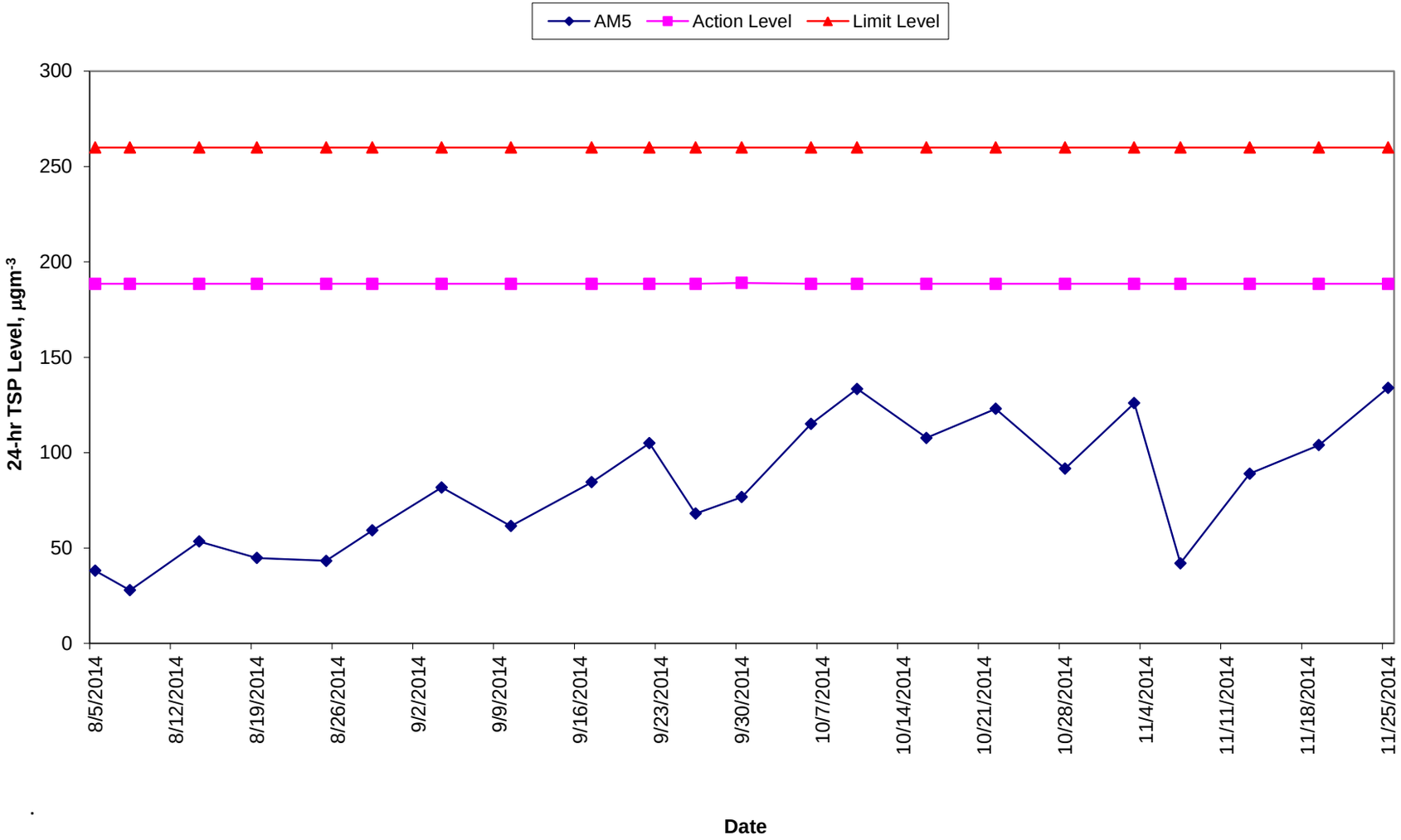
24-hour TSP Monitoring Results

Station AM5

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m^3/min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	(μg/m^3)	(μg/m^3)	(μg/m^3)		ID	ID
03-Nov-14	14:10	04-Nov-14	14:10	Fine	2.7891	2.9953	2175.98	2199.98	24.00	1.1321	1.1321	1.1321	126	189	260	Demolition of noise enclousure	Western Wholesale Food Market	2067
07-Nov-14	17:46	08-Nov-14	17:46	Fine	2.7804	2.851	2203.00	2227.00	24.00	1.0660	1.0660	1.1623	42	189	260	Demolition of noise enclousure	Western Wholesale Food Market	2071
13-Nov-14	15:30	14-Nov-14	15:30	Sunny	2.847	3.0119	2230.00	2254.00	24.00	1.2853	1.2853	1.2853	89	189	260	Demolition of noise enclousure	Western Wholesale Food Market	2075
19-Nov-14	14:10	20-Nov-14	14:10	Fine	2.7956	2.9836	2257.00	2281.00	24.00	1.2593	1.2593	1.2593	104	189	260	Demolition of noise enclousure	Western Wholesale Food Market	2079
25-Nov-14	16:50	26-Nov-14	16:50	Fine	2.811	3.0622	2284.01	2308.01	24.00	1.2977	1.2977	1.2977	134	189	260	operation of mobile, lifting	Western Wholesale Food Market	2083
												Min.	42					
												Max.	134					
												Average	99					


1-hr TSP Level
AM5 (AFCD Western Wholesale Food Market)
AM5
Action Level
Limit Level
1-hr TSP Level, µgm-3
600
500
400
300
200
100
0
30/07/2014
02/08/2014
05/08/2014
08/08/2014
11/08/2014
14/08/2014
17/08/2014
20/08/2014
23/08/2014
26/08/2014
29/08/2014
01/09/2014
04/09/2014
07/09/2014
10/09/2014
13/09/2014
16/09/2014
19/09/2014
22/09/2014
25/09/2014
28/09/2014
01/10/2014
04/10/2014
07/10/2014
10/10/2014
13/10/2014
16/10/2014
19/10/2014
22/10/2014
25/10/2014
28/10/2014
31/10/2014
03/11/2014
06/11/2014
09/11/2014
12/11/2014
15/11/2014
18/11/2014
21/11/2014
24/11/2014
27/11/2014
30/11/2014
03/12/2014
Date

24-hr TSP Level
AM5 (AFCD Western Wholesale Food Market)



Meteorological Data Extracted from the Hong Kong Observatory

		King's Park Station				
Date	Weather	Average Air Temperature (℃)	Average Relative Humidity (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
2014-09-02	Fine	29	59-88	0.0	0-15	NW/W
2014-09-03	Fine	30	56-86	0.0	2-15	NW/W
2014-09-04	Sunny	29	66-87	6.7	0-21	W/SE
2014-09-05	Sunny	29	66-89	Trace	0-15	SE
2014-09-07	Cloudy	30	66-88	0.6	1-23	E/SE
2014-09-08	Sunny	29	72-91	3.0	0-15	SE
2014-09-09	Sunny	30	65-85	0.0	0-15	NW/S
2014-09-10	Sunny	30	59-85	Trace	0-10	NW/S
2014-09-11	Rain	30	60-87	Trace	0-18	SE
2014-09-13	Sunny	29	72-97	6.2	0-17	SE
2014-09-14	Sunny	30	64-92	0.5	0-15	SE
2014-09-16	Cloudy	27	78-96	51.6	5-53	SE
2014-09-17	Fine	28	81-94	7.7	0-20	SE
2014-09-18	Rain	29	68-92	Trace	0-13	NW/W
2014-09-19	Fine	30	64-91	0.3	0-14	NW/W
2014-09-20	Fine	29	56-73	0.0	0-19	NE
2014-09-21	Sunny	27	59-70	0.0	0-15	NE
2014-09-22	Sunny	28	58-76	Trace	0-12	NE
2014-09-23	Fine	28	63-77	0.0	0-9	N
2014-09-25	Sunny	28	66-84	0.0	0-11	S
2014-09-26	Sunny	28	66-84	0.0	0-12	S
2014-09-27	Sunny	29	64-85	0.0	0-14	S
2014-09-28	Fine	29	60-85	0.0	0-12	S
2014-09-30	Sunny	30	61-90	11.4	0-14	SE
2014-10-01	Sunny	28	70-96	26.7	0-23	SE

		Tsing Yi Station				
Date	Weather	Average Air Temperature (℃)	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-09-02	Fine	29	59-88	0.0	0-15	-
2014-09-03	Fine	30	56-86	0.0	0-16	-
2014-09-04	Sunny	28	66-87	6.7	0-35	-
2014-09-05	Sunny	31	66-89	Trace	0-19	-
2014-09-07	Cloudy	30	66-88	0.6	0-20	-
2014-09-08	Sunny	29	72-91	3.0	3-23	-
2014-09-09	Sunny	29	65-85	0.0	0-14	-
2014-09-10	Sunny	29	59-85	Trace	0-15	-
2014-09-11	Rain	30	60-87	Trace	0-18	-
2014-09-13	Sunny	30	72-97	6.2	0-18	-
2014-09-14	Sunny	29	64-92	0.5	0-19	-
2014-09-16	Cloudy	28	78-96	51.6	10-40	-
2014-09-17	Fine	29	81-94	7.7	7-27	-
2014-09-18	Rain	29	68-92	Trace	0-14	-
2014-09-19	Fine	30	64-91	0.3	0-19	-
2014-09-20	Fine	29	56-73	0.0	0-27	-
2014-09-21	Sunny	28	59-70	0.0	0-18	-
2014-09-22	Sunny	27	58-76	Trace	0-13	-
2014-09-23	Fine	27	63-77	0.0	0-15	-
2014-09-25	Sunny	28	66-84	0.0	0-17	-
2014-09-26	Sunny	28	66-84	0.0	0-15	-
2014-09-27	Sunny	28	64-85	0.0	0-15	-
2014-09-28	Fine	28	60-85	0.0	0-14	-
2014-09-30	Sunny	30	61-90	11.4	0-14	-
2014-10-01	Sunny	28	70-96	26.7	0-21	-

		Kai Tak Station				
Date	Weather	Average Air Temperature (℃) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-09-02	Fine	29	59-88	0.0	3-13	SE/W
2014-09-03	Fine	30	56-86	0.0	4-17	W/SW
2014-09-04	Sunny	29	66-87	6.7	0-40	E/W
2014-09-05	Sunny	29	66-89	Trace	0-23	E
2014-09-07	Cloudy	30	66-88	0.6	5-30	E
2014-09-08	Sunny	29	72-91	3.0	4-27	SE
2014-09-09	Sunny	30	65-85	0.0	0-13	SW
2014-09-10	Sunny	30	59-85	Trace	0-18	SE
2014-09-11	Rain	30	60-87	Trace	2-25	E/SE
2014-09-13	Sunny	29	72-97	6.2	4-24	E/SE
2014-09-14	Sunny	30	64-92	0.5	0-19	E/SE
2014-09-16	Cloudy	27	78-96	51.6	24-50	E/SE
2014-09-17	Fine	28	81-94	7.7	10-36	SE
2014-09-18	Rain	29	68-92	Trace	2-20	NW
2014-09-19	Fine	30	64-91	0.3	0-19	S/SW
2014-09-20	Fine	29	56-73	0.0	0-22	NW
2014-09-21	Sunny	27	59-70	0.0	0-26	N
2014-09-22	Sunny	28	58-76	Trace	0-15	NW
2014-09-23	Fine	28	63-77	0.0	0-19	SE
2014-09-25	Sunny	28	66-84	0.0	0-17	SE
2014-09-26	Sunny	28	66-84	0.0	0-17	SE
2014-09-27	Sunny	29	64-85	0.0	0-18	SE
2014-09-28	Fine	29	60-85	0.0	0-18	SE
2014-09-30	Sunny	30	61-90	11.4	0-18	SE
2014-10-01	Sunny	28	70-96	26.7	3-32	SE

		Green Island Station				
Date	Weather	Average Air Temperature (℃) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-09-02	Fine	29	59-88	0.0	0-20	S
2014-09-03	Fine	30	56-86	0.0	0-22	S/SW
2014-09-04	Sunny	29	66-87	6.7	0-49	NE/NW
2014-09-05	Sunny	29	66-89	Trace	3-36	NE
2014-09-07	Cloudy	30	66-88	0.6	12-48	NE
2014-09-08	Sunny	29	72-91	3.0	8-39	S
2014-09-09	Sunny	30	65-85	0.0	6-23	S
2014-09-10	Sunny	30	59-85	Trace	0-22	S
2014-09-11	Rain	30	60-87	Trace	0-45	NE
2014-09-13	Sunny	29	72-97	6.2	4-42	S/NE
2014-09-14	Sunny	30	64-92	0.5	0-25	NE
2014-09-16	Cloudy	27	78-96	51.6	29-83	E/SE
2014-09-17	Fine	28	81-94	7.7	10-44	SE
2014-09-18	Rain	29	68-92	Trace	2-20	S
2014-09-19	Fine	30	64-91	0.3	0-25	NW
2014-09-20	Fine	29	56-73	0.0	7-36	N/NW
2014-09-21	Sunny	27	59-70	0.0	17-33	N/NE
2014-09-22	Sunny	28	58-76	Trace	3-32	N/NW
2014-09-23	Fine	28	63-77	0.0	0-21	S
2014-09-25	Sunny	28	66-84	0.0	0-23	S/SE
2014-09-26	Sunny	28	66-84	0.0	0-27	E
2014-09-27	Sunny	29	64-85	0.0	0-30	S/SE
2014-09-28	Fine	29	60-85	0.0	0-26	S
2014-09-30	Sunny	30	61-90	11.4	0-27	S
2014-10-01	Sunny	28	70-96	26.7	5-55	SE

* King's Park's data
\- Data was not available
\# less than 24 hourly observations per day

Meteorological Data Extracted from the Hong Kong Observatory

Date	Weather	King's Park Station				
		Average Air Temperature (°C)	Average Relative Humidity (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
2014-10-03	Sunny	28	76-92	23.7	0-21	SE
2014-10-04	Sunny	27	75-96	2.6	0-15	SE/E
2014-10-06	Sunny	27	47-78	0.0	1-20	E
2014-10-07	Sunny	26	54-72	Trace	0-18	SE/E
2014-10-08	Sunny	26	48-73	0.0	0-17	S/SE
2014-10-09	Sunny	27	48-71	0.0	0-14	N
2014-10-11	Sunny	28	49-72	0.0	0-15	E
2014-10-12	Sunny	27	42-79	0.0	0-20	NE
2014-10-14	Sunny	26	51-71	Trace	0-18	E/NE
2014-10-15	Sunny	25	56-74	0.0	0-20	SE
2014-10-17	Sunny	25	53-74	0.0	4-21	SE
2014-10-18	Sunny	25	51-78	0.0	1-20	SE/E
2014-10-20	Sunny	27	66-83	0.0	0-12	SE
2014-10-21	Sunny	27	50-84	Trace	0-11	NW/W
2014-10-23	Fine	24	75-95	0.2	1-18	SE/E
2014-10-24	Fine	24	70-80	0.0	3-16	SE/E
2014-10-25	Cloudy	25	76-83	0.0	1-18	SE
2014-10-26	Sunny	26	68-87	0.1	0-14	SE/E
2014-10-28	Sunny	25	59-78	Trace	6-24	SE/E
2014-10-29	Fine	25	62-82	Trace	1-22	SE
2014-10-30	Fine	26	70-86	0.0	1-18	E
2014-10-31	Sunny	26	70-87	0.0	0-14	N
2014-11-01	Sunny	26	70-86	0.0	0-13	SE/E

Date	Weather	Tsing Yi Station				
		Average Air Temperature (°C)	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-10-03	Sunny	27	76-92	23.7	0-21	-
2014-10-04	Sunny	27	75-96	2.6	0-20	-
2014-10-06	Sunny	27	47-78	0.0	0-14	-
2014-10-07	Sunny	27	54-72	Trace	0-18	-
2014-10-08	Sunny	26	48-73	0.0	0-13	-
2014-10-09	Sunny	26	48-71	0.0	0-14	N
2014-10-11	Sunny	28	49-72	0.0	0-12	SE/E
2014-10-12	Sunny	27	42-79	0.0	0-20	N/NW
2014-10-14	Sunny	26	51-71	Trace	1-15	N
2014-10-15	Sunny	25	56-74	0.0	0-17	E
2014-10-17	Sunny	26	53-74	0.0	3-20	SE/E
2014-10-18	Sunny	26	51-78	0.0	3-21	SE/E
2014-10-20	Sunny	28	66-83	0.0	1-18	SE/E
2014-10-21	Sunny	27	50-84	Trace	0-12	S/SE
2014-10-23	Fine	25	75-95	0.2	1-12	SE/E
2014-10-24	Fine	25	70-80	0.0	0-17	E
2014-10-25	Cloudy	26	76-83	0.0	1-15	SE/E
2014-10-26	Sunny	27	68-87	0.1	0-15	E
2014-10-28	Sunny	26	59-78	Trace	6-24	SE/E
2014-10-29	Fine	27	62-82	Trace	6-23	SE/E
2014-10-30	Fine	27	70-86	0.0	2-17	E/NE
2014-10-31	Sunny	26	70-87	0.0	0-15	NE
2014-11-01	Sunny	26	70-86	0.0	0-13	E

Date	Weather	Kai Tak Station				
		Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-10-03	Sunny	28	76-92	23.7	0-23	SE
2014-10-04	Sunny	27	75-96	2.6	0-21	E
2014-10-06	Sunny	27	47-78	0.0	2-23	E
2014-10-07	Sunny	26	54-72	Trace	3-26	E
2014-10-08	Sunny	26	48-73	0.0	2-16	N/NE
2014-10-09	Sunny	27	48-71	0.0	0-18	SE
2014-10-11	Sunny	28	49-72	0.0	0-16	SE/E
2014-10-12	Sunny	27	42-79	0.0	1-21	N
2014-10-14	Sunny	26	51-71	Trace	3-19	NE
2014-10-15	Sunny	25	56-74	0.0	0-19	E
2014-10-17	Sunny	25	53-74	0.0	9-25	E
2014-10-18	Sunny	25	51-78	0.0	5-24	E/NE
2014-10-20	Sunny	27	66-83	0.0	0-19	SE/E
2014-10-21	Sunny	27	50-84	Trace	0-15	SE
2014-10-23	Fine	24	75-95	0.2	9-25	E
2014-10-24	Fine	24	70-80	0.0	3-21	SE/E
2014-10-25	Cloudy	25	76-83	0.0	6-22	E
2014-10-26	Sunny	26	68-87	0.1	3-17	S/SE
2014-10-28	Sunny	25	59-78	Trace	12-30	E
2014-10-29	Fine	25	62-82	Trace	7-29	E
2014-10-30	Fine	26	70-86	0.0	6-24	E/NE
2014-10-31	Sunny	26	70-87	0.0	5-19	-
2014-11-01	Sunny	26	70-86	0.0	0-20	SE

Date	Weather	Green Island Station				
		Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-10-03	Sunny	28	76-92	23.7	0-40	E/NE
2014-10-04	Sunny	27	75-96	2.6	2-27	E
2014-10-06	Sunny	27	47-78	0.0	12-42	NE
2014-10-07	Sunny	26	54-72	Trace	10-45	E/NE
2014-10-08	Sunny	26	48-73	0.0	6-37	NE
2014-10-09	Sunny	27	48-71	0.0	0-22	SW
2014-10-11	Sunny	28	49-72	0.0	0-35	S
2014-10-12	Sunny	27	42-79	0.0	0-41	NE/N
2014-10-14	Sunny	26	51-71	Trace	2-39	NE/N
2014-10-15	Sunny	25	56-74	0.0	6-29	E/NE
2014-10-17	Sunny	25	53-74	0.0	5-43	E/NE
2014-10-18	Sunny	25	51-78	0.0	8-37	E/NE
2014-10-20	Sunny	27	66-83	0.0	0-33	NE
2014-10-21	Sunny	27	50-84	Trace	0-21	NW/W
2014-10-23	Fine	24	75-95	0.2	5-46	NE
2014-10-24	Fine	24	70-80	0.0	12-39	NE
2014-10-25	Cloudy	25	76-83	0.0	14-33	NE
2014-10-26	Sunny	26	68-87	0.1	0-33	NE
2014-10-28	Sunny	25	59-78	Trace	28-65	NE
2014-10-29	Fine	25	62-82	Trace	15-52	NE
2014-10-30	Fine	26	70-86	0.0	6-47	NE
2014-10-31	Sunny	26	70-87	0.0	0-33	E/NE
2014-11-01	Sunny	26	70-86	0.0	0-27	SE

* King's Park's data
\- Data was not available
\# less than 24 hourly observations per day

Meteorological Data Extracted from the Hong Kong Observatory

Date	Weather	King's Park Station				
		Average Air Temperature (°C)	Average Relative Humidity (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
2014-11-02	Sunny	25	61-85	Trace	0-15	NE
2014-11-04	Cloudy	22	72-81	Trace	0-15	SE/E
2014-11-05	Cloudy	24	74-81	Trace	2-16	SE/E
2014-11-06	Sunny	24	74-87	0.1	0-14	SE/E
2014-11-07	Sunny	23	82-97	11.8	0-18	SE
2014-11-09	Cloudy	22	75-86	Trace	0-19	SE
2014-11-10	Cloudy	24	72-84	Trace	0-20	SE/E
2014-11-11	Cloudy	24	76-85	0.0	0-15	SE/E
2014-11-12	Cloudy	25	74-88	Trace	0-13	E/NE
2014-11-13	Cloudy	19	72-88	Trace	0-17	NE/N
2014-11-15	Sunny	22	65-85	0.4	0-19	-
2014-11-16	Sunny	23	61-85	0.0	0-14	NE/N
2014-11-18	Sunny	21	57-72	Trace	0-16	NE
2014-11-19	Sunny	22	58-78	Trace	0-12	SE/E
2014-11-21	Sunny	23	62-83	0.0	0-18	SE/E
2014-11-22	Sunny	23	68-88	0.0	0-19	SE/E
2014-11-23	Sunny	23	70-88	0.0	2-18	SE
2014-11-24	Sunny	24	67-88	0.0	0-14	SE
2014-11-25	Sunny	24	65-92	0.0	0-12	N
2014-11-27	Fine	22	77-90	0.4	0-18	SE/E
2014-11-28	Cloudy	24	75-88	Trace	0-13	SE
2014-11-29	Cloudy	23	78-94	0.2	0-19	SE/E
2014-11-30	Sunny	25	82-96	0.2	0-12	SE

Date	Weather	Tsing Yi Station				
		Average Air Temperature (°C)	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-11-02	Sunny	26	61-85	Trace	1-18	N
2014-11-04	Cloudy	23	72-81	Trace	0-14	E
2014-11-05	Cloudy	25	74-81	Trace	4-16	E
2014-11-06	Sunny	24	74-87	0.1	1-11	SE/E
2014-11-07	Sunny	24	82-97	11.8	0-21	NE/E
2014-11-09	Cloudy	22	75-86	Trace	0-18	NE
2014-11-10	Cloudy	24	72-84	Trace	0-14	NW
2014-11-11	Cloudy	25	76-85	0.0	0-15	N
2014-11-12	Cloudy	22	74-88	Trace	0-20	NW
2014-11-13	Cloudy	20	72-88	Trace	0-13	NW
2014-11-15	Sunny	23	65-85	0.4	2-23	E
2014-11-16	Sunny	23	61-85	0.0	0-14	N
2014-11-18	Sunny	21	57-72	Trace	0-15	SE/E
2014-11-19	Sunny	22	58-78	Trace	1-14	NE/E
2014-11-21	Sunny	24	62-83	0.0	0-18	NE/E
2014-11-22	Sunny	23	68-88	0.0	0-19	-
2014-11-23	Sunny	25	70-88	0.0	1-23	E
2014-11-24	Sunny	25	67-88	0.0	0-15	-
2014-11-25	Sunny	24	65-92	0.0	0-12	NW
2014-11-27	Fine	23	77-90	0.4	3-18	E
2014-11-28	Cloudy	25	75-88	Trace	0-15	SE/E
2014-11-29	Cloudy	25	78-94	0.2	3-21	E
2014-11-30	Sunny	26	82-96	0.2	0-12	W

Date	Weather	Kai Tak Station				
		Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-11-02	Sunny	25	61-85	Trace	3-21	N/NW
2014-11-04	Cloudy	22	72-81	Trace	3-21	E
2014-11-05	Cloudy	24	74-81	Trace	4-22	SE/E
2014-11-06	Sunny	24	74-87	0.1	0-21	E
2014-11-07	Sunny	23	82-97	11.8	8-26	E
2014-11-09	Cloudy	22	75-86	Trace	0-24	E
2014-11-10	Cloudy	24	72-84	Trace	4-25	E
2014-11-11	Cloudy	24	76-85	0.0	0-21	N/NW
2014-11-12	Cloudy	25	74-88	Trace	0-15	SW/S
2014-11-13	Cloudy	19	72-88	Trace	0-18	E
2014-11-15	Sunny	22	65-85	0.4	2-25	SE/E
2014-11-16	Sunny	23	61-85	0.0	0-20	E
2014-11-18	Sunny	21	57-72	Trace	3-18	NE
2014-11-19	Sunny	22	58-78	Trace	4-18	E
2014-11-21	Sunny	23	62-83	0.0	0-22	NE/N
2014-11-22	Sunny	23	68-88	0.0	0-26	SE/E
2014-11-23	Sunny	23	70-88	0.0	5-24	E
2014-11-24	Sunny	24	67-88	0.0	0-21	SE
2014-11-25	Sunny	24	65-92	0.0	0-14	SW/W
2014-11-27	Fine	22	77-90	0.4	3-24	SE/E
2014-11-28	Cloudy	24	75-88	Trace	3-18	SE/E
2014-11-29	Cloudy	23	78-94	0.2	6-19	SE/E
2014-11-30	Sunny	25	82-96	0.2	4-19	SE/E

Date	Weather	Green Island Station				
		Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-11-02	Sunny	25	61-85	Trace	11-38	NE/N
2014-11-04	Cloudy	22	72-81	Trace	5-37	NE
2014-11-05	Cloudy	24	74-81	Trace	2-36	NE
2014-11-06	Sunny	24	74-87	0.1	0-35	NE
2014-11-07	Sunny	23	82-97	11.8	24-50	NE
2014-11-09	Cloudy	22	75-86	Trace	17-45	NE/N
2014-11-10	Cloudy	24	72-84	Trace	5-45	NE
2014-11-11	Cloudy	24	76-85	0.0	12-41	NE
2014-11-12	Cloudy	25	74-88	Trace	11-35	NE/N
2014-11-13	Cloudy	19	72-88	Trace	16-35	N
2014-11-15	Sunny	22	65-85	0.4	15-57	NE
2014-11-16	Sunny	23	61-85	0.0	0-32	NE/N
2014-11-18	Sunny	21	57-72	Trace	2-39	NE/N
2014-11-19	Sunny	22	58-78	Trace	0-31	NE
2014-11-21	Sunny	23	62-83	0.0	0-40	NE
2014-11-22	Sunny	23	68-88	0.0	6-46	NE
2014-11-23	Sunny	23	70-88	0.0	-	-
2014-11-24	Sunny	24	67-88	0.0	0-40	NE
2014-11-25	Sunny	24	65-92	0.0	0-20	NW
2014-11-27	Fine	22	77-90	0.4	13-45	NE
2014-11-28	Cloudy	24	75-88	Trace	2-40	NE
2014-11-29	Cloudy	23	78-94	0.2	20-41	NE
2014-11-30	Sunny	25	82-96	0.2	1-31	NE

* King's Park's data
\- Data was not available
\# less than 24 hourly observations per day

Annex F6 Noise Monitoring Results

Daytime Noise Monitoring Results

Station NM4

Date	Start Time	End Time	Weather	Noise level (dB(A)), 30 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (℃)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
2-Sep-14	14:06	14:36	Sunny	67	69	66	-	Traffic Noise	-	29	0.2	RION- NL52 (S/N 00131627)	RION-NL73 (S/N 10997142)
8-Sep-14	13:05	13:35	Sunny	67	69	66	-	Traffic Noise	-	29	0.3	RION- NL52 (S/N 00131627)	RION-NL73 (S/N 10997142)
19-Sep-14	9:22	9:52	Fine	66	69	68	-	Traffic Noise	-	30	0.5	RION- NL52 (S/N 00131627)	RION-NL73 (S/N 10997142)
25-Sep-14	10:26	10:56	Sunny	66	69	67	-	Traffic Noise	-	28	0.3	RION- NL52 (S/N 00131627)	RION-NL73 (S/N 10997142)
30-Sep-14	13:12	13:42	Sunny	65	66	67	-	Traffic Noise	-	30	0.3	RION- NL52 (S/N 00131627)	RION-NL73 (S/N 10997142)
			Min.	**65**									
			Max.	**67**									

Annex F6 Noise Monitoring Results

Daytime Noise Monitoring Results

Station NM4

Date	Start Time	End Time	Weather	Noise level (dB(A)), 30 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
06-Oct-14	9:22	9:52	Sunny	67	69	66	-	Traffic Noise	-	28	0.5	RION- NL52 (S/N 00131627)	RION-NL73 (S/N 10997142)
17-Oct-14	14:15	14:45	Sunny	67	69	66	-	Traffic Noise	-	27	0.3	RION- NL52 (S/N 00131627)	RION-NL73 (S/N 10997142)
23-Oct-14	14:25	14:55	Fine	67	68	65	-	Traffic Noise	-	27	0.3	RION- NL52 (S/N 00131627)	RION-NL73 (S/N 10997142)
29-Oct-14	10:25	10:55	Fine	67	69	66	-	Traffic Noise	-	28	0.3	RION- NL52 (S/N 00131627)	RION-NL73 (S/N 10997142)
			Min.	**67**									
			Max.	**67**									

Annex F6 Noise Monitoring Results

Daytime Noise Monitoring Results

Station NM4

Date	Start Time	End Time	Weather	Noise level (dB(A)), 30 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
04-Nov-14	10:22	10:52	Cloudy	67	68	66	Concreting work	Traffic Noise	-	22	0.3	RION- NL52 (S/N 00131627)	RION-NL73 (S/N 10997142)
10-Nov-14	14:05	14:35	Cloudy	67	68	65	Demolition from nearby site	Traffic Noise	-	24	0.3	RION- NL52 (S/N 00131627)	RION-NL73 (S/N 10997142)
21-Nov-14	14:55	15:25	Sunny	68	69	66	Demolition	Traffic Noise	-	23	0.3	RION- NL52 (S/N 00131627)	RION-NL73 (S/N 10997142)
27-Nov-14	14:10	14:40	Fine	67	69	66	Demolition from nearby site	Traffic Noise	-	22	0.3	RION- NL52 (S/N 00131627)	RION-NL73 (S/N 10997142)
			Min.	**67**									
			Max.	**68**									

Annex F6 Noise Monitoring Results

Restricted Hours Noise Monitoring Results

Station NM4

Date	Start Time	End Time	Weather	Noise level (dB(A)), 5 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (℃)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
9-Sep-14	21:11	21:16	Fine	66	68	64	-	Traffic noise	-	#REF!	0.3	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
	21:16	21:21	Fine	65	67	63			-				
	21:21	21:26	Fine	65	66	63			-				
	21:11	21:26	Fine	65	67	63			-				
14-Sep-14	11:32	11:37	Sunny	67	68	64	-	Traffic noise	-	#REF!	0.3	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
	11:37	11:42	Sunny	67	68	64			-				
	11:42	11:47	Sunny	67	68	63			-				
	11:32	11:47	Sunny	67	68	64			-				
23-Sep-14	22:12	22:17	Fine	66	68	68	-	Traffic noise	-	#REF!	0.2	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
	22:17	22:22	Fine	65	66	63			-				
	22:22	22:27	Fine	64	66	63			-				
	22:12	22:27	Fine	65	67	63			-				
28-Sep-14	18:40	18:45	Fine	64	66	62	-	Traffic noise	-	#REF!	0.5	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
	18:45	18:50	Fine	64	66	32			-				
	18:50	18:55	Fine	64	66	62			-				
	18:40	18:55	Fine	64	66	62			-				
			Min.	**64**									
			Max.	**67**									

Annex F6 Noise Monitoring Results

Restricted Hours Noise Monitoring Results

Station NM4

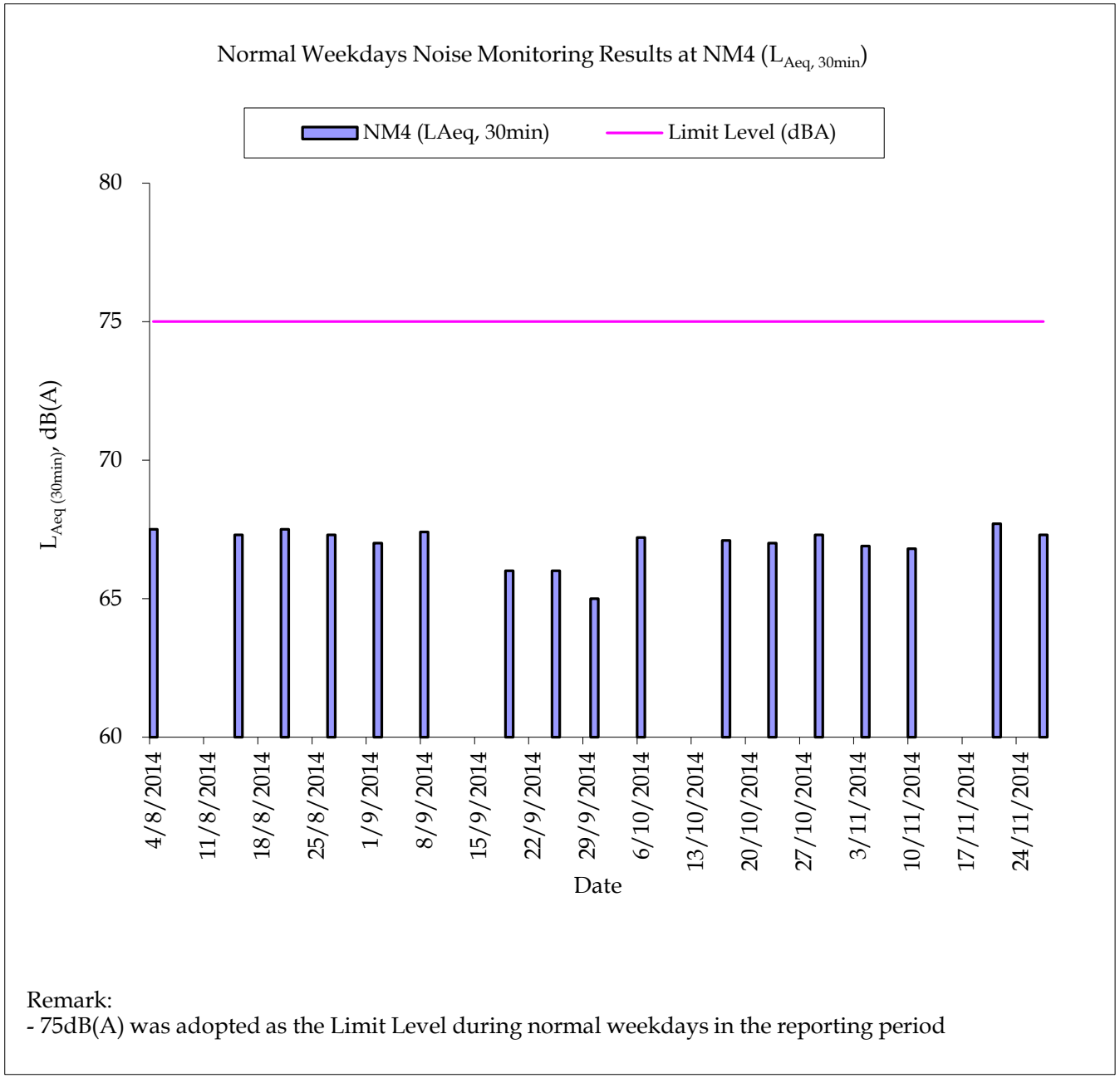
Date	Start Time	End Time	Weather	Noise level (dB(A)), 5 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
07-Oct-14	20:45	20:50	Fine	65	67	62	-	Traffic noise	-	31	0.5	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
	20:50	20:55	Fine	64	66	62			-				
	20:55	21:00	Fine	64	66	63			-				
	20:45	21:00	Fine	65	68	62			-				
12-Oct-14	11:42	11:47	Sunny	65	67	64	-	Traffic noise	-	27	0.5	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
	11:47	11:52	Sunny	66	66	63			-				
	11:52	11:57	Sunny	66	68	63			-				
	11:42	11:57	Sunny	66	67	63			-				
21-Oct-14	20:09	20:14	Fine	66	67	64			-	27	0.3	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
	20:14	20:19	Fine	65	67	62			-				
	20:19	20:24	Fine	66	68	64			-				
	20:09	20:24	Fine	66	67	64			-				
26-Oct-14	11:28	11:33	Sunny	66	67	64			-	26	0.3	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
	11:33	11:38	Sunny	66	68	64			-				
	11:38	11:43	Sunny	67	69	64			-				
	11:28	11:43	Sunny	66	68	64			-				
			Min.	**64**									
			Max.	**67**									

Annex F6 Noise Monitoring Results

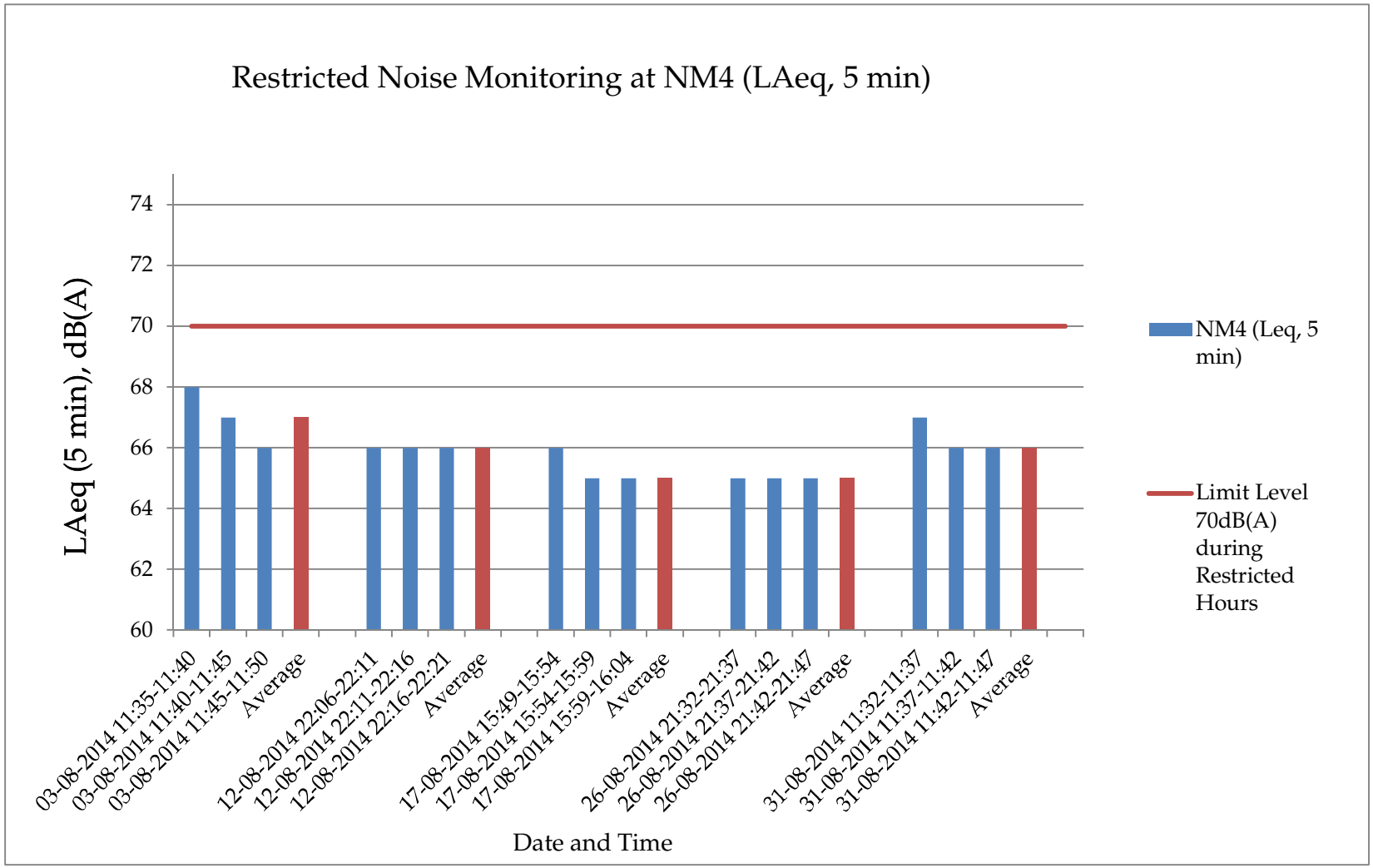
Restricted Hours Noise Monitoring Results

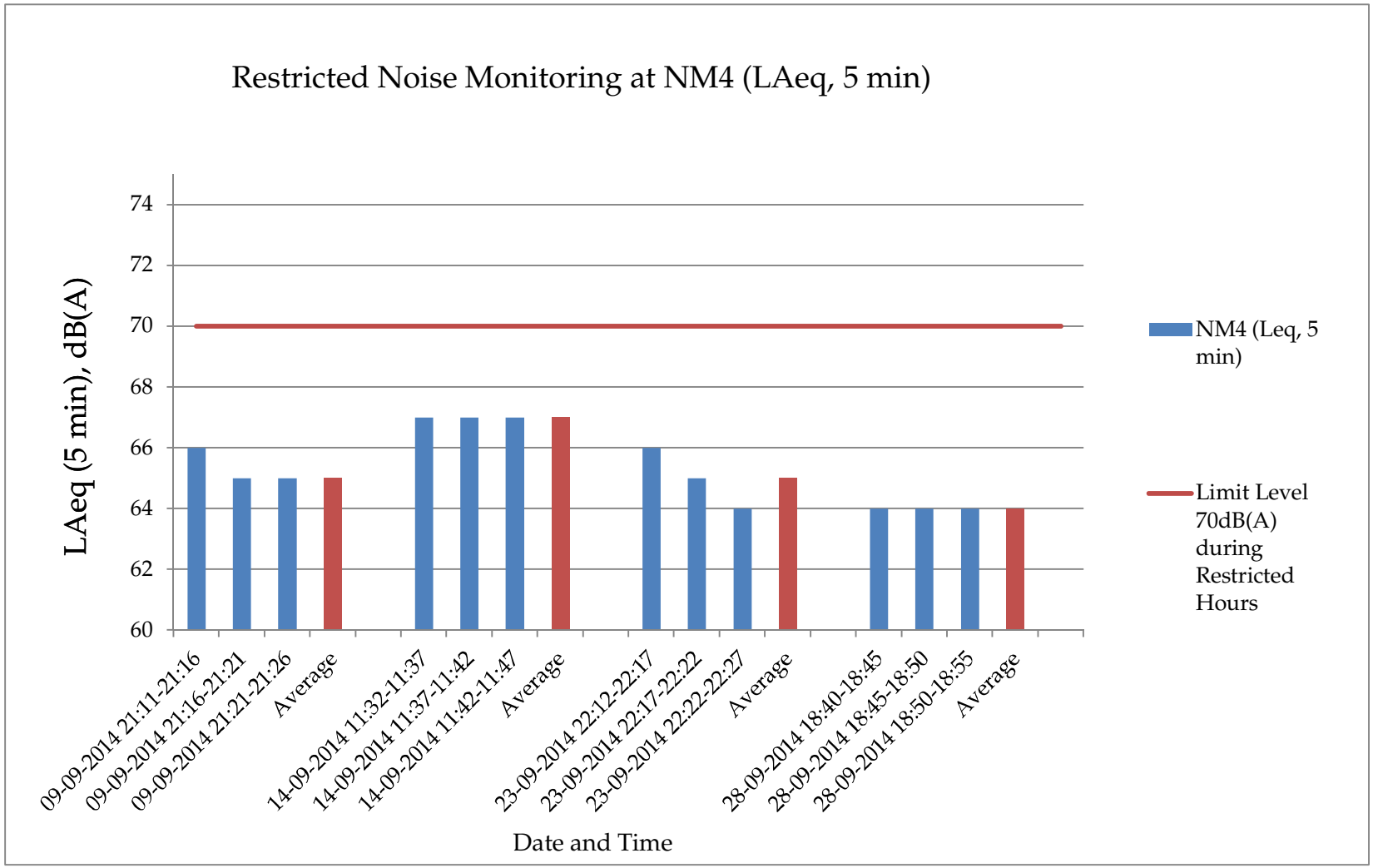
Station NM4

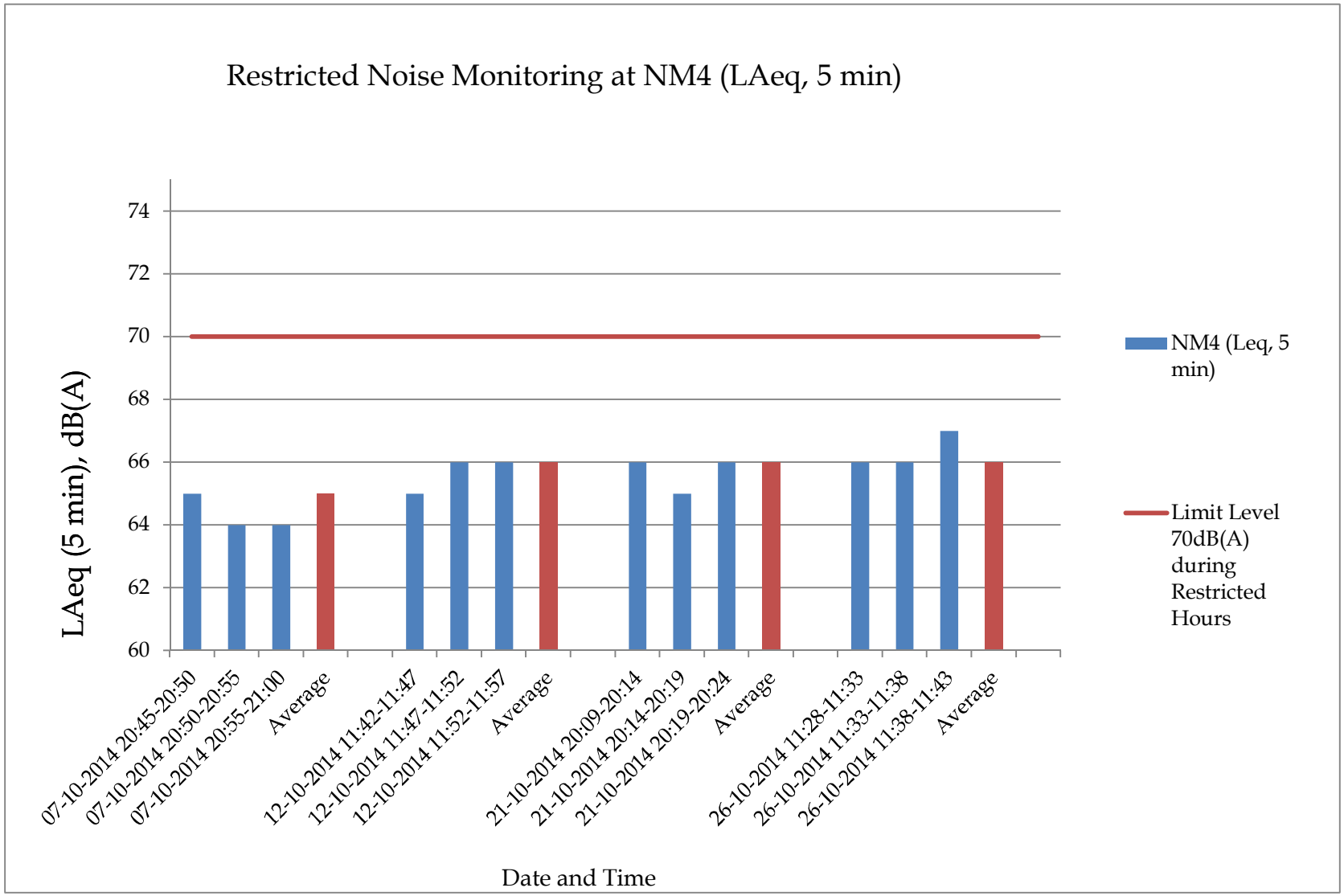
Date	Start Time	End Time	Weather	Noise level (dB(A)), 5 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
04-Nov-14	19:22	19:27	Fine	65	67	62	-	Traffic noise	-	22	0.3	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
	19:27	19:32	Fine	64	66	63			-				
	19:32	19:37	Fine	64	66	62			-				
	19:22	19:37	Fine	64	66	62			-				
09-Nov-14	10:20	10:25	Cloudy	65	67	63	-	Traffic noise	-	22	0.3	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
	10:25	10:30	Cloudy	67	68	63			-				
	10:30	10:35	Cloudy	65	67	63			-				
	10:20	10:35	Cloudy	66	67	63			-				
18-Nov-14	19:38	19:43	Fine	66	68	64	-	Traffic noise	-	21	0.3	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
	19:43	19:48	Fine	66	68	64			-				
	19:48	19:53	Fine	66	68	64			-				
	19:38	19:53	Fine	66	68	64			-				
23-Nov-14	17:39	17:44	Sunny	66	68	63	-	Traffic noise	-	23	0.3	RION- NL52 (S/N 00131627)	RION - NC73 (S/N 10997142)
	17:44	17:49	Sunny	65	67	63			-				
	17:49	17:54	Sunny	66	68	64			-				
	17:39	17:54	Sunny	66	67	63			-				
			Min.	**64**									
			Max.	**67**									

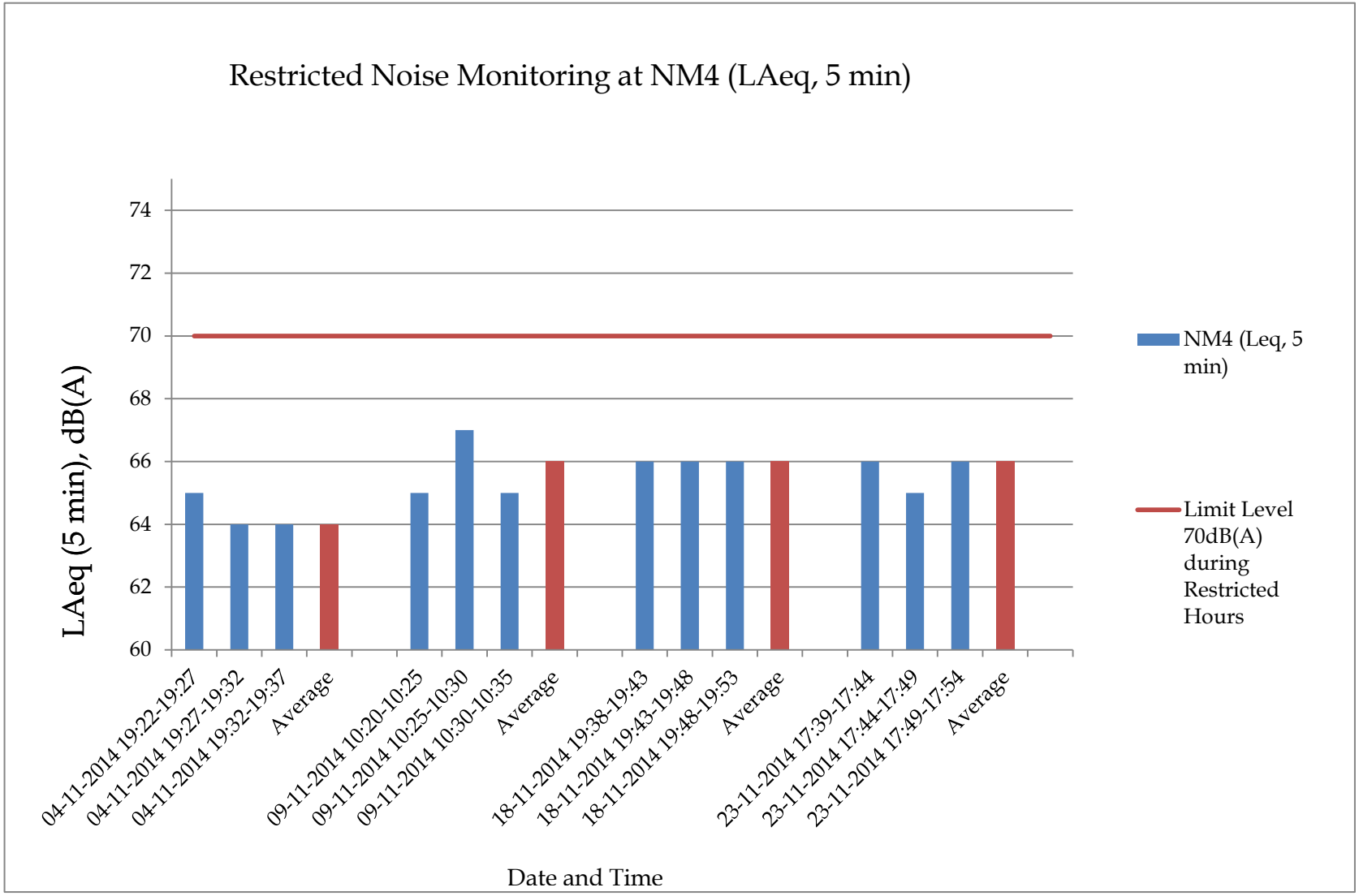


Remark:
- 75dB(A) was adopted as the Limit Level during normal weekdays in the reporting period


Restricted Noise Monitoring at NM4 (LAeq, 5 min)
LAeq (5 min), dB(A)
74
72
70
68
66
64
62
60
03-08-2014 11:35-11:40
03-08-2014 11:40-11:45
03-08-2014 11:45-11:50
Average
12-08-2014 22:06-22:11
12-08-2014 22:11-22:16
12-08-2014 22:16-22:21
Average
17-08-2014 15:49-15:54
17-08-2014 15:54-15:59
17-08-2014 15:59-16:04
Average
26-08-2014 21:32-21:37
26-08-2014 21:37-21:42
26-08-2014 21:42-21:47
Average
31-08-2014 11:32-11:37
31-08-2014 11:37-11:42
31-08-2014 11:42-11:47
Average
Date and Time
NM4 (Leq, 5 min)
Limit Level 70dB(A) during Restricted Hours


Restricted Noise Monitoring at NM4 (LAeq, 5 min)
LAeq (5 min), dB(A)
74
72
70
68
66
64
62
60
09-09-2014 21:11-21:16
09-09-2014 21:16-21:21
09-09-2014 21:21-21:26
Average
14-09-2014 11:32-11:37
14-09-2014 11:37-11:42
14-09-2014 11:42-11:47
Average
23-09-2014 22:12-22:17
23-09-2014 22:17-22:22
23-09-2014 22:22-22:27
Average
28-09-2014 18:40-18:45
28-09-2014 18:45-18:50
28-09-2014 18:50-18:55
Average
Date and Time
NM4 (Leq, 5 min)
Limit Level 70dB(A) during Restricted Hours


Restricted Noise Monitoring at NM4 (LAeq, 5 min)
LAeq (5 min), dB(A)
74
72
70
68
66
64
62
60
07-10-2014 20:45-20:50
07-10-2014 20:50-20:55
07-10-2014 20:55-21:00
Average
12-10-2014 11:42-11:47
12-10-2014 11:47-11:52
12-10-2014 11:52-11:57
Average
21-10-2014 20:09-20:14
21-10-2014 20:14-20:19
21-10-2014 20:19-20:24
Average
26-10-2014 11:28-11:33
26-10-2014 11:33-11:38
26-10-2014 11:38-11:43
Average
Date and Time
NM4 (Leq, 5 min)
Limit Level 70dB(A) during Restricted Hours


Restricted Noise Monitoring at NM4 (LAeq, 5 min)
LAeq (5 min), dB(A)
74
72
70
68
66
64
62
60
04-11-2014 19:22-19:27
04-11-2014 19:27-19:32
04-11-2014 19:32-19:37
Average
09-11-2014 10:20-10:25
09-11-2014 10:25-10:30
09-11-2014 10:30-10:35
Average
18-11-2014 19:38-19:43
18-11-2014 19:43-19:48
18-11-2014 19:48-19:53
Average
23-11-2014 17:39-17:44
23-11-2014 17:44-17:49
23-11-2014 17:49-17:54
Average
Date and Time
NM4 (Leq, 5 min)
Limit Level 70dB(A) during Restricted Hours

Annex F7 Cumulative Complaint and Summons/Prosecutions Log

Reporting Month	Number of Complaints in Reporting Month	Number of Summons/Prosecutions in Reporting Month
December 2009	0	0
January 2010	0	0
February 2010	1	0
March 2010	0	0
April 2010	1	0
May 2010	2	0
June 2010	0	0
July 2010	1	0
August 2010	0	0
September 2010	0	0
October 2010	0	0
November 2010	0	0
December 2010	0	0
January 2011	0	0
February 2011	0	0
March 2011	0	0
April 2011	0	0
May 2011	0	0

Annex F7 Cumulative Complaint and Summons/Prosecutions Log

Reporting Month	Number of Complaints in Reporting Month	Number of Summons/Prosecutions in Reporting Month
June 2011	0	0
July 2011	0	0
August 2011	0	0
September 2011	0	0
October 2011	0	0
November 2011	0	0
December 2011	0	0
January 2012	0	0
February 2012	0	0
March 2012	0	0
April 2012	1	0
May 2012	0	0
June 2012	0	0
July 2012	0	0
August 2012	0	0
September 2012	0	0
October 2012	0	0
November 2012	0	0

Annex F7 Cumulative Complaint and Summons/Prosecutions Log

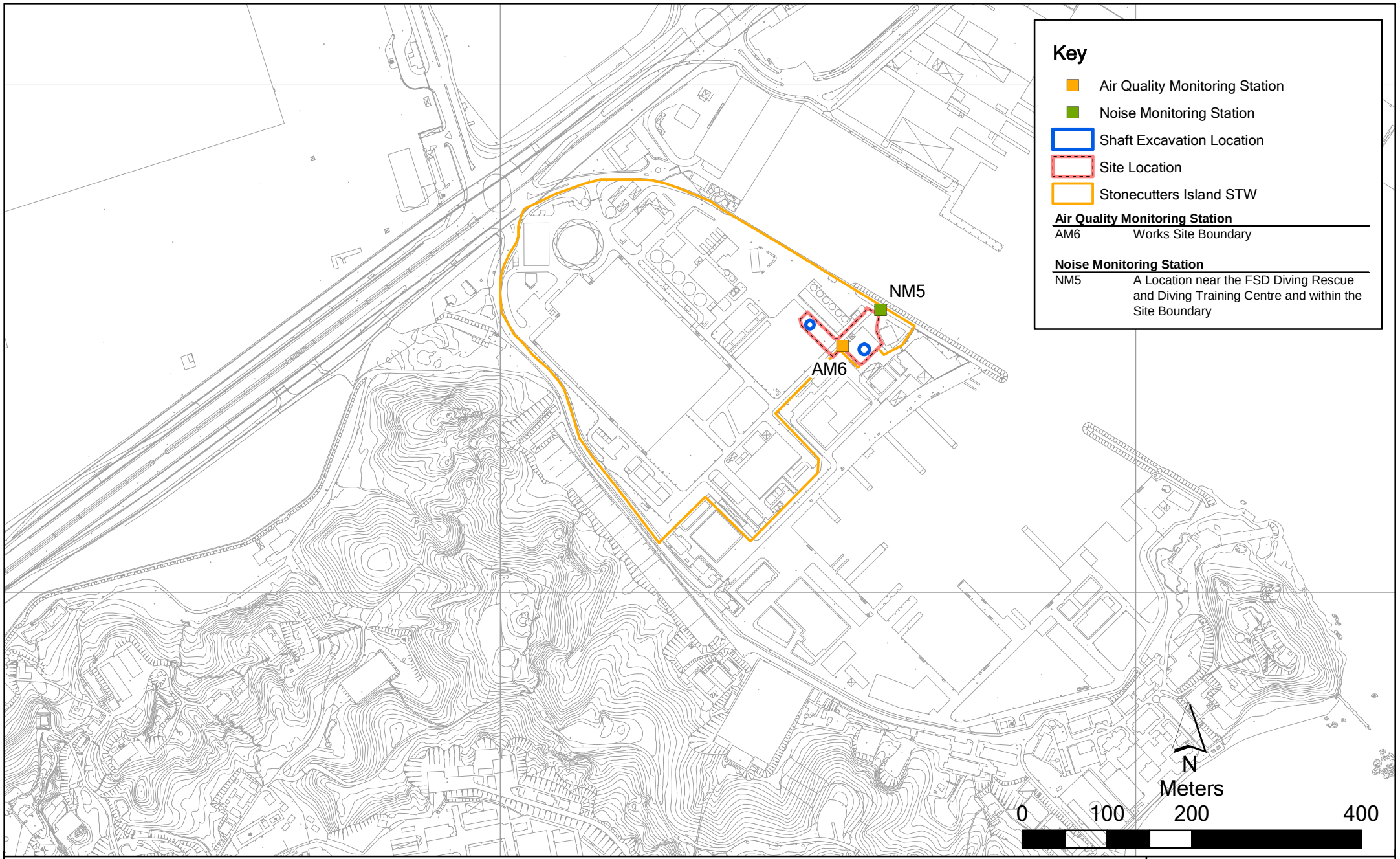
Reporting Month	Number of Complaints in Reporting Month	Number of Summons/Prosecutions in Reporting Month
December 2012	1	0
January 2013	0	0
February 2013	0	0
March 2013	0	0
April 2013	0	0
May 2013	0	0
June 2013	0	0
July 2013	0	0
August 2013	0	0
September 2013	0	0
October 2013	0	0
November 2013	0	0
December 2013	0	0
January 2014	0	0
February 2014	0	0
March 2014	0	0
April 2014	0	0
May 2014	0	0

Annex F7 Cumulative Complaint and Summons/Prosecutions Log

Reporting Month	Number of Complaints in Reporting Month	Number of Summons/Prosecutions in Reporting Month
June 2014	0	0
July 2014	0	0
August 2014	0	0
September 2014	0	0
October 2014	0	0
November 2014	0	0
Overall Total	7	0

Annex G

Stonecutters Island Production and Riser Shafts



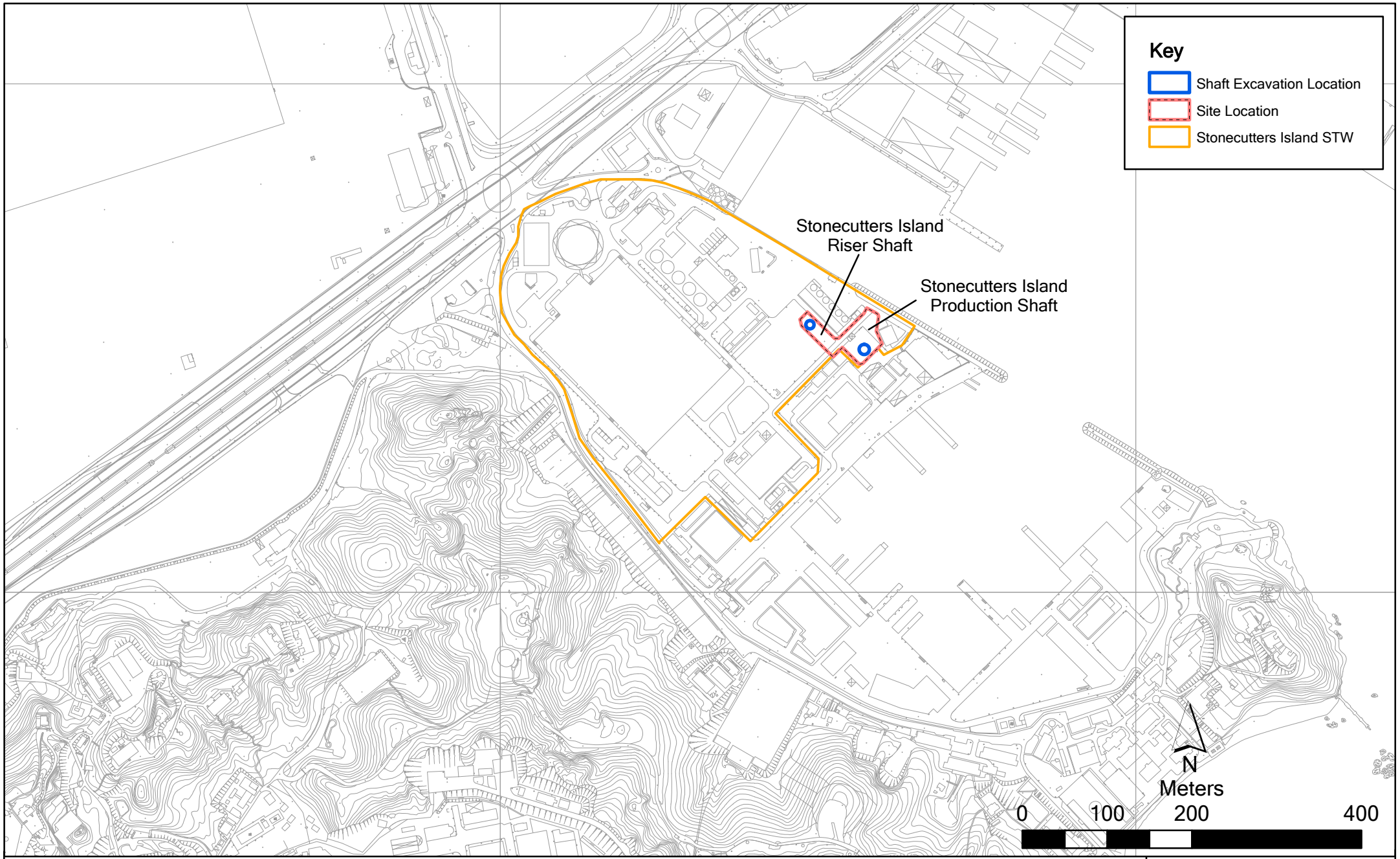
Annex G2

Contract No. DC/2007/23
Harbour Area Treatment Scheme Stage 2A
Construction of Sewage Conveyance System from North Point to Stonecutters Island
Impact Air Quality & Noise Monitoring Station (Stonecutters Island STW)

File: EM&A and proposed station\
0104887_Stonecutters Island_NMAM.mxd
Date: 03/03/2010

Environmental Resources Management

ERM



Annex G1

Contract No. DC/2007/23
Harbour Area Treatment Scheme Stage 2A
Construction of Sewage Conveyance System from North Point to Stonecutters Island
Construction Site Locations at Stonecutters Island STW

File: EM&A and proposed station\
0104887_Stonecutters Island.mxd
Date: 03/03/2010

Environmental Resources Management

ERM

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Construction Phase			
Air Quality	The Air Pollution Control (Construction Dust) Regulation shall be implemented and good site practices shall be incorporated in the contract clauses to minimise construction dust impact. Control measures relevant to this Project are listed below: • skip hoist for material transport should be totally enclosed by impervious sheeting; • every vehicle should be washed to remove any dusty materials from its body and wheels before leaving a construction site; • the area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; • where a site boundary adjoins a road, streets or other accessible to the public, hoarding of not less than 2.4 m high from ground level should be provided along the entire length except for a site entrance or exit; • every stock of more than 20 bags of cement should be covered entirely by impervious sheeting placed in an area sheltered on the top and the 3 sides; • regular watering, with complete coverage, to reduce dust emission from exposed site surfaces and unpaved roads, particularly during dry weather; • site enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering should be applied to aggregate fines; • open stock piles should be avoided or covered and prevent placing dusty material storage piles near ASRs if possible; • tarpaulin covering of all dusty vehicle loads transported to, from and between site locations; and • instigation of an environmental monitoring auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Air Quality	The following watering measures for specific site would be required to control the fugitive dust impacts: • the barging points should be continuous watering throughout the whole unloading process; and • watering 8 times per day within worksites at the SCS works area at SCISTW and the Disinfection Facilities of SCISTW.	All work sites / during construction	√
Operational Phase			
Air Quality	Good housekeeping for SCISTW and PTWs listed below should be followed to ameliorate any odour impact from the plant and these standard practices should be included in the plant operator manual. • Screens should be cleaned regularly to remove any accumulated organic debris • Grit and screening transfer systems should be flushed regularly with water to remove organic debris and grit • Grit and screened materials should be transferred to closed containers to minimise odour escape • Scum and grease collection wells and troughs should be emptied and flushed regularly to prevent putrefaction of accumulated organics • Skim and remove floating solids and grease from primary clarifiers regularly • Frequent sludge withdrawal from tanks is necessary to prevent the production of gases • Sludge cake should be transferred to closed containers • Sludge containers should be flushed with water regularly	All work sites / during construction	NA. Measures not required until commencement of operational phase
Air Quality	To avoid excessive extraction of the foul air from the drop shafts of the sedimentation tanks and also from the effluent flume structure of SCISTW to deodorisation system, the extraction vent(s) of the deodorisation system should be located away from the top openings of the drop shafts.	SCISTW /during operational phase	NA. Measures not required until commencement of operational phase
Air Quality	Commissioning tests for all deodorisation system should be included in the Design and Construction Contract Document.	All PTW and SCISTW/ during operational phase	NA. Measures not required until commencement of operational phase
Construction Phase			

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Noise	Use of quiet PME, movable barriers and acoustic mats	All work sites / during construction	√
Noise	Good Site Practice: • only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program; • silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction program; • mobile plant, if any, should be sited as far from NSRs as possible; • machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and • material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities; Environmental audit shall be carried out to ensure that appropriate noise control measures would be properly implemented.	All work sites / during construction	√
Construction Phase			
Water Quality	Construction Site Runoff and General Construction Activities. The mitigation measures as outlined in the ProPECC PN 1/94 Construction Site Drainage should be adopted where applicable.	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Effluent Discharge There is a need to apply to EPD for a discharge licence for discharge of effluent from the construction site under the WPCO. The discharge quality must meet the requirements specified in the discharge licence. If monitoring of the treated effluent quality from the works areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the WPCO license which is under the ambit of regional office (RO) of EPD. Minimum distances of 100 m should be maintained between the discharge points of construction site effluent and the existing saltwater intakes.	All work sites / during construction	√
Water Quality	Accidental Spillage of Chemicals Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	All work sites / during construction	√
Water Quality	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	All work sites / during construction	√
Water Quality	Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows: • Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport. • Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents. • Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.	All work sites / during construction	<>

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Construction Works in Close Proximity of Storm Drains or Seafront To minimise the potential water quality impacts from the construction works located at or near any watercourse, the practices outlined below should be adopted where applicable. • The use of less or smaller construction plants may be specified to reduce the disturbance to the storm water courses or marine environment. • Temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well away from any water courses during carrying out of the construction works. • Stockpiling of construction materials and dusty materials should be covered and located away from any water courses. • Construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nearby water receivers. • Construction activities, which generate large amount of wastewater, should be carried out in a distance away from the waterfront, where practicable. • Proper shoring may need to be erected in order to prevent soil/mud from slipping into the storm culvert or sea	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Temporary Sewage Bypass It is recommended that the temporary sewage bypass required for (i) the modification to the existing pumping station at SCISTW and (ii) the interconnection between the existing main pumping station and the new pumping station on Stonecutters Island, if needed, should be scheduled at the same time as far as practicable in order to minimise the temporary discharge duration. It is also recommended that all the modification and interconnection to the existing facilities (including the modification to the existing NWKPS) should be programmed to avoid temporary sewage bypass in wet or bathing season (March to October) to minimise the potential impacts. Relevant government departments including EPD and LCSD should be informed of the planned sewage bypass prior to any discharge. During the sewage bypass period, water quality monitoring should be carried out at the water sensitive receivers to quantify the water quality impacts and to determine when the baseline water quality conditions are restored. Also, a framework of the response procedures has been formulated to minimise the impact of temporary discharges. Details are provided in the standalone EM&A Manual.	SCISTW/ construction period	√
Operational Phase			
Water Quality	Dual power supply, standby facilities for the main treatment units and standby equipment parts / accessories should be provided as far as possible at the SCISTW to minimise the chance of emergency discharge.	SCISTW and all the Stage 2 PTWs / Operation Stage	NA. Measures not required until commencement of operational phase
Water Quality	The response procedure and monitoring requirements for emergency discharge as stated in EM&A Manual should be followed.	SCISTW / Operation Stage	NA. Measures not required until commencement of operational phase
Water Quality	In case of total power outage of the dechlorination plant, the uninterruptible power supply (UPS) system to be provided would switch the power supply of the sodium bisulphite dosing pump to a backup battery almost instantaneously, allowing continuous dosage of sodium bisulphite for at least half an hour so that sufficient time can be provided for shutting down the chlorination plant to avoid the possibility of discharge of chlorinated effluent.	SCISTW / Operation Stage	NA. Measures not required until commencement of operational phase

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	The model predicted that if Stage 2B is not implemented for HATS in 2021 as scheduled, the nutrient contents (both P and N) in the marine water would ultimately increase to exceed the baseline Stage 1 level when the HATS flow is reaching its design capacity of 2.45M m3/day. It is recommended that the future review study for Stage 2B should review the validity of the model predictions provided in this EIA and confirm the need of enhanced nutrient removal for HATS after 2021.	SCISTW / Operation Stage	NA. Measures not required until commencement of operational phase
Water Quality	It should be noted that the mixing zone for TIN predicted for Stage 2B was large with an area of about 30 km2 and the area of exceedance would encroach on the nearby water sensitive receivers (e.g. Ma Wan Fish Culture Zone). This is due to the elevated oxidised nitrogen assumed for the proposed nitrification process at Stage 2B as well as the increased HATS effluent flow assumed for Stage 2B. It is recommended that these water quality issues should be further investigated / assessed under the future EIA for Stage 2B. Further mitigation measures / alternative treatment designs should also be considered under the future EIA for Stage 2B to mitigate / minimise the potential TIN exceedances.	SCISTW / Operation Stage	NA. Measures not required until commencement of operational phase
Construction Phase			
Waste	Reusable steel or concrete panel shutters, fencing and hoarding and signboard should be used as a preferred alternative to items made of wood, to minimise wastage of wood. Attention should be paid to WBTC No. 19/2001 - Metallic Site Hoardings and Signboards to reduce the amount of timber used on construction sites. Metallic alternatives to timber are readily available and should be used rather than new timber. Precast concrete units should be adopted wherever feasible to minimise the use of timber formwork.	All work sites / during the construction period	√
Waste	All waste materials should be segregated into categories covering: • excavated materials suitable for reuse on-site; • excavated materials suitable for public filling facilities; • remaining C&D waste for landfill; • chemical waste; and • general refuse for landfill.	All work sites / during the construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	Recommendations to achieve waste reduction include: • Sort C&D waste from demolition of existing facilities to recover recyclable portions such as metals; • 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; • Encourage collection of aluminium cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force; • Any unused chemicals or those with remaining functional capacity shall be recycled; and • Proper storage and site practices to minimise the potential for damage or contamination of construction materials.	All work sites / during the construction period	√
Waste	Recommendations for good site practices during construction activities include:- • 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. • Develop and provide toolbox talk for on-site sorting of C&D materials to enhance worker's awareness in handling, sorting, reuse and recycling of C&D materials. • Provision of sufficient waste disposal points and regular collection of waste. • Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.	All work sites / during the construction period	√
Waste	Bentonite slurries used in diaphragm wall construction should be reconditioned and reused wherever practicable. The disposal of residual used bentonite slurry should follow the good practice guidelines stated in ProPECC PN 1/94 "Construction Site Drainage".	All work sites / during the construction period	NA
Waste	Adequate number of portable toilets at temporary works areas or the PTWs to ensure that sewage from site staff would be properly collected.	All work sites / during the construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	General refuse should be stored in enclosed bins, skips or compaction units separating from C&D material and disposed of at designated landfill.	All work sites / during the construction period	<>
Waste	The recyclable component of the municipal waste generated by the workforce, such as aluminium cans, paper and cleansed plastic containers should be separated from other waste. Provision and collection of recycling bins for different types of recyclable waste should be set up by the Contractor. The Contractor should also be responsible for arranging recycling companies to collect these materials.	All work sites / during the construction period	√
Waste	If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidising, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the approved Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	All work sites / during the construction period	√
Waste	Prior to excavation of the marine deposit layer, the deposit should be tested in accordance with the ETWB TC(W) No. 34/2002 and the results should be presented in a Preliminary Sediment Quality Report. The marine deposit should be disposed of at the disposal site designated by the Marine Fill Committee (MFC) or Director of Environmental Protection (DEP) depending on the test results.	All work sites / during the construction period	√
Operation Phase			

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	The sludge tanks should be air-tighten. Rotating brushes or other alternative devises should be installed at the upper frame of the sludge tank washing facilities to provide better cleaning of the surface around the top loading opening of the sludge tanks. Prior to making such provision, the top covers of the sludge transfer tanks should be water cleaned manually after unloading.	SCISTW / Operation Stage	NA. Measures not required until commencement of operational phase
Waste	Since the air tightness of tankers highly relies on the effectiveness of rubber seals at the loading openings and unloading doors, odour leakage from tankers are commonly resulted from the aging rubber seals. It is recommended to develop a preventive maintenance programme for rubber seals of loading openings and unloading doors of sludge transfer tanks to ensure the tightness of covers and doors. Rubber seals should be regularly replaced within its design life as specified by suppliers.	SCISTW / Operation Stage	NA. Measures not required until commencement of operational phase
Construction Phase			
Landscape & Visual	• Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical. • Existing trees to be retained on site should be carefully protected during construction. • Trees unavoidably affected by the works should be transplanted where practical. • Compensatory tree planting should be provided to compensate for felled trees. • Control of night-time lighting. • Erection of decorative screen hoarding compatible with the surrounding setting.	All the works areas, PTWs and SCISTW/ during the construction period	√
Operational Phase	•		
Landscape & Visual	• Aesthetic design of the façade of PTW and associated structures to harmonise with the surrounding settings. • Shrub and Climbing Plants to soften proposed structures / Roof Greening. • Buffer Tree and Shrub Planting to screen proposed associated structures. • Reinstated of disturbed area	All the works areas, PTWs and SCISTW/ during the construction period	NA. Measures not required until commencement of operational phase

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Construction Phase	•		
Cultural Heritage	The construction vibration control limit (ppv of 25mm/s) shall be strictly followed.	Identified historical buildings/structures as mentioned in Tables 15.10 and 15.11. During blasting for tunnel, shafts, effluent conveyance system and disinfection facilities in the vicinity of the buildings/ structures	NA. Vibration monitoring has not been launched during the reporting period.

Remark:
√ Compliance of Mitigation Measures
<> Compliance of Mitigation but need improvement
x Non-compliance of Mitigation Measures
Δ Deficiency of Mitigation Measures but rectified by Gammon Construction Limited
NA Not Applicable

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Construction Phase			
Air Quality	The Air Pollution Control (Construction Dust) Regulation shall be implemented and good site practices shall be incorporated in the contract clauses to minimise construction dust impact. Control measures relevant to this Project are listed below: • skip hoist for material transport should be totally enclosed by impervious sheeting; • every vehicle should be washed to remove any dusty materials from its body and wheels before leaving a construction site; • the area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; • where a site boundary adjoins a road, streets or other accessible to the public, hoarding of not less than 2.4 m high from ground level should be provided along the entire length except for a site entrance or exit; • every stock of more than 20 bags of cement should be covered entirely by impervious sheeting placed in an area sheltered on the top and the 3 sides; • regular watering, with complete coverage, to reduce dust emission from exposed site surfaces and unpaved roads, particularly during dry weather; • site enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering should be applied to aggregate fines; • open stock piles should be avoided or covered and prevent placing dusty material storage piles near ASRs if possible; • tarpaulin covering of all dusty vehicle loads transported to, from and between site locations; and • instigation of an environmental monitoring auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Air Quality	The following watering measures for specific site would be required to control the fugitive dust impacts: • the barging points should be continuous watering throughout the whole unloading process; and • watering 8 times per day within worksites at the SCS works area at SCISTW and the Disinfection Facilities of SCISTW.	All work sites / during construction	√
Operational Phase			
Air Quality	Good housekeeping for SCISTW and PTWs listed below should be followed to ameliorate any odour impact from the plant and these standard practices should be included in the plant operator manual. • Screens should be cleaned regularly to remove any accumulated organic debris • Grit and screening transfer systems should be flushed regularly with water to remove organic debris and grit • Grit and screened materials should be transferred to closed containers to minimise odour escape • Scum and grease collection wells and troughs should be emptied and flushed regularly to prevent putrefaction of accumulated organics • Skim and remove floating solids and grease from primary clarifiers regularly • Frequent sludge withdrawal from tanks is necessary to prevent the production of gases • Sludge cake should be transferred to closed containers • Sludge containers should be flushed with water regularly	All work sites / during construction	NA. Measures not required until commencement of operational phase
Air Quality	To avoid excessive extraction of the foul air from the drop shafts of the sedimentation tanks and also from the effluent flume structure of SCISTW to deodorisation system, the extraction vent(s) of the deodorisation system should be located away from the top openings of the drop shafts.	SCISTW /during operational phase	NA. Measures not required until commencement of operational phase
Air Quality	Commissioning tests for all deodorisation system should be included in the Design and Construction Contract Document.	All PTW and SCISTW/ during operational phase	NA. Measures not required until commencement of operational phase
Construction Phase			

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Noise	Use of quiet PME, movable barriers and acoustic mats	All work sites / during construction	√
Noise	Good Site Practice: • only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program; • silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction program; • mobile plant, if any, should be sited as far from NSRs as possible; • machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and • material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities; Environmental audit shall be carried out to ensure that appropriate noise control measures would be properly implemented.	All work sites / during construction	√
Construction Phase			
Water Quality	Construction Site Runoff and General Construction Activities. The mitigation measures as outlined in the ProPECC PN 1/94 Construction Site Drainage should be adopted where applicable.	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Effluent Discharge There is a need to apply to EPD for a discharge licence for discharge of effluent from the construction site under the WPCO. The discharge quality must meet the requirements specified in the discharge licence. If monitoring of the treated effluent quality from the works areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the WPCO license which is under the ambit of regional office (RO) of EPD. Minimum distances of 100 m should be maintained between the discharge points of construction site effluent and the existing saltwater intakes.	All work sites / during construction	√
Water Quality	Accidental Spillage of Chemicals Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	All work sites / during construction	√
Water Quality	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	All work sites / during construction	√
Water Quality	Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows: • Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport. • Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents. • Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.	All work sites / during construction	<>

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Construction Works in Close Proximity of Storm Drains or Seafront To minimise the potential water quality impacts from the construction works located at or near any watercourse, the practices outlined below should be adopted where applicable. • The use of less or smaller construction plants may be specified to reduce the disturbance to the storm water courses or marine environment. • Temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well away from any water courses during carrying out of the construction works. • Stockpiling of construction materials and dusty materials should be covered and located away from any water courses. • Construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nearby water receivers. • Construction activities, which generate large amount of wastewater, should be carried out in a distance away from the waterfront, where practicable. • Proper shoring may need to be erected in order to prevent soil/mud from slipping into the storm culvert or sea	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Temporary Sewage Bypass It is recommended that the temporary sewage bypass required for (i) the modification to the existing pumping station at SCISTW and (ii) the interconnection between the existing main pumping station and the new pumping station on Stonecutters Island, if needed, should be scheduled at the same time as far as practicable in order to minimise the temporary discharge duration. It is also recommended that all the modification and interconnection to the existing facilities (including the modification to the existing NWKPS) should be programmed to avoid temporary sewage bypass in wet or bathing season (March to October) to minimise the potential impacts. Relevant government departments including EPD and LCSD should be informed of the planned sewage bypass prior to any discharge. During the sewage bypass period, water quality monitoring should be carried out at the water sensitive receivers to quantify the water quality impacts and to determine when the baseline water quality conditions are restored. Also, a framework of the response procedures has been formulated to minimise the impact of temporary discharges. Details are provided in the standalone EM&A Manual.	SCISTW/ construction period	√
Operational Phase			
Water Quality	Dual power supply, standby facilities for the main treatment units and standby equipment parts / accessories should be provided as far as possible at the SCISTW to minimise the chance of emergency discharge.	SCISTW and all the Stage 2 PTWs / Operation Stage	NA. Measures not required until commencement of operational phase
Water Quality	The response procedure and monitoring requirements for emergency discharge as stated in EM&A Manual should be followed.	SCISTW / Operation Stage	NA. Measures not required until commencement of operational phase
Water Quality	In case of total power outage of the dechlorination plant, the uninterruptible power supply (UPS) system to be provided would switch the power supply of the sodium bisulphite dosing pump to a backup battery almost instantaneously, allowing continuous dosage of sodium bisulphite for at least half an hour so that sufficient time can be provided for shutting down the chlorination plant to avoid the possibility of discharge of chlorinated effluent.	SCISTW / Operation Stage	NA. Measures not required until commencement of operational phase

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	The model predicted that if Stage 2B is not implemented for HATS in 2021 as scheduled, the nutrient contents (both P and N) in the marine water would ultimately increase to exceed the baseline Stage 1 level when the HATS flow is reaching its design capacity of 2.45M m3/day. It is recommended that the future review study for Stage 2B should review the validity of the model predictions provided in this EIA and confirm the need of enhanced nutrient removal for HATS after 2021.	SCISTW / Operation Stage	NA. Measures not required until commencement of operational phase
Water Quality	It should be noted that the mixing zone for TIN predicted for Stage 2B was large with an area of about 30 km2 and the area of exceedance would encroach on the nearby water sensitive receivers (e.g. Ma Wan Fish Culture Zone). This is due to the elevated oxidised nitrogen assumed for the proposed nitrification process at Stage 2B as well as the increased HATS effluent flow assumed for Stage 2B. It is recommended that these water quality issues should be further investigated / assessed under the future EIA for Stage 2B. Further mitigation measures / alternative treatment designs should also be considered under the future EIA for Stage 2B to mitigate / minimise the potential TIN exceedances.	SCISTW / Operation Stage	NA. Measures not required until commencement of operational phase
Construction Phase			
Waste	Reusable steel or concrete panel shutters, fencing and hoarding and signboard should be used as a preferred alternative to items made of wood, to minimise wastage of wood. Attention should be paid to WBTC No. 19/2001 - Metallic Site Hoardings and Signboards to reduce the amount of timber used on construction sites. Metallic alternatives to timber are readily available and should be used rather than new timber. Precast concrete units should be adopted wherever feasible to minimise the use of timber formwork.	All work sites / during the construction period	√
Waste	All waste materials should be segregated into categories covering: • excavated materials suitable for reuse on-site; • excavated materials suitable for public filling facilities; • remaining C&D waste for landfill; • chemical waste; and • general refuse for landfill.	All work sites / during the construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	Recommendations to achieve waste reduction include: • Sort C&D waste from demolition of existing facilities to recover recyclable portions such as metals; • 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; • Encourage collection of aluminium cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force; • Any unused chemicals or those with remaining functional capacity shall be recycled; and • Proper storage and site practices to minimise the potential for damage or contamination of construction materials.	All work sites / during the construction period	√
Waste	Recommendations for good site practices during construction activities include:- • 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. • Develop and provide toolbox talk for on-site sorting of C&D materials to enhance worker's awareness in handling, sorting, reuse and recycling of C&D materials. • Provision of sufficient waste disposal points and regular collection of waste. • Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.	All work sites / during the construction period	√
Waste	Bentonite slurries used in diaphragm wall construction should be reconditioned and reused wherever practicable. The disposal of residual used bentonite slurry should follow the good practice guidelines stated in ProPECC PN 1/94 "Construction Site Drainage".	All work sites / during the construction period	NA
Waste	Adequate number of portable toilets at temporary works areas or the PTWs to ensure that sewage from site staff would be properly collected.	All work sites / during the construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	General refuse should be stored in enclosed bins, skips or compaction units separating from C&D material and disposed of at designated landfill.	All work sites / during the construction period	<>
Waste	The recyclable component of the municipal waste generated by the workforce, such as aluminium cans, paper and cleansed plastic containers should be separated from other waste. Provision and collection of recycling bins for different types of recyclable waste should be set up by the Contractor. The Contractor should also be responsible for arranging recycling companies to collect these materials.	All work sites / during the construction period	√
Waste	If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidising, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the approved Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	All work sites / during the construction period	√
Waste	Prior to excavation of the marine deposit layer, the deposit should be tested in accordance with the ETWB TC(W) No. 34/2002 and the results should be presented in a Preliminary Sediment Quality Report. The marine deposit should be disposed of at the disposal site designated by the Marine Fill Committee (MFC) or Director of Environmental Protection (DEP) depending on the test results.	All work sites / during the construction period	√
Operation Phase			

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	The sludge tanks should be air-tighten. Rotating brushes or other alternative devises should be installed at the upper frame of the sludge tank washing facilities to provide better cleaning of the surface around the top loading opening of the sludge tanks. Prior to making such provision, the top covers of the sludge transfer tanks should be water cleaned manually after unloading.	SCISTW / Operation Stage	NA. Measures not required until commencement of operational phase
Waste	Since the air tightness of tankers highly relies on the effectiveness of rubber seals at the loading openings and unloading doors, odour leakage from tankers are commonly resulted from the aging rubber seals. It is recommended to develop a preventive maintenance programme for rubber seals of loading openings and unloading doors of sludge transfer tanks to ensure the tightness of covers and doors. Rubber seals should be regularly replaced within its design life as specified by suppliers.	SCISTW / Operation Stage	NA. Measures not required until commencement of operational phase
Construction Phase			
Landscape & Visual	• Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical. • Existing trees to be retained on site should be carefully protected during construction. • Trees unavoidably affected by the works should be transplanted where practical. • Compensatory tree planting should be provided to compensate for felled trees. • Control of night-time lighting. • Erection of decorative screen hoarding compatible with the surrounding setting.	All the works areas, PTWs and SCISTW/ during the construction period	√
Operational Phase	•		
Landscape & Visual	• Aesthetic design of the façade of PTW and associated structures to harmonise with the surrounding settings. • Shrub and Climbing Plants to soften proposed structures / Roof Greening. • Buffer Tree and Shrub Planting to screen proposed associated structures. • Reinstated of disturbed area	All the works areas, PTWs and SCISTW/ during the construction period	NA. Measures not required until commencement of operational phase

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Construction Phase	•		
Cultural Heritage	The construction vibration control limit (ppv of 25mm/s) shall be strictly followed.	Identified historical buildings/structures as mentioned in Tables 15.10 and 15.11. During blasting for tunnel, shafts, effluent conveyance system and disinfection facilities in the vicinity of the buildings/ structures	NA. Vibration monitoring has not been launched during the reporting period.

Remark:

√ Compliance of Mitigation Measures
<> Compliance of Mitigation but need improvement
x Non-compliance of Mitigation Measures
Δ Deficiency of Mitigation Measures but rectified by Gammon Construction Limited
NA Not Applicable

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Construction Phase			
Air Quality	The Air Pollution Control (Construction Dust) Regulation shall be implemented and good site practices shall be incorporated in the contract clauses to minimise construction dust impact. Control measures relevant to this Project are listed below: • skip hoist for material transport should be totally enclosed by impervious sheeting; • every vehicle should be washed to remove any dusty materials from its body and wheels before leaving a construction site; • the area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; • where a site boundary adjoins a road, streets or other accessible to the public, hoarding of not less than 2.4 m high from ground level should be provided along the entire length except for a site entrance or exit; • every stock of more than 20 bags of cement should be covered entirely by impervious sheeting placed in an area sheltered on the top and the 3 sides; • regular watering, with complete coverage, to reduce dust emission from exposed site surfaces and unpaved roads, particularly during dry weather; • site enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering should be applied to aggregate fines; • open stock piles should be avoided or covered and prevent placing dusty material storage piles near ASRs if possible; • tarpaulin covering of all dusty vehicle loads transported to, from and between site locations; and • instigation of an environmental monitoring auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Air Quality	The following watering measures for specific site would be required to control the fugitive dust impacts: • the barging points should be continuous watering throughout the whole unloading process; and • watering 8 times per day within worksites at the SCS works area at SCISTW and the Disinfection Facilities of SCISTW.	All work sites / during construction	√
Operational Phase			
Air Quality	Good housekeeping for SCISTW and PTWs listed below should be followed to ameliorate any odour impact from the plant and these standard practices should be included in the plant operator manual. • Screens should be cleaned regularly to remove any accumulated organic debris • Grit and screening transfer systems should be flushed regularly with water to remove organic debris and grit • Grit and screened materials should be transferred to closed containers to minimise odour escape • Scum and grease collection wells and troughs should be emptied and flushed regularly to prevent putrefaction of accumulated organics • Skim and remove floating solids and grease from primary clarifiers regularly • Frequent sludge withdrawal from tanks is necessary to prevent the production of gases • Sludge cake should be transferred to closed containers • Sludge containers should be flushed with water regularly	All work sites / during construction	NA. Measures not required until commencement of operational phase
Air Quality	To avoid excessive extraction of the foul air from the drop shafts of the sedimentation tanks and also from the effluent flume structure of SCISTW to deodorisation system, the extraction vent(s) of the deodorisation system should be located away from the top openings of the drop shafts.	SCISTW /during operational phase	NA. Measures not required until commencement of operational phase
Air Quality	Commissioning tests for all deodorisation system should be included in the Design and Construction Contract Document.	All PTW and SCISTW/ during operational phase	NA. Measures not required until commencement of operational phase
Construction Phase			

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Noise	Use of quiet PME, movable barriers and acoustic mats	All work sites / during construction	√
Noise	Good Site Practice: • only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program; • silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction program; • mobile plant, if any, should be sited as far from NSRs as possible; • machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and • material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities; Environmental audit shall be carried out to ensure that appropriate noise control measures would be properly implemented.	All work sites / during construction	√
Construction Phase			
Water Quality	Construction Site Runoff and General Construction Activities. The mitigation measures as outlined in the ProPECC PN 1/94 Construction Site Drainage should be adopted where applicable.	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Effluent Discharge There is a need to apply to EPD for a discharge licence for discharge of effluent from the construction site under the WPCO. The discharge quality must meet the requirements specified in the discharge licence. If monitoring of the treated effluent quality from the works areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the WPCO license which is under the ambit of regional office (RO) of EPD. Minimum distances of 100 m should be maintained between the discharge points of construction site effluent and the existing saltwater intakes.	All work sites / during construction	√
Water Quality	Accidental Spillage of Chemicals Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	All work sites / during construction	√
Water Quality	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	All work sites / during construction	√
Water Quality	Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows: • Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport. • Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents. • Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.	All work sites / during construction	<>

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Construction Works in Close Proximity of Storm Drains or Seafront To minimise the potential water quality impacts from the construction works located at or near any watercourse, the practices outlined below should be adopted where applicable. • The use of less or smaller construction plants may be specified to reduce the disturbance to the storm water courses or marine environment. • Temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well away from any water courses during carrying out of the construction works. • Stockpiling of construction materials and dusty materials should be covered and located away from any water courses. • Construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nearby water receivers. • Construction activities, which generate large amount of wastewater, should be carried out in a distance away from the waterfront, where practicable. • Proper shoring may need to be erected in order to prevent soil/mud from slipping into the storm culvert or sea	All work sites / during construction	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Temporary Sewage Bypass It is recommended that the temporary sewage bypass required for (i) the modification to the existing pumping station at SCISTW and (ii) the interconnection between the existing main pumping station and the new pumping station on Stonecutters Island, if needed, should be scheduled at the same time as far as practicable in order to minimise the temporary discharge duration. It is also recommended that all the modification and interconnection to the existing facilities (including the modification to the existing NWKPS) should be programmed to avoid temporary sewage bypass in wet or bathing season (March to October) to minimise the potential impacts. Relevant government departments including EPD and LCSD should be informed of the planned sewage bypass prior to any discharge. During the sewage bypass period, water quality monitoring should be carried out at the water sensitive receivers to quantify the water quality impacts and to determine when the baseline water quality conditions are restored. Also, a framework of the response procedures has been formulated to minimise the impact of temporary discharges. Details are provided in the standalone EM&A Manual.	SCISTW/ construction period	√
Operational Phase			
Water Quality	Dual power supply, standby facilities for the main treatment units and standby equipment parts / accessories should be provided as far as possible at the SCISTW to minimise the chance of emergency discharge.	SCISTW and all the Stage 2 PTWs / Operation Stage	NA. Measures not required until commencement of operational phase
Water Quality	The response procedure and monitoring requirements for emergency discharge as stated in EM&A Manual should be followed.	SCISTW / Operation Stage	NA. Measures not required until commencement of operational phase
Water Quality	In case of total power outage of the dechlorination plant, the uninterruptible power supply (UPS) system to be provided would switch the power supply of the sodium bisulphite dosing pump to a backup battery almost instantaneously, allowing continuous dosage of sodium bisulphite for at least half an hour so that sufficient time can be provided for shutting down the chlorination plant to avoid the possibility of discharge of chlorinated effluent.	SCISTW / Operation Stage	NA. Measures not required until commencement of operational phase

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	The model predicted that if Stage 2B is not implemented for HATS in 2021 as scheduled, the nutrient contents (both P and N) in the marine water would ultimately increase to exceed the baseline Stage 1 level when the HATS flow is reaching its design capacity of 2.45M m3/day. It is recommended that the future review study for Stage 2B should review the validity of the model predictions provided in this EIA and confirm the need of enhanced nutrient removal for HATS after 2021.	SCISTW / Operation Stage	NA. Measures not required until commencement of operational phase
Water Quality	It should be noted that the mixing zone for TIN predicted for Stage 2B was large with an area of about 30 km2 and the area of exceedance would encroach on the nearby water sensitive receivers (e.g. Ma Wan Fish Culture Zone). This is due to the elevated oxidised nitrogen assumed for the proposed nitrification process at Stage 2B as well as the increased HATS effluent flow assumed for Stage 2B. It is recommended that these water quality issues should be further investigated / assessed under the future EIA for Stage 2B. Further mitigation measures / alternative treatment designs should also be considered under the future EIA for Stage 2B to mitigate / minimise the potential TIN exceedances.	SCISTW / Operation Stage	NA. Measures not required until commencement of operational phase
Construction Phase			
Waste	Reusable steel or concrete panel shutters, fencing and hoarding and signboard should be used as a preferred alternative to items made of wood, to minimise wastage of wood. Attention should be paid to WBTC No. 19/2001 - Metallic Site Hoardings and Signboards to reduce the amount of timber used on construction sites. Metallic alternatives to timber are readily available and should be used rather than new timber. Precast concrete units should be adopted wherever feasible to minimise the use of timber formwork.	All work sites / during the construction period	√
Waste	All waste materials should be segregated into categories covering: • excavated materials suitable for reuse on-site; • excavated materials suitable for public filling facilities; • remaining C&D waste for landfill; • chemical waste; and • general refuse for landfill.	All work sites / during the construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	Recommendations to achieve waste reduction include: • Sort C&D waste from demolition of existing facilities to recover recyclable portions such as metals; • 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; • Encourage collection of aluminium cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force; • Any unused chemicals or those with remaining functional capacity shall be recycled; and • Proper storage and site practices to minimise the potential for damage or contamination of construction materials.	All work sites / during the construction period	√
Waste	Recommendations for good site practices during construction activities include:- • 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. • Develop and provide toolbox talk for on-site sorting of C&D materials to enhance worker's awareness in handling, sorting, reuse and recycling of C&D materials. • Provision of sufficient waste disposal points and regular collection of waste. • Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.	All work sites / during the construction period	√
Waste	Bentonite slurries used in diaphragm wall construction should be reconditioned and reused wherever practicable. The disposal of residual used bentonite slurry should follow the good practice guidelines stated in ProPECC PN 1/94 "Construction Site Drainage".	All work sites / during the construction period	NA
Waste	Adequate number of portable toilets at temporary works areas or the PTWs to ensure that sewage from site staff would be properly collected.	All work sites / during the construction period	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	General refuse should be stored in enclosed bins, skips or compaction units separating from C&D material and disposed of at designated landfill.	All work sites / during the construction period	<>
Waste	The recyclable component of the municipal waste generated by the workforce, such as aluminium cans, paper and cleansed plastic containers should be separated from other waste. Provision and collection of recycling bins for different types of recyclable waste should be set up by the Contractor. The Contractor should also be responsible for arranging recycling companies to collect these materials.	All work sites / during the construction period	√
Waste	If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidising, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the approved Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	All work sites / during the construction period	√
Waste	Prior to excavation of the marine deposit layer, the deposit should be tested in accordance with the ETWB TC(W) No. 34/2002 and the results should be presented in a Preliminary Sediment Quality Report. The marine deposit should be disposed of at the disposal site designated by the Marine Fill Committee (MFC) or Director of Environmental Protection (DEP) depending on the test results.	All work sites / during the construction period	√
Operation Phase			

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	The sludge tanks should be air-tighten. Rotating brushes or other alternative devises should be installed at the upper frame of the sludge tank washing facilities to provide better cleaning of the surface around the top loading opening of the sludge tanks. Prior to making such provision, the top covers of the sludge transfer tanks should be water cleaned manually after unloading.	SCISTW / Operation Stage	NA. Measures not required until commencement of operational phase
Waste	Since the air tightness of tankers highly relies on the effectiveness of rubber seals at the loading openings and unloading doors, odour leakage from tankers are commonly resulted from the aging rubber seals. It is recommended to develop a preventive maintenance programme for rubber seals of loading openings and unloading doors of sludge transfer tanks to ensure the tightness of covers and doors. Rubber seals should be regularly replaced within its design life as specified by suppliers.	SCISTW / Operation Stage	NA. Measures not required until commencement of operational phase
Construction Phase			
Landscape & Visual	• Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical. • Existing trees to be retained on site should be carefully protected during construction. • Trees unavoidably affected by the works should be transplanted where practical. • Compensatory tree planting should be provided to compensate for felled trees. • Control of night-time lighting. • Erection of decorative screen hoarding compatible with the surrounding setting.	All the works areas, PTWs and SCISTW/ during the construction period	√
Operational Phase	•		
Landscape & Visual	• Aesthetic design of the façade of PTW and associated structures to harmonise with the surrounding settings. • Shrub and Climbing Plants to soften proposed structures / Roof Greening. • Buffer Tree and Shrub Planting to screen proposed associated structures. • Reinstated of disturbed area	All the works areas, PTWs and SCISTW/ during the construction period	NA. Measures not required until commencement of operational phase

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Construction Phase	•		
Cultural Heritage	The construction vibration control limit (ppv of 25mm/s) shall be strictly followed.	Identified historical buildings/structures as mentioned in Tables 15.10 and 15.11. During blasting for tunnel, shafts, effluent conveyance system and disinfection facilities in the vicinity of the buildings/ structures	NA. Vibration monitoring has not been launched during the reporting period.

Remark:
√ Compliance of Mitigation Measures
<> Compliance of Mitigation but need improvement
x Non-compliance of Mitigation Measures
Δ Deficiency of Mitigation Measures but rectified by Gammon Construction Limited
NA Not Applicable

Annex G5 24-hour and 1-hour TSP Monitoring Results

1-hour TSP Monitoring Results

Station AM6

	Start	Finish	Weather	TSP Concentration	Action Level	Limit Level	Site Conditions /	Temperature	Wind Speed *	Sampler	Filter
Date	Time	Time		($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)	Observations / Remarks	(°C)	(m/s)	ID	ID
04-Sep-14	8:43	9:43	Sunny	141	346	500	Construction work in progress	30	<5	GMW GS-2310 (S/N 1254)	4257
	9:45	10:45	Sunny	145	346	500	Construction work in progress	30	<5	GMW GS-2310 (S/N 1254)	4258
	10:47	11:47	Sunny	160	346	500	Construction work in progress	30	<5	GMW GS-2310 (S/N 1254)	4259
10-Sep-14	8:30	9:30	Sunny	119	346	500	Construction work in progress	30	<5	GMW GS-2310 (S/N 1254)	4261
	9:32	10:32	Sunny	89	346	500	Construction work in progress	30	<5	GMW GS-2310 (S/N 1254)	4262
	10:34	11:34	Sunny	103	346	500	Construction work in progress	30	<5	GMW GS-2310 (S/N 1254)	4325
16-Sep-14	11:10	12:10	Cloudy	128	346	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 1254)	4327
	12:12	13:12	Cloudy	115	346	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 1254)	4328
	13:14	14:14	Cloudy	100	346	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 1254)	4329
22-Sep-14	14:40	15:40	Sunny	181	346	500	Construction work in progress	30	<5	GMW GS-2310 (S/N 1254)	4331
	15:42	16:42	Sunny	216	346	500	Construction work in progress	30	<5	GMW GS-2310 (S/N 1254)	4332
	16:44	17:44	Sunny	224	346	500	Construction work in progress	30	<5	GMW GS-2310 (S/N 1254)	4333
27-Sep-14	9:30	10:30	Sunny	183	346	500	Construction work in progress	30	<5	GMW GS-2310 (S/N 1254)	4335
	10:32	11:32	Sunny	172	346	500	Construction work in progress	30	<5	GMW GS-2310 (S/N 1254)	4336
	11:34	12:34	Sunny	173	346	500	Construction work in progress	30	<5	GMW GS-2310 (S/N 1254)	4337
			Min.	**89**							
			Max.	**224**							
			Average	**150**							

* Wind Speed data is presented in the Meteorological Data table

Annex G5 24-hour and 1-hour TSP Monitoring Results

1-hour TSP Monitoring Results

Station AM6

Date	Start Time	Finish Time	Weather	TSP Concentration ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Site Conditions / Observations / Remarks	Temperature (°C)	Wind Speed * (m/s)	Sampler ID	Filter ID
03-Oct-14	14:20	15:20	Sunny	167	346	500	Construction work in progress	31	<5	GMW GS-2310 (S/N 1254)	4339
	15:22	16:22	Sunny	173	346	500	Construction work in progress	31	<5	GMW GS-2310 (S/N 1254)	4340
	16:24	17:24	Sunny	181	346	500	Construction work in progress	31	<5	GMW GS-2310 (S/N 1254)	4341
08-Oct-14	14:18	15:18	Sunny	112	346	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 1254)	4343
	15:20	16:20	Sunny	159	346	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 1254)	4344
	16:22	17:22	Sunny	171	346	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 1254)	4345
14-Oct-14	14:00	15:00	Sunny	241	346	500	Construction work in progress	28	<5	GMW GS-2310 (S/N 1254)	4573
	15:02	16:02	Sunny	233	346	500	Construction work in progress	28	<5	GMW GS-2310 (S/N 1254)	4574
	16:04	17:04	Sunny	251	346	500	Construction work in progress	28	<5	GMW GS-2310 (S/N 1254)	4575
20-Oct-14	14:33	15:33	Sunny	198	346	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 1254)	4577
	15:35	16:35	Sunny	183	346	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 1254)	4578
	16:37	17:37	Sunny	188	346	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 1254)	4579
25-Oct-14	12:30	13:30	Cloudy	168	346	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 1254)	4649
	13:32	14:32	Cloudy	148	346	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 1254)	4650
	14:34	15:34	Cloudy	168	346	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 1254)	4651
31-Oct-14	14:40	15:40	Sunny	180	346	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 1254)	4673
	15:42	16:42	Sunny	185	346	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 1254)	4674
	16:44	17:44	Sunny	183	346	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 1254)	4675
			Min.	**112**							
			Max.	**251**							
			Average	**183**							

* Wind Speed data is presented in the Meteorological Data table

Annex G5 24-hour and 1-hour TSP Monitoring Results

1-hour TSP Monitoring Results

Station AM6

Date	Start Time	Finish Time	Weather	TSP Concentration (μg/m³)	Action Level (μg/m³)	Limit Level (μg/m³)	Site Conditions / Observations / Remarks	Temperature (°C)	Wind Speed * (m/s)	Sampler ID	Filter ID
06-Nov-14	14:20	15:20	Sunny	151	346	500	Construction work in progress	25	<5	GMW GS-2310 (S/N 1254)	4677
	15:22	16:22	Sunny	190	346	500	Construction work in progress	25	<5	GMW GS-2310 (S/N 1254)	4678
	16:24	17:24	Sunny	169	346	500	Construction work in progress	25	<5	GMW GS-2310 (S/N 1254)	4679
12-Nov-14	14:11	15:11	Cloudy	184	346	500	Construction work in progress	22	<5	GMW GS-2310 (S/N 1254)	4825
	15:13	16:13	Cloudy	179	346	500	Construction work in progress	22	<5	GMW GS-2310 (S/N 1254)	4826
	16:15	17:15	Cloudy	184	346	500	Construction work in progress	22	<5	GMW GS-2310 (S/N 1254)	4827
18-Nov-14	14:16	15:16	Sunny	157	346	500	Construction work in progress	23	<5	GMW GS-2310 (S/N 1254)	4829
	15:18	16:18	Sunny	199	346	500	Construction work in progress	23	<5	GMW GS-2310 (S/N 1254)	4830
	16:20	17:20	Sunny	195	346	500	Construction work in progress	23	<5	GMW GS-2310 (S/N 1254)	4831
24-Nov-14	9:00	10:00	Sunny	81	346	500	Construction work in progress	24	<5	GMW GS-2310 (S/N 1254)	4833
	10:02	11:02	Sunny	143	346	500	Construction work in progress	24	<5	GMW GS-2310 (S/N 1254)	4834
	11:04	12:04	Sunny	105	346	500	Construction work in progress	24	<5	GMW GS-2310 (S/N 1254)	4835
28-Nov-14	13:12	14:12	Cloudy	199	346	500	Construction work in progress	24	<5	GMW GS-2310 (S/N 1254)	4837
	14:14	15:14	Cloudy	184	346	500	Construction work in progress	24	<5	GMW GS-2310 (S/N 1254)	4838
	15:16	16:16	Cloudy	209	346	500	Construction work in progress	24	<5	GMW GS-2310 (S/N 1254)	4839
			Min.	**81**							
			Max.	**209**							
			Average	**169**							

* Wind Speed data is presented in the Meteorological Data table

Annex G5 24-hour and 1-hour TSP Monitoring Results

24-hour TSP Monitoring Results

Station AM6

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m^3/min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	(μg/m^3)	(μg/m^3)	(μg/m^3)		ID	ID
04-Sep-14	11:49	05-Sep-14	11:49	Sunny	2.7859	2.9542	13923.03	13947.03	24.00	1.25	1.25	1.25	94	196	260	-	GMW GS 2310 (S/N 1254)	4260
10-Sep-14	11:36	11-Sep-14	11:36	Sunny	2.7187	2.8339	13950.03	13974.03	24.00	1.25	1.25	1.25	64	196	260	-	GMW GS 2310 (S/N 1254)	4326
16-Sep-14	14:16	17-Sep-14	14:16	Cloudy	2.7286	2.8422	13977.03	14001.03	24.00	1.25	1.25	1.25	63	196	260	-	GMW GS 2310 (S/N 1254)	4330
22-Sep-14	17:46	23-Sep-14	17:46	Sunny	2.7244	2.9411	14004.03	14028.03	24.00	1.26	1.26	1.26	119	196	260	-	GMW GS 2310 (S/N 1254)	4334
27-Sep-14	12:36	27-Sep-14	12:36	Sunny	2.7249	2.9984	14031.03	14055.03	24.00	1.26	1.26	1.26	151	196	260	-	GMW GS 2310 (S/N 1254)	4338
												Min.	**63**					
												Max.	**151**					
												Average	**98**					

Annex G5 24-hour and 1-hour TSP Monitoring Results

24-hour TSP Monitoring Results

Station AM6

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m^3/min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	(μg/m^3)	(μg/m^3)	(μg/m^3)		ID	ID
03-Oct-14	17:26	04-Oct-14	17:26	Sunny	2.7288	2.8821	14058.03	14082.03	24.00	1.26	1.26	1.26	84	196	260	Construction work in progress	GMW GS 2310 (S/N 1254)	4342
08-Oct-14	17:24	09-Oct-14	17:24	Sunny	2.7306	2.8797	14085.03	14109.03	24.00	1.26	1.26	1.26	82	196	260	Construction work in progress	GMW GS 2310 (S/N 1254)	4346
14-Oct-14	17:06	15-Oct-14	17:06	Sunny	2.7181	2.9387	14112.03	14136.03	24.00	1.26	1.26	1.26	122	196	260	Construction work in progress	GMW GS 2310 (S/N 1254)	4576
20-Oct-14	17:39	21-Oct-14	17:39	Sunny	2.7109	2.9011	14139.03	14163.03	24.00	1.26	1.26	1.26	105	196	260	Construction work in progress	GMW GS 2310 (S/N 1254)	4582
25-Oct-14	15:36	26-Oct-14	15:36	Cloudy	2.7409	2.9300	14166.03	14190.03	24.00	1.26	1.26	1.26	104	196	260	Construction work in progress	GMW GS 2310 (S/N 1254)	4652
31-Oct-14	17:46	01-Nov-14	17:46	Sunny	2.7300	2.9311	14193.03	14217.03	24.00	1.26	1.26	1.26	111	196	260	Construction work in progress	GMW GS 2310 (S/N 1254)	4676
												Min.	**82**					
												Max.	**122**					
												Average	**101**					

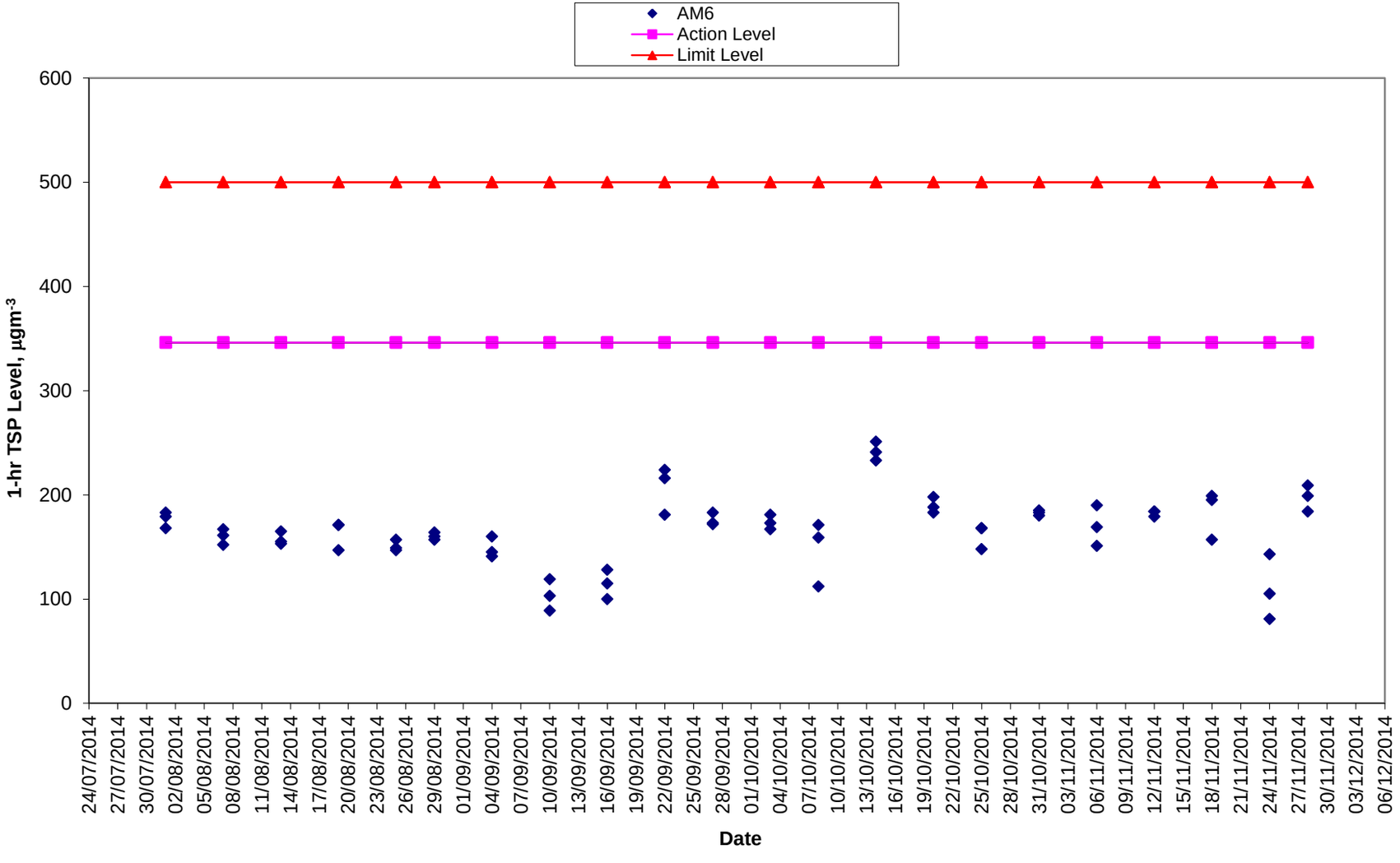
Annex G5 24-hour and 1-hour TSP Monitoring Results

24-hour TSP Monitoring Results

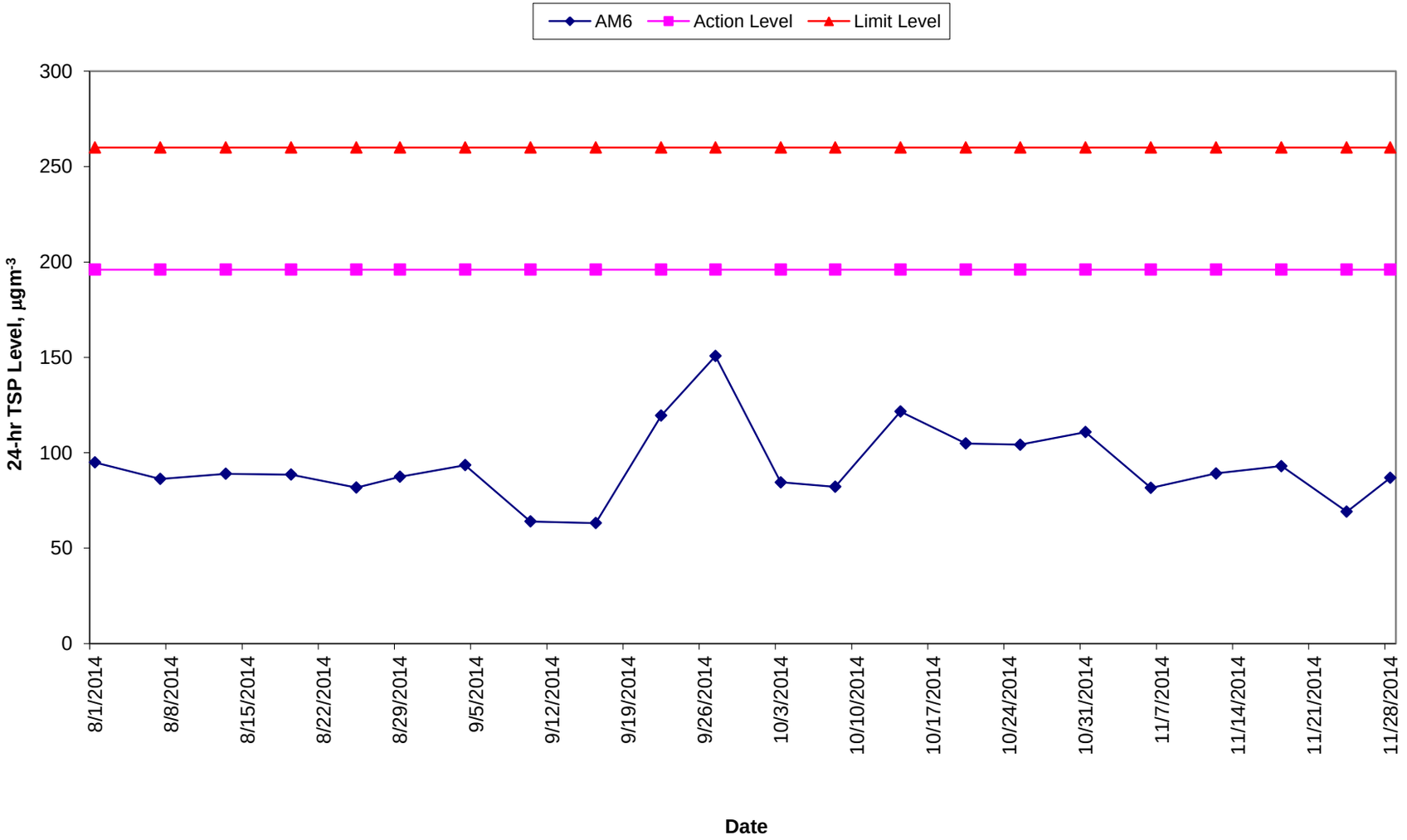
Station AM6

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m^3/min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	(μg/m^3)	(μg/m^3)	(μg/m^3)		ID	ID
06-Nov-14	17:26	07-Nov-14	17:26	Sunny	2.7291	2.8771	14220.03	14244.03	24.00	1.26	1.26	1.26	82	196	260	Construction work in progress	GMW GS 2310 (S/N 1254)	4680
12-Nov-14	17:17	13-Nov-14	17:17	Cloudy	2.8361	2.9979	14247.03	14271.03	24.00	1.26	1.26	1.26	89	196	260	Construction work in progress	GMW GS 2310 (S/N 1254)	4828
18-Nov-14	17:22	19-Nov-14	17:22	Sunny	2.8247	2.9921	14274.03	14298.03	24.00	1.25	1.25	1.25	93	196	260	Construction work in progress	GMW GS 2310 (S/N 1254)	4832
24-Nov-14	12:06	25-Nov-14	12:06	Sunny	2.8365	2.9608	14301.03	14325.03	24.00	1.25	1.25	1.25	69	196	260	Construction work in progress	GMW GS 2310 (S/N 1254)	4836
28-Nov-14	16:18	29-Nov-14	16:18	Cloudy	2.8426	2.9989	14328.03	14352.03	24.00	1.25	1.25	1.25	87	196	260	Construction work in progress	GMW GS 2310 (S/N 1254)	4840
												Min.	**69**					
												Max.	**93**					
												Average	**84**					

1-hr TSP Level
AM6 (Stonecutters Island Sewage Treatment Works)



24-hr TSP Level
AM6 (Stonecutters Island Sewage Treatment Works)



Meteorological Data Extracted from the Hong Kong Observatory

		King's Park Station				
Date	Weather	Average Air Temperature (℃)	Average Relative Humidity (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
2014-09-02	Fine	29	59-88	0.0	0-15	NW/W
2014-09-03	Fine	30	56-86	0.0	2-15	NW/W
2014-09-04	Sunny	29	66-87	6.7	0-21	W/SE
2014-09-05	Sunny	29	66-89	Trace	0-15	SE
2014-09-07	Cloudy	30	66-88	0.6	1-23	E/SE
2014-09-08	Sunny	29	72-91	3.0	0-15	SE
2014-09-09	Sunny	30	65-85	0.0	0-15	NW/S
2014-09-10	Sunny	30	59-85	Trace	0-10	NW/S
2014-09-11	Rain	30	60-87	Trace	0-18	SE
2014-09-13	Sunny	29	72-97	6.2	0-17	SE
2014-09-14	Sunny	30	64-92	0.5	0-15	SE
2014-09-16	Cloudy	27	78-96	51.6	5-53	SE
2014-09-17	Fine	28	81-94	7.7	0-20	SE
2014-09-18	Rain	29	68-92	Trace	0-13	NW/W
2014-09-19	Fine	30	64-91	0.3	0-14	NW/W
2014-09-20	Fine	29	56-73	0.0	0-19	NE
2014-09-21	Sunny	27	59-70	0.0	0-15	NE
2014-09-22	Sunny	28	58-76	Trace	0-12	NE
2014-09-23	Fine	28	63-77	0.0	0-9	N
2014-09-25	Sunny	28	66-84	0.0	0-11	S
2014-09-26	Sunny	28	66-84	0.0	0-12	S
2014-09-27	Sunny	29	64-85	0.0	0-14	S
2014-09-28	Fine	29	60-85	0.0	0-12	S
2014-09-30	Sunny	30	61-90	11.4	0-14	SE
2014-10-01	Sunny	28	70-96	26.7	0-23	SE

		Tsing Yi Station				
Date	Weather	Average Air Temperature (℃)	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-09-02	Fine	29	59-88	0.0	0-15	-
2014-09-03	Fine	30	56-86	0.0	0-16	-
2014-09-04	Sunny	28	66-87	6.7	0-35	-
2014-09-05	Sunny	31	66-89	Trace	0-19	-
2014-09-07	Cloudy	30	66-88	0.6	0-20	-
2014-09-08	Sunny	29	72-91	3.0	3-23	-
2014-09-09	Sunny	29	65-85	0.0	0-14	-
2014-09-10	Sunny	29	59-85	Trace	0-15	-
2014-09-11	Rain	30	60-87	Trace	0-18	-
2014-09-13	Sunny	30	72-97	6.2	0-18	-
2014-09-14	Sunny	29	64-92	0.5	0-19	-
2014-09-16	Cloudy	28	78-96	51.6	10-40	-
2014-09-17	Fine	29	81-94	7.7	7-27	-
2014-09-18	Rain	29	68-92	Trace	0-14	-
2014-09-19	Fine	30	64-91	0.3	0-19	-
2014-09-20	Fine	29	56-73	0.0	0-27	-
2014-09-21	Sunny	28	59-70	0.0	0-18	-
2014-09-22	Sunny	27	58-76	Trace	0-13	-
2014-09-23	Fine	27	63-77	0.0	0-15	-
2014-09-25	Sunny	28	66-84	0.0	0-17	-
2014-09-26	Sunny	28	66-84	0.0	0-15	-
2014-09-27	Sunny	28	64-85	0.0	0-15	-
2014-09-28	Fine	28	60-85	0.0	0-14	-
2014-09-30	Sunny	30	61-90	11.4	0-14	-
2014-10-01	Sunny	28	70-96	26.7	0-21	-

		Kai Tak Station				
Date	Weather	Average Air Temperature (℃) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-09-02	Fine	29	59-88	0.0	3-13	SE/W
2014-09-03	Fine	30	56-86	0.0	4-17	W/SW
2014-09-04	Sunny	29	66-87	6.7	0-40	E/W
2014-09-05	Sunny	29	66-89	Trace	0-23	E
2014-09-07	Cloudy	30	66-88	0.6	5-30	E
2014-09-08	Sunny	29	72-91	3.0	4-27	SE
2014-09-09	Sunny	30	65-85	0.0	0-13	SW
2014-09-10	Sunny	30	59-85	Trace	0-18	SE
2014-09-11	Rain	30	60-87	Trace	2-25	E/SE
2014-09-13	Sunny	29	72-97	6.2	4-24	E/SE
2014-09-14	Sunny	30	64-92	0.5	0-19	E/SE
2014-09-16	Cloudy	27	78-96	51.6	24-50	E/SE
2014-09-17	Fine	28	81-94	7.7	10-36	SE
2014-09-18	Rain	29	68-92	Trace	2-20	NW
2014-09-19	Fine	30	64-91	0.3	0-19	S/SW
2014-09-20	Fine	29	56-73	0.0	0-22	NW
2014-09-21	Sunny	27	59-70	0.0	0-26	N
2014-09-22	Sunny	28	58-76	Trace	0-15	NW
2014-09-23	Fine	28	63-77	0.0	0-19	SE
2014-09-25	Sunny	28	66-84	0.0	0-17	SE
2014-09-26	Sunny	28	66-84	0.0	0-17	SE
2014-09-27	Sunny	29	64-85	0.0	0-18	SE
2014-09-28	Fine	29	60-85	0.0	0-18	SE
2014-09-30	Sunny	30	61-90	11.4	0-18	SE
2014-10-01	Sunny	28	70-96	26.7	3-32	SE

		Green Island Station				
Date	Weather	Average Air Temperature (℃) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-09-02	Fine	29	59-88	0.0	0-20	S
2014-09-03	Fine	30	56-86	0.0	0-22	S/SW
2014-09-04	Sunny	29	66-87	6.7	0-49	NE/NW
2014-09-05	Sunny	29	66-89	Trace	3-36	NE
2014-09-07	Cloudy	30	66-88	0.6	12-48	NE
2014-09-08	Sunny	29	72-91	3.0	8-39	S
2014-09-09	Sunny	30	65-85	0.0	6-23	S
2014-09-10	Sunny	30	59-85	Trace	0-22	S
2014-09-11	Rain	30	60-87	Trace	0-45	NE
2014-09-13	Sunny	29	72-97	6.2	4-42	S/NE
2014-09-14	Sunny	30	64-92	0.5	0-25	NE
2014-09-16	Cloudy	27	78-96	51.6	29-83	E/SE
2014-09-17	Fine	28	81-94	7.7	10-44	SE
2014-09-18	Rain	29	68-92	Trace	2-20	S
2014-09-19	Fine	30	64-91	0.3	0-25	NW
2014-09-20	Fine	29	56-73	0.0	7-36	N/NW
2014-09-21	Sunny	27	59-70	0.0	17-33	N/NE
2014-09-22	Sunny	28	58-76	Trace	3-32	N/NW
2014-09-23	Fine	28	63-77	0.0	0-21	S
2014-09-25	Sunny	28	66-84	0.0	0-23	S/SE
2014-09-26	Sunny	28	66-84	0.0	0-27	E
2014-09-27	Sunny	29	64-85	0.0	0-30	S/SE
2014-09-28	Fine	29	60-85	0.0	0-26	S
2014-09-30	Sunny	30	61-90	11.4	0-27	S
2014-10-01	Sunny	28	70-96	26.7	5-55	SE

* King's Park's data
\- Data was not available
\# less than 24 hourly observations per day

Meteorological Data Extracted from the Hong Kong Observatory

Date	Weather	King's Park Station				
		Average Air Temperature (°C)	Average Relative Humidity (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
2014-10-03	Sunny	28	76-92	23.7	0-21	SE
2014-10-04	Sunny	27	75-96	2.6	0-15	SE/E
2014-10-06	Sunny	27	47-78	0.0	1-20	E
2014-10-07	Sunny	26	54-72	Trace	0-18	SE/E
2014-10-08	Sunny	26	48-73	0.0	0-17	S/SE
2014-10-09	Sunny	27	48-71	0.0	0-14	N
2014-10-11	Sunny	28	49-72	0.0	0-15	E
2014-10-12	Sunny	27	42-79	0.0	0-20	NE
2014-10-14	Sunny	26	51-71	Trace	0-18	E/NE
2014-10-15	Sunny	25	56-74	0.0	0-20	SE
2014-10-17	Sunny	25	53-74	0.0	4-21	SE
2014-10-18	Sunny	25	51-78	0.0	1-20	SE/E
2014-10-20	Sunny	27	66-83	0.0	0-12	SE
2014-10-21	Sunny	27	50-84	Trace	0-11	NW/W
2014-10-23	Fine	24	75-95	0.2	1-18	SE/E
2014-10-24	Fine	24	70-80	0.0	3-16	SE/E
2014-10-25	Cloudy	25	76-83	0.0	1-18	SE
2014-10-26	Sunny	26	68-87	0.1	0-14	SE/E
2014-10-28	Sunny	25	59-78	Trace	6-24	SE/E
2014-10-29	Fine	25	62-82	Trace	1-22	SE
2014-10-30	Fine	26	70-86	0.0	1-18	E
2014-10-31	Sunny	26	70-87	0.0	0-14	N
2014-11-01	Sunny	26	70-86	0.0	0-13	SE/E

Date	Weather	Tsing Yi Station				
		Average Air Temperature (°C)	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-10-03	Sunny	27	76-92	23.7	0-21	-
2014-10-04	Sunny	27	75-96	2.6	0-20	-
2014-10-06	Sunny	27	47-78	0.0	0-14	-
2014-10-07	Sunny	27	54-72	Trace	0-18	-
2014-10-08	Sunny	26	48-73	0.0	0-13	-
2014-10-09	Sunny	26	48-71	0.0	0-14	N
2014-10-11	Sunny	28	49-72	0.0	0-12	SE/E
2014-10-12	Sunny	27	42-79	0.0	0-20	N/NW
2014-10-14	Sunny	26	51-71	Trace	1-15	N
2014-10-15	Sunny	25	56-74	0.0	0-17	E
2014-10-17	Sunny	26	53-74	0.0	3-20	SE/E
2014-10-18	Sunny	26	51-78	0.0	3-21	SE/E
2014-10-20	Sunny	28	66-83	0.0	1-18	SE/E
2014-10-21	Sunny	27	50-84	Trace	0-12	S/SE
2014-10-23	Fine	25	75-95	0.2	1-12	SE/E
2014-10-24	Fine	25	70-80	0.0	0-17	E
2014-10-25	Cloudy	26	76-83	0.0	1-15	SE/E
2014-10-26	Sunny	27	68-87	0.1	0-15	E
2014-10-28	Sunny	26	59-78	Trace	6-24	SE/E
2014-10-29	Fine	27	62-82	Trace	6-23	SE/E
2014-10-30	Fine	27	70-86	0.0	2-17	E/NE
2014-10-31	Sunny	26	70-87	0.0	0-15	NE
2014-11-01	Sunny	26	70-86	0.0	0-13	E

Date	Weather	Kai Tak Station				
		Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-10-03	Sunny	28	76-92	23.7	0-23	SE
2014-10-04	Sunny	27	75-96	2.6	0-21	E
2014-10-06	Sunny	27	47-78	0.0	2-23	E
2014-10-07	Sunny	26	54-72	Trace	3-26	E
2014-10-08	Sunny	26	48-73	0.0	2-16	N/NE
2014-10-09	Sunny	27	48-71	0.0	0-18	SE
2014-10-11	Sunny	28	49-72	0.0	0-16	SE/E
2014-10-12	Sunny	27	42-79	0.0	1-21	N
2014-10-14	Sunny	26	51-71	Trace	3-19	NE
2014-10-15	Sunny	25	56-74	0.0	0-19	E
2014-10-17	Sunny	25	53-74	0.0	9-25	E
2014-10-18	Sunny	25	51-78	0.0	5-24	E/NE
2014-10-20	Sunny	27	66-83	0.0	0-19	SE/E
2014-10-21	Sunny	27	50-84	Trace	0-15	SE
2014-10-23	Fine	24	75-95	0.2	9-25	E
2014-10-24	Fine	24	70-80	0.0	3-21	SE/E
2014-10-25	Cloudy	25	76-83	0.0	6-22	E
2014-10-26	Sunny	26	68-87	0.1	3-17	S/SE
2014-10-28	Sunny	25	59-78	Trace	12-30	E
2014-10-29	Fine	25	62-82	Trace	7-29	E
2014-10-30	Fine	26	70-86	0.0	6-24	E/NE
2014-10-31	Sunny	26	70-87	0.0	5-19	-
2014-11-01	Sunny	26	70-86	0.0	0-20	SE

Date	Weather	Green Island Station				
		Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-10-03	Sunny	28	76-92	23.7	0-40	E/NE
2014-10-04	Sunny	27	75-96	2.6	2-27	E
2014-10-06	Sunny	27	47-78	0.0	12-42	NE
2014-10-07	Sunny	26	54-72	Trace	10-45	E/NE
2014-10-08	Sunny	26	48-73	0.0	6-37	NE
2014-10-09	Sunny	27	48-71	0.0	0-22	SW
2014-10-11	Sunny	28	49-72	0.0	0-35	S
2014-10-12	Sunny	27	42-79	0.0	0-41	NE/N
2014-10-14	Sunny	26	51-71	Trace	2-39	NE/N
2014-10-15	Sunny	25	56-74	0.0	6-29	E/NE
2014-10-17	Sunny	25	53-74	0.0	5-43	E/NE
2014-10-18	Sunny	25	51-78	0.0	8-37	E/NE
2014-10-20	Sunny	27	66-83	0.0	0-33	NE
2014-10-21	Sunny	27	50-84	Trace	0-21	NW/W
2014-10-23	Fine	24	75-95	0.2	5-46	NE
2014-10-24	Fine	24	70-80	0.0	12-39	NE
2014-10-25	Cloudy	25	76-83	0.0	14-33	NE
2014-10-26	Sunny	26	68-87	0.1	0-33	NE
2014-10-28	Sunny	25	59-78	Trace	28-65	NE
2014-10-29	Fine	25	62-82	Trace	15-52	NE
2014-10-30	Fine	26	70-86	0.0	6-47	NE
2014-10-31	Sunny	26	70-87	0.0	0-33	E/NE
2014-11-01	Sunny	26	70-86	0.0	0-27	SE

* King's Park's data
\- Data was not available
\# less than 24 hourly observations per day

Meteorological Data Extracted from the Hong Kong Observatory

Date	Weather	King's Park Station				
		Average Air Temperature (°C)	Average Relative Humidity (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
2014-11-02	Sunny	25	61-85	Trace	0-15	NE
2014-11-04	Cloudy	22	72-81	Trace	0-15	SE/E
2014-11-05	Cloudy	24	74-81	Trace	2-16	SE/E
2014-11-06	Sunny	24	74-87	0.1	0-14	SE/E
2014-11-07	Sunny	23	82-97	11.8	0-18	SE
2014-11-09	Cloudy	22	75-86	Trace	0-19	SE
2014-11-10	Cloudy	24	72-84	Trace	0-20	SE/E
2014-11-11	Cloudy	24	76-85	0.0	0-15	SE/E
2014-11-12	Cloudy	25	74-88	Trace	0-13	E/NE
2014-11-13	Cloudy	19	72-88	Trace	0-17	NE/N
2014-11-15	Sunny	22	65-85	0.4	0-19	-
2014-11-16	Sunny	23	61-85	0.0	0-14	NE/N
2014-11-18	Sunny	21	57-72	Trace	0-16	NE
2014-11-19	Sunny	22	58-78	Trace	0-12	SE/E
2014-11-21	Sunny	23	62-83	0.0	0-18	SE/E
2014-11-22	Sunny	23	68-88	0.0	0-19	SE/E
2014-11-23	Sunny	23	70-88	0.0	2-18	SE
2014-11-24	Sunny	24	67-88	0.0	0-14	SE
2014-11-25	Sunny	24	65-92	0.0	0-12	N
2014-11-27	Fine	22	77-90	0.4	0-18	SE/E
2014-11-28	Cloudy	24	75-88	Trace	0-13	SE
2014-11-29	Cloudy	23	78-94	0.2	0-19	SE/E
2014-11-30	Sunny	25	82-96	0.2	0-12	SE

Date	Weather	Tsing Yi Station				
		Average Air Temperature (°C)	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-11-02	Sunny	26	61-85	Trace	1-18	N
2014-11-04	Cloudy	23	72-81	Trace	0-14	E
2014-11-05	Cloudy	25	74-81	Trace	4-16	E
2014-11-06	Sunny	24	74-87	0.1	1-11	SE/E
2014-11-07	Sunny	24	82-97	11.8	0-21	NE/E
2014-11-09	Cloudy	22	75-86	Trace	0-18	NE
2014-11-10	Cloudy	24	72-84	Trace	0-14	NW
2014-11-11	Cloudy	25	76-85	0.0	0-15	N
2014-11-12	Cloudy	22	74-88	Trace	0-20	NW
2014-11-13	Cloudy	20	72-88	Trace	0-13	NW
2014-11-15	Sunny	23	65-85	0.4	2-23	E
2014-11-16	Sunny	23	61-85	0.0	0-14	N
2014-11-18	Sunny	21	57-72	Trace	0-15	SE/E
2014-11-19	Sunny	22	58-78	Trace	1-14	NE/E
2014-11-21	Sunny	24	62-83	0.0	0-18	NE/E
2014-11-22	Sunny	23	68-88	0.0	0-19	-
2014-11-23	Sunny	25	70-88	0.0	1-23	E
2014-11-24	Sunny	25	67-88	0.0	0-15	-
2014-11-25	Sunny	24	65-92	0.0	0-12	NW
2014-11-27	Fine	23	77-90	0.4	3-18	E
2014-11-28	Cloudy	25	75-88	Trace	0-15	SE/E
2014-11-29	Cloudy	25	78-94	0.2	3-21	E
2014-11-30	Sunny	26	82-96	0.2	0-12	W

Date	Weather	Kai Tak Station				
		Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-11-02	Sunny	25	61-85	Trace	3-21	N/NW
2014-11-04	Cloudy	22	72-81	Trace	3-21	E
2014-11-05	Cloudy	24	74-81	Trace	4-22	SE/E
2014-11-06	Sunny	24	74-87	0.1	0-21	E
2014-11-07	Sunny	23	82-97	11.8	8-26	E
2014-11-09	Cloudy	22	75-86	Trace	0-24	E
2014-11-10	Cloudy	24	72-84	Trace	4-25	E
2014-11-11	Cloudy	24	76-85	0.0	0-21	N/NW
2014-11-12	Cloudy	25	74-88	Trace	0-15	SW/S
2014-11-13	Cloudy	19	72-88	Trace	0-18	E
2014-11-15	Sunny	22	65-85	0.4	2-25	SE/E
2014-11-16	Sunny	23	61-85	0.0	0-20	E
2014-11-18	Sunny	21	57-72	Trace	3-18	NE
2014-11-19	Sunny	22	58-78	Trace	4-18	E
2014-11-21	Sunny	23	62-83	0.0	0-22	NE/N
2014-11-22	Sunny	23	68-88	0.0	0-26	SE/E
2014-11-23	Sunny	23	70-88	0.0	5-24	E
2014-11-24	Sunny	24	67-88	0.0	0-21	SE
2014-11-25	Sunny	24	65-92	0.0	0-14	SW/W
2014-11-27	Fine	22	77-90	0.4	3-24	SE/E
2014-11-28	Cloudy	24	75-88	Trace	3-18	SE/E
2014-11-29	Cloudy	23	78-94	0.2	6-19	SE/E
2014-11-30	Sunny	25	82-96	0.2	4-19	SE/E

Date	Weather	Green Island Station				
		Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2014-11-02	Sunny	25	61-85	Trace	11-38	NE/N
2014-11-04	Cloudy	22	72-81	Trace	5-37	NE
2014-11-05	Cloudy	24	74-81	Trace	2-36	NE
2014-11-06	Sunny	24	74-87	0.1	0-35	NE
2014-11-07	Sunny	23	82-97	11.8	24-50	NE
2014-11-09	Cloudy	22	75-86	Trace	17-45	NE/N
2014-11-10	Cloudy	24	72-84	Trace	5-45	NE
2014-11-11	Cloudy	24	76-85	0.0	12-41	NE
2014-11-12	Cloudy	25	74-88	Trace	11-35	NE/N
2014-11-13	Cloudy	19	72-88	Trace	16-35	N
2014-11-15	Sunny	22	65-85	0.4	15-57	NE
2014-11-16	Sunny	23	61-85	0.0	0-32	NE/N
2014-11-18	Sunny	21	57-72	Trace	2-39	NE/N
2014-11-19	Sunny	22	58-78	Trace	0-31	NE
2014-11-21	Sunny	23	62-83	0.0	0-40	NE
2014-11-22	Sunny	23	68-88	0.0	6-46	NE
2014-11-23	Sunny	23	70-88	0.0	-	-
2014-11-24	Sunny	24	67-88	0.0	0-40	NE
2014-11-25	Sunny	24	65-92	0.0	0-20	NW
2014-11-27	Fine	22	77-90	0.4	13-45	NE
2014-11-28	Cloudy	24	75-88	Trace	2-40	NE
2014-11-29	Cloudy	23	78-94	0.2	20-41	NE
2014-11-30	Sunny	25	82-96	0.2	1-31	NE

* King's Park's data
\- Data was not available
\# less than 24 hourly observations per day

Annex G6 Noise Monitoring Results

Daytime Noise Monitoring Results

Station NM5

Date	Start Time	End Time	Weather	Noise level (dB(A)), 30 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (℃)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
4-Sep-14	10:55	11:25	Sunny	62	64	58	Drill rig, Welding machine, Excavator, Dump truck	Traffic noise	-	30	0.3	RION-NL31 (S/N 00603867)	RION-NL73 (S/N 10997142)
10-Sep-14	9:38	10:08	Sunny	61	63	57	Drill rig, Welding machine, Excavator, Dump truck	Traffic Noise	-	30	0.3	RION-NL31 (S/N 00603867)	RION-NL73 (S/N 10997142)
16-Sep-14	11:16	11:46	Cloudy	60	62	60	-	Traffic Noise	-	29	0.9	RION-NL31 (S/N 00603867)	RION-NL73 (S/N 10997142)
22-Sep-14	15:05	15:35	Sunny	60	62	56	Drill rig, Welding machine, Excavator, Dump truck	Traffic Noise	-	30	0.3	RION-NL31 (S/N 00603867)	RION-NL73 (S/N 10997142)
			Min.	**60**									
			Max.	**62**									

Annex G6 Noise Monitoring Results

Daytime Noise Monitoring Results

Station NM5

Date	Start Time	End Time	Weather	Noise level (dB(A)), 30 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
03-Oct-14	14:35	15:05	Sunny	61	63	57	Drill rig, Welding machine, excavator, dump truck	Traffic Noise	-	31	0.3	RION- NL31 (S/N 00603867)	RION-NL73 (S/N 10997142)
08-Oct-14	15:30	16:00	Sunny	61	63	58	Drill rig, concrete lorry mixer, welding machine	Traffic Noise	-	29	0.5	RION- NL31 (S/N 00603868)	RION-NL73 (S/N 10997142)
14-Oct-14	16:10	16:40	Sunny	63	64	60	Drill rig, execavator, dump truck	Traffic Noise	-	28	0.4	RION- NL31 (S/N 00603869)	RION-NL73 (S/N 10997142)
20-Oct-14	16:10	16:40	Sunny	60	63	57	Drill rig, welding machine, excavator	Traffic Noise	-	29	0.4	RION- NL31 (S/N 00603870)	RION-NL73 (S/N 10997142)
31-Oct-14	16:10	16:40	Sunny	61	63	57	Drill rig, execavator, dump truck	Traffic Noise	-	29	0.5	RION- NL31 (S/N 00603871)	RION-NL73 (S/N 10997142)
			Min.	**60**									
			Max.	**63**									

Annex G6 Noise Monitoring Results

Daytime Noise Monitoring Results

Station NM5

Date	Start Time	End Time	Weather	Noise level (dB(A)), 30 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
06-Nov-14	16:30	17:00	Sunny	60	62	56	Drill rig, Welding machine, excavator	Traffic Noise	-	25	0.3	RION- NL31 (S/N 00603867)	RION-NL73 (S/N 10997142)
12-Nov-14	16:18	16:48	Cloudy	61	63	57	Drill rig, welding machine, dump truck	Traffic Noise	-	22	0.5	RION- NL31 (S/N 00603867)	RION-NL73 (S/N 10997142)
18-Nov-14	15:40	16:10	Sunny	61	62	57	Drill rig, welding machine, execavator, dump truck	Traffic Noise	-	23	0.3	RION- NL31 (S/N 00603867)	RION-NL73 (S/N 10997142)
24-Nov-14	10:11	10:41	Sunny	60	62	57	Drill rig, welding machine, dump truck	Traffic Noise	-	24	0.5	RION- NL31 (S/N 00603867)	RION-NL73 (S/N 10997142)
			Min.	**60**									
			Max.	**61**									

Annex G6 Noise Monitoring Results

Restricted Hours Noise Monitoring Results

Station NM5

Date	Start Time	End Time	Weather	Noise level (dB(A)), 5 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (℃)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
2-Sep-14	19:03	19:08	Fine	59	60	57	Drill rig	Traffic Noise	-	30	0.3	RION-NL31 (S/N 00603867)	RION - NC73 (S/N 10997142)
	19:08	19:13	Fine	59	61	57			-				
	19:13	19:18	Fine	60	61	57			-				
	19:03	19:18	Fine	59	61	57			-				
7-Sep-14	9:22	9:27	Cloudy	58	61	56	Drill rig, welding machine	Traffic Noise	-	29	0.3	RION-NL31 (S/N 00603867)	RION - NC73 (S/N 10997142)
	9:27	9:32	Cloudy	59	61	56			-				
	9:32	9:37	Cloudy	60	62	56			-				
	9:22	9:37	Cloudy	59	61	56			-				
16-Sep-14	19:05	19:10	Cloudy	60	62	59	-	Traffic Noise	-	28	1.5	RION-NL31 (S/N 00603867)	RION - NC73 (S/N 10997142)
	19:10	19:15	Cloudy	61	63	59			-				
	19:15	19:20	Cloudy	61	62	58			-				
	19:05	19:20	Cloudy	61	63	58			-				
21-Sep-14	9:00	9:05	Sunny	60	62	57	Drill rig	Traffic Noise	-	30	0.2	RION-NL31 (S/N 00603867)	RION - NC73 (S/N 10997142)
	9:05	9:10	Sunny	61	63	57			-				
	9:10	9:15	Sunny	61	63	58			-				
	9:00	9:15	Sunny	60	63	57			-				
30-Sep-14	19:03	19:08	Fine	59	61	55	Drill rig	Traffic Noise	-	30	0.2	RION-NL31 (S/N 00603867)	RION - NC73 (S/N 10997142)
	19:08	19:13	Fine	60	61	56			-				
	19:13	19:18	Fine	59	60	55			-				
	19:03	19:18	Fine	59	61	56			-				
			Min.	**58**									
			Max.	**61**									

Annex G6 Noise Monitoring Results

Restricted Hours Noise Monitoring Results

Station NM5

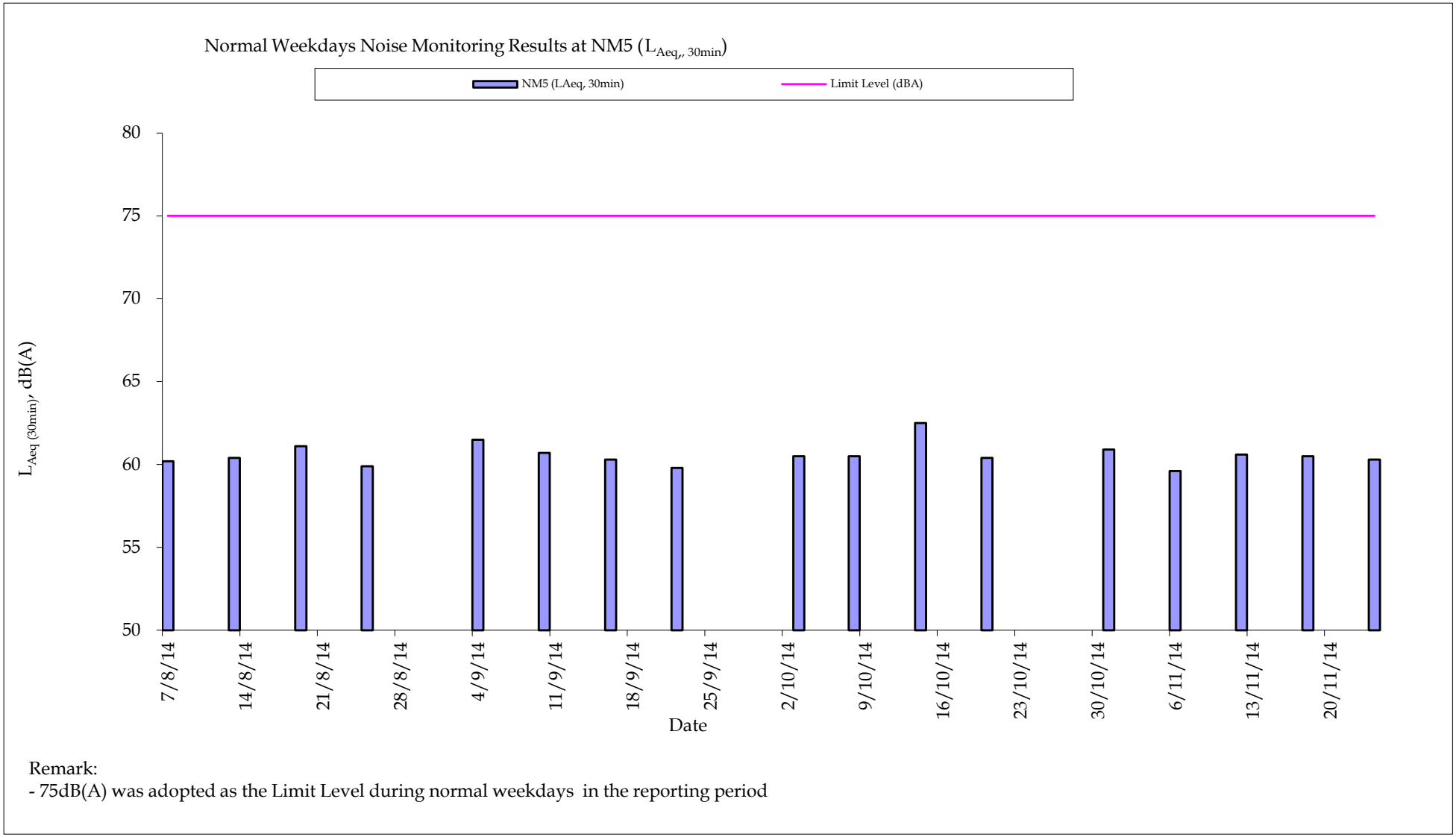
Date	Start Time	End Time	Weather	Noise level (dB(A)), 5 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
05-Oct-14	11:10	11:15	Sunny	60	62	57	Drill rig	Traffic noise	-	31	0.3	RION- NL31 (S/N 00603867)	RION - NC73 (S/N 10997142)
	11:15	11:20	Sunny	59	61	57			-				
	11:20	11:25	Sunny	60	62	57			-				
	11:10	11:25	Sunny	60	61	57			-				
14-Oct-14	19:01	19:06	Sunny	61	62	57	Drill rig	Traffic noise	-	27	0.3	RION- NL31 (S/N 00603867)	RION - NC73 (S/N 10997142)
	19:06	19:11	Sunny	61	63	57			-				
	19:11	19:16	Sunny	60	62	57			-				
	19:01	19:16	Sunny	61	63	57			-				
19-Oct-14	9:00	9:05	Sunny	60	61	57	Drill rig	Traffic noise	-	27	0.3	RION- NL31 (S/N 00603867)	RION - NC73 (S/N 10997142)
	9:05	9:10	Sunny	60	62	56			-				
	9:15	9:20	Sunny	60	62	57			-				
	9:00	9:15	Sunny	60	62	57			-				
28-Oct-14	19:20	19:25	Fine	59	61	56	Drill rig	Traffic noise	-	25	0.5	RION- NL31 (S/N 00603867)	RION - NC73 (S/N 10997142)
	19:25	19:30	Fine	60	62	57			-				
	19:30	19:35	Fine	60	62	57			-				
	19:20	19:35	Fine	60	62	57			-				
			Min.	**59**									
			Max.	**61**									

Annex G6 Noise Monitoring Results

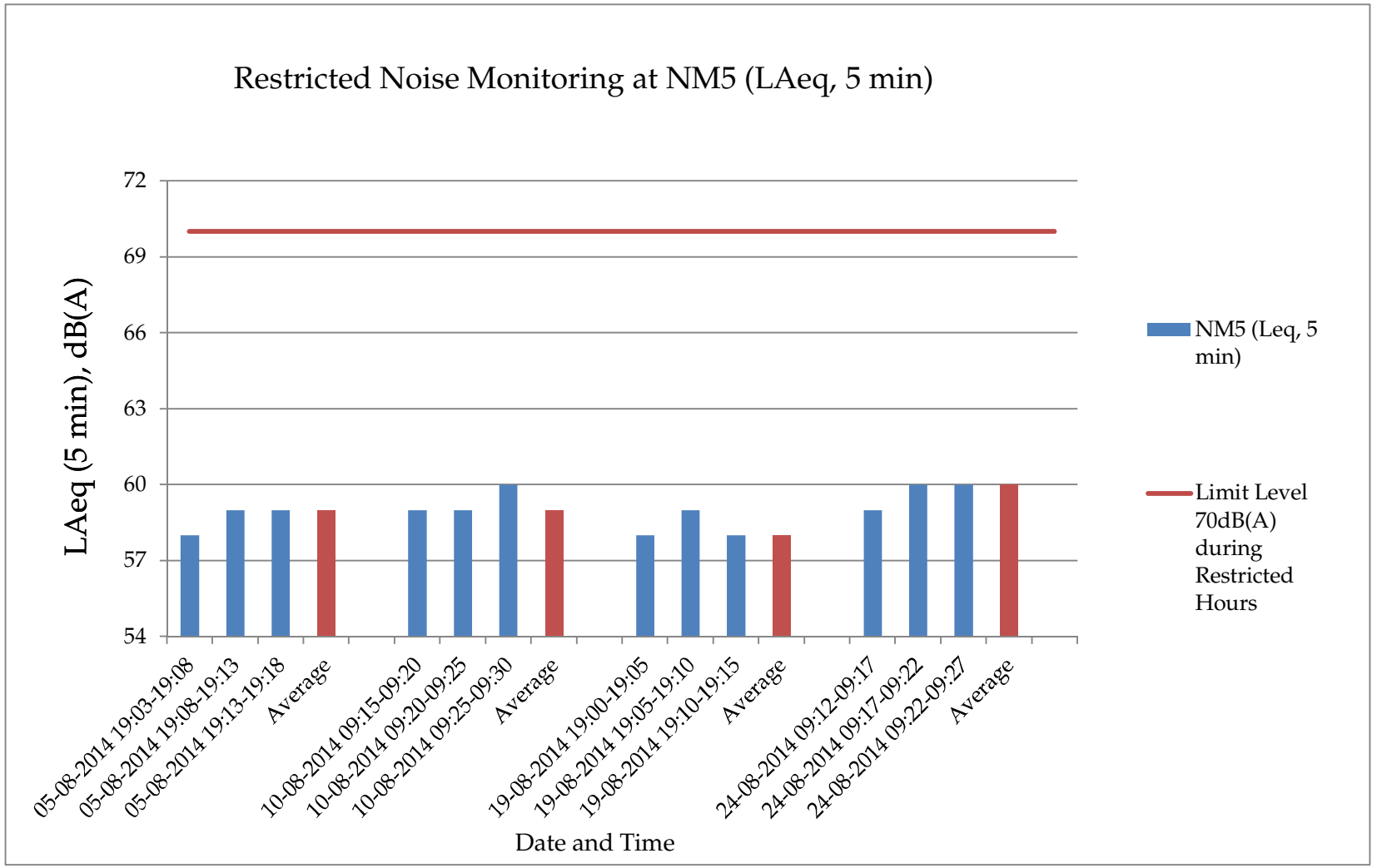
Restricted Hours Noise Monitoring Results

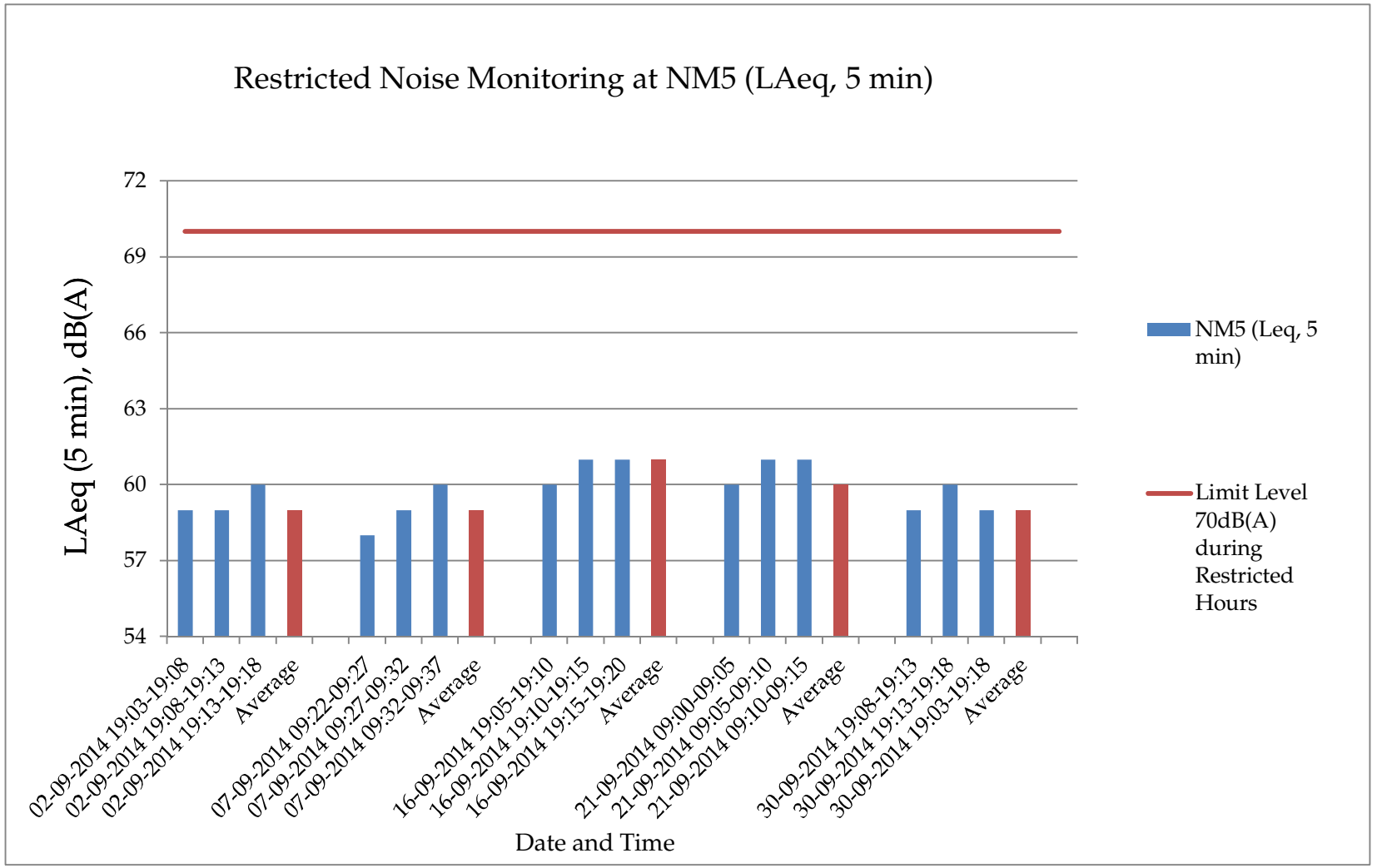
Station NM5

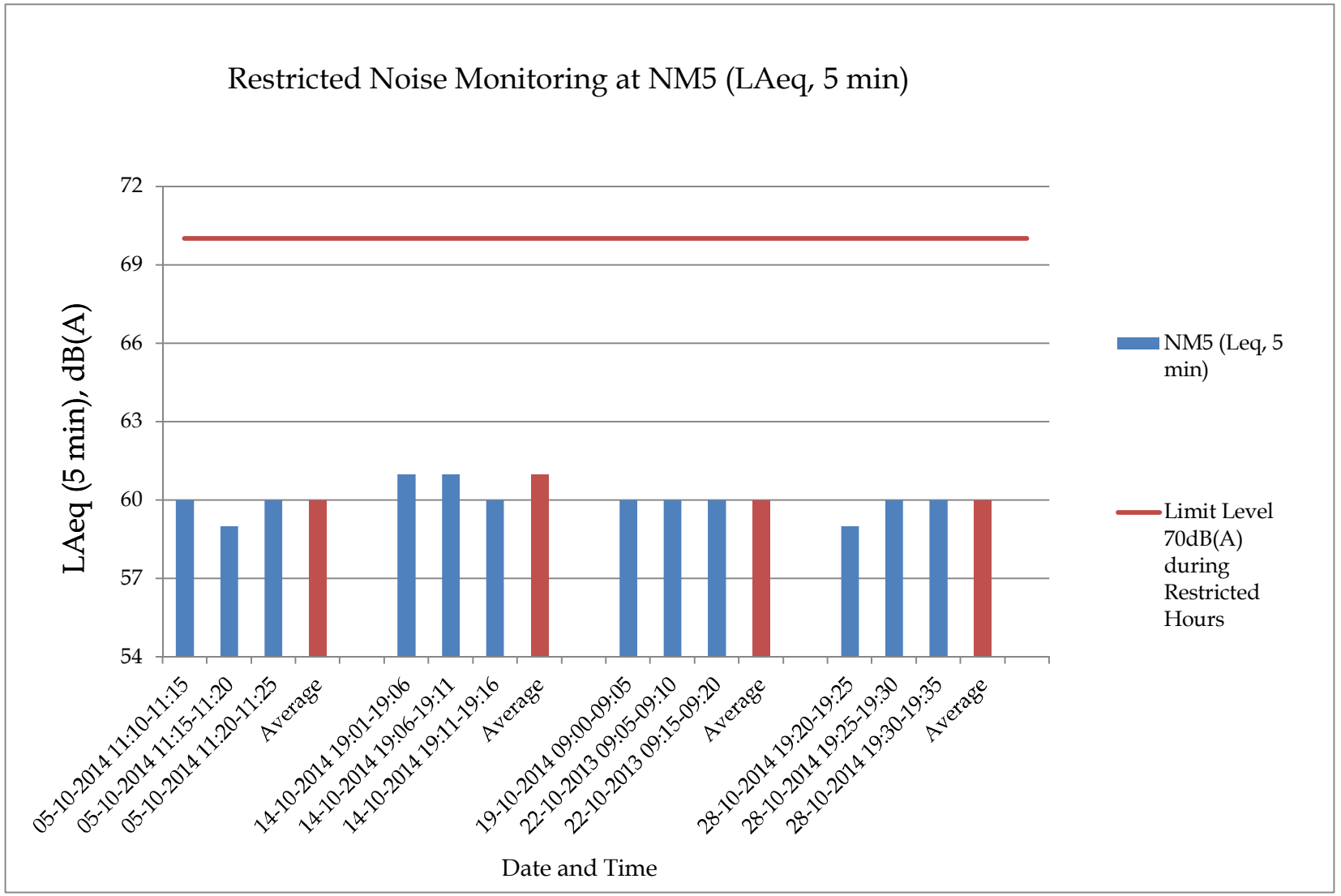
Date	Start Time	End Time	Weather	Noise level (dB(A)), 5 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
02-Nov-14	9:25	9:30	Sunny	59	61	56	Drill rig	Traffic noise	-	26	0.5	RION- NL31 (S/N 00603867)	RION - NC73 (S/N 10997142)
	9:30	9:35	Sunny	60	61	56			-				
	9:35	9:40	Sunny	60	62	57			-				
	9:25	9:40	Sunny	60	62	56			-				
11-Nov-14	19:00	19:05	Cloudy	59	61	56	Drill rig	Traffic noise	-	23	0.5	RION- NL31 (S/N 00603867)	RION - NC73 (S/N 10997142)
	19:05	19:10	Cloudy	59	62	56			-				
	19:10	19:15	Cloudy	59	61	57			-				
	19:00	19:15	Cloudy	59	62	56			-				
16-Nov-14	9:08	9:13	Sunny	60	62	57	Drill rig	Traffic noise	-	23	0.3	RION- NL31 (S/N 00603867)	RION - NC73 (S/N 10997142)
	9:13	9:18	Sunny	60	63	57			-				
	9:18	9:23	Sunny	60	62	57			-				
	9:08	9:23	Sunny	60	62	57			-				
25-Nov-14	19:02	19:07	Fine	57	59	55	Drill rig	Traffic noise	-	21	0.3	RION- NL31 (S/N 00603867)	RION - NC73 (S/N 10997142)
	19:07	19:12	Fine	57	59	55			-				
	19:12	19:17	Fine	56	58	54			-				
	19:02	19:17	Fine	57	59	55			-				
30-Nov-14	9:22	9:27	Sunny	59	61	57	Drill rig	Traffic noise	-	22	0.5	RION- NL31 (S/N 00410224)	RION - NC73 (S/N 10997142)
	9:27	9:32	Sunny	58	60	56			-				
	9:32	9:37	Sunny	59	60	57			-				
	9:22	9:37	Sunny	59	60	57			-				
			Min.	**56**									
			Max.	**60**									

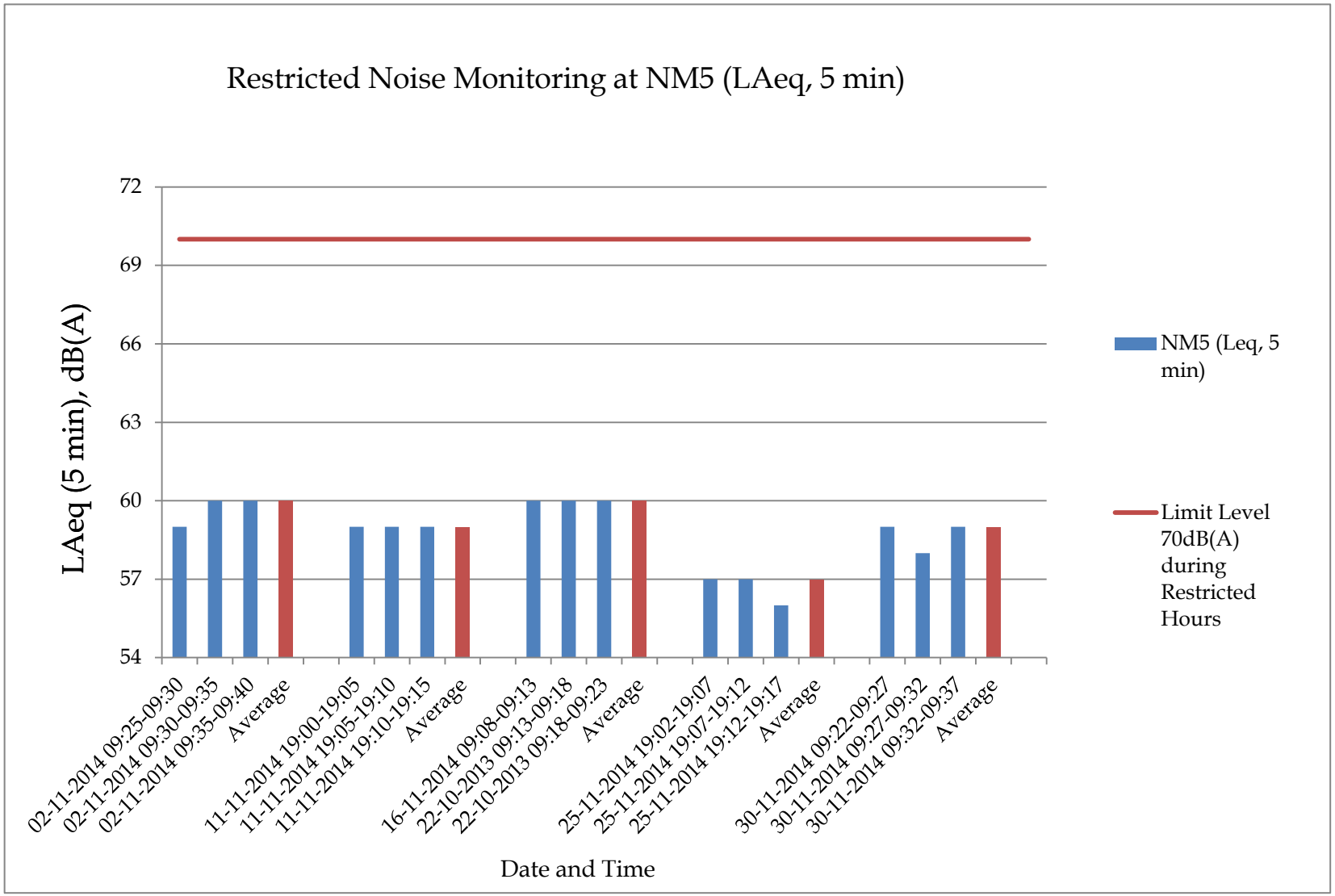


Remark:
- 75dB(A) was adopted as the Limit Level during normal weekdays in the reporting period


Restricted Noise Monitoring at NM5 (LAeq, 5 min)
LAeq (5 min), dB(A)
72
69
66
63
60
57
54
05-08-2014 19:03-19:08
05-08-2014 19:08-19:13
05-08-2014 19:13-19:18
Average
10-08-2014 09:15-09:20
10-08-2014 09:20-09:25
10-08-2014 09:25-09:30
Average
19-08-2014 19:00-19:05
19-08-2014 19:05-19:10
19-08-2014 19:10-19:15
Average
24-08-2014 09:12-09:17
24-08-2014 09:17-09:22
24-08-2014 09:22-09:27
Average
Date and Time
NM5 (Leq, 5 min)
Limit Level 70dB(A) during Restricted Hours


Restricted Noise Monitoring at NM5 (LAeq, 5 min)
LAeq (5 min), dB(A)
72
69
66
63
60
57
54
02-09-2014 19:03-19:08
02-09-2014 19:08-19:13
02-09-2014 19:13-19:18
Average
07-09-2014 09:22-09:27
07-09-2014 09:27-09:32
07-09-2014 09:32-09:37
Average
16-09-2014 19:05-19:10
16-09-2014 19:10-19:15
16-09-2014 19:15-19:20
Average
21-09-2014 09:00-09:05
21-09-2014 09:05-09:10
21-09-2014 09:10-09:15
Average
30-09-2014 19:08-19:13
30-09-2014 19:13-19:18
30-09-2014 19:03-19:18
Average
Date and Time
NM5 (Leq, 5 min)
Limit Level 70dB(A) during Restricted Hours


Restricted Noise Monitoring at NM5 (LAeq, 5 min)
LAeq (5 min), dB(A)
72
69
66
63
60
57
54
05-10-2014 11:10-11:15
05-10-2014 11:15-11:20
05-10-2014 11:20-11:25
Average
14-10-2014 19:01-19:06
14-10-2014 19:06-19:11
14-10-2014 19:11-19:16
Average
19-10-2014 09:00-09:05
22-10-2013 09:05-09:10
22-10-2013 09:15-09:20
Average
28-10-2014 19:20-19:25
28-10-2014 19:25-19:30
28-10-2014 19:30-19:35
Average
Date and Time
NM5 (Leq, 5 min)
Limit Level 70dB(A) during Restricted Hours


Restricted Noise Monitoring at NM5 (LAeq, 5 min)
LAeq (5 min), dB(A)
72
69
66
63
60
57
54
02-11-2014 09:25-09:30
02-11-2014 09:30-09:35
02-11-2014 09:35-09:40
Average
11-11-2014 19:00-19:05
11-11-2014 19:05-19:10
11-11-2014 19:10-19:15
Average
16-11-2014 09:08-09:13
22-10-2013 09:13-09:18
22-10-2013 09:18-09:23
Average
25-11-2014 19:02-19:07
25-11-2014 19:07-19:12
25-11-2014 19:12-19:17
Average
30-11-2014 09:22-09:27
30-11-2014 09:27-09:32
30-11-2014 09:32-09:37
Average
Date and Time
NM5 (Leq, 5 min)
Limit Level 70dB(A) during Restricted Hours

Annex G7 Cumulative Complaint and Summons/Prosecutions Log

Reporting Month	Number of Complaints in Reporting Month	Number of Summons/Prosecutions in Reporting Month
December 2009	0	0
January 2010	0	0
February 2010	0	0
March 2010	0	0
April 2010	0	0
May 2010	0	0
June 2010	0	0
July 2010	0	0
August 2010	0	0
September 2010	0	0
October 2010	0	0
November 2010	0	0
December 2010	0	0
January 2011	0	0
February 2011	0	0
March 2011	0	0
April 2011	0	0
May 2011	0	0

Annex G7 Cumulative Complaint and Summons/Prosecutions Log

Reporting Month	Number of Complaints in Reporting Month	Number of Summons/Prosecutions in Reporting Month
June 2011	0	0
July 2011	0	0
August 2011	0	0
September 2011	0	0
October 2011	0	0
November 2011	0	0
December 2011	0	0
January 2012	0	0
February 2012	0	0
March 2012	0	0
April 2012	0	0
May 2012	0	0
June 2012	0	0
July 2012	0	0
August 2012	0	0
September 2012	0	0
October 2012	0	0
November 2012	0	0

Annex G7 Cumulative Complaint and Summons/Prosecutions Log

Reporting Month	Number of Complaints in Reporting Month	Number of Summons/Prosecutions in Reporting Month
December 2012	0	0
January 2013	0	0
February 2013	0	0
March 2013	0	0
April 2013	0	0
May 2013	0	0
June 2013	0	0
July 2013	1	0
August 2013	0	0
September 2013	0	0
October 2013	0	0
November 2013	0	0
December 2013	0	0
January 2014	0	0
February 2014	0	0
March 2014	0	0
April 2014	0	0
May 2014	0	0

Annex G7 Cumulative Complaint and Summons/Prosecutions Log

Reporting Month	Number of Complaints in Reporting Month	Number of Summons/Prosecutions in Reporting Month
June 2014	0	0
July 2014	0	0
August 2014	0	0
September 2014	0	0
October 2014	0	0
November 2014	0	0
Overall Total	1	0

Annex H

Calibration Reports for HVSs and Sound Level Meters for All Sites

TSP Monitoring Equipment

Monitoring Station ID	Location	Monitoring Equipment		Last Calibration Date	Next Calibration Date
24-hr and 1-hr TSP		**HVS**	**Calibrator**		
AM1	Chan's Creative School (formerly known as Madam Chan Wai Chow Memorial School)	GMW GS-2310 (S/N 1808)	CM-AIR-43 (S/N 0438320)	18 July 2014	18 September 2014
AM1	Chan's Creative School (formerly known as Madam Chan Wai Chow Memorial School)	GMW GS-2310 (S/N 1808)	CM-AIR-43 (S/N 0438320)	18 September 2014	18 November 2014
AM1	Chan's Creative School (formerly known as Madam Chan Wai Chow Memorial School)	GMW GS-2310 (S/N 1808)	CM-AIR-43 (S/N 0438320)	18 November 2014	18 January 2015
AM2	Rooftop of Hong Kong & Islands Regional Office, WSD	GMW GS-2310 (S/N 0145)	CM-AIR-43 (S/N 0438320)	18 July 2014	18 September 2014
AM2	Rooftop of Hong Kong & Islands Regional Office, WSD	GMW GS-2310 (S/N 0145)	CM-AIR-43 (S/N 0438320)	18 September 2014	18 November 2014
AM2	Rooftop of Hong Kong & Islands Regional Office, WSD	GMW GS-2310 (S/N 0145)	CM-AIR-43 (S/N 0438320)	18 November 2014	18 January 2015
AM3	Rooftop of Wan Chai East PTW	GMW GS-2310 (S/N 0481)	CM-AIR-43 (S/N 0438320)	18 July 2014	18 September 2014
AM3	Rooftop of Wan Chai East PTW	GMW GS-2310 (S/N 0481)	CM-AIR-43 (S/N 0438320)	18 September 2014	18 November 2014
AM3	Rooftop of Wan Chai East PTW	GMW GS-2310 (S/N 0481)	CM-AIR-43 (S/N 0438320)	18 November 2014	18 January 2015
AM4_2	A location next to Sheung Wan Fire Station	GMW GS-2310 (S/N 9315)	CM-AIR-43 (S/N 0438320)	18 July 2014	18 September 2014
AM4_2	A location next to Sheung Wan Fire Station	GMW GS-2310 (S/N 9315)	CM-AIR-43 (S/N 0438320)	18 September 2014	18 November 2014
AM4_2	A location next to Sheung Wan Fire Station	GMW GS-2310 (S/N 9315)	CM-AIR-43 (S/N 0438320)	18 November 2014	18 January 2015
AM5	Western Wholesale Food Market	TE-5170 (S/N 2146)	CM-AIR-43 (S/N 0438320)	8 July 2014	8 September 2014
AM5	Western Wholesale Food Market	TE-5170 (S/N 2146)	CM-AIR-43 (S/N 0438320)	5 September 2014	5 November 2014
AM5	Western Wholesale Food Market	TE-5170 (S/N 2146)	CM-AIR-43 (S/N 0438320)	4 November 2014	4 January 2015
AM6	Works Site Boundary	GMW GS-2310 (S/N 1254)	CM-AIR-43 (S/N 0438320)	18 July 2014	18 September 2014
AM6	Works Site Boundary	GMW GS-2310 (S/N 1254)	CM-AIR-43 (S/N 0438320)	18 September 2014	18 November 2014
AM6	Works Site Boundary	GMW GS-2310 (S/N 1254)	CM-AIR-43 (S/N 0438320)	18 November 2014	18 January 2015

Monitoring Equipment

Monitoring Station ID	Monitoring Equipment	Model & Serial No.	Last Calibration Date	Next Calibration Date
NM1 – NM5 [(a)]	Calibrator	Rion NC-73 (S/N 10997142)	28 June 2014	28 June 2015
NM1-NM4	Sound Level Meter	Rion NL-52 (S/N 00131627)	17 March 2014	17 March 2015
NM5	Sound Level Meter	Rion NL-31 (S/N 00603867)	29 July 2014	29 July 2015

Remarks

Monitoring Station ID	Location
NM1	Rooftop of Chan's Creative School (formerly known as Madam Chan Wai Chow Memorial School)
NM2	Rooftop of Hyde Building
NM3	Rooftop of Goldfield Building
NM4	Rooftop of Block A, Kwan Yick Building Phase III
NM5	A Location near the FSD Diving Rescue and Diving Training Centre near the Site Boundary

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AM1
Calibrated by	:	K.T.Ho
Date	:	18/07/2014

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 1808

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	24 Mar 2014
Slope (m)	:	2.07593
Intercept (b)	:	-0.00102
Correlation Coefficient(r)	:	0.99996

Standard Condition

Pstd (hpa)	:	1013
Tstd (K)	:	298.18

Calibration Condition

Pa (hpa)	:	1005
Ta(K)	:	305

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	10.6	3.205	1.544	57	56.12
2	13 holes	8.8	2.921	1.407	51	50.21
3	10 holes	6.0	2.412	1.162	42	41.35
4	7 holes	4.5	2.089	1.007	35	34.46
5	5 holes	2.3	1.493	0.720	24	23.63

Sampler Calibration Relationship

Slope(m):39.280 Intercept(b): -4.729 Correlation Coefficient(r): 0.9996

Checked by: Magnum Fan Date: 21/07/2014

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AM1
Calibrated by	:	K.T.Ho
Date	:	18/09/2014

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 1808

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	24 Mar 2014
Slope (m)	:	2.07593
Intercept (b)	:	-0.00102
Correlation Coefficient(r)	:	0.99996

Standard Condition

Pstd (hpa)	:	1013
Tstd (K)	:	298.18

Calibration Condition

Pa (hpa)	:	1012
Ta(K)	:	304

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	10.4	3.191	1.538	57	56.41
2	13 holes	8.6	2.902	1.398	52	51.46
3	10 holes	5.6	2.342	1.129	41	40.57
4	7 holes	3.8	1.929	0.930	33	32.66
5	5 holes	2.2	1.468	0.708	24	23.75

Sampler Calibration Relationship

Slope(m):39.551 Intercept(b): -4.136 Correlation Coefficient(r): 0.9996

Checked by: Magnum Fan Date: 22/09/2014

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AM1
Calibrated by	:	K.T.Ho
Date	:	18/11/2014

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 1808

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	24 Mar 2014
Slope (m)	:	2.07593
Intercept (b)	:	-0.00102
Correlation Coefficient(r)	:	0.99996

Standard Condition

Pstd (hpa)	:	1013
Tstd (K)	:	298.18

Calibration Condition

Pa (hpa)	:	1020
Ta(K)	:	295

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	10.3	3.237	1.560	58	58.50
2	13 holes	8.8	2.992	1.442	52	52.44
3	10 holes	6.0	2.470	1.191	42	42.36
4	7 holes	4.5	2.139	1.031	35	35.30
5	5 holes	2.3	1.530	0.737	22	22.19

Sampler Calibration Relationship

Slope(m):43.607 Intercept(b): -9.824 Correlation Coefficient(r): 0.9996

Checked by: Magnum Fan Date: 22/11/2014

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AM2
Calibrated by	:	K.T.Ho
Date	:	18/07/2014

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 0145

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	24 Mar 2014
Slope (m)	:	2.07593
Intercept (b)	:	-0.00102
Correlation Coefficient(r)	:	0.99996

Standard Condition

Pstd (hpa)	:	1013
Tstd (K)	:	298.18

Calibration Condition

Pa (hpa)	:	1005
Ta(K)	:	305

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	11.0	3.265	1.573	57	56.12
2	13 holes	9.0	2.954	1.423	52	51.20
3	10 holes	7.0	2.605	1.255	45	44.30
4	7 holes	4.2	2.018	0.972	36	35.44
5	5 holes	2.3	1.493	0.720	26	25.60

Sampler Calibration Relationship

Slope(m):35.540 Intercept(b): 0.281 Correlation Coefficient(r): 0.9992

Checked by: Magnum Fan Date: 21/07/2014

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AM2
Calibrated by	:	K.T.Ho
Date	:	18/09/2014

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 0145

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	24 Mar 2014
Slope (m)	:	2.07593
Intercept (b)	:	-0.00102
Correlation Coefficient(r)	:	0.99996

Standard Condition

Pstd (hpa)	:	1013
Tstd (K)	:	298.18

Calibration Condition

Pa (hpa)	:	1012
Ta(K)	:	304

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	8.7	2.919	1.407	57	56.41
2	13 holes	6.6	2.542	1.225	48	47.50
3	10 holes	5.3	2.278	1.098	42	41.56
4	7 holes	3.7	1.904	0.917	34	33.65
5	5 holes	2.3	1.501	0.723	25	24.74

Sampler Calibration Relationship

Slope(m):46.093 Intercept(b): -8.738 Correlation Coefficient(r): 0.9997

Checked by: Magnum Fan Date: 22/09/2014

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AM2
Calibrated by	:	K.T.Ho
Date	:	18/11/2014

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 0145

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	24 Mar 2014
Slope (m)	:	2.07593
Intercept (b)	:	-0.00102
Correlation Coefficient(r)	:	0.99996

Standard Condition

Pstd (hpa)	:	1013
Tstd (K)	:	298.18

Calibration Condition

Pa (hpa)	:	1020
Ta(K)	:	295

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	11.2	3.375	1.626	58	58.50
2	13 holes	9.0	3.026	1.458	52	52.44
3	10 holes	7.2	2.7062	1.304	45	45.38
4	7 holes	4.2	2.067	0.996	35	35.30
5	5 holes	2.2	1.496	0.721	25	25.21

Sampler Calibration Relationship

Slope(m):36.639 Intercept(b): -1.374 Correlation Coefficient(r): 0.9991

Checked by: Magnum Fan Date: 22/09/2014

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AM3
Calibrated by	:	K.T.Ho
Date	:	18/07/2014

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 0481

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	24 Mar 2014
Slope (m)	:	2.07593
Intercept (b)	:	-0.00102
Correlation Coefficient(r)	:	0.99996

Standard Condition

Pstd (hpa)	:	1013
Tstd (K)	:	298.18

Calibration Condition

Pa (hpa)	:	1005
Ta(K)	:	305

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	11.0	3.265	1.573	60	59.07
2	13 holes	8.4	2.853	1.375	50	49.23
3	10 holes	6.3	2.471	1.191	43	42.34
4	7 holes	4.3	2.042	0.984	34	33.47
5	5 holes	2.5	1.557	0.750	24	23.63

Sampler Calibration Relationship

Slope(m):42.523 Intercept(b): -8.405 Correlation Coefficient(r): 0.9993

Checked by: Magnum Fan Date: 21/07/2014

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AM3
Calibrated by	:	K.T.Ho
Date	:	18/09/2014

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 0481

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	24 Mar 2014
Slope (m)	:	2.07593
Intercept (b)	:	-0.00102
Correlation Coefficient(r)	:	0.99996

Standard Condition

Pstd (hpa)	:	1013
Tstd (K)	:	298.18

Calibration Condition

Pa (hpa)	:	1012
Ta(K)	:	304

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	11.0	3.282	1.582	60	59.38
2	13 holes	8.5	2.885	1.390	51	50.47
3	10 holes	6.2	2.464	1.187	44	43.54
4	7 holes	4.2	2.028	0.977	35	34.64
5	5 holes	2.5	1.565	0.754	25	24.74

Sampler Calibration Relationship

Slope(m):41.175 Intercept(b): -5.960 Correlation Coefficient(r): 0.9991

Checked by: Magnum Fan Date: 22/09/2014

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AM3
Calibrated by	:	K.T.Ho
Date	:	18/11/2014

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 0481

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	24 Mar 2014
Slope (m)	:	2.07593
Intercept (b)	:	-0.00102
Correlation Coefficient(r)	:	0.99996

Standard Condition

Pstd (hpa)	:	1013
Tstd (K)	:	298.18

Calibration Condition

Pa (hpa)	:	1020
Ta(K)	:	295

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	11.0	3.345	1.612	60	60.51
2	13 holes	8.5	2.940	1.417	51	51.44
3	10 holes	6.2	2.511	1.210	44	44.38
4	7 holes	4.2	2.067	0.996	35	35.30
5	5 holes	2.5	1.595	0.769	25	25.21

Sampler Calibration Relationship

Slope(m):41.175 Intercept(b): -6.073 Correlation Coefficient(r): 0.9991

Checked by: Magnum Fan Date: 22/11/2014

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AM4
Calibrated by	:	K.T.Ho
Date	:	18/07/2014

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 9315

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	24 Mar 2014
Slope (m)	:	2.07593
Intercept (b)	:	-0.00102
Correlation Coefficient(r)	:	0.99996

Standard Condition

Pstd (hpa)	:	1013
Tstd (K)	:	298.18

Calibration Condition

Pa (hpa)	:	1005
Ta(K)	:	305

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	10.0	3.113	1.500	60	59.07
2	13 holes	8.0	2.785	1.342	53	52.18
3	10 holes	6.2	2.452	1.181	45	44.30
4	7 holes	4.4	2.065	0.995	37	36.43
5	5 holes	2.4	1.525	0.735	25	24.61

Sampler Calibration Relationship

Slope(m):45.093 Intercept(b): -8.575 Correlation Coefficient(r): 0.9998

Checked by: Magnum Fan Date: 21/07/2014

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AM4
Calibrated by	:	K.T.Ho
Date	:	18/09/2014

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 9315

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	24 Mar 2014
Slope (m)	:	2.07593
Intercept (b)	:	-0.00102
Correlation Coefficient(r)	:	0.99996

Standard Condition

Pstd (hpa)	:	1013
Tstd (K)	:	298.18

Calibration Condition

Pa (hpa)	:	1012
Ta(K)	:	304

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	9.8	3.098	1.493	56	55.42
2	13 holes	7.6	2.728	1.315	49	48.49
3	10 holes	5.9	2.404	1.158	43	42.55
4	7 holes	4.1	2.004	0.966	36	35.63
5	5 holes	2.2	1.468	0.708	25	24.74

Sampler Calibration Relationship

Slope(m):38.752 Intercept(b): -2.340 Correlation Coefficient(r): 0.9996

Checked by: Magnum Fan Date: 22/09/2014

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AM4
Calibrated by	:	K.T.Ho
Date	:	18/11/2014

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 9315

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	24 Mar 2014
Slope (m)	:	2.07593
Intercept (b)	:	-0.00102
Correlation Coefficient(r)	:	0.99996

Standard Condition

Pstd (hpa)	:	1013
Tstd (K)	:	298.18

Calibration Condition

Pa (hpa)	:	1020
Ta(K)	:	295

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	10.0	3.189	1.537	62	62.53
2	13 holes	8.0	2.853	1.375	54	54.46
3	10 holes	6.0	2.470	1.191	45	45.38
4	7 holes	4.2	2.067	0.996	37	37.32
5	5 holes	2.4	1.562	0.753	25	25.21

Sampler Calibration Relationship

Slope(m):47.153 Intercept(b): -10.200 Correlation Coefficient(r): 0.9996

Checked by: Magnum Fan Date: 22/11/2014

High-Volume TSP Sampler
5-Point Calibration Record

Location	**:**	**Sai Ying Pun**
Calibrated by	**:**	**K.T.Ho**
Date	**:**	**08/07/2014**

Sampler

Model	**:**	**TE-5170**
Serial Number	**:**	**S/N 2146**

Calibration Orfice and Standard Calibration Relationship

Serial Number	**:**	**2454**
Service Date	**:**	**24 Mar 2014**
Slope (m)	**:**	**2.07593**
Intercept (b)	**:**	**-0.00102**
Correlation Coefficient(r)	**:**	**0.99996**

Standard Condition

Pstd (hpa)	**:**	**1013**
Tstd (K)	**:**	**298.18**

Calibration Condition

Pa (hpa)	**:**	**1001**
Ta(K)	**:**	**305**

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	10.8	3.229	1.556	59	57.97
2	13 holes	8.5	2.865	1.380	51	50.11
3	10 holes	6.6	2.524	1.216	45	44.22
4	7 holes	4.7	2.130	1.027	37	36.36
5	5 holes	2.9	1.673	0.807	27	26.53

Sampler Calibration Relationship

Slope(m):41.424 Intercept(b): -6.556 Correlation Coefficient(r): 0.9994

Checked by: Magnum Fan Date: 10/07/2014

High-Volume TSP Sampler
5-Point Calibration Record

Location	**:**	**Sai Ying Pun**
Calibrated by	**:**	**K.T.Ho**
Date	**:**	**05/09/2014**

Sampler

Model	**:**	**TE-5170**
Serial Number	**:**	**S/N 2146**

Calibration Orfice and Standard Calibration Relationship

Serial Number	**:**	**2454**
Service Date	**:**	**24 Mar 2014**
Slope (m)	**:**	**2.07593**
Intercept (b)	**:**	**-0.00102**
Correlation Coefficient(r)	**:**	**0.99996**

Standard Condition

Pstd (hpa)	**:**	**1013**
Tstd (K)	**:**	**298.18**

Calibration Condition

Pa (hpa)	**:**	**1006**
Ta(K)	**:**	**305**

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	10.5	3.192	1.538	58	57.13
2	13 holes	8.8	2.922	1.408	52	51.22
3	10 holes	6.8	2.569	1.238	45	44.33
4	7 holes	4.5	2.090	1.007	36	35.46
5	5 holes	2.8	1.648	0.794	27	26.60

Sampler Calibration Relationship

Slope(m):40.606 Intercept(b): -5.663 Correlation Coefficient(r): 0.9997

Checked by: Magnum Fan Date: 09/09/2014

High-Volume TSP Sampler
5-Point Calibration Record

Location	**:**	**Sai Ying Pun**
Calibrated by	**:**	**K.T.Ho**
Date	**:**	**04/11/2014**

Sampler

Model	**:**	**TE-5170**
Serial Number	**:**	**S/N 2146**

Calibration Orfice and Standard Calibration Relationship

Serial Number	**:**	**2454**
Service Date	**:**	**24 Mar 2014**
Slope (m)	**:**	**2.07593**
Intercept (b)	**:**	**-0.00102**
Correlation Coefficient(r)	**:**	**0.99996**

Standard Condition

Pstd (hpa)	**:**	**1013**
Tstd (K)	**:**	**298.18**

Calibration Condition

Pa (hpa)	**:**	**1006**
Ta(K)	**:**	**305**

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	10.0	3.179	1.532	56	56.30
2	13 holes	8.4	2.914	1.404	50	50.27
3	10 holes	6.5	2.563	1.235	43	43.23
4	7 holes	4.3	2.085	1.005	34	34.18
5	5 holes	2.5	1.590	0.766	23	23.12

Sampler Calibration Relationship

Slope(m):42.669 Intercept(b): -9.289 Correlation Coefficient(r): 0.9995

Checked by: Magnum Fan Date: 09/11/2014

High-Volume TSP Sampler
5-Point Calibration Record9

Location	:	AM6
Calibrated by	:	P.F.Yeung
Date	:	18/07/2014

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 1254

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	24 Mar 2014
Slope (m)	:	2.07593
Intercept (b)	:	-0.00102
Correlation Coefficient(r)	:	0.99996

Standard Condition

Pstd (hpa)	:	1013
Tstd (K)	:	298.18

Calibration Condition

Pa (hpa)	:	1005
Ta(K)	:	305

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	10.2	3.175	1.530	52	51.70
2	13 holes	8.5	2.899	1.397	47	46.73
3	10 holes	6.5	2.534	1.221	41	40.76
4	7 holes	4.3	2.062	0.994	34	33.80
5	5 holes	2.8	1.664	0.802	27	26.84

Sampler Calibration Relationship

Slope(m):33.612 Intercept(b): 0.011 Correlation Coefficient(r): 0.9995

Checked by: Magnum Fan Date: 21/07/2014

High-Volume TSP Sampler
5-Point Calibration Record9

Location	:	AM6
Calibrated by	:	P.F.Yeung
Date	:	18/09/2014

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 1254

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	24 Mar 2014
Slope (m)	:	2.07593
Intercept (b)	:	-0.00102
Correlation Coefficient(r)	:	0.99996

Standard Condition

Pstd (hpa)	:	1013
Tstd (K)	:	298.18

Calibration Condition

Pa (hpa)	:	1012
Ta(K)	:	304

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	11.0	3.282	1.582	53	52.45
2	13 holes	8.6	2.902	1.398	47	46.51
3	10 holes	6.4	2.503	1.206	41	40.57
4	7 holes	4.8	2.168	1.045	35	34.64
5	5 holes	2.8	1.656	0.798	27	26.72

Sampler Calibration Relationship

Slope(m):32.966 Intercept(b): 0.424 Correlation Coefficient(r): 0.9997

Checked by: Magnum Fan Date: 22/09/2014

High-Volume TSP Sampler
5-Point Calibration Record9

Location	:	AM6
Calibrated by	:	P.F.Yeung
Date	:	18/11/2014

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 1254

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	24 Mar 2014
Slope (m)	:	2.07593
Intercept (b)	:	-0.00102
Correlation Coefficient(r)	:	0.99996

Standard Condition

Pstd (hpa)	:	1013
Tstd (K)	:	298.18

Calibration Condition

Pa (hpa)	:	1020
Ta(K)	:	295

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	10.4	3.252	1.567	56	56.48
2	13 holes	9.0	3.026	1.458	51	51.44
3	10 holes	7.2	2.7062	1.304	45	45.38
4	7 holes	4.8	2.210	1.065	37	37.32
5	5 holes	2.9	1.717	0.828	28	28.24

Sampler Calibration Relationship

Slope(m):37.489 Intercept(b): -2.881 Correlation Coefficient(r): 0.9990

Checked by: Magnum Fan Date: 22/11/2014

TISCH Environmental

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

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Jan 27, 2014 Rootsmeter S/N 0438320 Ta (K) - 293
Operator Tisch Orifice I.D. - 2421 Pa (mm) - 754.38

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.4360	3.2	2.00
2	NA	NA	1.00	1.0120	6.4	4.00
3	NA	NA	1.00	0.9090	7.9	5.00
4	NA	NA	1.00	0.8650	8.8	5.50
5	NA	NA	1.00	0.7140	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
1.0052	0.7000	1.4209		0.9957	0.6934	0.8814
1.0010	0.9891	2.0095		0.9915	0.9798	1.2464
0.9989	1.0989	2.2467		0.9894	1.0885	1.3936
0.9977	1.1535	2.3564		0.9883	1.1426	1.4616
0.9925	1.3901	2.8419		0.9831	1.3769	1.7627
Qstd slope (m) =		2.06238		Qa slope (m) =		1.29142
intercept (b) =		-0.02415		intercept (b) =		-0.01498
coefficient (r) =		0.99994		coefficient (r) =		0.99994
x axis = SQRT[H2O(Pa/760)(298/Ta)]				y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

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

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

For subsequent flow rate calculations:

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

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

Certificate of Calibration
校正證書

Certificate No. : C141622
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC14-0645) Date of Receipt / 收件日期 : 11 March 2014

Description / 儀器名稱 : Sound Level Meter
Manufacturer / 製造商 : Rion
Model No. / 型號 : NL-52
Serial No. / 編號 : 00131627
Supplied By / 委託者 : Envirotech Services Co.
Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road,
Hong Kong

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (55 ± 20)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 17 March 2014

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies, USA
- Fluke Everett Service Center, USA
- Rohde & Schwarz Laboratory, Germany

Tested By 測試 : K C Lee
Project Engineer

Certified By 核證 : K M Wu
Engineer

Date of Issue 簽發日期 : 20 March 2014

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Certificate of Calibration
校正證書

Certificate No. : C141622
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.

2. Self-calibration was performed before the test.

3. The results presented are the mean of 3 measurements at each calibration point.

4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C140016
CL281	Multifunction Acoustic Calibrator	DC130171

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L_A	A	Fast	94.00	1	94.1	± 1.1

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 130	L_A	A	Fast	94.00	1	94.1 (Ref.)
				104.00		104.1
				114.00		114.1

IEC 61672 Class 1 Spec. : ± 0.6 dB per 10 dB step and ± 1.1 dB for overall different.

6.2 Time Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L_A	A	Fast	94.00	1	94.1	Ref.
			Slow			94.1	± 0.3

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate s all not be reproduced except in full, without the prior written approval of this laboratory.
本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

Sun Creation Engineering Limited – Calibration & Testing Laboratory
Rm 4/F, Tsing Shan Wan Exchange Building, 1 Hing On L ane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
香港新界屯門興安里一號青山灣機樓四樓
Tel 電話: 2927 2606 Fax 傳真: 2744 8986 E-mail 電郵: callab@suncreation.com Website 網址: www.suncreatic i.com

Certificate of Calibration
校正證書

Certificate No. : C141622
證書編號

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L_A	A	Fast	94.00	63 Hz	67.8	-26.2 ± 1.5
					125 Hz	77.8	-16.1 ± 1.5
					250 Hz	85.4	-8.6 ± 1.4
					500 Hz	90.8	-3.2 ± 1.4
					1 kHz	94.1	Ref.
					2 kHz	95.3	+1.2 ± 1.6
					4 kHz	95.1	+1.0 ± 1.6
					8 kHz	93.0	-1.1 (+2.1 ; -3.1)
					12.5 kHz	89.6	-4.3 (+3.0 ; -6.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L_A	C	Fast	94.00	63 Hz	93.2	-0.8 ± 1.5
					125 Hz	93.8	-0.2 ± 1.5
					250 Hz	94.0	0.0 ± 1.4
					500 Hz	94.1	0.0 ± 1.4
					1 kHz	94.1	Ref.
					2 kHz	93.9	-0.2 ± 1.6
					4 kHz	93.3	-0.8 ± 1.6
					8 kHz	91.1	-3.0 (+2.1 ; -3.1)
					12.5 kHz	87.7	-6.2 (+3.0 ; -6.0)

Remarks : - UUT Microphone Model No. : UC-59 & S/N : 04663

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value :

94 dB :	63 Hz - 125 Hz	: ± 0.35 dB
	250 Hz - 500 Hz	: ± 0.30 dB
	1 kHz	: ± 0.20 dB
	2 kHz - 4 kHz	: ± 0.35 dB
	8 kHz	: ± 0.45 dB
	12.5 kHz	: ± 0.70 dB
104 dB :	1 kHz	: ± 0.10 dB (Ref. 94 dB)
114 dB :	1 kHz	: ± 0.10 dB (Ref. 94 dB)

- The uncertainties are for a confidence probability of not less than 95 %.

Note :
The values given in this 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 environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited 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 the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4 F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel 電話: 2927 2606 Fax 傳真: 2744 8986 E-mail 電郵: callab@suncreation.com Website 網址: www.suncreation.com

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

Certificate of Calibration
校正證書

Certificate No. : C144558
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC14-1853) Date of Receipt / 收件日期 : 22 July 2014

Description / 儀器名稱 : Sound Level Meter
Manufacturer / 製造商 : Rion
Model No. / 型號 : NL-31
Serial No. / 編號 : 00603867
Supplied By / 委託者 : Envirotech Services Co.
Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road,
Hong Kong

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (55 ± 20)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 29 July 2014

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

Tested By 測試 : K C Lee, Project Engineer

Certified By 核證 : K M Wu, Engineer

Date of Issue 簽發日期 : 30 July 2014

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

Certificate of Calibration
校正證書

Certificate No. : C144558
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.

2. Self-calibration was performed before the test.

3. The results presented are the mean of 3 measurements at each calibration point.

4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C140016
CL281	Multifunction Acoustic Calibrator	DC130171

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 120	L_A	A	Fast	94.00	1	93.6	± 1.1

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 120	L_A	A	Fast	94.00	1	93.6 (Ref.)
				104.00		103.6
				114.00		113.6

IEC 61672 Class 1 Spec. : ± 0.6 dB per 10 dB step and ± 1.1 dB for overall different.

6.2 Time Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 120	L_A	A	Fast	94.00	1	93.6	Ref.
			Slow			93.5	± 0.3

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里 1號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Certificate of Calibration
校正證書

Certificate No. : C144558
證書編號

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 120	L_A	A	Fast	94.00	63 Hz	67.3	-26.2 ± 1.5
					125 Hz	77.3	-16.1 ± 1.5
					250 Hz	84.9	-8.6 ± 1.4
					500 Hz	90.3	-3.2 ± 1.4
					1 kHz	93.6	Ref.
					2 kHz	94.9	+1.2 ± 1.6
					4 kHz	94.7	+1.0 ± 1.6
					8 kHz	92.5	-1.1 (+2.1 ; -3.1)
					12.5 kHz	89.7	-4.3 (+3.0 ; -6.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 120	L_C	C	Fast	94.00	63 Hz	92.7	-0.8 ± 1.5
					125 Hz	93.4	-0.2 ± 1.5
					250 Hz	93.6	0.0 ± 1.4
					500 Hz	93.6	0.0 ± 1.4
					1 kHz	93.6	Ref.
					2 kHz	93.5	-0.2 ± 1.6
					4 kHz	92.9	-0.8 ± 1.6
					8 kHz	90.6	-3.0 (+2.1 ; -3.1)
					12.5 kHz	87.8	-6.2 (+3.0 ; -6.0)

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

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

Certificate of Calibration
校正證書

Certificate No. : C144558
證書編號

Remarks : - UUT Microphone Model No. : UC-53A & S/N : 316987

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value :

94 dB	: 63 Hz - 125 Hz	:	± 0.35 dB
	250 Hz - 500 Hz	:	± 0.30 dB
	1 kHz	:	± 0.20 dB
	2 kHz - 4 kHz	:	± 0.35 dB
	8 kHz	:	± 0.45 dB
	12.5 kHz	:	± 0.70 dB
104 dB	: 1 kHz	:	± 0.10 dB (Ref. 94 dB)
114 dB	: 1 kHz	:	± 0.10 dB (Ref. 94 dB)

- The uncertainties are for a confidence probability of not less than 95 %.

Note :
The values given in this 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 environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited 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 the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

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

Certificate of Calibration
校正證書

Certificate No. : C143980
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC14-1497) Date of Receipt / 收件日期 : 23 June 2014

Description / 儀器名稱	:	Sound Level Calibrator
Manufacturer / 製造商	:	Rion
Model No. / 型號	:	NC-73
Serial No. / 編號	:	10997142
Supplied By / 委託者	:	Envirotech Services Co. Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road, Hong Kong

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (55 ± 20)%

Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 28 June 2014

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

Tested By 測試 : K C Lee, Project Engineer

Certified By 核證 : K M Wu, Engineer

Date of Issue 簽發日期 : 2 July 2014

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

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

Certificate of Calibration
校正證書

Certificate No. : C143980
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.

2. The results presented are the mean of 3 measurements at each calibration point.

3. Test equipment :

Equipment ID	Description	Certificate No.
CL130	Universal Counter	C143868
CL281	Multifunction Acoustic Calibrator	DC130171
TST150A	Measuring Amplifier	C141558

4. Test procedure : MA100N.

5. Results :

5.1 Sound Level Accuracy

UUT Nominal Value	Measured Value (dB)	Mfr's Spec. (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	93.7	± 0.5	± 0.2

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	0.987	1 kHz ± 2 %	± 1

Remark : The uncertainties are for a confidence probability of not less than 95 %.

Note :
The values given in this 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 environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited 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 the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Annex I

Event /Action Plans for Air Quality, Noise and Landscape and Visual Monitoring for All Sites

Table I1 Event Action Plan for Air Quality Monitoring

Action Level/Limit Level	Environmental Team Leader (ETL)	Independent Environmental Checker (IEC)	Engineer's Representative (ER)	Contractor
Action Level				
Exceedance for one sample	• Identify source, investigate the causes of exceedance and propose remedial measures; • Inform IEC and ER; • Repeat measurement to confirm finding; and, • Increase monitoring frequency to daily.	• Check monitoring data submitted by ET; and, • Check Contractor's working method.	• Notify Contractor	• Rectify any unacceptable practice; and, • Amend working methods if appropriate.
Exceedance for two or more consecutive samples	• 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; and, • Discuss with IEC and Contractor on remedial actions required;	• 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; and, • Supervise Implementation of remedial measures.	• Confirm receipt of notification of failure in writing; • Notify Contractor, and, • Ensure remedial measures properly implemented.	• Submit proposals for remedial to ER within 3 working days of notification; • Implement the agreed proposals; • Amend proposal if appropriate.

Action Level/Limit Level	Environmental Team Leader (ETL)	Independent Environmental Checker (IEC)	Engineer's Representative (ER)	Contractor
Limit Level				
Exceedance for one sample	• 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; and, • Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	• 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; and, • Supervise implementation of remedial measures.	• Confirm receipt of notification of failure in writing; • Notify Contractor; and, • Ensure remedial measures properly implemented.	• Take immediate action to avoid further exceedance; • Submit proposals for remedial actions to IEC within 3 working days of notification; • Implement the agreed proposals; and, • Amend proposal if appropriate.
Exceedance for two or more consecutive samples	• 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; and, • If exceedance stops, cease additional monitoring.	• Check monitoring data submitted by ET; • Check Contractor's working method; • 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; and, • Supervise the implementation of remedial measures.	• Confirm receipt of notification of failure in writing; • Notify Contractor; • In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; • Ensure remedial measures properly implemented; and, • If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	• Take immediate action to avoid further exceedance; • Submit proposals for remedial actions to IEC within 3 working days of notification; • Implement the agreed proposals; • Resubmit proposals if problem still not under control; and, • Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Table I2 Event Action Plan for Noise Monitoring

Action Level/Limit Level	Environmental Team Leader (ETL)	Independent Environmental Checker (IEC)	Engineer's Representative (ER)	Contractor
Action Level being exceeded	• Notify ER, IEC and Contractor; • Carry out investigation; • Report the results of investigation to the IEC, ER and Contractor; • Discuss with the IEC and Contractor on remedial measures required; and, • Increase monitoring frequency to check mitigation effectiveness.	• Review the investigation results submitted by the ET; • Review the proposed remedial measures by the Contractor and advise the ER accordingly; and, • Advise the ER on the effectiveness of the proposed remedial measures.	• Confirm receipt of notification of failure in writing; • Notify Contractor; • In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; and, • Supervise the implementation of remedial measures.	• Submit noise mitigation proposals to IEC and ER; and, • Implement noise mitigation proposals.

Action Level/Limit Level	Environmental Team Leader (ETL)	Independent Environmental Checker (IEC)	Engineer's Representative (ER)	Contractor
Limit Level being exceeded	• Inform IEC, ER, Contractor and EPD; • Repeat measurements to confirm findings; • Increase monitoring frequency; • Identify source and investigate the cause of exceedance; • Carry out analysis of Contractor's working procedures; • Discuss with the IEC, Contractor and ER on remedial measures required; • Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; and, • If exceedance stops, cease additional monitoring.	• Discuss amongst ER, ET, and Contractor on the potential remedial actions; and, • Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly.	• Confirm receipt of notification of failure in writing; • Notify Contractor; • In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; • Supervise the implementation of remedial measures; and, • If exceedance continues, consider stopping the Contractor to continue working on that portion of work which causes the exceedance until the exceedance is abated.	• Take immediate action to avoid further exceedance; • Submit proposals for remedial actions to IEC and ER within 3 working days of notification; • Implement the agreed proposals; • Submit further proposal if problem still not under control; and, • Stop the relevant portion of works as instructed by the ER until the exceedance is abated.

Table I3 Event and Action Plan for Landscape and Visual Impact - Construction Phase

Action Level	Environmental Team Leader (ETL)	Independent Environmental Checker (IEC)	Engineer's Representative (ER)	Contractor
Non-conformity on one occasion	Identify source Inform the IEC and the ER Discuss remedial actions with the IEC, the ER and the Contractor Monitor remedial action until rectification has been completed	Check report Check the Contractor's working method Discuss with the ER and the Contractor on possible remedial measures Advise the ER on effectiveness of proposed remedial measures	Notify the Contractor Ensure remedial measures are properly implemented	Amend working methods Rectify damage and undertake remedial measures or any necessary replacement
Repeated Non-conformity	Identify source Inform the IEC and the ER Increase monitoring (site audit) frequency Discuss remedial actions with the IEC, the ER and the Contractor Monitor remedial actions until rectification has been completed If exceedance stops, cease additional monitoring (site audit)	Check report Check the Contractor's working method Discuss with the ER and the Contractor on possible remedial measures Advise the ER on effectiveness of proposed remedial measures Supervise implementation of remedial measures	Notify the Contractor Ensure remedial measures are properly implemented	Amend working methods Rectify damage and undertake remedial measures or any necessary replacement

Annex J

Waste Flow Table

Harbour Area Treatment Scheme Stage 2A – Construction of Sewage Conveyance System from North Point to Stonecutters Island

Contract No. : DC/2007/23

Monthly Summary Waste Flow Table for 2009 (year)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete (see Note 4)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill		Metals (see Note 2)	Paper/ cardboard packaging (see Note 2)	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)		(in '000kg)	(in '000kg)	(in '000kg)	(in'000kg / '000L)	(in '000m³)
Jan											
Feb											
Mar											
Apr											
May											
June											
Sub-total											
July	0	0	0	0	0		0	0	0	0	0
Aug	0	0	0	0	0		0	0	0	0	0
Sept	0.016	0	0	0	Dry	Wet	0	0	0	0	0.068
					0.016	0					
Oct	0.523	0	0	0	0.523	0	0	0	0	0	0.086
Nov	2.331	0	0	0	2.275	0.056	99.2	0.036	0	0	0.129
Dec	3.803	0	0	0	3.004	0.799	1	0	0	0	0.120
Total	6.673	0	0	0	5.818	0.855	100.2	0.036	0	0	0.403

Notes:
(1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
(2) Metal and paper/cardboard packaging will be collected by recycler for recycling.
(3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material and the wastes are collected by recycler for recycling.
(4) Broken concrete for recycling into aggregates
(5) If necessary, use the conversion factor: 1 full load of dumping truck being equivalent to 6.5 m^3 by volume.
(6) For chemical waste, the actual quantities of empty paint cans will be in kilogram (kg) and spent lubrication oil will be in litre (L).

Harbour Area Treatment Scheme Stage 2A – Construction of Sewage Conveyance System from North Point to Stonecutters Island

Contract No. : DC/2007/23

Monthly Summary Waste Flow Table for 2010 (year)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete (see Note 4)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill		Metals (see Note 2)	Paper/ cardboard packaging (see Note 2)	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)		(in '000kg)	(in '000kg)	(in '000kg)	(in'000kg / '000L)	(in '000m³)
Jan	5.341	0	0	0	Dry	Wet	0	0.144	0	0.8	0.178
					3.066	2.275					
Feb	3.328	0	0	0	1.541	1.787	0	0	0	0	0.167
Mar	4.486	0	0	0	2.019	2.467	0	0.09	0	0	0.148
Apr	4.864	0	0	0	1.756	3.108	0	0.054	0	0	0.160
May	7.092	0	0	0	3.383	3.709	0	0.144	0	0.3	0.157
June	6.190	0	0	0	1.083	5.107	0	0.09	0	0.4	0.455
Sub-total	31.301	0	0	0	12.848	18.453	0	0.522	0	1.5	1.265
July	5.031	0	0	0	1.006	4.025	0	0.162	0	0	0.212
Aug	5.140	0	0	0.23	1.970	2.940	0	0.09	0	0.4	0.312
Sept	3.593	0.15	0	0.35	1.771	1.322	0	0.09	0	1	0.146
Oct	2.324	0	0	0	1.429	0.895	0	0.144	0	0	0.078
Nov	5.927	0	0	0	4.383	1.544	0	0	0	0.8	0.078
Dec	4.963	0	0	0	4.840	0.123	0	0.072	0	0	0.078
Total	58.279	0.15	0	0.58	28.247	29.302	0	1.080	0	3.7	2.169

Notes:
(1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
(2) Metal and paper/cardboard packaging will be collected by recycler for recycling.
(3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material and the wastes are collected by recycler for recycling.
(4) Broken concrete for recycling into aggregates
(5) If necessary, use the conversion factor: 1 full load of dumping truck being equivalent to 6.5 m^3 by volume.
(6) For chemical waste, the actual quantities of empty paint cans will be in kilogram (kg) and spent lubrication oil will be in litre (L).

Harbour Area Treatment Scheme Stage 2A – Construction of Sewage Conveyance System from North Point to Stonecutters Island

Contract No. : DC/2007/23

Monthly Summary Waste Flow Table for 2011 (year)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete (see Note 4)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill		Metals (see Note 2)	Paper/ cardboard packaging (see Note 2)	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)		(in '000kg)	(in '000kg)	(in '000kg)	(in'000kg / '000L)	(in '000m³)
Jan	8.423	0	0	0	Dry	Wet	0	0.09	0	1.2	0.124
					8.236	0.187					
Feb	7.794	0	0	0.799	6.814	0.181	0	0.09	0	0	0.138
Mar	9.641	0	0	0.576	9.007	0.058	0	0.19	0	0	0.059
Apr	8.841	0	0	2.014	6.730	0.097	0	0.09	0	0.2	0.069
May	5.416	0	0	0.887	4.280	0.249	0	0.09	0	0	0.077
June	7.507	0	0	0.665	6.245	0.597	0	0.337	0.028	1.0	0.072
Sub-total	47.622	0	0	4.941	41.312	1.369	0	0.887	0.028	2.4	0.539
July	5.31	0	0	2.372	2.795	0.143	0	0.162	0	0	0.109
Aug	5.381	0	0	2.553	2.530	0.298	0	0.248	0.035	0.4	0.097
Sept	6.963	0	0	2.814	3.974	0.175	0	0.289	0.032	0	0.155
Oct	5.330	0	0	0.794	4.385	0.151	0	0.254	0.015	0	0.128
Nov	5.009	0	0	0.995	3.760	0.254	0	0.270	0	0.6	0.116
Dec	5.429	0	0.159	1.430	3.522	0.318	0	0.216	0	0	0.117
Total	81.044	0	0.159	15.899	62.278	2.708	0	2.326	0.11	3.4	1.261

Notes:
(1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
(2) Metal and paper/cardboard packaging will be collected by recycler for recycling.
(3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material and the wastes are collected by recycler for recycling.
(4) Broken concrete for recycling into aggregates
(5) If necessary, use the conversion factor: 1 full load of dumping truck being equivalent to 6.5 m^3 by volume.
(6) For chemical waste, the actual quantities of empty paint cans will be in kilogram (kg) and spent lubrication oil will be in litre (L).

Harbour Area Treatment Scheme Stage 2A – Construction of Sewage Conveyance System from North Point to Stonecutters Island

Contract No. : DC/2007/23

Monthly Summary Waste Flow Table for 2012 (year)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete (see Note 4)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill		Metals (see Note 2)	Paper/ cardboard packaging (see Note 2)	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)		(in '000kg)	(in '000kg)	(in '000kg)	(in'000kg / "000L)	(in '000m³)
Jan	6.208	0	0	1.615	Dry	Wet	0	0.108	0	0.4	0.117
					4.277	0.316					
Feb	6.006	0	0	0.443	5.148	0.415	0	0.108	0	0	0.063
Mar	8.370	0	0	1.226	6.871	0.273	0	0.108	0	0	0.181
Apr	8.899	0	0	1.101	7.581	0.217	0	0.036	0	0	0.685
May	6.789	0	0	0.716	5.931	0.142	0	0.108	0	0.4	0.103
June	7.585	0	0.021	5.565	1.786	0.213	0.014	0.256	0	0.0	0.197
Sub-total	43.857	0	0.021	10.666	31.594	1.576	0.014	0.724	0	0.8	1.346
July	9.128	0	0	5.240	3.730	0.158	8.356	0.055	0	0.8	0.171
Aug	5.756	0	0	3.836	1.640	0.280	0.008	0.062	0	0.2	0.126
Sept	7.809	0	0.172	2.103	5.062	0.472	0.007	0.172	0	0.4	0.105
Oct	12.073	0	0	7.279	4.427	0.367	0.007	0.028	0	0	0.123
Nov	16.713	0	0	15.626	0.853	0.234	0.005	0.303	0	1.6	0.088
Dec	16.760	0	0	16.362	0.192	0.206	0.005	0.102	0	0.8	0.111
Total	112.096	0	0.193	61.112	47.498	3.293	8.402	1.446	0	4.6	2.070

Notes:
(1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
(2) Metal and paper/cardboard packaging will be collected by recycler for recycling.
(3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material and the wastes are collected by recycler for recycling.
(4) Broken concrete for recycling into aggregates
(5) If necessary, use the conversion factor: 1 full load of dumping truck being equivalent to 6.5 m^3 by volume.
(6) For chemical waste, the actual quantities of empty paint cans will be in kilogram (kg) and spent lubrication oil will be in litre (L) and will be collected by licensed collector.
(7) Inert C&D Materials shall be dumped at Chai Wan Barging Point, TKO Area 137 and Tuen Mun Area 38 and General refuses shall be dumped at SENT.

Harbour Area Treatment Scheme Stage 2A – Construction of Sewage Conveyance System from North Point to Stonecutters Island

Contract No. : DC/2007/23

Monthly Summary Waste Flow Table for 2013 (year)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete (see Note 4)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill		Metals (see Note 2)	Paper/ cardboard packaging (see Note 2)	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)		(in '000kg)	(in '000kg)	(in '000kg)	(in'000kg / "000L)	(in '000m³)
Jan	13.689	0	0	12.331	Dry	Wet	0.005	0.030	0	0.4	0.129
					1.141	0.217					
Feb	15.098	0	0	5.320	9.521	0.257	0.005	0.181	0	0.4	0.078
Mar	17.449	0	0	9.229	8.005	0.215	0	0.111	0	0	0.110
Apr	17.440	0	0	9.884	7.097	0.459	0.003	0.155	0	0	0.142
May	15.293	0	0	7.911	7.006	0.376	0.001	0.101	0	1.8	0.120
June	19.809	0	0	9.620	9.872	0.317	0.001	0.100	0	0.4	0.198
Sub-total	98.778	0	0	54.295	42.642	1.841	0.015	0.678	0	3	0.777
July	19.977	0	0	14.009	5.613	0.355	0.004	0.145	0	0.4	0.178
Aug	18.468	0	0	12.644	5.365	0.459	0.002	0.074	0	0	0.206
Sept	21.668	0	0	14.693	6.690	0.285	0.005	0.155	0	0.2	0.224
Oct	18.939	0	0	13.895	4.623	0.421	0.003	0.108	0	0	0.182
Nov	19.797	0	0	17.751	1.688	0.358	0.004	0.072	0	1	0.150
Dec	15.749	0.016	0	14.306	1.034	0.393	0.005	0.144	0	0.4	0.129
Total	213.376	0.016	0	141.593	67.655	4.112	0.038	1.376	0	5	1.846

Notes:
(1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
(2) Metal and paper/cardboard packaging will be collected by recycler for recycling.
(3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material and the wastes are collected by recycler for recycling.
(4) Broken concrete for recycling into aggregates
(5) If necessary, use the conversion factor: 1 full load of dumping truck being equivalent to 6.5 m^3 by volume.
(6) For chemical waste, the actual quantities of empty paint cans will be in kilogram (kg) and spent lubrication oil will be in litre (L) and will be collected by licensed collector.
(7) Inert C&D Materials shall be dumped at Chai Wan Barging Point, TKO Area 137 and Tuen Mun Area 38 and General refuses shall be dumped at SENT.

Harbour Area Treatment Scheme Stage 2A – Construction of Sewage Conveyance System from North Point to Stonecutters Island

Contract No. : DC/2007/23

Monthly Summary Waste Flow Table for 2014 (year)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete (see Note 4)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill		Metals (see Note 2)	Paper/ cardboard packaging (see Note 2)	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)		(in '000kg)	(in '000kg)	(in '000kg)	(in'000kg / "000L)	(in '000m³)
Jan	14.837	0	0	13.864	Dry	Wet	0.007	0.054	0	0.4	0.099
					0.324	0.649					
Feb	14.772	0	0	12.084	1.636	1.052	0.006	0	0	0	0.152
Mar	14.770	0	0	12.401	2.200	0.169	0.008	0.18	0	0	0.174
Apr	13.433	0	0	12.159	1.054	0.220	0.004	0	0	0	0.121
May	16.433	0	0	15.833	0.255	0.345	0.009	0	0	0	0.136
June	16.169	0	0	15.235	0.601	0.333	0.002	0.144	0	0	0.236
Sub-total	90.414	0	0	81.576	6.070	2.768	0.036	0.378	0	0.4	0.918
July	13.835	0	0	12.980	0.554	0.301	0.005	0	0	0	0.166
Aug	11.464	0	0	9.611	0.600	1.253	0.008	0	0	0	0.208
Sept	6.198	0	0	3.796	0.988	1.414	0.006	0	0	0.6	0.244
Oct	3.249	0	0	0	1.892	1.357	0.004	0.198	0	0	0.261
Nov	2.984	0	0	0	1.337	1.647	0.003	0.108	0	0.4	0.258
Dec	0	0	0	0	0	0	0	0	0	0	0
Total	128.144	0	0	107.963	11.441	8.740	0.062	0.792	0	1.6	2.055

Notes:
(1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
(2) Metal and paper/cardboard packaging will be collected by recycler for recycling.
(3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material and the wastes are collected by recycler for recycling.
(4) Broken concrete for recycling into aggregates
(5) If necessary, use the conversion factor: 1 full load of dumping truck being equivalent to 6.5 m^3 by volume.
(6) For chemical waste, the actual quantities of empty paint cans will be in kilogram (kg) and spent lubrication oil will be in litre (L) and will be collected by licensed collector.
(7) Inert C&D Materials shall be dumped at Chai Wan Barging Point, TKO Area 137 and Tuen Mun Area 38 and General refuses shall be dumped at SENT.

Annex K

Summary of Observations and Follow-up Actions of Environmental Site Inspections for All Sites

Annex K Summary of Site Inspections Observations and Follow-ups

Inspection date: 4 September 2014

Follow-up Actions Taken after Previous Site Audit

Stonecutters Island Production Shaft

- The chemical container observed without drip tray during the last site inspection had been removed from the works area.
- The Contractor had plugged the plughole of the drip tray which contains an air compressor.

Wan Chai Production Shaft

- Chemical containers were still observed to be stored in the workshop area. Please see the recommendations for WCEPS.
- Unknown substance spilled in the workshop area had been cleaned up.
- Oil container stored just outside the chemical storage area had been provided with secondary containment.
- Rubber hosing was still observed to be stored inside the tree protection zone of retained tree T0005 and leaning on the tree. Please see the recommendations for WCEPS.

North Point Production Shaft

- Chemical containers had been provided with secondary containment or moved to the chemical storage area.

Observations and Recommendations

Stonecutters Island Production Shaft

- The Contractor was reminded to remove the refuse observed behind the noise enclosure and in the tree protection zone and to maintain a good housekeeping.

Sai Ying Pun Production Shaft

- The Contractor was reminded to arrange regular collection of refuse on a regular basis and to spray pesticides around the works area as a large number of flies were discovered in the works area.

Central Production Shaft

- Chemical containers were observed placed at the root of a retained tree. The Contractor was reminded to erect a steadfast tree protection zone and to remove any objects found within the tree protection zone.

Wan Chai Production Shaft

- Waste diesel oil was observed in an open chemical container by the workshop. The Contractor was reminded to remove the oil from the chemical container and dispose of appropriately as chemical waste.
- Chemical containers were observed to be stored by the air compressors. The Contractor was reminded to move the chemical containers to the chemical storage area.
- Waste skip was observed to have accumulated refuse. The Contractor was reminded to arrange for the regular collection of refuse and to maintain good housekeeping.
- Spillage of machine oil was observed by the air compressors. The Contractor was reminded to clean the spilled oil and dispose of appropriately as chemical waste.
- Rubber hosing was still observed to be stored inside the tree protection zone of retained tree T0005 and leaning on the tree. The Contractor was strongly reminded to remove the rubber hosing from the tree protection zone.
- Chemical containers were still observed to be stored in the workshop area. The Contractor was strongly reminded to move the chemicals to the chemical storage area if not in use.

North Point Production Shaft

- Waste skip was observed to have accumulated refuse. The Contractor was reminded to arrange for the regular collection of refuse and to maintain good housekeeping.

Inspection date: 11 September 2014

Follow-up Actions Taken after Previous Site Audit

Stonecutters Island Production Shaft

- Refuse inside the tree protection zone and behind the noise enclosure had been removed.

Sai Ying Pun Production

- The Contractor would duly arrange regular collection of refuse in the works area. Flies were not observed during the site inspection.

Central Production Shaft

- Chemical containers placed near a retained tree as observed during the previous site inspection had been removed. The Contractor had provided a steadfast tree protection zone for the retained trees.

Wan Chai Production Shaft

- The open chemical container by the workshop containing waste diesel oil has been removed.
- Chemical containers were still observed to be stored by the air compressors. Please see recommendation for WCPS.
- Waste skip has been cleared of rubbish.
- Spillage of machine oil by the air compressors has been cleaned up.
- Rubber hosing has been moved away from the tree protection zone of retained tree T0005.
- Chemical containers have been removed from the workshop area.

North Point Production Shaft

- Waste skip was observed to have accumulated refuse. The Contractor was reminded to arrange for the regular collection of refuse and to maintain good housekeeping.

Observations and Recommendations

Stonecutters Island Production Shaft

- The Contractor was reminded to provide sufficient drip trays for chemical containers stored in the area previously used to store dangerous goods. It was observed that the chemical containers were all placed on hard paved ground.
- The Contractor was reminded to remove the refuse found inside the tree protection zone next to the electrical storage area.

Sai Ying Pun Production Shaft

The Contractor was reminded to provide sufficient drip trays for chemical containers stored next to the waste water treatment facility. All chemical containers were observed to be placed on hard paved ground.

Central Production Shaft

- The Contractor was reminded to provide drip trays for chemical containers found on the hard paved ground next to the workers' restroom.

Wan Chai Production Shaft

- Chemical containers were still observed to be stored by the air compressors. The Contractor was reminded to move the containers to the chemical storage area.
- The waste bin inside the noise enclosure was observed to be filled with rubbish. The Contractor was reminded to arrange for the regular collection of rubbish and maintain good housekeeping.

North Point Production Shaft

- Oil container with oil inside was observed to be stored by the workshop are without secondary containment. The Contractor was reminded to move the oil container to the chemical storage area.
- A chemical waste container with unknown substance was observed next to the chemical waste storage without lid or bunded containment. The Contractor was reminded to move the chemical to the chemical waste storage.

Inspection date: 18 September 2014

Follow-up Actions Taken after Previous Site Audit

Stonecutters Island Production Shaft

- Chemical containers were still observed to be stored on hard ground. Please see recommendations for SCIPS.
- Refuse found inside the tree protection zone next to the electrical storage area has been removed.

Sai Ying Pun Production

- Drip trays have been provided for chemical containers stored next to the waste water treatment facility.

Central Production Shaft

- Drip trays have been provided for chemical containers found on the hard paved ground next to the workers' restroom.

Wan Chai Production Shaft

- Chemical containers have been removed from the vicinity around the air compressors.
- The waste bin inside the noise enclosure has been emptied.

North Point Production Shaft

- Oil container stored by the workshop area has been removed.
- The chemical waste container with unknown substance next to the chemical waste storage has been removed.

Observations and Recommendations

Stonecutters Island Production Shaft

- Chemical containers were observed to be stored on hard ground. The Contractor was reminded to put the chemical containers inside a drip tray or move them to the chemical storage area.

Sai Ying Pun Production Shaft

- There were no major observations during the site inspection.

Wan Chai Production Shaft

- Waste skip was observed to have accumulated refuse. The Contractor was reminded to arrange for the regular collection of refuse and to maintain good housekeeping.

North Point Drop Shaft

Chemical containers were observed to be stored next to drop shaft without secondary bunded containment. The Contractor was reminded to move the chemical containers to the chemical storage area.

Inspection date: 24 September 2014

Follow-up Actions Taken after Previous Site Audit

Stonecutters Island Production Shaft

- Chemical containers have been moved to the chemical storage area.

Wan Chai Production Shaft

- The waste skip has been cleared.

North Point Drop Shaft

- Chemical containers have been moved to the chemical storage area.

Observations and Recommendations

Stonecutters Island Production Shaft

- Chemical was observed to be leaking from the secondary containment at the chemical storage adjacent to the noise enclosure. The Contractor was reminded to clean up the content of the secondary containment regularly and ensure the containment in good integrity.

Sai Ying Pun Production Shaft

- Lubricant containers were observed being stored next to the transformer room without secondary containment. The contractor was reminded to provide secondary containment to chemicals stored on-site,

Annex K Summary of Site Inspections Observations and Follow-ups

Inspection date: 3 October 2014

Follow-up Actions Taken after Previous Site Audit

Stonecutters Island Production Shaft

- Chemical has been provided with secondary containment or removed from the noise enclosure.

Sai Ying Pun Production

- Lubricant containers have been provided with secondary containment or moved to the storage area.

Observations and Recommendations

Stonecutters Island Production Shaft

- There were no major observations during the site inspection.

Sai Ying Pun Production Shaft

- There were no major observations during the site inspection.

Wan Chai Production Shaft

- There were no major observations during the site inspection.

North Point Production Shaft

- The Contractor was reminded to check the capacity of drip trays regularly to avoid leakage.
- Chemical containers were observed without drip tray.

Inspection date: 9 October 2014

Follow-up Actions Taken after Previous Site Audit

North Point Production Shaft

- Sufficient drip trays have been provided for the chemical containers.

Observations and Recommendations

Stonecutters Island Production Shaft

- There were no major observations during the site inspection.

Sai Ying Pun Production Shaft

- There were no major observations during the site inspection.

Wan Chai Drop Shaft

- Chemical containers were observed to be placed next to the tree zone. The Contractor was reminded to move the container to the chemical storage area.

North Point Production Shaft

- There were no major observations during the site inspection.

Inspection date: 16 October 2014

Follow-up Actions Taken after Previous Site Audit

Wan Chai Drop Shaft

- Chemical containers have been removed from the vicinity of the tree protection zone.

Observations and Recommendations

Stonecutters Island Production Shaft

- A chemical drum containing red liquid was found inside the noise enclosure. The Contractor was reminded to label the chemical properly and provide it with a drip tray to prevent leakage.

Sai Ying Pun Production Shaft
- There is no major observation during the site inspection.

Wan Chai Production Shaft
- Broken branch was observed on retained tree across from the noise enclosure. The Contractor was reminded to remove the broken branch to avoid further damage to the retained tree.

North Point Production Shaft
- Chemical container was observed to be stored just outside the chemical storage area without secondary bunded containment. The Contractor was reminded to move the chemical container into the chemical storage area.

Inspection date: 23 October 2014

Follow-up Actions Taken after Previous Site Audit

Stonecutters Island Production Shaft
- The free-standing chemical container as observed in previous site inspection had been removed.

North Point Production Shaft
- Chemical containers have been moved into the chemical storage area.

Observations and Recommendations

Stonecutters Island Production Shaft
- The Contractor was reminded to remove the metal bars placed in front of the chemical waste storage area and to keep a clear access.

Sai Ying Pun Production Shaft
- A chemical container was found without secondary containment in the new works area at the back of Sai Ying Pun Production Shaft. The Contractor was reminded to provide it with a drip tray to prevent leakage.

Wan Chai Production Shaft
- Broken branch was observed on retained tree across from the noise enclosure. The Contractor was reminded to remove the broken branch to avoid further damage to the retained tree.
- General refuse was observed to be accumulated near the tree protection zone. The Contractor was reminded to maintain good housekeeping, collect and sort waste regularly.

North Point Production Shaft
- General refuse was observed to be accumulated in the waste skip. The Contractor was reminded to maintain good housekeeping, collect and sort waste regularly.

Inspection date: 29 October 2014

Follow-up Actions Taken after Previous Site Audit

Stonecutters Island Production Shaft
- The metal bars have been removed.

North Point Production Shaft

- A drip tray has been provided for the chemical container.

Wan Chai Production Shaft

- This works area had not been covered during the site inspection and the items will be checked upon in subsequent site inspection.

North Point Production Shaft

- This works area had not been covered during the site inspection and the items will be checked upon in subsequent site inspection.

Observations and Recommendations

Stonecutters Island Production Shaft

- The Contractor was reminded to provide a secondary tray for the chemical containers.

Sai Ying Pun Production Shaft

- The Contractor was reminded to remove the oil stain on the ground.
- Stagnant water was observed to be accumulated in the empty container and drip tray. The Contractor was reminded to clean it up.

North Point Drop Shaft

- The Contractor was reminded to provide a drip tray for the chemical container.

Annex K Summary of Site Inspections Observations and Follow-ups

Inspection date: 6 November 2014

Follow-up Actions Taken after Previous Site Audit

Stonecutters Island Production Shaft

- A secondary tray had been provided

Sai Ying Pun Production Shaft

- Oil stain had been removed from the ground.
- Stagnant water had been emptied from the container and drip tray.

North Point Production Shaft

- A drip tray has been provided for the chemical container.
- General refuse had been cleared

Wan Chai Production Shaft

- The Contractor had been already arranged a tree specialist to check the condition of the tree.

Observations and Recommendations

Stonecutters Island Production Shaft

- There was no major observation during the site inspection.

Sai Ying Pun Production Shaft

- The Contractor was reminded to clear the waste stored in the waste skip on a regular basis.
- The Contractor was reminded to provide drip trays for chemical containers outside the noise enclosure.

Wan Chai Production Shaft

- General refuse were still observed to be accumulated near the tree protection zone. The Contractor was reminded to maintain good housekeeping, collect and sort waste regularly.
- Stagnant water was observed to be accumulated in the empty container and drip tray. The Contractor was reminded to clean it up.

North Point Production Shaft

- The Contractor was reminded to remove the oil stain and dispose of properly as chemical waste.
- Stagnant water was observed to be accumulated in the drainage. The Contractor was reminded to clean it up.

Inspection date: 13 November 2014

Follow-up Actions Taken after Previous Site Audit

Sai Ying Pun Production Shaft

- The waste stored in the waste skip had been cleared.
- Drip trays had been provided for chemical containers outside the noise enclosure.

North Point Production Shaft

- Oil stain had been removed and disposed as chemical waste.
- Stagnant water in the drainage had been cleared.

Wan Chai Production Shaft

- General refuse had been cleared near the tree protection zone.
- Stagnant water had been emptied from the container and drip trays.

Observations and Recommendations

Stonecutters Island Production Shaft
- There were no major observations during site inspection.

Sai Ying Pun Production Shaft
- There were no major observations during site inspection.

Wan Chai Drop Shaft
- Two chemical cans were observed being placed next to the drop shaft without drip tray. The Contractor was reminded to provide drip tray to chemical stored within the shaft.

Wan Chai Production Shaft
- An empty chemical can was observed being placed at the general refuse storage next to the noise enclosure. The Contractor was reminded to put any waste chemical cans at the chemical waste storage.

North Point Production Shaft
- An oil drum was observed being placed next to the noise enclosure without drip tray. The Contractor was reminded to provide drip tray to chemical stored within the shaft.

Inspection date: 20 November 2014

Follow-up Actions Taken after Previous Site Audit

North Point Production Shaft
- Drip tray had been provided for the oil drum.

Wan Chai Drop Shaft
- Drip trays had been provided for chemical containers.

Wan Chai Production Shaft
- Chemical cans had been moved to the chemical waste storage.

Observations and Recommendations

Stonecutters Island Production Shaft
- There were no major observations during site inspection.

Sai Ying Pun Production Shaft
- There were no major observations during site inspection.

Wan Chai Production Shaft
- There were no major observations during site inspection.

North Point Production Shaft
- Oil stains were observed outside the chemical storage area. The Contractor was reminded to remove the oil stain.

Inspection date: 26 November 2014

Follow-up Actions Taken after Previous Site Audit

North Point Production Shaft

- This works area had not been covered during site inspection and the items will be checked upon in subsequent site inspection

Observations and Recommendations

Stonecutters Island Production Shaft

- Chemical containers were observed without drip trays near the noise enclosure. The Contractor was reminded to provide drip tray for the containers.

Sai Ying Pun Production Shaft

- There were no major observations during site inspection.