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: *Twenty-sixth Quarterly EM&A Report*

June 2016

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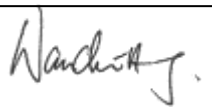
Contract No. DC/2007/23 Harbour Area Treatment Scheme Stage 2A Construction of Sewage Conveyance System from North Point to Stonecutters Island: *Twenty-sixth Quarterly EM&A Report*

June 2016

Reference 0104887

For and on behalf of ERM-Hong Kong, Limited

Approved by: Frank Wan

Signed: 

Position: Partner

Certified by:

(Environmental Team Leader – Mandy To)

Date: 30 June 2016

MOTT MACDONALD

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Attn: Mr. Danny Tang

Agreement No. CE 8/2009(EP) Harbour Area Treatment Scheme Stage 2A Independent Environmental Checker for Construction Phase – Investigation

Our Reference
GCB/AFK/DC/bw/
T261332/22.01/L-1073

Contract No. DC/2007/23 – Construction of Sewage Conveyance System from North Point to Stonecutters Island

Submission of 26th Quarterly EM&A Report for March to May 2016

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25 July 2016
By Post

Dear Sir,

We refer to the revised 26th Quarterly EM&A Report for March to May 2016 received on 25 July 2016 via email. We confirm we have no comment on the captioned report.

Yours faithfully
for MOTT MACDONALD HONG KONG LIMITED

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c.c.

AECOM	Ms. Mandy Fu	By email
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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*	*15*
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*	*16*
3.7.3	*Summary of Environmental Complaint*	*16*
3.7.4	*Summary of Environmental Summon and Successful Prosecution*	*16*
4	*WAN CHAI EAST PRODUCTION AND DROP SHAFTS*	*17*
4.1	*CONSTRUCTION ACTIVITIES DURING THE REPORTING PERIOD*	*17*
4.2	*STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS*	*17*
4.3	*ENVIRONMENTAL MONITORING REQUIREMENTS*	*17*
4.3.1	*Air Quality Monitoring*	*17*
4.3.2	*Noise Monitoring*	*21*
4.3.3	*Cultural Heritage*	*22*
4.3.4	*Landscape and Visual Monitoring*	*22*
4.4	*IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS*	*23*
4.5	*MONITORING RESULTS*	*23*
4.5.1	*Air Quality*	*23*
4.5.2	*Noise*	*23*
4.5.3	*Landscape and Visual*	*23*

4.5.4	*Cultural Heritage*	*23*
4.5.5	*Waste Management*	*24*
4.6	*ENVIRONMENTAL SITE INSPECTION*	*24*
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*	*25*
4.7.4	*Summary of Environmental Summon and Successful Prosecution*	*25*
5	*CENTRAL DROP SHAFT*	*26*
5.1	*CONSTRUCTION ACTIVITIES DURING THE REPORTING PERIOD*	*26*
6	*SAI YING PUN JUNCTION SHAFT*	*27*
6.1	*CONSTRUCTION ACTIVITIES DURING THE REPORTING PERIOD*	*27*
6.2	*STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS*	*27*
6.3	*ENVIRONMENTAL MONITORING REQUIREMENTS*	*27*
6.3.1	*Air Quality Monitoring*	*27*
6.3.2	*Noise Monitoring*	*30*
6.3.3	*Cultural Heritage*	*32*
6.3.4	*Landscape and Visual Monitoring*	*32*
6.4	*IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS*	*33*
6.5	*MONITORING RESULTS*	*33*
6.5.1	*Air Quality*	*33*
6.5.2	*Noise*	*33*
6.5.3	*Landscape and Visual*	*33*
6.5.4	*Cultural Heritage*	*33*
6.5.5	*Waste Management*	*34*
6.6	*ENVIRONMENTAL SITE INSPECTION*	*34*
6.7	*ENVIRONMENTAL NON-CONFORMANCE*	*34*
6.7.1	*Summary of Monitoring Exceedance*	*34*
6.7.2	*Summary of Environmental Non-Compliance*	*34*
6.7.3	*Summary of Environmental Complaint*	*34*
6.7.4	*Summary of Environmental Summon and Successful Prosecution*	*35*
7	*STONECUTTERS ISLAND PRODUCTION AND RISER SHAFTS*	*36*
7.1	*CONSTRUCTION ACTIVITIES DURING THE REPORTING PERIOD*	*36*
8	*CONCLUSIONS*	*37*
8.1	*NORTH POINT PRODUCTION AND DROP SHAFTS*	*37*
8.2	*WAN CHAI EAST PRODUCTION AND DROP SHAFTS*	*37*
8.3	*CENTRAL DROP SHAFT*	*38*
8.4	*SAI YING PUN JUNCTION SHAFT*	*38*
8.5	*STONECUTTERS ISLAND PRODUCTION AND RISER SHAFTS*	*38*
8.6	*OVERALL*	*38*

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 MARCH 2016 TO 31 MAY 2016 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 MARCH 2016 TO 31 MAY 2016 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 6.1 SUMMARY OF CONSTRUCTION ACTIVITIES UNDERTAKEN FROM 1 MARCH 2016 TO 31 MAY 2016 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

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	*Summary of Exceedance Investigation*
Annex C8	*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	*Approval Letter from EPD for Termination of Construction Phase EM&A Programme*
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	*Approval Letter from EPD for Termination of Construction Phase EM&A Programme*
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 26th quarterly Environmental Monitoring and Audit (EM&A) report presenting the EM&A work carried out during the period from 1 March to 31 May 2016 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:

- Phase 1 fire wall demolition at Production Shaft was completed reinstatement works was continued at Production Shaft;
- Temporary road diversion was successfully carried out;
- Construction of new intake chamber is in progress at Sewage By-Pass Structure from Sea Front; and
- Reinstatement of road surface / footpath / car park run-in were carried out at Sewage By-Pass Structure from Sea Front.

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)	17 sets
• 1-hour averaged TSP Monitoring at each monitoring station (AM1)	51 sets
• 24-hour averaged TSP Monitoring at each monitoring station (AM2)	17 sets
• 1-hour averaged TSP Monitoring at each monitoring station (AM2)	51 sets
• Construction Noise Monitoring during Normal Weekdays at NM1	13 times
• Construction Noise Monitoring during Restricted Hours at NM1	13 times
• Joint Environmental Site Inspection	13 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.

2 numbers of exceedance of noise limit level was recorded during normal working hours at NM1 on 17 March and 26 May 2016; meanwhile, 8 numbers of exceedance of the noise limit level were recorded during restricted hours at NM1 on 6, 17 and 25 March; 10 and 24 April; 8, 16 and 22 May 2016.

The exceedances were investigated. Since no outdoor construction activities had taken place during the period with exceedance, 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.

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:

- Footing breaking at Production Shaft was 100% completed; and
- Backfilling and soil compaction at Production Shaft are in progress with 70% completed.

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	17 sets
• 1-hour averaged TSP Monitoring at AM3	51 sets
• Construction Noise Monitoring during Normal Weekdays at NM2	13 times
• Construction Noise Monitoring during Restricted hours at NM2	13 times
• Joint Environmental Site Inspection	8 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.

2 numbers of exceedance of noise limit level was recorded during normal working hours at NM2 on 7 and 28 April 2016; meanwhile, 12 numbers of exceedances of noise Limit Level during restricted hours were reported at NM2 on 1, 6, 17, 25 and 29 March; 7, 19 and 24 April; and 4, 8, 16 and 22 May 2016.

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 were 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

Construction works had been completed in January 2016. The termination of construction phase EM&A programme at the worksites within Central Preliminary Treatment Works (CENPTW) for Contract No. DC/2007/23 was approved by EPD on 22 February 2016. Air and noise monitoring and regular site inspection had been handed over to Environmental Team of Contract No. DC/2009/23 in October 2015. The approval letter from EPD is shown in *Annex E9*.

Sai Ying Pun Junction Shaft

Summary of Construction Works undertaken during the reporting period

The major construction works undertaken included:

- Surface landscaping work at Production Shaft was completed;
- E&M installation was completed at DO Chamber;
- Painting control kiosk and excavation for laying water pipe for irrigation water at Junction Shaft are in progress;
- Installation of I-beams in down pipes and erecting of chain-link fence at Junction Shaft are in progress; and
- Construction of multi-part covers at Junction Shaft is in progress.

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	12 times
• Construction Noise Monitoring during Restricted hours at NM4	3 times
• Joint Environmental Site Inspection	4 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

Construction works had been completed in October 2015. The termination of construction phase EM&A programme at the worksites within Stonecutters Island Sewage Treatment Works (SCISTW) for *Contract No. DC/2007/23* was approved by EPD in November 2015. Air and noise monitoring and regular site inspection had been handed over to Environmental Team of *Contract No. DC/2009/10*.

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 twenty-sixth quarterly EM&A report which summarises the impact monitoring results and audit findings for the EM&A programme during the reporting period from **1 March 2016 to31 May 2016**.

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/F and 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 2016.

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	Variation of the Permit granted on 9 May 2014
Notification of Construction Works under Air Pollution Control APC (Construction Dust) Regulation	--	04 August 2009 – 13 December 2016	Reference number for Notification Pursuant to APC (Construction Dust) Regulation: 371432
Waste Disposal (Charges for Disposal of Construction Waste) Regulation Approval of Application of Billing Account	7009167	Throughout the Contract	--

Notes:

(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 76th Monthly EM&A Report	14 April 2016
	Submission of 77th Monthly EM&A Report	12 May 2016
	Submission of 78th Monthly EM&A Report	14 June 2016

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 March 2016 to 31 May 2016 at North Point Production and Drop Shafts

Worksite	Construction Activities Undertaken
Production Shaft	• Phase 1 fire wall demolition was completed and temporary road diversion was successfully carried out; and • Reinstatement works were continued.
Drop Shaft	• No major works.
Sewage By-Pass Structure from Sea Front.	• Construction of new intake chamber in progress; and • Reinstate road surface / footpath / car park run-in.

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 WT00020821-2015	9 February 2015 - 31 March 2020	--
	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-RS0934-15	10 September 2015 – 9 March 2016	--

Permit/ Licences/ Notification	Reference	Validity Period	Remarks
	Ka Wah Centre GW-RS0969-15	10 September 2015 – 9 March 2016	--
	Ka Wah Centre GW-RS0170-16	9 March 2016 – 8 September 2016	--

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.

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 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

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 C6*, 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

17 sets of 24-hour averaged and 51 sets of 1-hour averaged TSP measurements were carried out at AM1 during the reporting period. 17 sets of 24-hour averaged and 51 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 cloudy 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. 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 6, 17, and 25 March 2016; 7, 10, 19 and 24 April 2016; and 4, 8, 16, and 22 May 2016. The monitoring results together with their graphical presentations are presented in *Annex C6*.

2 numbers of exceedance of the limit level were recorded during normal working hours at NM1 on 17 March and 26 May 2016; besides, 8 numbers of exceedance of the limit level were recorded during restricted hours at NM1 on 6, 17 and 25 March; 10 and 24 April; 8, 16 and 22 May 2016. Investigations had been conducted to identify the potential causes for the recorded noise level. A summary of the investigation results is presented in *Section 3.7.1*.

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 2, 9, 16, 23 and 30 March 2016; 6, 13, 20 and 27 April 2016; and 4, 11, 19 and 25 May 2016. The representative of the IEC joined the site inspection on 23 March, 27 April and 25 May 2016. 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 Action and Limit Levels of noise was recorded at monitoring station during both normal working hours was recorded.

2 numbers of exceedance of the limit level were recorded during normal working hours at NM1 on 17 March and 26 May 2016. 8 numbers of exceedances of noise Limit Level during restricted hours on 6, 17 and 25 March; 10 and 24 April; 8, 16 and 22 May 2016 were reported at NM1. The exceedances were investigated and they are detailed in *Annex C7*. Since no outdoor construction activities had taken place during the period with exceedance, 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.

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 C8*.

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 C8*.

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 March 2016 to 31 May 2016 at Wan Chai East Production and Drop Shafts

Worksite	Construction Activities Undertaken
Production Shaft	• Footing breaking is 100% completed. Backfilling and soil compaction are in progress with 70% completed.
Drop Shaft	• No major works.

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-RS1023-155	6 October 2015 – 5 April 2016	--

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.

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 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 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 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 17 sets of 24-hour averaged and 51 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 rainy 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. 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 1, 6, 17, 25 and 29 March; 7, 10, 19 and 24 April; and 4, 8, 16 and 22 May 2016. The monitoring results together with their graphical presentations are presented in *Annex D6*.

2 exceedance of the limit level were recorded during normal working hours at NM2 on 7 and 28 April 2016. 13 numbers of exceedance of the limit level were recorded during restricted hours at NM2 on 1, 6, 17, 25 and 29 March; 7, 19 and 24 April; and 4, 8, 16 and 22 May 2016. 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 on 2, 9, 16, 23 and 30 March; 6, 13 and 20 April 2016. A representative of IEC joined the site inspection on 23 March 2016. 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.
2 exceedance of the limit level were recorded during normal working hours at NM2 on 7 and 28 April 2016. 12 numbers of exceedance of the limit level were recorded during restricted hours at NM2 on 1, 6, 17, 25 and 29 March; 7, 19 and 24 April; and 4, 8, 16 and 22 May 2016. Since no outdoor construction activities had taken place during the period with exceedance, it is considered that the exceedances were not due to the Contract 23 construction works.
The exceedances were investigated and they are detailed in *Annex D7*.

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

Construction works had been completed in January 2016. The termination of construction phase EM&A programme at the worksites within Central Preliminary Treatment Works (CENPTW) for *Contract No. DC/2007/23* was approved by EPD on 22 February 2016. Air and noise monitoring and regular site inspection had been handed over to Environmental Team of *Contract No. DC/2009/23* in October 2015. The approval letter from EPD is shown in *Annex E1*.

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 March 2016 to 31 May 2016 at Sai Ying Pun Junction Shaft

Construction Activities Undertaken
• Surface landscaping work is completed; • Painting control kiosk and excavation for laying water pipe for irrigation water are in progress; • Installation of I-beams in down pipes and erecting of chain-link fence are in progress; • E&M installation at DO Chamber is completed; and • Construction of multi-part covers is in progress.

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 WT00020318-2014	10 November 2014 – 31 October 2019	--
Chemical Waste Producer Registration	Sai Ying Pun Junction Shaft 5213-112-G2347-05	Throughout the Contractor	--

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* in December 2014.

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

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 F5*.

Monitoring Methodology

Installation

The setup location of the HVS was listed in *Table 6.3*. The HVS was free-standing with no obstruction.

The following criteria have been considered in the installation of the HVSs:

- appropriate support to secure the samplers against gusty wind were provided at AM5;
- 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 did not 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 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.

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 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 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 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 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 F6*, 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 12 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. 3 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 8, 13 and 22 March 2016 during the reporting period. Construction noise measurement during restricted hours has been stopped since no works have been conducted at restricted hours since 22 March 2016. A letter for cancellation of construction noise permit (No. GWRS0238-16) has been submitted to EPD (*Annex F6*). 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 30 March; 6, 13 and 20 April 2016. 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 Action and Limit Levels of noise 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 STONECUTTERS ISLAND PRODUCTION AND RISER SHAFTS

7.1 CONSTRUCTION ACTIVITIES DURING THE REPORTING PERIOD

Construction works had been completed in October 2015. The termination of construction phase EM&A programme at the worksites within Stonecutters Island Sewage Treatment Works (SCISTW) for *Contract No. DC/2007/23* was approved by EPD in November 2015. Air and noise monitoring and regular site inspection had been handed over to Environmental Team of *Contract No. DC/2009/10*, therefore, air and noise monitoring and regular site inspection was not required since November 2015. The approval letter from EPD is shown in *Annex G1*.

8 CONCLUSIONS

This Environmental Monitoring and Audit (EM&A) Report presents the EM&A works undertaken during the period from 1 March to 31 May 2016 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.

Limit level for construction noise was exceeded on 17 March and 26 May 2016 during normal working hours. Also, limit level for construction noise was exceeded on 6, 17 and 25 March; 10 and 24 April; and 8, 16 and 22 May 2016 during the restricted hours at the monitoring station. The findings of the investigation of exceedance 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.

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.

Limit level for construction noise was exceeded on 17 March; 7 and 28 April 2016 during normal working hours. Also, limit level for construction noise was exceeded on 1, 6, 17, 25 and 29 March; 7, 19 and 24 April; and 4, 8, 16 and 22 May 2016 during the restricted hour at the monitoring station. The findings of the investigation of exceedance 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

The termination of construction phase EM&A programme at the worksites within CENPTW for Contract No. DC/2007/23 was approved by EPD. It is confirmed that the EM&A programme, including the monitoring works at AM4 and NM3 and regular site inspection, have been handed over to the Environment Team of HATS-2A Contract No. DC/2009/23.

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 non-compliance event was recorded during the reporting period.

8.5 STONECUTTERS ISLAND PRODUCTION AND RISER SHAFTS

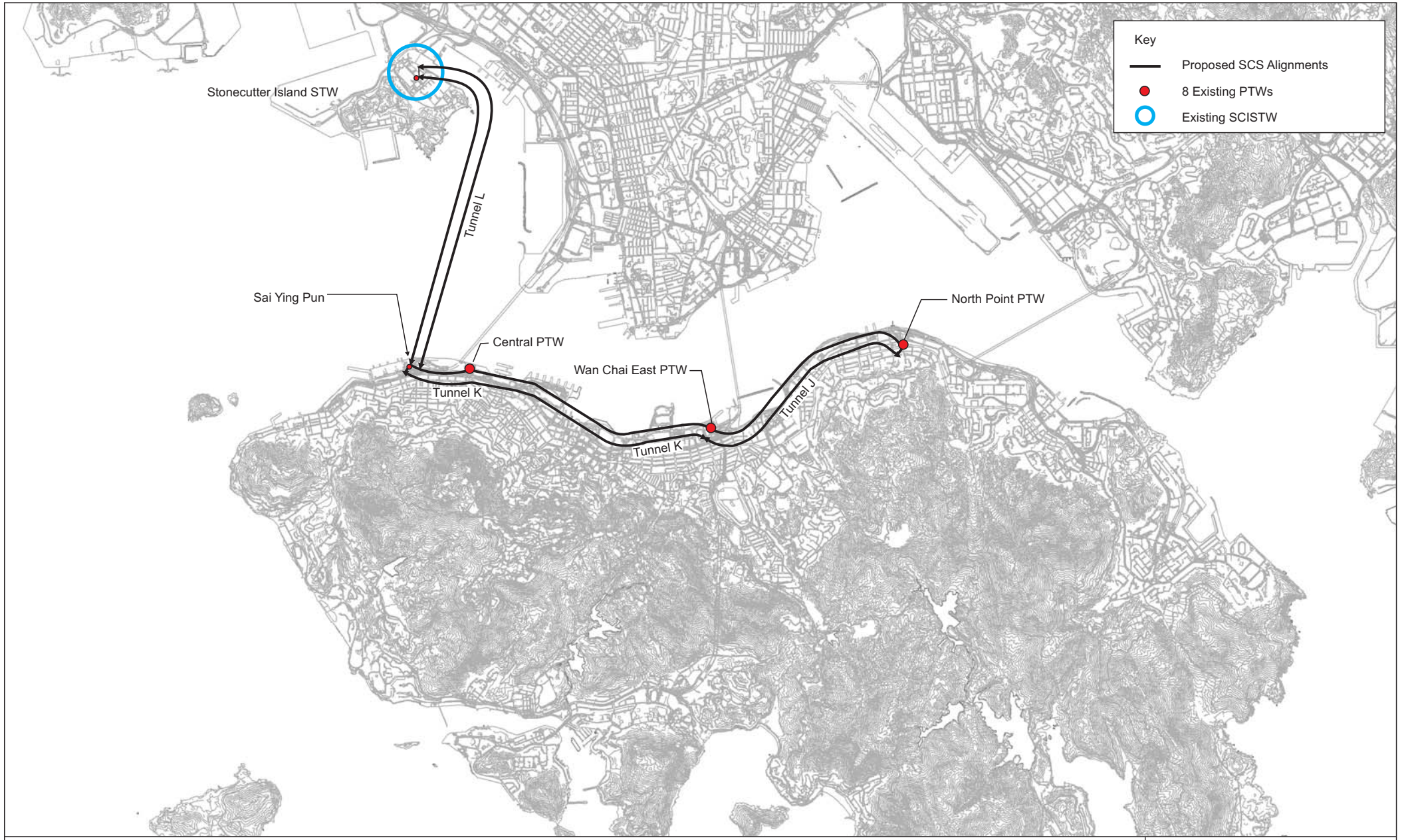
Construction works had been completed in October 2015. The termination of construction phase EM&A programme at the worksites within Stonecutters Island Sewage Treatment Works (SCISTW) for *Contract No. DC/2007/23* was approved by EPD in November 2015. Air and noise monitoring and regular site inspection had been handed over to Environmental Team of *Contract No. DC/2009/10.*

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

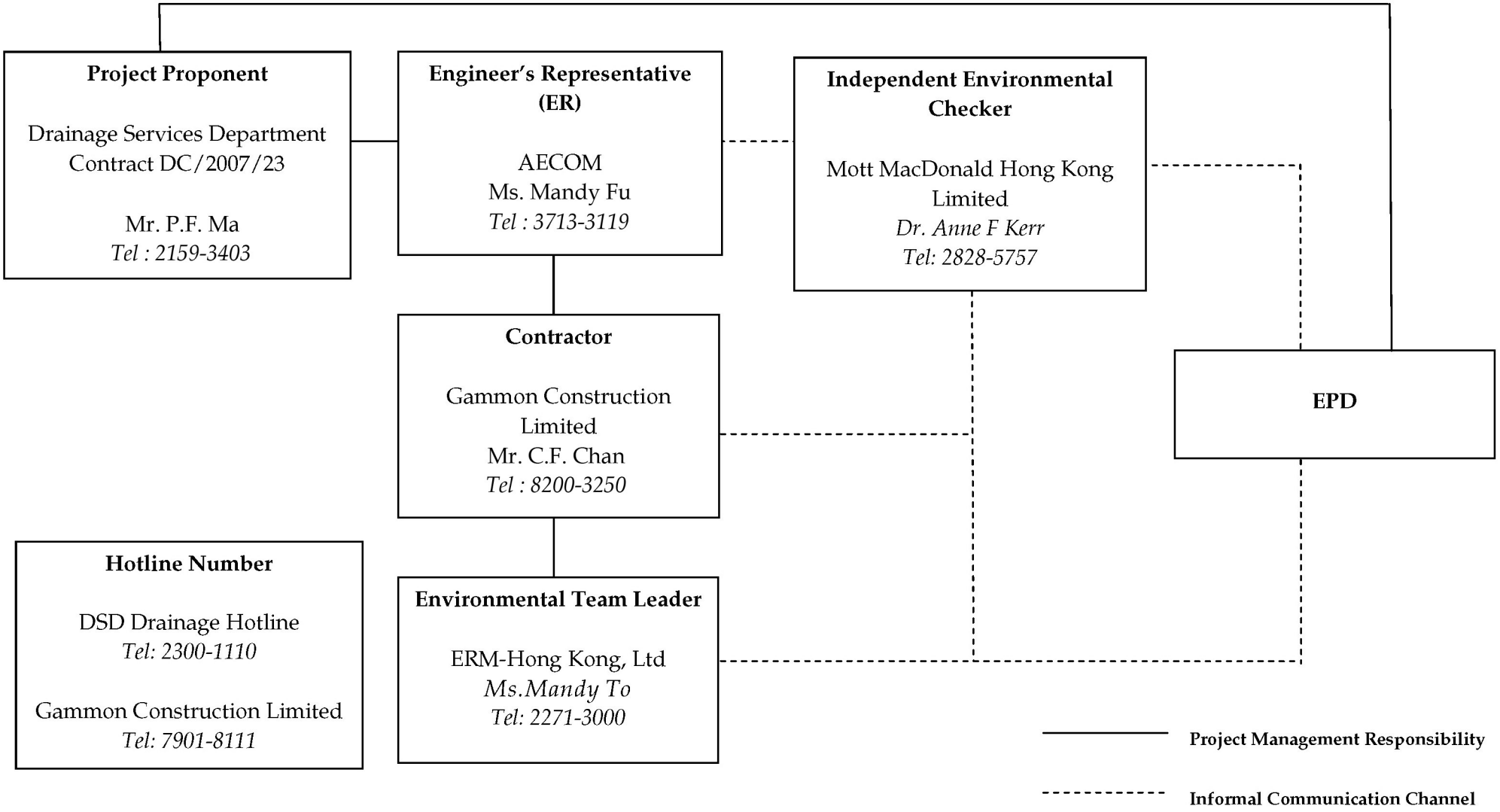
Environmental Resources Management

ERM

Annex B

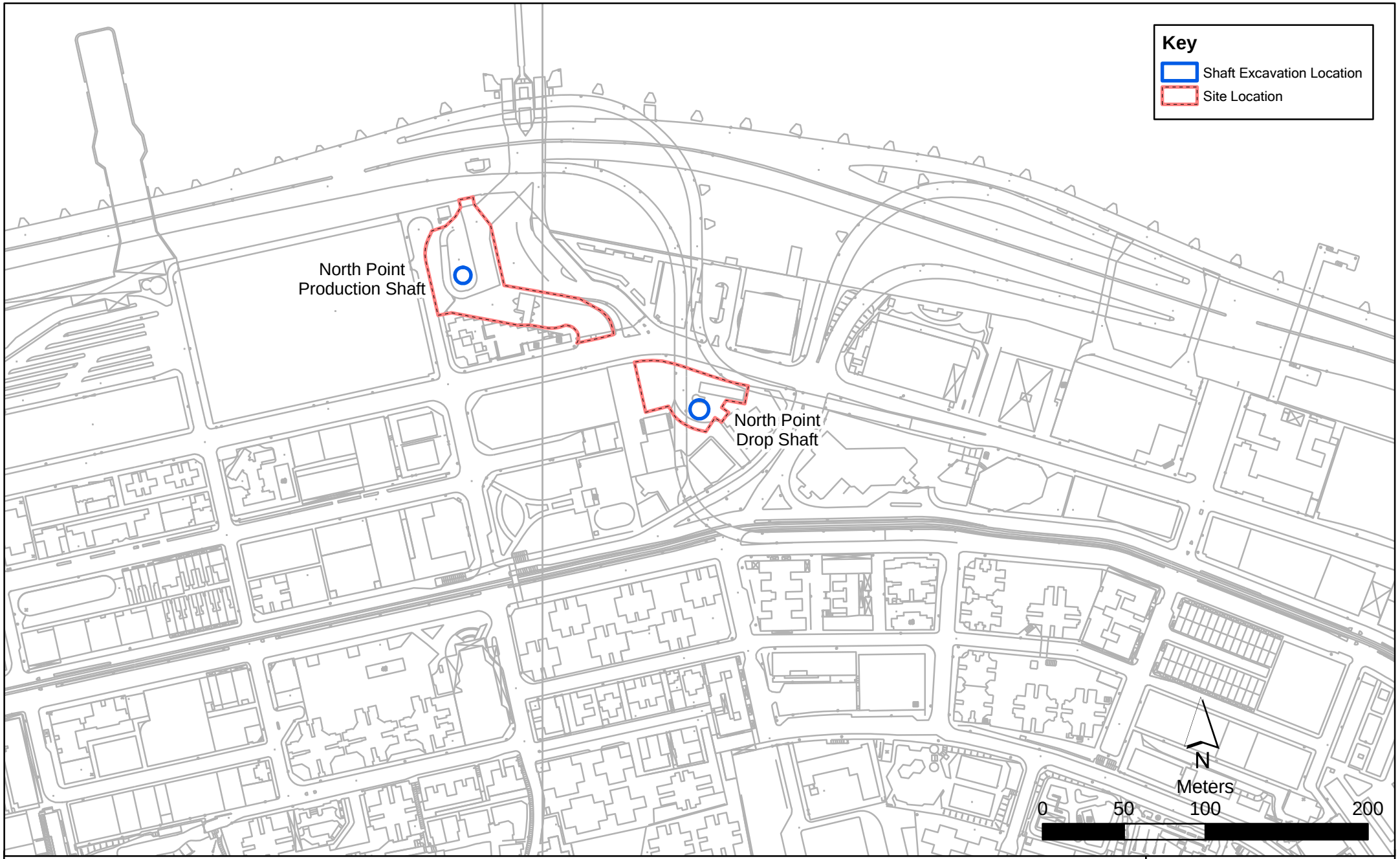
Project Organisation Chart and Contact Detail

Project Organization



Annex C

North Point Production and Drop Shafts



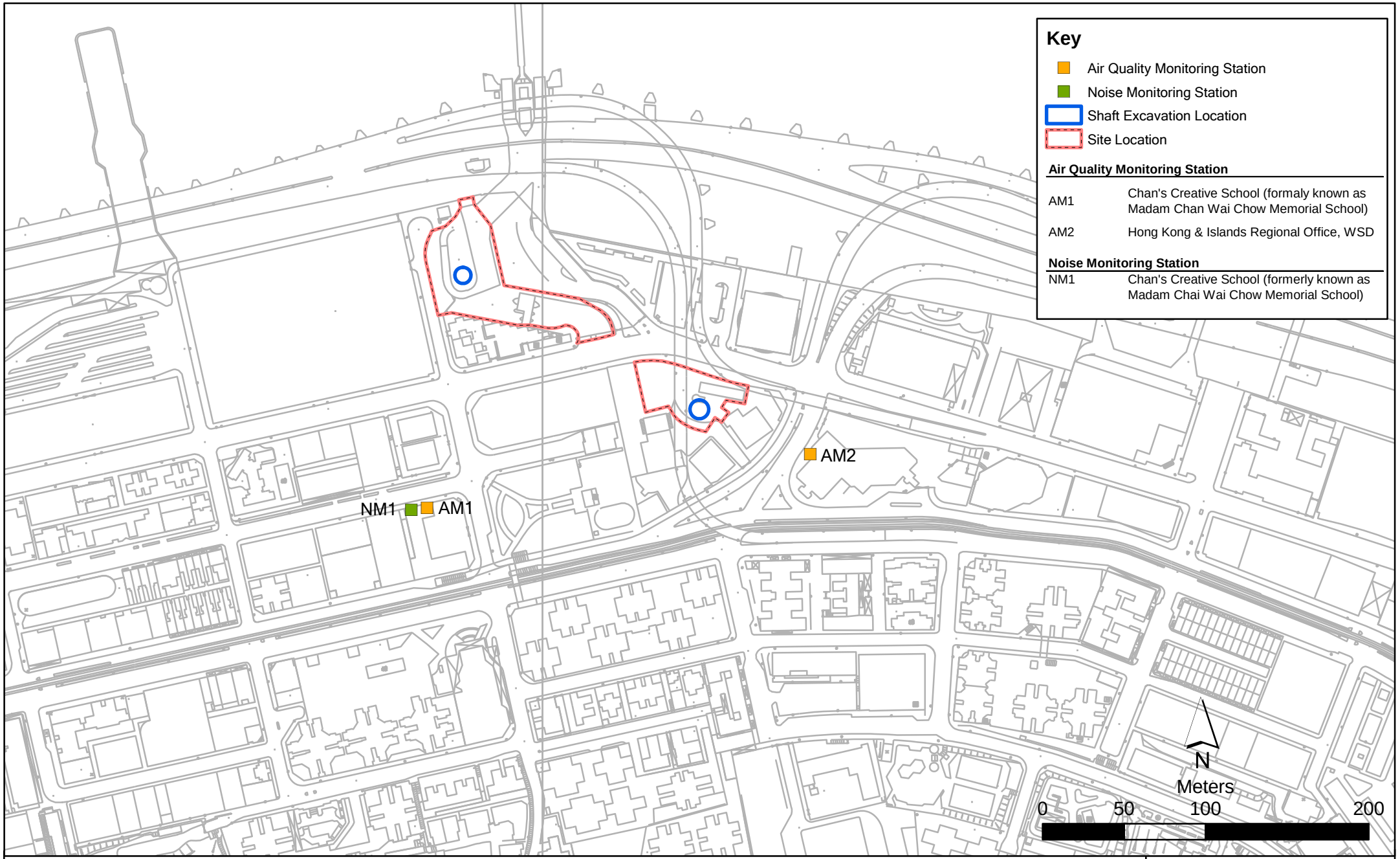
Annex C1

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 (°C)	Wind Speed * (m/s)	Sampler ID
01-Mar-16	13:00	14:00	Sunny	249	340	500	N.A.	16	<5	LD-3B (A.02.04)
	14:00	15:00	Sunny	257	340	500	N.A.	16	<5	LD-3B (A.02.04)
	15:00	16:00	Sunny	253	340	500	N.A.	16	<5	LD-3B (A.02.04)
07-Mar-16	13:00	14:00	Cloudy	268	340	500	N.A.	20	<5	LD-3B (A.02.04)
	14:00	15:00	Cloudy	270	340	500	N.A.	20	<5	LD-3B (A.02.04)
	15:00	16:00	Cloudy	267	340	500	N.A.	20	<5	LD-3B (A.02.04)
11-Mar-16	9:00	10:00	Cloudy	156	340	500	N.A.	12	<5	LD-3B (A.02.04)
	10:00	11:00	Cloudy	158	340	500	N.A.	12	<5	LD-3B (A.02.04)
	11:00	12:00	Cloudy	155	340	500	N.A.	12	<5	LD-3B (A.02.04)
17-Mar-16	9:00	10:00	Cloudy	250	340	500	N.A.	16	<5	LD-3B (A.02.07)
	10:00	11:00	Cloudy	242	340	500	N.A.	16	<5	LD-3B (A.02.07)
	11:00	12:00	Cloudy	244	340	500	N.A.	16	<5	LD-3B (A.02.07)
23-Mar-16	8:45	9:45	Cloudy	224	340	500	N.A.	19	<5	LD-3B (A.02.08)
	9:45	10:45	Cloudy	227	340	500	N.A.	19	<5	LD-3B (A.02.08)
	10:45	11:45	Cloudy	231	340	500	N.A.	19	<5	LD-3B (A.02.08)
29-Mar-16	8:30	9:30	Fine	161	340	500	N.A.	17	<5	LD-3B (A.02.04)
	9:30	10:30	Fine	170	340	500	N.A.	17	<5	LD-3B (A.02.04)
	10:30	11:30	Fine	168	340	500	N.A.	17	<5	LD-3B (A.02.04)
			Min.	**155**						
			Max.	**270**						
			Average	**219**						

* 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
01-Mar-16	13:00	14:00	Cloudy	260	352	500	N.A.	16	<5	LD-3B (A.02.08)
	14:00	15:00	Cloudy	249	352	500	N.A.	16	<5	LD-3B (A.02.08)
	15:00	16:00	Cloudy	247	352	500	N.A.	16	<5	LD-3B (A.02.08)
07-Mar-16	13:00	14:00	Sunny	271	352	500	N.A.	20	<5	LD-3B (A.02.04)
	14:00	15:00	Sunny	268	352	500	N.A.	20	<5	LD-3B (A.02.04)
	15:00	16:00	Sunny	269	352	500	N.A.	20	<5	LD-3B (A.02.04)
11-Mar-16	13:00	14:00	Cloudy	153	352	500	N.A.	12	<5	LD-3B (A.02.04)
	14:00	15:00	Cloudy	154	352	500	N.A.	12	<5	LD-3B (A.02.04)
	15:00	16:00	Cloudy	156	352	500	N.A.	12	<5	LD-3B (A.02.04)
17-Mar-16	13:00	14:00	Cloudy	239	352	500	N.A.	16	<5	LD-3B (A.02.07)
	14:00	15:00	Cloudy	272	352	500	N.A.	16	<5	LD-3B (A.02.07)
	15:00	16:00	Cloudy	253	352	500	N.A.	16	<5	LD-3B (A.02.07)
23-Mar-16	13:10	14:10	Cloudy	233	352	500	N.A.	19	<5	LD-3B (A.02.08)
	14:10	15:10	Cloudy	230	352	500	N.A.	19	<5	LD-3B (A.02.08)
	15:10	16:10	Cloudy	231	352	500	N.A.	19	<5	LD-3B (A.02.08)
29-Mar-16	9:00	10:00	Fine	127	352	500	N.A.	17	<5	LD-3B (A.02.10)
	10:00	11:00	Fine	132	352	500	N.A.	17	<5	LD-3B (A.02.10)
	11:00	12:00	Fine	131	352	500	N.A.	17	<5	LD-3B (A.02.10)
			Min.	**127**						
			Max.	**272**						
			Average	**215**						

* 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
01-Apr-16	9:00	10:00	Cloudy	44	340	500	N.A.	23	<5	Hal-HPC300 (A.26.01)
	10:00	11:00	Cloudy	39	340	500	N.A.	23	<5	Hal-HPC300 (A.26.01)
	11:00	12:00	Cloudy	42	340	500	N.A.	23	<5	Hal-HPC300 (A.26.01)
07-Apr-16	9:00	10:00	Fine	259	340	500	Operation of Mobile Crane	25	<5	LD-3B (A.02.05)
	10:00	11:00	Fine	262	340	500	Operation of Mobile Crane	25	<5	LD-3B (A.02.05)
	11:00	12:00	Fine	260	340	500	Operation of Mobile Crane	25	<5	LD-3B (A.02.05)
13-Apr-16	13:00	14:00	Rainy	219	340	500	N.A.	23	<5	LD-3B (A.02.08)
	14:00	15:00	Rainy	220	340	500	N.A.	23	<5	LD-3B (A.02.08)
	15:00	16:00	Rainy	209	340	500	N.A.	23	<5	LD-3B (A.02.08)
19-Apr-16	13:00	14:00	Cloudy	182	340	500	N.A.	20	<5	LD-3B (A.02.08)
	14:00	15:00	Cloudy	176	340	500	N.A.	20	<5	LD-3B (A.02.08)
	15:00	16:00	Cloudy	194	340	500	N.A.	20	<5	LD-3B (A.02.08)
22-Apr-16	13:37	14:37	Fine	42	340	500	N.A.	24	<5	LD-3B (A.02.07)
	14:37	15:37	Fine	29	340	500	N.A.	24	<5	LD-3B (A.02.07)
	15:37	16:37	Fine	17	340	500	N.A.	24	<5	LD-3B (A.02.07)
28-Apr-16	13:00	14:00	Sunny	228	340	500	N.A.	24	<5	LD-3B (A.02.08)
	14:00	15:00	Sunny	226	340	500	N.A.	24	<5	LD-3B (A.02.08)
	15:00	16:00	Sunny	226	340	500	N.A.	24	<5	LD-3B (A.02.08)
			Min.	**17**						
			Max.	**262**						
			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
01-Apr-16	9:00	10:00	Cloudy	38	352	500	N.A.	23	<5	Hal-HPC300 (A.26.03)
	10:00	11:00	Cloudy	41	352	500	N.A.	23	<5	Hal-HPC300 (A.26.03)
	11:00	12:00	Cloudy	45	352	500	N.A.	23	<5	Hal-HPC300 (A.26.03)
07-Apr-16	13:00	14:00	Fine	245	352	500	N.A.	25	<5	LD-3B (A.02.05)
	14:00	15:00	Fine	253	352	500	N.A.	25	<5	LD-3B (A.02.05)
	15:00	16:00	Fine	249	352	500	N.A.	25	<5	LD-3B (A.02.05)
13-Apr-16	13:00	14:00	Rainy	228	352	500	N.A.	23	<5	LD-3B (A.02.01)
	14:00	15:00	Rainy	236	352	500	N.A.	23	<5	LD-3B (A.02.01)
	15:00	16:00	Rainy	221	352	500	N.A.	23	<5	LD-3B (A.02.01)
19-Apr-16	13:00	14:00	Cloudy	199	352	500	N.A.	20	<5	LD-3B (A.02.01)
	14:00	15:00	Cloudy	194	352	500	N.A.	20	<5	LD-3B (A.02.01)
	15:00	16:00	Cloudy	187	352	500	N.A.	20	<5	LD-3B (A.02.01)
22-Apr-16	9:00	10:00	Fine	15	352	500	N.A.	24	<5	LD-3B (A.02.07)
	10:00	11:00	Fine	19	352	500	N.A.	24	<5	LD-3B (A.02.07)
	11:00	12:00	Fine	12	352	500	N.A.	24	<5	LD-3B (A.02.07)
28-Apr-16	9:00	10:00	Sunny	210	352	500	N.A.	24	<5	LD-3B (A.02.08)
	10:00	11:00	Sunny	217	352	500	N.A.	24	<5	LD-3B (A.02.08)
	11:00	12:00	Sunny	220	352	500	N.A.	24	<5	LD-3B (A.02.08)
			Min.	**12**						
			Max.	**253**						
			Average	**157**						

* 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
04-May-16	13:22	14:22	Cloudy	104	340	500	N.A.	25	<5	LD-3B (A.02.09)
	14:22	15:22	Cloudy	108	340	500	N.A.	25	<5	LD-3B (A.02.09)
	15:22	16:22	Cloudy	113	340	500	N.A.	25	<5	LD-3B (A.02.09)
10-May-16	13:00	14:00	Cloudy	81	340	500	N.A.	25	<5	LD-3B (A.02.01)
	14:00	15:00	Cloudy	82	340	500	N.A.	25	<5	LD-3B (A.02.01)
	15:00	16:00	Cloudy	82	340	500	N.A.	25	<5	LD-3B (A.02.01)
16-May-16	13:00	14:00	Sunny	158	340	500	N.A.	25	<5	LD-3B (A.02.04)
	14:00	15:00	Sunny	123	340	500	N.A.	25	<5	LD-3B (A.02.04)
	15:00	16:00	Sunny	141	340	500	N.A.	25	<5	LD-3B (A.02.04)
20-May-16	13:30	14:30	Cloudy	222	340	500	N.A.	20	<5	LD-3B (A.02.01)
	14:30	15:30	Cloudy	213	340	500	N.A.	20	<5	LD-3B (A.02.01)
	15:30	16:30	Cloudy	255	340	500	N.A.	20	<5	LD-3B (A.02.01)
26-May-16	13:05	14:05	Cloudy	238	340	500	N.A.	24	<5	LD-3B (A.02.01)
	14:05	15:05	Cloudy	215	340	500	N.A.	24	<5	LD-3B (A.02.01)
	15:05	16:05	Cloudy	248	340	500	N.A.	24	<5	LD-3B (A.02.01)
			Min.	**81**						
			Max.	**255**						
			Average	**159**						

* 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
04-May-16	9:00	10:00	Cloudy	100	352	500	N.A.	25	<5	LD-3B (A.02.09)
	10:00	11:00	Cloudy	110	352	500	N.A.	25	<5	LD-3B (A.02.09)
	11:00	12:00	Cloudy	114	352	500	N.A.	25	<5	LD-3B (A.02.09)
10-May-16	9:00	10:00	Cloudy	69	352	500	N.A.	25	<5	LD-3B (A.02.01)
	10:00	11:00	Cloudy	71	352	500	N.A.	25	<5	LD-3B (A.02.01)
	11:00	12:00	Cloudy	72	352	500	N.A.	25	<5	LD-3B (A.02.01)
16-May-16	9:00	10:00	Sunny	56	352	500	N.A.	25	<5	LD-3B (A.02.04)
	10:00	11:00	Sunny	62	352	500	N.A.	25	<5	LD-3B (A.02.04)
	11:00	12:00	Sunny	57	352	500	N.A.	25	<5	LD-3B (A.02.04)
20-May-16	9:30	10:30	Rainy	217	352	500	N.A.	20	<5	LD-3B (A.02.01)
	10:30	11:30	Rainy	204	352	500	N.A.	20	<5	LD-3B (A.02.01)
	11:30	12:30	Rainy	231	352	500	N.A.	20	<5	LD-3B (A.02.01)
26-May-16	9:00	10:00	Cloudy	286	352	500	N.A.	24	<5	LD-3B (A.02.01)
	10:00	11:00	Cloudy	215	352	500	N.A.	24	<5	LD-3B (A.02.01)
	11:00	12:00	Cloudy	247	352	500	N.A.	24	<5	LD-3B (A.02.01)
			Min.	**56**						
			Max.	**286**						
			Average	**141**						

* 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	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)		ID	ID
04-Mar-16	9:00	05-Mar-16	9:00	Cloudy	3.2234	3.3255	6245.66	6269.66	24.00	1.19	1.19	1.19	60	185	260	N.A.	TE-5170 A-01-46	160202/071
10-Mar-16	9:00	11-Mar-16	9:00	Cloudy	3.2310	3.2831	6269.66	6293.66	24.00	1.20	1.20	1.20	30	185	260	N.A.	TE-5170 A-01-46	160202/077
16-Mar-16	9:00	17-Mar-16	9:00	Cloudy	3.2766	3.3794	1.00	24.00	23.00	1.19	1.19	1.19	63	185	260	N.A.	TE-5170 A-01-46	160202/090
22-Mar-16	9:00	23-Mar-16	9:00	Cloudy	3.3186	3.4245	24.00	48.00	24.00	1.19	1.19	1.19	62	185	260	N.A.	TE-5170 A-01-46	160503/075
24-Mar-16	9:00	25-Mar-16	9:00	Cloudy	3.3201	3.3826	48.00	72.00	24.00	1.20	1.19	1.20	36	185	260	N.A.	TE-5170 A-01-46	160203/083
30-Mar-16	9:00	31-Mar-16	9:00	Cloudy	3.3041	3.3680	72.00	96.00	24.00	1.21	1.21	1.21	37	185	260	N.A.	TE-5170 A-01-46	160203/091
												Min.	**30**					
												Max.	**63**					
												Average	**48**					

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-Mar-16	9:00	05-Mar-16	9:00	Cloudy	3.2832	3.4842	10233.62	10257.62	24.00	1.19	1.19	1.19	117	182	260	N.A.	TE-5170 A-01-44	160202/070
10-Mar-16	9:00	11-Mar-16	9:00	Cloudy	3.2603	3.3412	10257.62	10281.62	24.00	1.21	1.21	1.21	46	182	260	N.A.	TE-5170 A-01-44	160202/078
16-Mar-16	9:00	17-Mar-16	9:00	Cloudy	3.3001	3.4927	10281.77	10305.77	24.00	1.20	1.20	1.20	111	182	260	N.A.	TE-5170 A-01-44	160202/094
22-Mar-16	9:00	23-Mar-16	9:00	Cloudy	3.2988	3.4811	10305.77	10329.77	24.00	1.20	1.20	1.20	105	182	260	N.A.	TE-5170 A-01-44	160203/076
24-Mar-16	9:00	25-Mar-16	9:00	Cloudy	3.3424	3.4439	10329.77	10353.77	24.00	1.21	1.21	1.21	58	182	260	N.A.	TE-5170 A-01-44	160203/084
30-Mar-16	9:00	31-Mar-16	9:00	Cloudy	3.3069	3.5006	10353.77	10377.77	24.00	1.20	1.20	1.20	112	182	260	N.A.	TE-5170 A-01-44	160208/090
												Min.	**46**					
												Max.	**117**					
												Average	**92**					

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
05-Apr-16	9:00	06-Apr-16	9:00	Sunny	3.3311	3.4312	119.99	143.99	24.00	1.21	1.21	1.21	58	185	260	N.A.	TE-5170 A-01-46	160303/022
11-Apr-16	9:00	12-Apr-16	9:00	Cloudy	3.3736	3.4749	143.99	167.99	24.00	1.20	1.20	1.20	59	185	260	N.A.	TE-5170 A-01-46	160303/025
15-Apr-16	9:00	16-Apr-16	9:00	Cloudy	3.3320	3.4931	167.99	191.99	24.00	1.21	1.21	1.21	93	185	260	N.A.	TE-5170 A-01-46	160304/001
21-Apr-16	9:00	22-Apr-16	9:00	Cloudy	3.3371	3.4535	191.99	215.99	24.00	1.20	1.20	1.20	67	185	260	N.A.	TE-5170 A-01-46	160304/013
27-Apr-16	9:00	28-Apr-16	9:00	Cloudy	3.2924	3.4299	215.99	239.99	24.00	1.19	1.19	1.19	80	185	260	N.A.	TE-5170 A-01-46	160303/036
												Min.	**58**					
												Max.	**93**					
												Average	**71**					

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
05-Apr-16	9:00	06-Apr-16	9:00	Sunny	3.3633	3.5630	10401.77	10425.77	24.00	1.21	1.21	1.21	115	182	260	N.A.	TE-5170 A-01-44	160303/023
11-Apr-16	9:00	12-Apr-16	9:00	Cloudy	3.3572	3.5040	10425.77	10449.77	24.00	1.20	1.20	1.20	86	182	260	N.A.	TE-5170 A-01-44	160303/024
15-Apr-16	9:00	16-Apr-16	9:00	Cloudy	3.2886	3.5556	10449.77	10473.77	24.00	1.21	1.21	1.21	154	182	260	N.A.	TE-5170 A-01-44	060303/031
21-Apr-16	9:00	22-Apr-16	9:00	Cloudy	3.3182	3.5307	10473.77	10497.77	24.00	1.20	1.20	1.20	123	182	260	N.A.	TE-5170 A-01-44	160304/014
27-Apr-16	9:00	28-Apr-16	9:00	Cloudy	3.3132	3.5476	10497.77	10521.77	24.00	1.19	1.19	1.19	136	182	260	N.A.	TE-5170 A-01-44	160304/098
												Min.	**86**					
												Max.	**154**					
												Average	**123**					

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
03-May-16	9:00	04-May-16	9:00	Cloudy	3.3305	3.4137	239.99	263.99	24.00	1.19	1.19	1.19	49	185	260	N.A.	TE-5170 A-01-46	160401/036
09-May-16	9:00	10-May-16	9:00	Cloudy	3.3307	3.3902	263.99	287.99	24.00	1.19	1.19	1.19	35	185	260	N.A.	TE-5170 A-01-46	160403/024
13-May-16	9:00	14-May-16	9:00	Sunny	3.3050	3.4050	287.99	311.99	24.00	1.20	1.20	1.20	58	185	260	N.A.	TE-5170 A-01-46	160401/044
19-May-16	9:00	20-May-16	9:00	Cloudy	3.3366	3.4479	311.99	335.99	24.00	1.20	1.20	1.20	64	185	260	N.A.	TE-5170 A-01-46	160403/023
25-May-16	9:00	26-May-16	9:00	Cloudy	3.3223	3.3983	335.99	359.99	24.00	1.19	1.19	1.19	44	185	260	N.A.	TE-5170 A-01-46	160401/026
31-May-16	9:00	01-Jun-16	9:00	Sunny	3.3224	3.3833	360.00	384.00	24.00	1.20	1.20	1.20	35	185	260	N.A.	TE-5170 A-01-46	160501/095
												Min.	**35**					
												Max.	**64**					
												Average	**48**					

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
03-May-16	9:00	04-May-16	9:00	Cloudy	3.3373	3.4693	10521.77	10545.77	24.00	1.19	1.19	1.19	77	182	260	N.A.	TE-5170 A-01-44	160401/037
09-May-16	9:00	10-May-16	9:00	Cloudy	3.3301	3.4334	10545.76	10569.76	24.00	1.19	1.19	1.19	60	182	260	N.A.	TE-5170 A-01-44	160403/021
13-May-16	9:00	14-May-16	9:00	Sunny	3.3085	3.5268	10569.76	10593.76	24.00	1.19	1.19	1.19	127	182	260	N.A.	TE-5170 A-01-44	160402/049
19-May-16	9:00	20-May-16	9:00	Rainy	3.3324	3.5704	10593.76	10617.76	24.00	1.20	1.20	1.20	138	182	260	N.A.	TE-5170 A-01-44	160403/022
25-May-16	9:00	26-May-16	9:00	Cloudy	3.3628	3.5005	10617.76	10641.76	24.00	1.19	1.19	1.19	80	182	260	N.A.	TE-5170 A-01-44	160401/025
31-May-16	9:00	01-Jun-16	9:00	Sunny	3.3283	3.4229	10641.87	10665.87	24.00	1.20	1.20	1.20	55	182	260	N.A.	TE-5170 A-01-44	160403/025
												Min.	**55**					
												Max.	**138**					
												Average	**90**					

Meteorological Data Extracted from the Hong Kong Observatory

		King's Park Station				
Date	Weather	Average Air Temperature (°C)	Average Relative Humidity (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
2016/03/01	Sunny	16	58-82	0.0	8-25	E
2016/03/04	Cloudy	21	75-87	0.0	0-15	SE
2016/03/05	Fine	21	69-85	Trace	0-14	E
2016/03/07	Cloudy	20	86-94	0.2	0-18	E
2016/03/10	Cloudy	13	81-98	16.8	0-28	N/NE
2016/03/11	Cloudy	12	68-86	1.7	0-14	E/SE
2016/03/13	Cloudy	15	93-98	3.4	0-22	N/NE
2016/03/16	Cloudy	14	87-96	1.1	6-24	E
2016/03/17	Cloudy	16	96-98	2.2	10-25	SE
2016/03/22	Cloudy	16	94-98	1.7	10-29	E
2016/03/23	Cloudy	19	94-99	8.7	0-24	E/SE
2016/03/26	Cloudy	16	53-83	0.0	0-18	E
2016/03/29	Fine	18	48-71	Trace	0-15	E

		Tsing Yi Station				
Date	Weather	Average Air Temperature (°C)	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2016/03/01	Sunny	18	58-82	0.0	3-21	SE
2016/03/04	Cloudy	21	75-87	0.0	0-15	E/SE
2016/03/05	Fine	21	69-85	Trace	0-11	SE
2016/03/07	Cloudy	20	86-94	0.2	0-22	SE
2016/03/10	Cloudy	14	81-98	16.8	0-18	SE
2016/03/11	Cloudy	12	68-96	1.7	0-15	NW
2016/03/13	Cloudy	17	93-98	3.4	3--24	SE
2016/03/16	Cloudy	16	87-96	2.7	2-14	E/SE
2016/03/17	Cloudy	18	96-98	2.2	0-28	SE
2016/03/22	Cloudy	18	94-98	1.7	4-25	E/SE
2016/03/23	Cloudy	20	94-99	8.7	0-16	E
2016/03/26	Cloudy	16	53-83	0.0	0-24	E/SE
2016/03/29	Fine	18	48-71	Trace	0-15	E/SE

		Kai Tak Station				
Date	Weather	Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2016/03/01	Sunny	16	58-82	0.0	13-27	SE
2016/03/04	Cloudy	21	75-87	0.0	0-19	SE
2016/03/05	Fine	21	69-85	Trace	0-18	SW
2016/03/07	Cloudy	20	86-94	0.2	0-20	SE
2016/03/10	Cloudy	13	81-98	16.8	1-24	E
2016/03/11	Cloudy	12	68-86	1.7	2-16	E
2016/03/13	Cloudy	15	93-98	3.4	0-21	E
2016/03/16	Cloudy	14	87-96	1.1	12-26	SE
2016/03/17	Cloudy	16	96-98	2.2	11-25	E
2016/03/22	Cloudy	16	94-98	1.7	10-31	SE
2016/03/23	Cloudy	19	94-99	8.7	2-22	SW
2016/03/26	Cloudy	16	53-83	0.0	0-21	SE
2016/03/29	Fine	18	48-71	Trace	0-22	SE

		Green Island Station				
Date	Weather	Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2016/03/01	Sunny	18	58-82	0.0	5-48	NE
2016/03/04	Cloudy	21	75-87	0.0	0-25	E
2016/03/05	Fine	21	69-85	Trace	0-27	SE/E
2016/03/07	Cloudy	20	86-94	0.2	0-35	NE
2016/03/10	Cloudy	14	81-98	16.8	10-63	SE/E
2016/03/11	Cloudy	12	68-96	1.7	13-39	NE
2016/03/13	Cloudy	17	93-98	3.4	6-43	E
2016/03/16	Cloudy	16	87-96	2.7	30-47	NE
2016/03/17	Cloudy	18	96-98	2.2	13-43	SE/E
2016/03/22	Cloudy	18	94-98	1.7	28-60	NE
2016/03/23	Cloudy	20	94-99	8.7	0-48	E
2016/03/26	Cloudy	16	53-83	0.0	0-27	NE
2016/03/29	Fine	18	48-71	Trace	3-33	SE/E

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

Meteorological Data Extracted from the Hong Kong Observatory

		King's Park Station				
Date	Weather	Average Air Temperature (°C)	Average Relative Humidity (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
2016-04-01	Sunny	23	73-96	0.0	0-14	N/NE
2016-04-05	Cloudy	23	87-96	Trace	0-19	SE
2016-04-07	Sunny	25	79-96	0.0	0-14	E/SE
2016-04-11	Cloudy	21	87-95	0.4	0-18	E
2016-04-13	Rainy	23	93-100	76.4	0-19	N/NE
2016-04-15	Cloudy	21	95-98	3.4	0-24	E
2016-04-19	Cloudy	20	80-90	Trace	9-25	E
2016-04-22	Cloudy	24	71-96	8.3	6-24	E
2016-04-25	Rainy	26	80-99	12.4	0-12	SE
2016-04-29	Cloudy	24	66-87	Trace	1-23	E

		Tsing Yi Station				
Date	Weather	Average Air Temperature (°C)	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2016-04-01	Sunny	22	73-96	0.0	0-18	E
2016-04-05	Cloudy	23	87-96	Trace	0-17	E/SE
2016-04-07	Sunny	26	79-96	0.0	0-13	E/SE
2016-04-11	Cloudy	22	87-95	0.4	0-15	E/SE
2016-04-13	Rainy	23	93-100	76.4	0-25	SE
2016-04-15	Cloudy	23	68-96	1.7	0-27	NW
2016-04-19	Cloudy	21	80-90	Trace	0-25	SE
2016-04-22	Cloudy	24	71-96	2.7	0-32	E/SE
2016-04-25	Rainy	26	80-99	12.4	0-18	SE
2016-04-29	Cloudy	24	66-87	Trace	0-21	E/SE

		Kai Tak Station				
Date	Weather	Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2016-04-01	Sunny	23	73-96	0.0	0-22	SE
2016-04-05	Cloudy	23	87-96	Trace	0-18	SE
2016-04-07	Sunny	25	79-96	0.0	4-18	SW
2016-04-11	Cloudy	21	87-95	0.4	2-10	SE
2016-04-13	Rainy	23	93-100	76.4	0-35	E
2016-04-15	Cloudy	21	95-98	3.4	10-24	SE
2016-04-19	Cloudy	20	80-90	Trace	12-28	E
2016-04-22	Cloudy	24	71-96	8.3	0-40	E
2016-04-25	Rainy	26	80-99	12.4	0-14	E
2016-04-29	Cloudy	24	66-87	Trace	5-30	SW

		Green Island Station				
Date	Weather	Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2016-04-01	Sunny	22	73-96	0.0	0-35	E
2016-04-05	Cloudy	23	87-96	Trace	0-28	E
2016-04-07	Sunny	26	79-96	0.0	0-26	NE
2016-04-11	Cloudy	22	87-95	0.4	0-18	NE
2016-04-13	Rainy	23	93-100	76.4	0-48	E
2016-04-15	Cloudy	23	68-96	1.7	5-43	NE
2016-04-19	Cloudy	21	80-90	Trace	25-60	E
2016-04-22	Cloudy	24	71-96	2.7	0-35	NE
2016-04-25	Rainy	26	80-99	12.4	0-35	SE/E
2016-04-29	Cloudy	24	66-87	Trace	15-50	SE/E

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

Meteorological Data Extracted from the Hong Kong Observatory

		King's Park Station				
Date	Weather	Average Air Temperature (°C)	Average Relative Humidity (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
2016-05-03	Cloudy	27	72-96	30.7	0-15	E
2016-05-04	Cloudy	26	81-94	Trace	0-15	SE
2016-05-09	Cloudy	29	72-90	0.0	0-18	E/SE
2016-05-10	Cloudy	25	90-98	60.3	0-16	E
2016-05-13	Sunny	26	73-88	Trace	4-18	N/NE
2016-05-16	Cloudy	25	57-90	0.3	0-17	E
2016-05-20	Cloudy	25	89-98	16.1	0-18	SE
2016-05-25	Cloudy	28	71-90	Trace	0-20	E/SE
2016-05-26	Cloudy	28	79-90	0.1	4-22	E/SE
2016-05-31	Sunny	30	72-84	0.0	1-16	E

		Tsing Yi Station				
Date	Weather	Average Air Temperature (°C)	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2016-05-03	Cloudy	26	72-96	30.7	0-22	NW
2016-05-04	Cloudy	26	81-94	Trace	0-12	NW
2016-05-09	Cloudy	29	72-90	0.0	0-22	E/SE
2016-05-10	Cloudy	26	90-98	60.3	0-24	E/SE
2016-05-13	Sunny	27	73-88	Trace	3-18	SE
2016-05-16	Cloudy	26	68-96	1.7	3-27	NW
2016-05-20	Cloudy	26	89-98	16.1	3-31	SE
2016-05-25	Cloudy	28	71-90	2.7	0-21	E/SE
2016-05-26	Cloudy	29	79-90	0.1	0-20	E/SE
2016-05-31	Sunny	30	72-84	0.0	1-18	E/SE

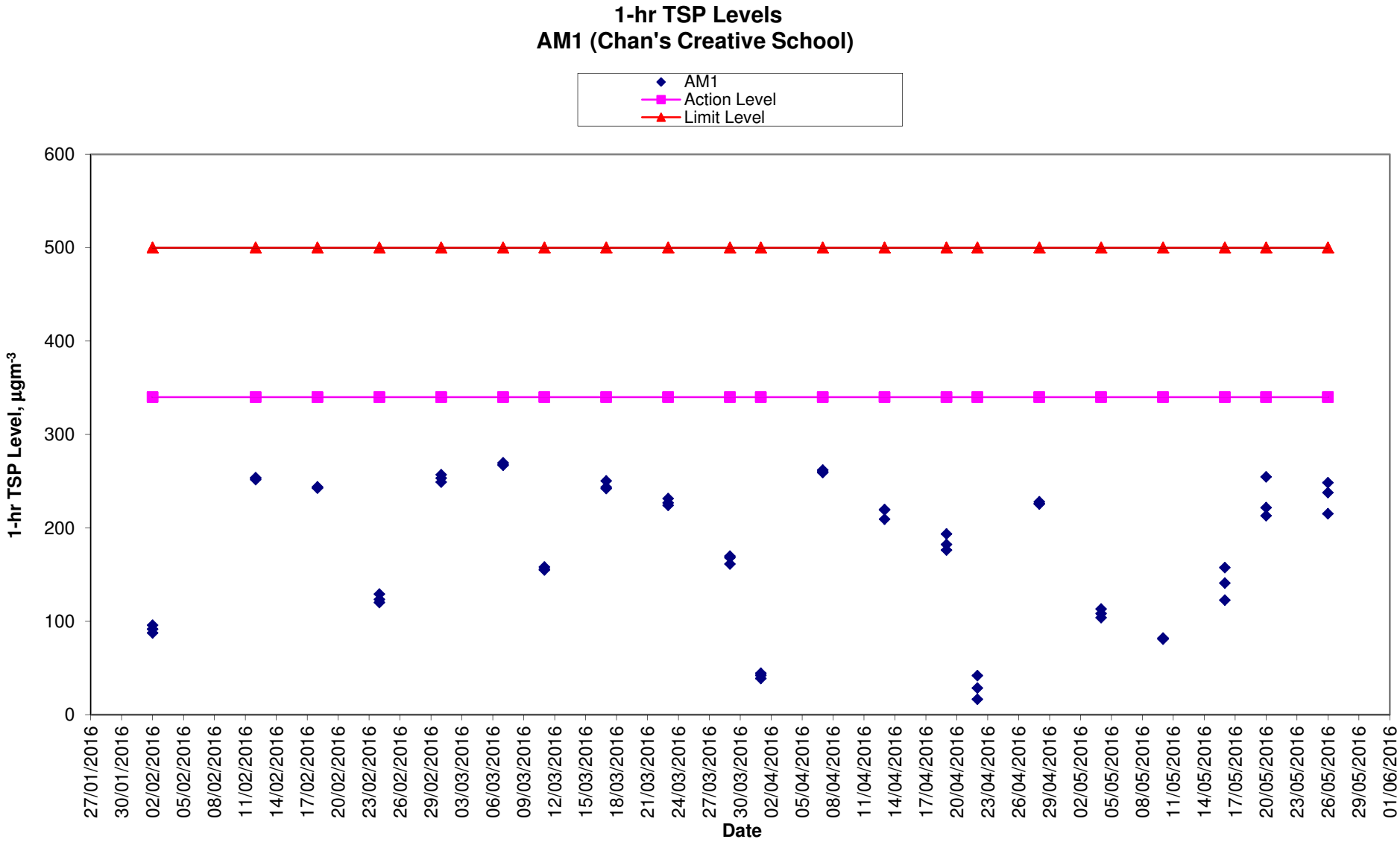
		Kai Tak Station				
Date	Weather	Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2016-05-03	Cloudy	27	72-96	30.7	0-24	SW
2016-05-04	Cloudy	26	81-94	Trace	0-19	E
2016-05-09	Cloudy	29	72-90	0.0	3-16	SE
2016-05-10	Cloudy	25	90-98	60.3	0-25	SE
2016-05-13	Sunny	26	73-88	Trace	8-23	E
2016-05-16	Cloudy	25	57-90	0.3	0-23	SE
2016-05-20	Cloudy	25	89-98	16.1	1-21	E
2016-05-25	Cloudy	28	71-90	Trace	1-24	E
2016-05-26	Cloudy	28	79-90	0.1	8-29	SE
2016-05-31	Sunny	30	72-84	0.0	2-20	E

		Green Island Station				
Date	Weather	Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2016-05-03	Cloudy	26	72-96	30.7	0-43	E
2016-05-04	Cloudy	26	81-94	Trace	0-25	SE/E
2016-05-09	Cloudy	29	72-90	0.0	6-35	E
2016-05-10	Cloudy	26	90-98	60.3	0-38	SE/E
2016-05-13	Sunny	27	73-88	Trace	10-45	E
2016-05-16	Cloudy	26	68-96	1.7	5-40	NE
2016-05-20	Cloudy	26	89-98	16.1	8-37	SE/E
2016-05-25	Cloudy	28	71-90	2.7	0-40	NE
2016-05-26	Cloudy	29	79-90	0.1	26-47	SE/E
2016-05-31	Sunny	30	72-84	0.0	16-34	SE/E

* King's Park's data

\- Data was not available

\# less than 24 hourly observations per day


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
27/01/2016
30/01/2016
02/02/2016
05/02/2016
08/02/2016
11/02/2016
14/02/2016
17/02/2016
20/02/2016
23/02/2016
26/02/2016
29/02/2016
03/03/2016
06/03/2016
09/03/2016
12/03/2016
15/03/2016
18/03/2016
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23/04/2016
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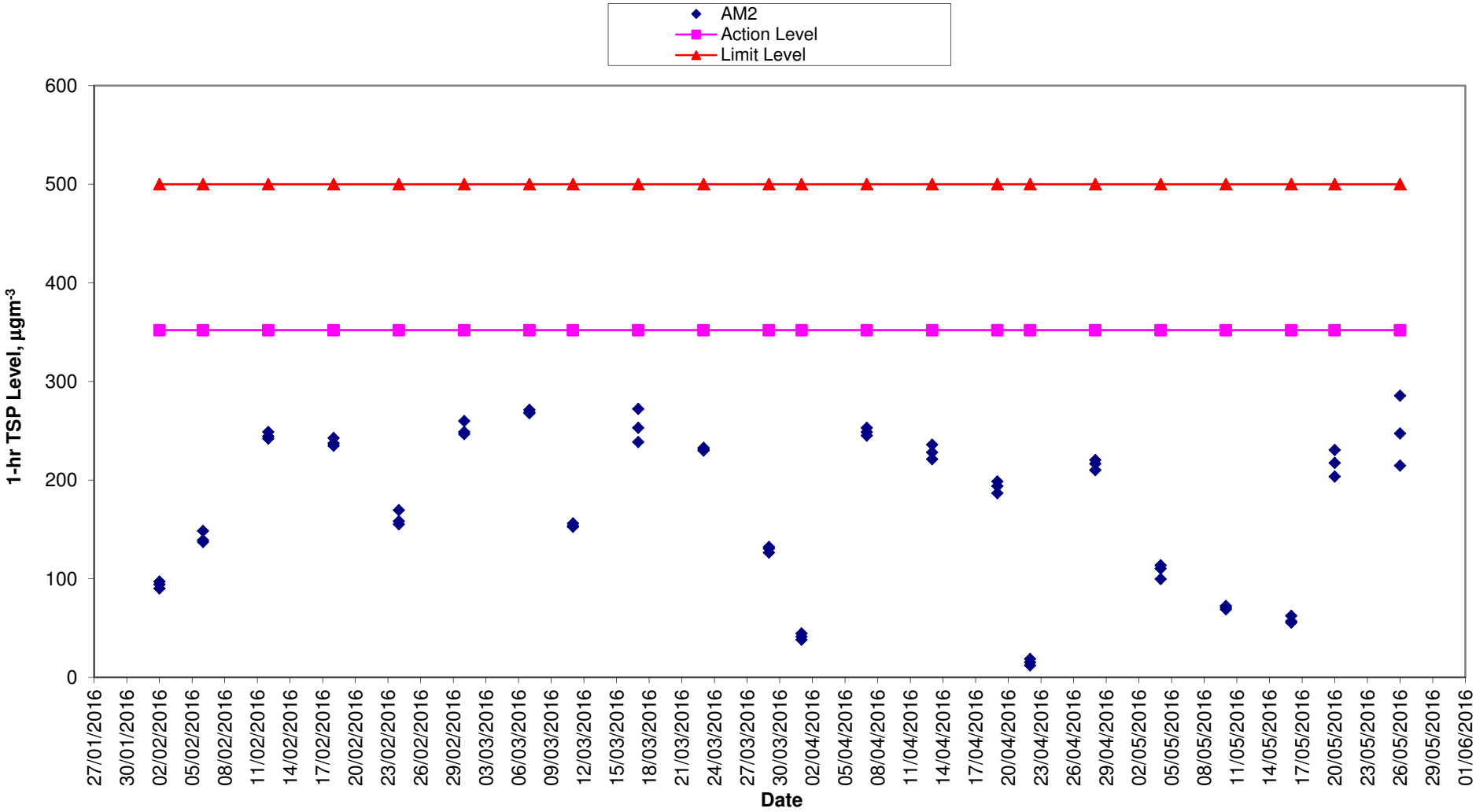
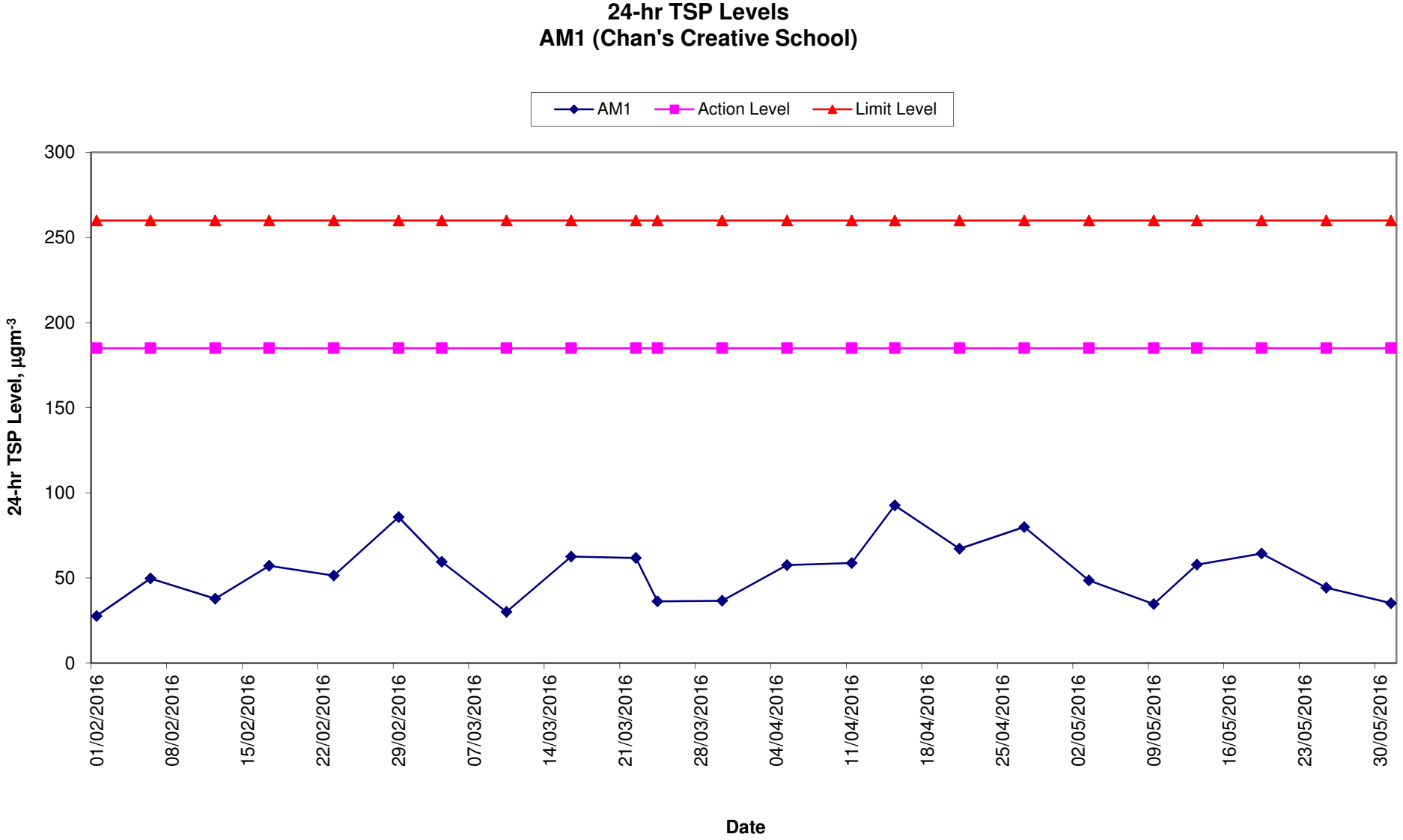
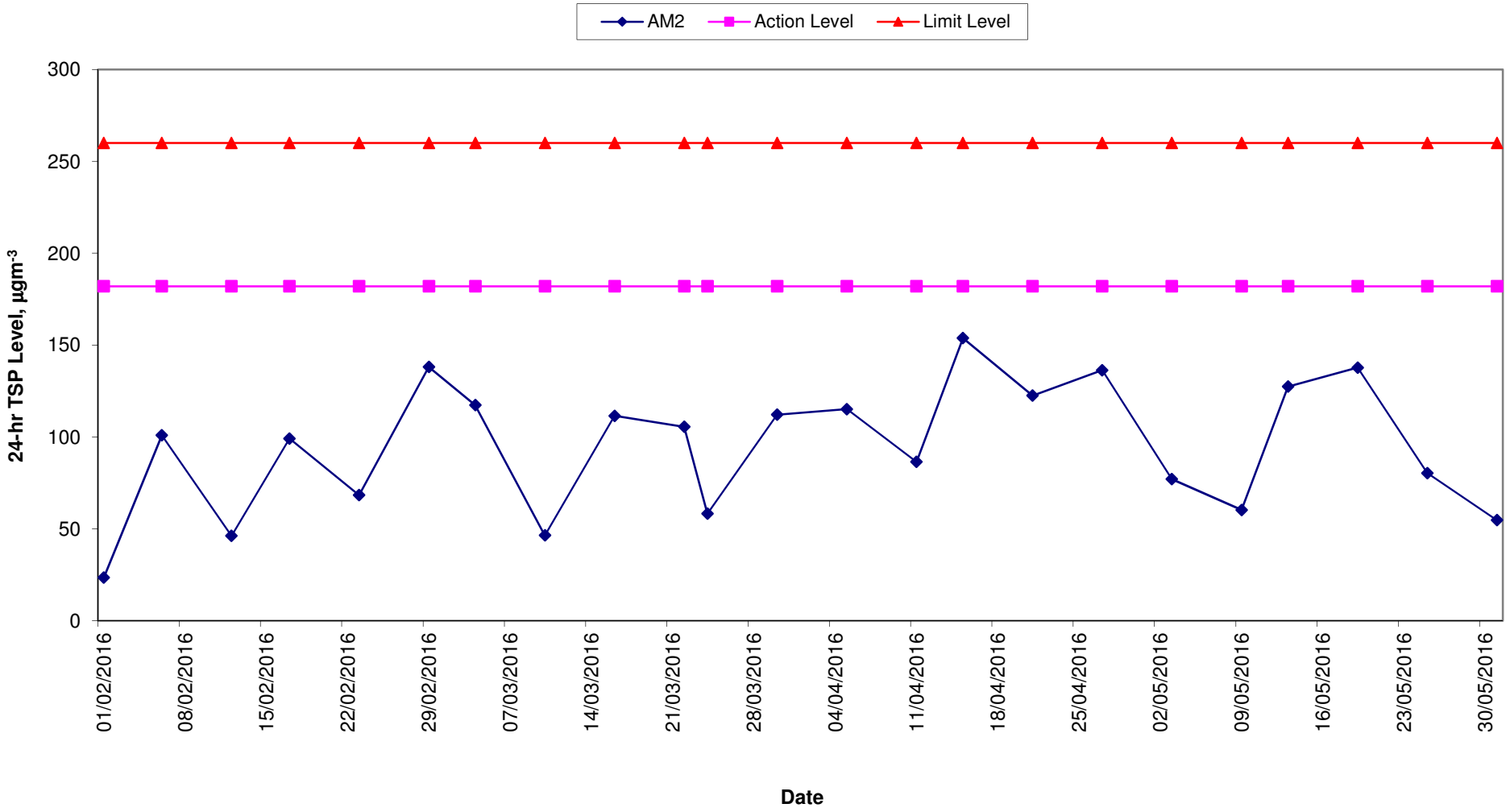
02/05/2016
05/05/2016
08/05/2016
11/05/2016
14/05/2016
17/05/2016
20/05/2016
23/05/2016
26/05/2016
29/05/2016
01/06/2016
Date

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




24-hr TSP Levels
AM1 (Chan's Creative School)
AM1
Action Level
Limit Level
24-hr TSP Level, µgm-3
300
250
200
150
100
50
0
01/02/2016
08/02/2016
15/02/2016
22/02/2016
29/02/2016
07/03/2016
14/03/2016
21/03/2016
28/03/2016
04/04/2016
11/04/2016
18/04/2016
25/04/2016
02/05/2016
09/05/2016
16/05/2016
23/05/2016
30/05/2016
Date

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



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							
01-Mar-16	13:15	13:45	Sunny	69	70	66	N.A.	Traffic noise	-	10	1.0	SVAN957 (N.08.08)	B&K4231 (N.02.03)
07-Mar-16	16:20	16:50	Cloudy	69	69	67	N.A.	Traffic noise	-	20	0.5	SVAN957 (N.08.08)	B&K4231 (N.02.03)
17-Mar-16	9:30	10:00	Cloudy	69	70	67	N.A.	Traffic noise	-	13	1.0	SVAN957 (N.08.09)	SV30A (N.09.03)
23-Mar-16	9:10	9:40	Cloudy	67	68	65	N.A.	Traffic noise	-	13	0.8	SVAN957 (N.08.07)	SV30A (N.09.04)
29-Mar-16	10:30	11:00	Fine	64	64	58	N.A.	Traffic noise	-	20	0.5	SVAN957 (N.08.07)	SV30A (N.09.04)
			Min.	**64**									
			Max.	**69**									

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							
07-Apr-16	9:30	10:00	Fine	67	69	65	N.A.	Traffic noise	-	25	1.0	SVAN957 (N.08.10)	SV30A (N.09.01)
14-Apr-16	15:30	16:00	Cloudy	65	67	63	N.A.	Traffic noise	-	22	1.0	SVAN957 (N.08.08)	B&K4231 (N.02.03)
19-Apr-16	13:30	14:00	Cloudy	66	67	64	N.A.	Traffic noise	-	20	0.5	SVAN957 (N.08.08)	B&K4231 (N.02.03)
28-Apr-16	15:20	15:50	Fine	69	71	65	N.A.	Traffic noise	-	24	1.0	SVAN957 (N.08.08)	B&K4231 (N.02.03)
			Min.	**65**									
			Max.	**69**									

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-May-16	13:29	13:59	CLoudy	68	70	68	N.A.	Traffic noise	-	25	1.0	SVAN957 (N.08.10)	B&K4231 (N.02.01)
10-May-16	13:10	13:40	Cloudy	66	68	65	N.A.	Traffic noise	-	25	1.0	SVAN957 (N.08.08)	SV30A (N.09.03)
16-May-16	14:03	14:33	Sunny	69	71	66	N.A.	Traffic noise	-	25	0.5	SVAN957 (N.08.07)	SV30A (N.09.04)
26-May-16	13:15	13:45	Cloudy	70	72	68	N.A.	Traffic noise	-	24	1.0	SVAN957 (N.08.10)	SV30A (N.09.05)
			Min.	**66**									
			Max.	**70**									

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							
01-Mar-16	19:50	19:55	Fine	69	72	63	-	Traffic noise	-	10	0.2	SVAN957 (N.08.08)	B&K4231 (N.02.03)
	19:55	20:00	Fine	70	73	62			-				
	20:00	20:05	Fine	70	62	63			-				
	19:50	20:05	Fine	69	-	-			-				
06-Mar-16	14:00	14:05	Cloudy	71	72	70	-	Traffic noise	-	20	0.5	SVAN957 (N.08.12)	SV30A (N.09.03)
	14:05	14:10	Cloudy	71	73	69			-				
	14:10	14:15	Cloudy	72	73	70			-				
	14:00	14:15	Cloudy	71	-	-			-				
17-Mar-16	19:30	19:35	Cloudy	70	72	64	-	Traffic noise	-	12	0.3	SVAN957 (N.08.09)	SV30A (N.09.03)
	19:35	19:40	Cloudy	70	72	63			-				
	19:00	19:05	Cloudy	70	72	64			-				
	19:30	19:45	Cloudy	70	-	-			-				
25-Mar-16	14:10	14:15	Cloudy	72	73	71	-	Traffic noise	-	14	0.2	SVAN957 (N.08.08)	B&K4231 (N.02.03)
	14:15	14:20	Cloudy	72	73	71			-				
	14:20	14:25	Cloudy	72	73	71			-				
	14:10	14:25	Cloudy	72	-	-			-				
29-Mar-16	19:50	19:55	Cloudy	69	73	60	-	Traffic Noise	-	18	0.6	SVAN957 (N.08.08)	B&K4231 (N.02.03)
	19:55	20:00	Cloudy	68	70	61			-				
	20:00	20:05	Cloudy	68	70	62			-				
	19:50	20:05	Cloudy	68	-	-			-				
			Min.	**68**									
			Max.	**72**									

[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-Apr-16	19:00	19:05	Fine	68	70	62	-	Traffic noise	-	25	0.2	SVAN957 (N.08.10)	SV30A (N.09.01)
	19:05	19:10	Fine	68	72	62			-				
	19:10	19:15	Fine	69	69	62			-				
	19:00	19:15	Fine	68	-	-			-				
10-Apr-16	16:35	16:40	Cloudy	73	76	70	-	Traffic noise	-	20	0.5	SVAN957 (N.08.08)	B&K4231 (N.02.03)
	16:40	16:45	Cloudy	73	76	70			-				
	16:45	16:50	Cloudy	73	76	70			-				
	16:35	16:50	Cloudy	73	-	-			-				
19-Apr-16	19:00	19:05	Cloudy	68	70	64	-	Traffic noise	-	20	0.2	SVAN957 (N.08.08)	B&K4231 (N.02.03)
	19:05	19:10	Cloudy	68	70	64			-				
	19:10	19:15	Cloudy	68	70	64			-				
	19:00	19:15	Cloudy	68	-	-			-				
24-Apr-16	15:00	15:05	Cloudy	72	76	69	-	Traffic noise	-	25	0.5	SVAN957 (N.08.07)	SV30A (N.09.03)
	15:05	15:10	Cloudy	72	76	69			-				
	15:10	15:15	Cloudy	73	76	69			-				
	15:00	15:15	Cloudy	72	-	-			-				
			Min.	**68**									
			Max.	**73**									

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

Annex C6 Noise Monitoring Results

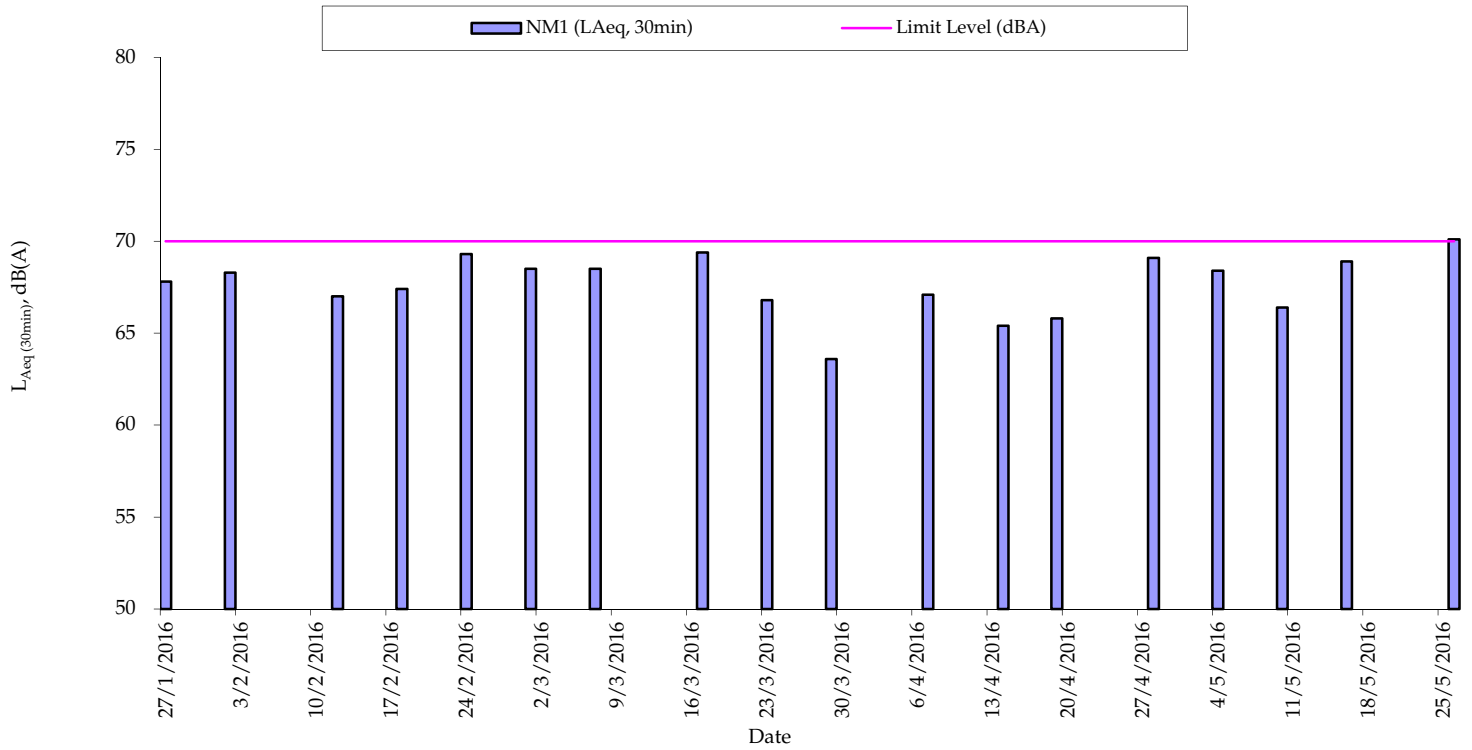
Restricted Hours Noise Monitoring Results [1]

Station NM1

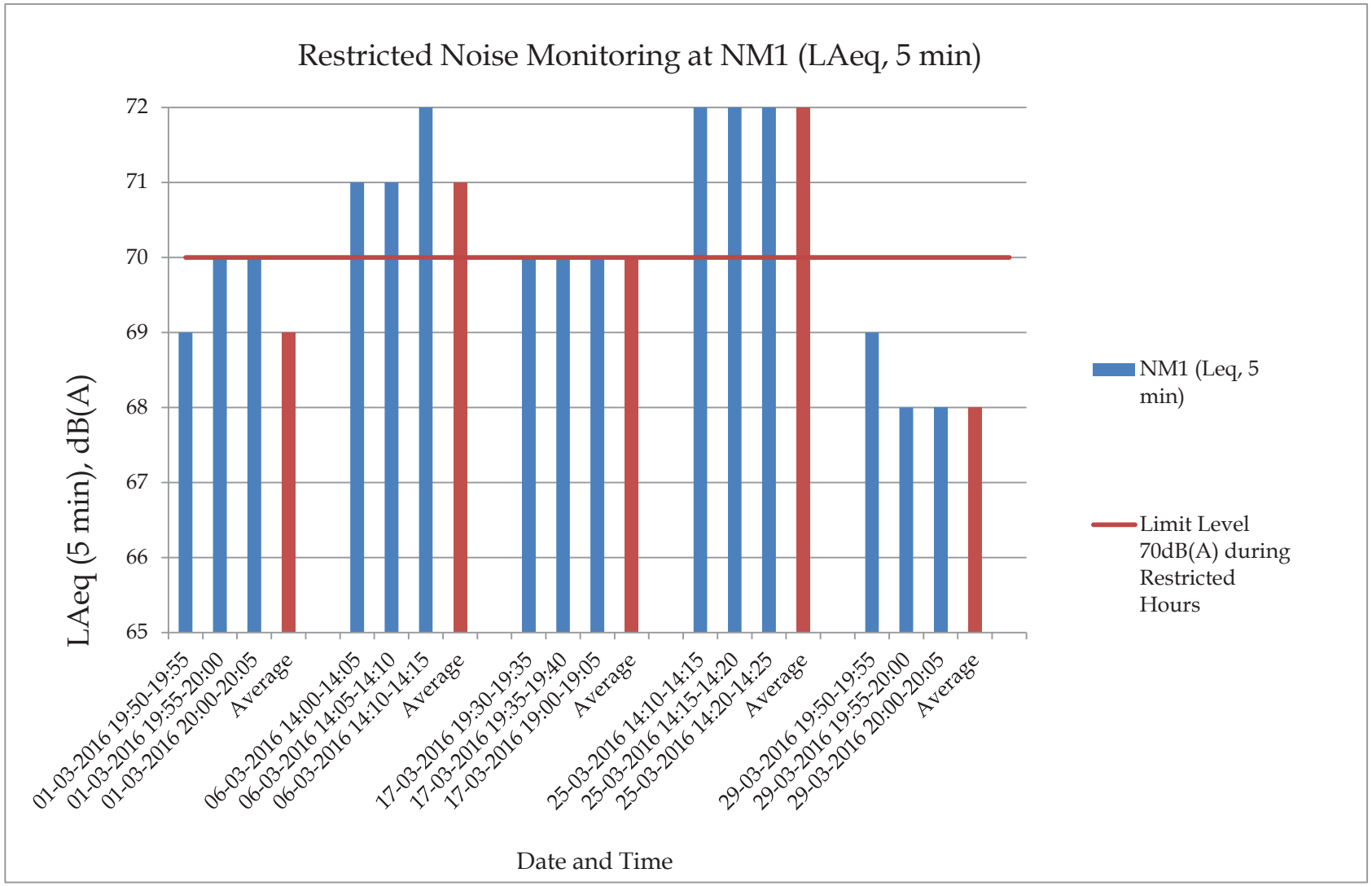
Date	Start Time	End Time	Weather	Noise level (dB(A)), 5 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
04-May-16	19:45	19:50	Fine	65	66	63	-	Traffic noise	-	25	0.2	SVAN957 (N.08.08)	B&K4231 (N.02.03)
	19:50	19:55	Fine	65	66	63			-				
	19:55	20:00	Fine	65	66	63			-				
	19:45	20:00	Fine	65	-	-			-				
08-May-16	14:00	14:05	Sunny	71	72	69	-	Traffic noise	-	25	0.5	SVAN957 (N.08.03)	SV30A (N.09.05)
	14:05	14:10	Sunny	71	73	68			-				
	14:10	14:15	Sunny	71	71	68			-				
	14:00	14:15	Sunny	71	-	-			-				
16-May-16	20:20	20:25	Fine	71	72	70	-	Traffic noise	-	25	0.2	SVAN957 (N.08.08)	B&K4231 (N.02.03)
	20:25	20:30	Fine	71	72	70			-				
	20:30	20:35	Fine	71	72	70			-				
	20:20	20:35	Fine	71	-	-			-				
22-May-16	13:30	13:35	Sunny	71	73	69	-	Traffic noise	-	25	0.5	SVAN957 (N.08.07)	SV30A (N.09.03)
	15:05	15:10	Sunny	71	72	68			-				
	15:10	15:15	Sunny	69	72	67			-				
	13:30	13:45	Sunny	70	-	-			-				
			Min.	**65**									
			Max.	**71**									

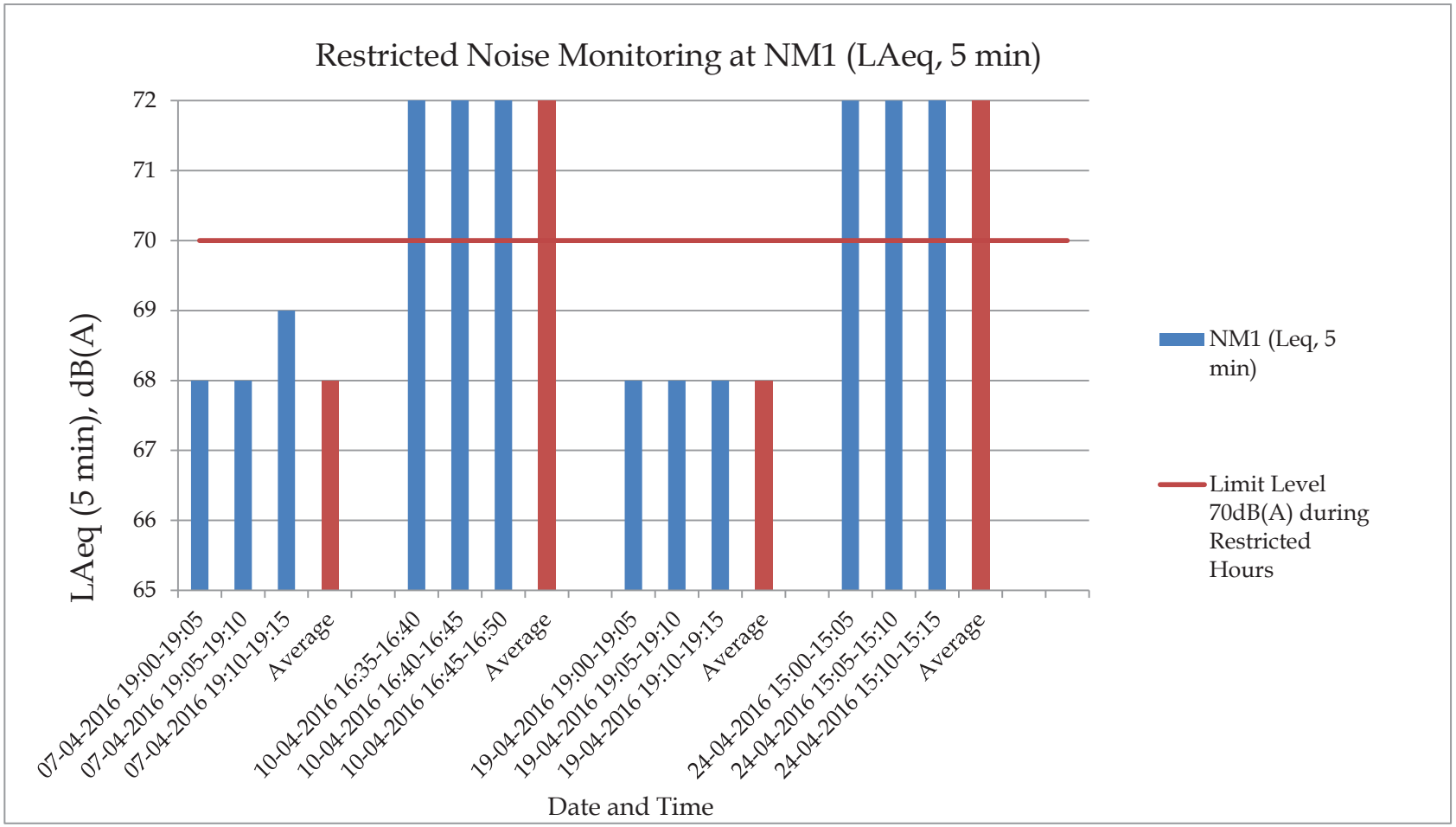
[1] No class was held at the school during all the measurement period.

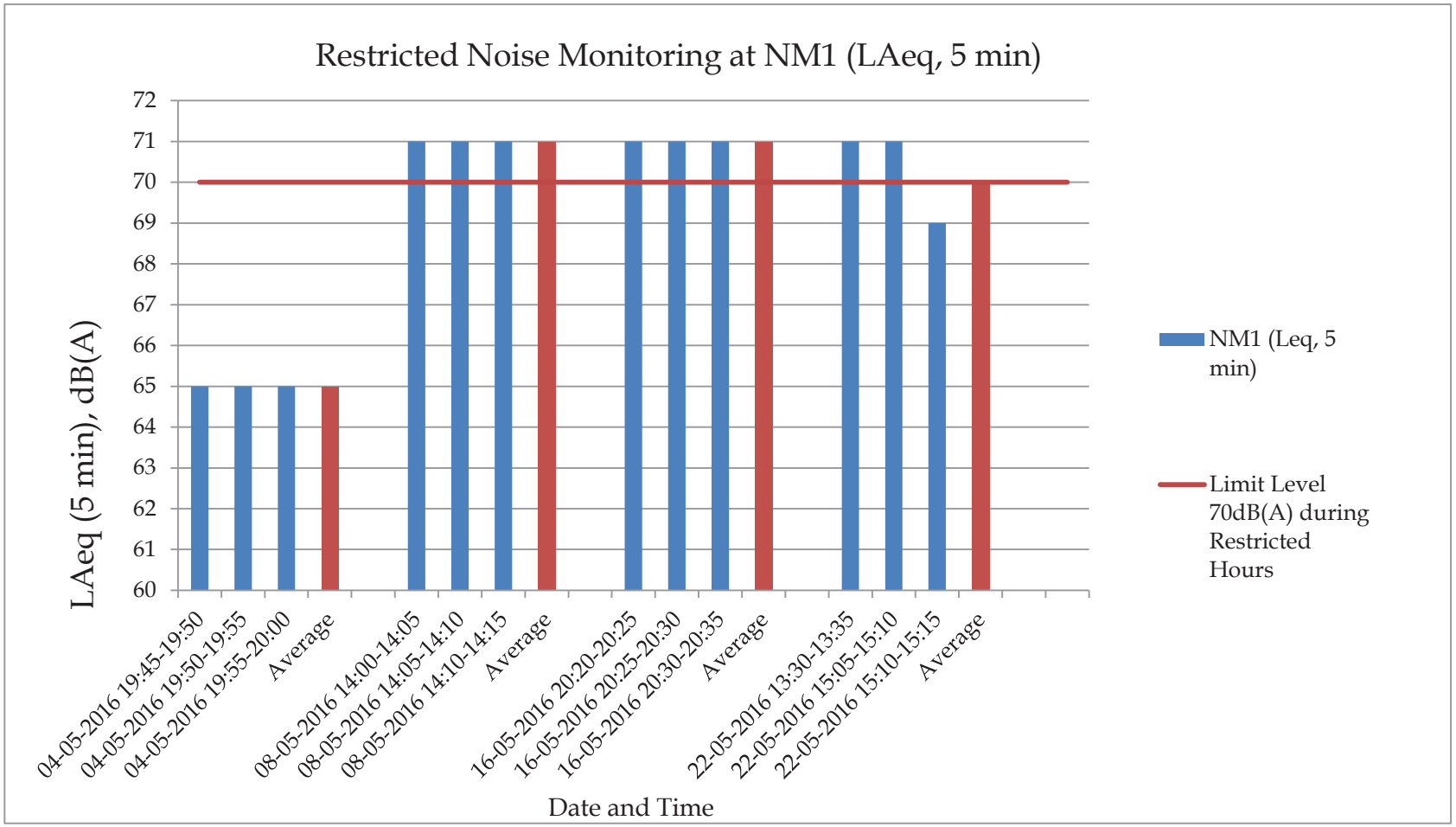
Normal Weekdays Noise Monitoring Results at NM1 ($L_{Aeq, 30min}$)



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
01-03-2016 19:50-19:55
01-03-2016 19:55-20:00
01-03-2016 20:00-20:05
Average
06-03-2016 14:00-14:05
06-03-2016 14:05-14:10
06-03-2016 14:10-14:15
Average
17-03-2016 19:30-19:35
17-03-2016 19:35-19:40
17-03-2016 19:00-19:05
Average
25-03-2016 14:10-14:15
25-03-2016 14:15-14:20
25-03-2016 14:20-14:25
Average
29-03-2016 19:50-19:55
29-03-2016 19:55-20:00
29-03-2016 20:00-20:05
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
07-04-2016 19:00-19:05
07-04-2016 19:05-19:10
07-04-2016 19:10-19:15
Average
10-04-2016 16:35-16:40
10-04-2016 16:40-16:45
10-04-2016 16:45-16:50
Average
19-04-2016 19:00-19:05
19-04-2016 19:05-19:10
19-04-2016 19:10-19:15
Average
24-04-2016 15:00-15:05
24-04-2016 15:05-15:10
24-04-2016 15:10-15:15
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
64
63
62
61
60
04-05-2016 19:45-19:50
04-05-2016 19:50-19:55
04-05-2016 19:55-20:00
Average
08-05-2016 14:00-14:05
08-05-2016 14:05-14:10
08-05-2016 14:10-14:15
Average
16-05-2016 20:20-20:25
16-05-2016 20:25-20:30
16-05-2016 20:30-20:35
Average
22-05-2016 13:30-13:35
22-05-2016 15:05-15:10
22-05-2016 15:10-15:15
Average
Date and Time
NM1 (Leq, 5 min)
Limit Level 70dB(A) during Restricted Hours

Annex C7

Summary of Exceedance Investigation

Contract No. DC/2009/23 – HATS Stage 2A
Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central
Report No. 160306_noise_NM1

Date of Measurement: 6th March 2016
Time of Measurement: 14:00 (3 consecutive 5-min measurements)

Location	Parameter	Measured Level (Leq dB(A))	Action Level	Limit Level (Leq dB(A))	Level exceeded
NM1	Construction Noise	70.9	When one documented complaint is received	70.0*	Limit
		71.2			
		71.5			

* 70dB (A) was adopted as the Limit Level during restricted hours in March 2016.

Remarks

(a) Statement of exceedance(s)

Construction noise measured at NM1(North Point PTW) - Pedestrian walkway adjacent to Chan's Creative School boundary along Tin Chiu Street exceeded the construction noise limit (70dB(A)) during the restricted hour (07:00 to 23:00 holidays & 19:00 to 23:00 on all other days).

(b) Cause of exceedance(s)

The exceedance was considered not due to the Contract No. DC/2009/23 based on the following reason(s):-

1) During the continuous measurements, the major noise source was the traffic noise.
2) According to information provided by the Contractor, no construction works for the Contract No. DC/2009/23 was carried out during the restricted hours noise monitoring.
3) Comparing with the similar monitoring period during the baseline noise monitoring, the average of the noise level on 6th March 2016 is well within the range of baseline noise levels (61.7 – 73.0dB(A)).

Therefore, the exceedance was considered to be non-project related.

(c) Conclusions and Recommendations:

- The exceedance was considered not due to the Contract No. DC/2009/23.
- The Contractor was reminded to review the effectiveness of the implemented noise mitigation measures from time to time during different construction phases.

ETL Signature: _____ Date: 12 April 2016

Contract No. DC/2009/23 – HATS Stage 2A
Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central
Report No. 160317_noise_NM1_RN

Date of Measurement: 17th March 2016
Time of Measurement: 19:30 (3 consecutive 5-min measurements)

Location	Parameter	Measured Level (Leq dB(A))	Action Level	Limit Level (Leq dB(A))	Level exceeded
NM1	Construction Noise	70.1	When one documented complaint is received	70.0*	Limit
		69.9			
		70.3			

* 70dB (A) was adopted as the Limit Level during restricted hours in March 2016.

Remarks

(a) Statement of exceedance(s)

Construction noise measured at NM1(North Point PTW) - Pedestrian walkway adjacent to Chan's Creative School boundary along Tin Chiu Street exceeded the construction noise limit (70dB(A)) during the restricted hour (07:00 to 23:00 holidays & 19:00 to 23:00 on all other days).

(b) Cause of exceedance(s)

The exceedance was considered not due to the Contract No. DC/2009/23 based on the following reason(s):-

1) During the continuous measurements, the major noise source was the traffic noise.
2) According to information provided by the Contractor, no construction works for the Contract No. DC/2009/23 was carried out during the restricted hours noise monitoring.
3) Comparing with the similar monitoring period during the baseline noise monitoring, the average of the noise level on 17th March 2016 is well within the range of baseline noise levels (61.7 – 73.0dB(A)).

Therefore, the exceedance was considered to be non-project related.

(c) Conclusions and Recommendations:

- The exceedance was considered not due to the Contract No. DC/2009/23.
- The Contractor was reminded to review the effectiveness of the implemented noise mitigation measures from time to time during different construction phases.

ETL Signature: _____ Date: 12 April 2016

Contract No. DC/2009/23 – HATS Stage 2A
Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central
Report No. 160317_noise_NM1

Date of Measurement: 17th March 2016
Time of Measurement: 09:30 (30-min measurement)

Location	Parameter	Measured Level (Leq dB(A))	Action Level	Limit Level (Leq dB(A))	Level exceeded
NM1	Construction Noise	69.4	When one documented complaint is received	69.0*	Limit

* 69dB (A) was adopted as the Limit Level during the examination period in March 2016. With reference to the Baseline Monitoring Report, the average LAeq,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)).

Remarks

(a) Statement of exceedance(s)

Construction noise measured at NM1(North Point PTW) - Pedestrian walkway adjacent to Chan's Creative School boundary along Tin Chiu Street exceeded the construction noise limit (69dB(A)) during the examination period in the daytime (07:00 to 19:00 on normal weekdays).

(b) Cause of exceedance(s)

The exceedance was considered not due to the Contract No. DC/2009/23 based on the following reason(s):-

1) During the continuous measurements, the major noise source was the traffic noise.
2) According to information provided by the Contractor, no noise construction plant for the Contract No. DC/2009/23 was operated during the examination period in daytime noise monitoring.
3) Comparing with the similar monitoring period during the baseline noise monitoring, the average of the noise level on 17th March 2016 is well within the range of baseline noise levels (66.2 – 71.7dB(A)).

Therefore, the exceedance was considered to be non-project related.

(c) Conclusions and Recommendations:

- The exceedance was considered not due to the Contract No. DC/2009/23.
- The Contractor was reminded to review the effectiveness of the implemented noise mitigation measures from time to time during different construction phases.

ETL Signature: _____ Date: 12 April 2016

Contract No. DC/2009/23 – HATS Stage 2A
Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central
Report No. 160325_noise_NM1

Date of Measurement: 25th March 2016
Time of Measurement: 14:10 (3 consecutive 5-min measurements)

Location	Parameter	Measured Level (Leq dB(A))	Action Level	Limit Level (Leq dB(A))	Level exceeded
NM1	Construction Noise	71.8	When one documented complaint is received	70.0*	Limit
		71.8			
		71.9			

* 70dB (A) was adopted as the Limit Level during restricted hours in March 2016.

Remarks

(a) Statement of exceedance(s)

Construction noise measured at NM1(North Point PTW) - Pedestrian walkway adjacent to Chan's Creative School boundary along Tin Chiu Street exceeded the construction noise limit (70dB(A)) during the restricted hour (07:00 to 23:00 holidays & 19:00 to 23:00 on all other days).

(b) Cause of exceedance(s)

The exceedance was considered not due to the Contract No. DC/2009/23 based on the following reason(s):-

1) During the continuous measurements, the major noise source was the traffic noise.
2) According to information provided by the Contractor, no construction works for the Contract No. DC/2009/23 was carried out during the restricted hours noise monitoring.
3) Comparing with the similar monitoring period during the baseline noise monitoring, the average of the noise level on 25th March 2016 is well within the range of baseline noise levels (61.7 – 73.0dB(A)).

Therefore, the exceedance was considered to be non-project related.

(c) Conclusions and Recommendations:

- The exceedance was considered not due to the Contract No. DC/2009/23.
- The Contractor was reminded to review the effectiveness of the implemented noise mitigation measures from time to time during different construction phases.

ETL Signature: _____ Date: 12 April 2016

Contract No. DC/2009/23 – HATS Stage 2A
Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central
Report No. 160410_noise_NM1

Date of Measurement: 10th April 2016
Time of Measurement: 16:35 (3 consecutive 5-min measurements)

Location	Parameter	Measured Level (Leq dB(A))	Action Level	Limit Level (Leq dB(A))	Level exceeded
NM1	Construction Noise	73.4	When one documented complaint is received	70.0*	Limit
		73.4			
		73.5			

* 70dB (A) was adopted as the Limit Level during restricted hours in April 2016.

Remarks

(a) Statement of exceedance(s)

Construction noise measured at NM1(North Point PTW) - Pedestrian walkway adjacent to Chan's Creative School boundary along Tin Chiu Street exceeded the construction noise limit (70dB(A)) during the restricted hour (07:00 to 23:00 holidays & 19:00 to 23:00 on all other days).

(b) Cause of exceedance(s)

The exceedance was considered not due to the Contract No. DC/2009/23 based on the following reason(s):-

1) During the continuous measurements, the major noise source was the traffic noise.
2) According to information provided by the Contractor, no construction works for the Contract No. DC/2009/23 was carried out during the restricted hours noise monitoring.
Therefore, the exceedance was considered to be non-project related.

(c) Conclusions and Recommendations:

- The exceedance was considered not due to the Contract No. DC/2009/23.
- The Contractor was reminded to review the effectiveness of the implemented noise mitigation measures from time to time during different construction phases.

ETL Signature: _____ Date: 3 May 2016

Contract No. DC/2009/23 – HATS Stage 2A
Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central
Report No. 160424_noise_NM1

Date of Measurement: 24th April 2016
Time of Measurement: 15:00 (3 consecutive 5-min measurements)

Location	Parameter	Measured Level (Leq dB(A))	Action Level	Limit Level (Leq dB(A))	Level exceeded
NM1	Construction Noise	72.4	When one documented complaint is received	70.0*	Limit
		72.1			
		72.8			

* 70dB (A) was adopted as the Limit Level during restricted hours in April 2016.

Remarks

(a) Statement of exceedance(s)

Construction noise measured at NM1(North Point PTW) - Pedestrian walkway adjacent to Chan's Creative School boundary along Tin Chiu Street exceeded the construction noise limit (70dB(A)) during the restricted hour (07:00 to 23:00 holidays & 19:00 to 23:00 on all other days).

(b) Cause of exceedance(s)

The exceedance was considered not due to the Contract No. DC/2009/23 based on the following reason(s):-

1) During the continuous measurements, the major noise source was the traffic noise.
2) According to information provided by the Contractor, no construction works for the Contract No. DC/2009/23 was carried out during the restricted hours noise monitoring.
3) Comparing with the similar monitoring period during the baseline noise monitoring, the average of the noise level on 24th April 2016 is well within the range of baseline noise levels (61.7 – 73.0dB(A)).

Therefore, the exceedance was considered to be non-project related.

(c) Conclusions and Recommendations:

- The exceedance was considered not due to the Contract No. DC/2009/23.
- The Contractor was reminded to review the effectiveness of the implemented noise mitigation measures from time to time during different construction phases.

ETL Signature: _____ Date: 9 May 2016

Contract No. DC/2009/23 – HATS Stage 2A
Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central
Report No. 160508_noise_NM1_RN

Date of Measurement: 8th May 2016
Time of Measurement: 14:00 (3 consecutive 5-min measurements)

Location	Parameter	Measured Level (Leq dB(A))	Action Level	Limit Level (Leq dB(A))	Level exceeded
NM1	Construction Noise	70.5	When one documented complaint is received	70.0*	Limit
		71.2			
		70.5			

* 70dB (A) was adopted as the Limit Level during restricted hours in May 2016.

Remarks

(a) Statement of exceedance(s)

Construction noise measured at NM1(North Point PTW) - Pedestrian walkway adjacent to Chan's Creative School boundary along Tin Chiu Street exceeded the construction noise limit (70dB(A)) during the restricted hour (07:00 to 23:00 holidays & 19:00 to 23:00 on all other days).

(b) Cause of exceedance(s)

The exceedance was considered not due to the Contract No. DC/2009/23 based on the following reason(s):-

1) During the continuous measurements, the major noise source was the traffic noise.
2) According to information provided by the Contractor, no construction works for the Contract No. DC/2009/23 was carried out during the restricted hours noise monitoring.
3) Comparing with the similar monitoring period during the baseline noise monitoring, the average of the noise level on 8th May 2016 is well within the range of baseline noise levels (61.7 – 73.0dB(A)).

Therefore, the exceedance was considered to be non-project related.

(c) Conclusions and Recommendations:

- The exceedance was considered not due to the Contract No. DC/2009/23.
- The Contractor was reminded to review the effectiveness of the implemented noise mitigation measures from time to time during different construction phases.

ETL Signature: _____ Date: 27 May 2016

Contract No. DC/2009/23 – HATS Stage 2A
Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central
Report No. 160516_noise_NM1_RN

Date of Measurement: 16th May 2016
Time of Measurement: 20:00 (3 consecutive 5-min measurements)

Location	Parameter	Measured Level (Leq dB(A))	Action Level	Limit Level (Leq dB(A))	Level exceeded
NM1	Construction Noise	70.8	When one documented complaint is received	70.0*	Limit
		70.8			
		70.8			

* 70dB (A) was adopted as the Limit Level during restricted hours in May 2016.

Remarks

(a) Statement of exceedance(s)

Construction noise measured at NM1(North Point PTW) - Pedestrian walkway adjacent to Chan's Creative School boundary along Tin Chiu Street exceeded the construction noise limit (70dB(A)) during the restricted hour (07:00 to 23:00 holidays & 19:00 to 23:00 on all other days).

(b) Cause of exceedance(s)

The exceedance was considered not due to the Contract No. DC/2009/23 based on the following reason(s):-

1) During the continuous measurements, the major noise source was the traffic noise.
2) According to information provided by the Contractor, no construction works for the Contract No. DC/2009/23 was carried out during the restricted hours noise monitoring.
3) Comparing with the similar monitoring period during the baseline noise monitoring, the average of the noise level on 16th May 2016 is well within the range of baseline noise levels (61.7 – 73.0dB(A)).

Therefore, the exceedance was considered to be non-project related.

(c) Conclusions and Recommendations:

- The exceedance was considered not due to the Contract No. DC/2009/23.
- The Contractor was reminded to review the effectiveness of the implemented noise mitigation measures from time to time during different construction phases.

ETL Signature: _____ Date: 27 May 2016

Contract No. DC/2009/23 – HATS Stage 2A
Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central
Report No. 160522_noise_NM1_RN

Date of Measurement: 22nd May 2016
Time of Measurement: 13:30 (3 consecutive 5-min measurements)

Location	Parameter	Measured Level (Leq dB(A))	Action Level	Limit Level (Leq dB(A))	Level exceeded
NM1	Construction Noise	71.2	When one documented complaint is received	70.0*	Limit
		70.5			
		69.0			

* 70dB (A) was adopted as the Limit Level during restricted hours in May 2016.

Remarks

(a) Statement of exceedance(s)

Construction noise measured at NM1(North Point PTW) - Pedestrian walkway adjacent to Chan's Creative School boundary along Tin Chiu Street exceeded the construction noise limit (70dB(A)) during the restricted hour (07:00 to 23:00 holidays & 19:00 to 23:00 on all other days).

(b) Cause of exceedance(s)

The exceedance was considered not due to the Contract No. DC/2009/23 based on the following reason(s):-

1) During the continuous measurements, the major noise source was the traffic noise.
2) According to information provided by the Contractor, no construction works for the Contract No. DC/2009/23 was carried out during the restricted hours noise monitoring.
3) Comparing with the similar monitoring period during the baseline noise monitoring, the average of the noise level on 22nd May 2016 is well within the range of baseline noise levels (61.7 – 73.0dB(A)).

Therefore, the exceedance was considered to be non-project related.

(c) Conclusions and Recommendations:

- The exceedance was considered not due to the Contract No. DC/2009/23.
- The Contractor was reminded to review the effectiveness of the implemented noise mitigation measures from time to time during different construction phases.

ETL Signature: _____ Date: 3 June 2016

Contract No. DC/2009/23 – HATS Stage 2A
Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central
Report No. 160526_noise_NM1

Date of Measurement: 26th May 2016
Time of Measurement: 13:15 (30-min measurement)

Location	Parameter	Measured Level (Leq dB(A))	Action Level	Limit Level (Leq dB(A))	Level exceeded
NM1	Construction Noise	70.1	When one documented complaint is received	70.0*	Limit

* 70dB (A) was adopted as the Limit Level during school normal teaching period in May 2016.

Remarks

(a) Statement of exceedance(s)

Construction noise measured at NM1(North Point PTW) - Rooftop of Chan's Creative School exceeded the construction noise limit (69dB(A)) during school teaching period in the daytime (07:00 to 19:00 on normal weekdays).

(b) Cause of exceedance(s)

The exceedance was considered not due to the Contract No. DC/2009/23 based on the following reason(s):-

1) During the continuous measurements, the major noise source was the traffic noise.
2) According to information provided by the Contractor, no noise construction plant for the Contract No. DC/2009/23 was operated during school teaching period in daytime noise monitoring.
3) Comparing with the similar monitoring period during the baseline noise monitoring, the average of the noise level on 26th May 2016 is well within the range of baseline noise levels (66.2 – 71.7dB(A)).

Therefore, the exceedance was considered to be non-project related.

(c) Conclusions and Recommendations:

- The exceedance was considered not due to the Contract No. DC/2009/23.
- The Contractor was reminded to review the effectiveness of the implemented noise mitigation measures from time to time during different construction phases.

ETL Signature: _____ Date: 30 May 2016

Annex C8 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 C8 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 C8 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 C8 Cumulative Complaint and Summons/Prosecutions Log

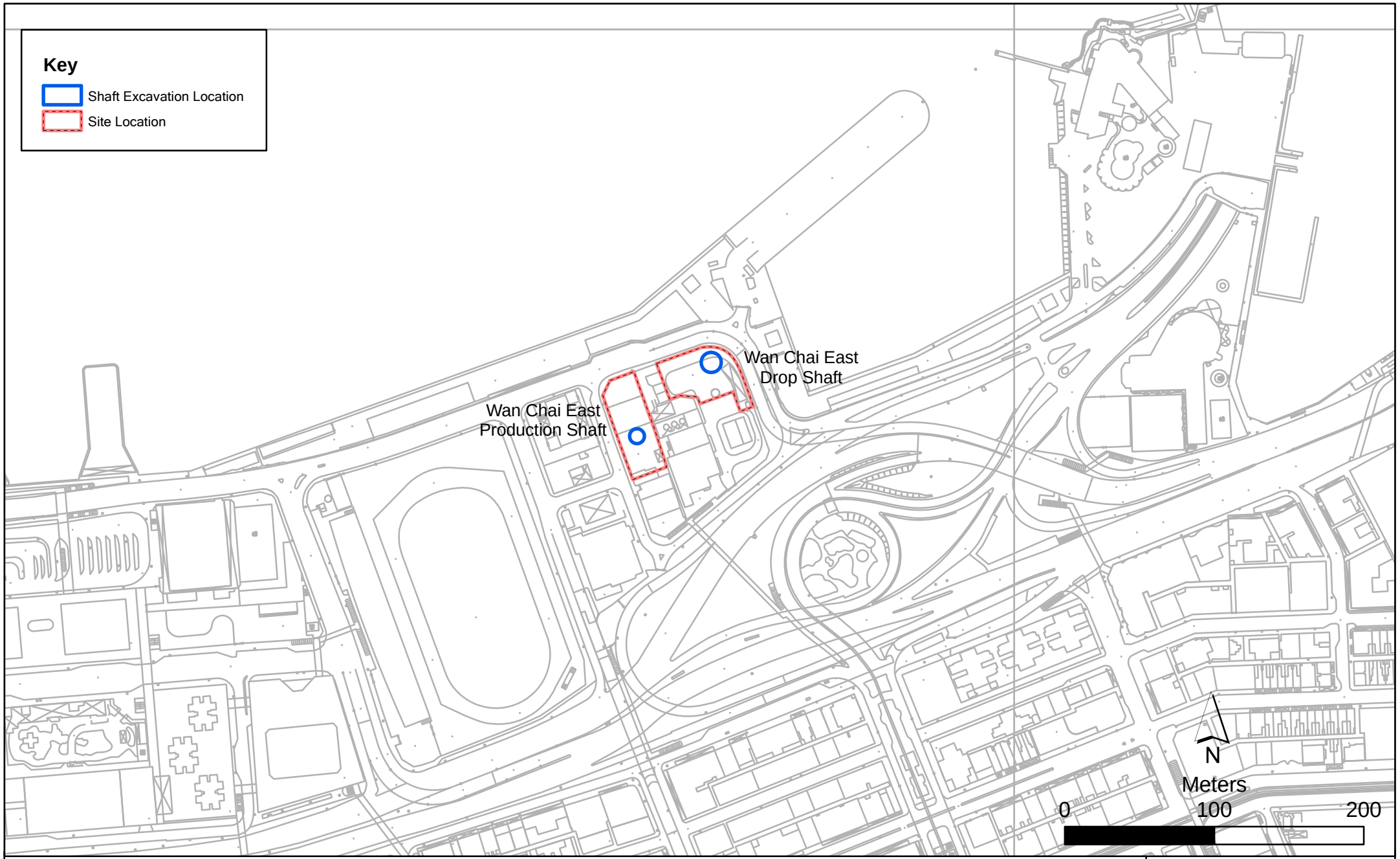
Reporting Month	Number of Complaints in Reporting Month	Number of Summons/Prosecutions in Reporting Month
June 2014	0	0
July 2014	0	0
August 2014	0	0
September 2014	0	0
October 2014	0	0
November 2014	0	0
December 2014	0	0
January 2015	0	0
February 2015	0	0
March 2015	0	0
April 2015	0	0
May 2015	0	0
June 2015	0	0
July 2015	0	0
August 2015	0	0
September 2015	0	0
October 2015	0	0
November 2015	0	0

Annex C8 Cumulative Complaint and Summons/Prosecutions Log

Reporting Month	Number of Complaints in Reporting Month	Number of Summons/Prosecutions in Reporting Month
December 2015	0	0
January 2016	0	0
February 2016	0	0
March 2016	0	0
April 2016	0	0
May 2016	0	0
Overall Total	0	0

Annex D

Wan Chai East Production and Drop Shafts



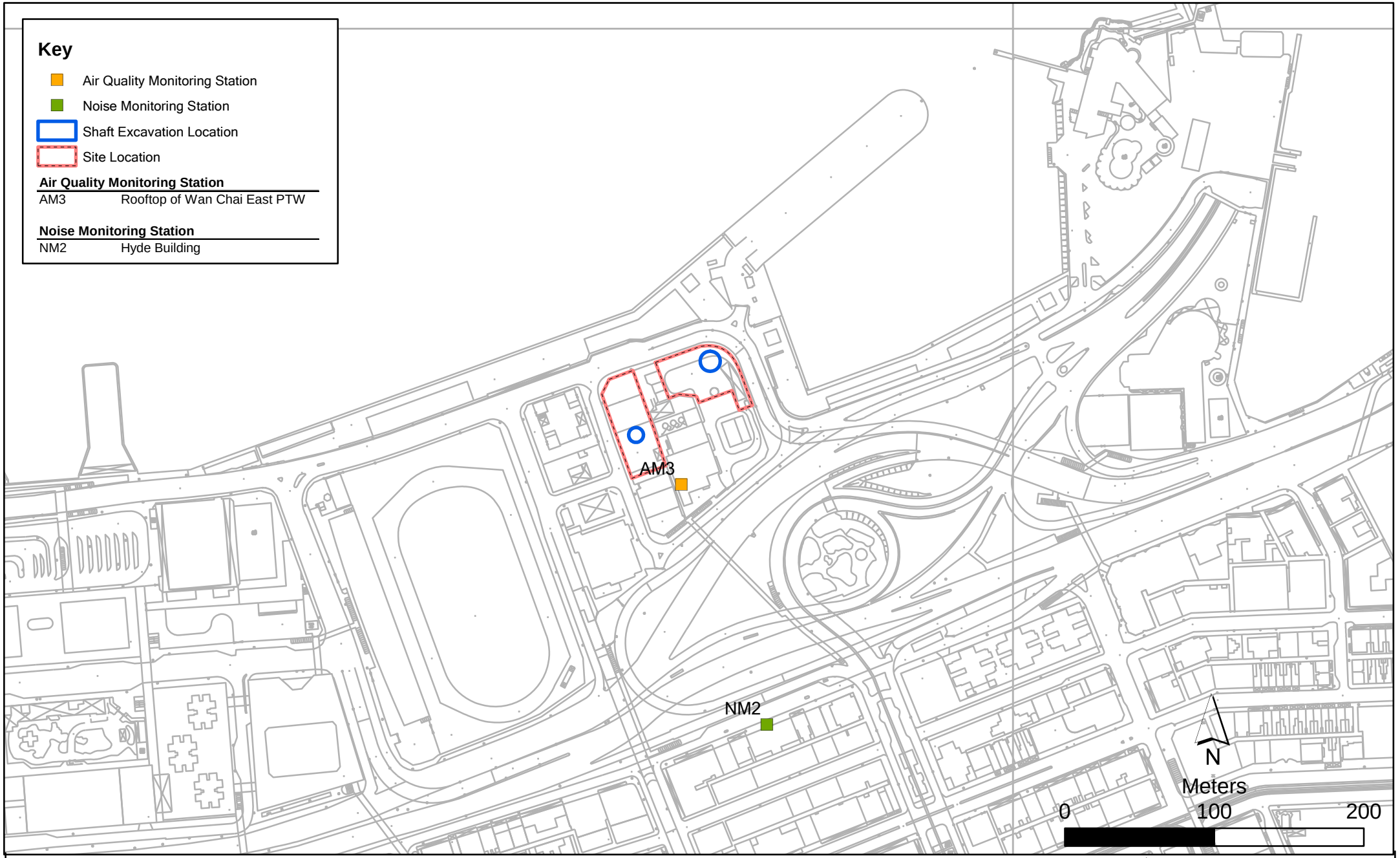
Annex D1

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
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

	Start	Finish	Weather	TSP Concentration	Action Level	Limit Level	Site Conditions /	Temperature	Wind Speed *	Sampler
Date	Time	Time		($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)	Observations / Remarks	(°C)	(m/s)	ID
01-Mar-16	9:00	10:00	Sunny	266	355	500	N.A.	16	<5	LD-3B (A.02.04)
	10:00	11:00	Sunny	260	355	500	N.A.	16	<5	LD-3B (A.02.04)
	11:00	12:00	Sunny	262	355	500	N.A.	16	<5	LD-3B (A.02.04)
07-Mar-16	13:00	14:00	Cloudy	259	355	500	N.A.	20	<5	LD-3B (A.02.08)
	14:00	15:00	Cloudy	263	355	500	N.A.	20	<5	LD-3B (A.02.08)
	15:00	16:00	Cloudy	258	355	500	N.A.	20	<5	LD-3B (A.02.08)
11-Mar-16	13:00	14:00	Cloudy	152	355	500	N.A.	12	<5	LD-3B (A.02.08)
	14:00	15:00	Cloudy	149	355	500	N.A.	12	<5	LD-3B (A.02.08)
	15:00	16:00	Cloudy	154	355	500	N.A.	12	<5	LD-3B (A.02.08)
17-Mar-16	8:30	9:30	Cloudy	228	355	500	N.A.	16	<5	LD-3B (A.02.08)
	9:30	10:30	Cloudy	230	355	500	N.A.	16	<5	LD-3B (A.02.08)
	10:30	11:30	Cloudy	230	355	500	N.A.	16	<5	LD-3B (A.02.08)
23-Mar-16	8:30	9:30	Cloudy	212	355	500	N.A.	19	<5	LD-3B (A.02.10)
	9:30	10:30	Cloudy	214	355	500	N.A.	19	<5	LD-3B (A.02.10)
	10:30	11:30	Cloudy	218	355	500	N.A.	19	<5	LD-3B (A.02.10)
29-Mar-16	8:40	9:40	Fine	212	355	500	N.A.	17	<5	LD-3B (A.02.08)
	9:40	10:40	Fine	204	355	500	N.A.	17	<5	LD-3B (A.02.08)
	10:40	11:40	Fine	209	355	500	N.A.	17	<5	LD-3B (A.02.08)
			Min.	**149**						
			Max.	**266**						
			Average	**221**						

* 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
01-Apr-16	9:00	10:00	Cloudy	54	355	500	N.A.	23	<5	Hal-HPC300 (A.26.02)
	10:00	11:00	Cloudy	61	355	500	N.A.	23	<5	Hal-HPC300 (A.26.02)
	11:00	12:00	Cloudy	67	355	500	N.A.	23	<5	Hal-HPC300 (A.26.02)
07-Apr-16	8:30	9:30	Fine	259	355	500	N.A.	25	<5	LD-3B (A.02.08)
	9:30	10:30	Fine	264	355	500	N.A.	25	<5	LD-3B (A.02.08)
	10:30	11:30	Fine	265	355	500	N.A.	25	<5	LD-3B (A.02.08)
13-Apr-16	9:00	10:00	Rainy	238	355	500	N.A.	23	<5	LD-3B (A.02.08)
	10:00	11:00	Rainy	232	355	500	N.A.	23	<5	LD-3B (A.02.08)
	11:00	12:00	Rainy	229	355	500	N.A.	23	<5	LD-3B (A.02.08)
19-Apr-16	9:00	10:00	Cloudy	233	355	500	N.A.	20	<5	LD-3B (A.02.08)
	10:00	11:00	Cloudy	246	355	500	N.A.	20	<5	LD-3B (A.02.08)
	11:00	12:00	Cloudy	244	355	500	N.A.	20	<5	LD-3B (A.02.08)
22-Apr-16	9:00	10:00	Fine	57	355	500	N.A.	24	<5	LD-3B (A.02.08)
	10:00	11:00	Fine	53	355	500	N.A.	24	<5	LD-3B (A.02.08)
	12:00	13:00	Fine	50	355	500	N.A.	24	<5	LD-3B (A.02.08)
28-Apr-16	13:00	14:00	Sunny	277	355	500	N.A.	24	<5	LD-3B (A.02.10)
	14:00	15:00	Sunny	280	355	500	N.A.	24	<5	LD-3B (A.02.10)
	15:00	16:00	Sunny	284	355	500	N.A.	24	<5	LD-3B (A.02.10)
			Min.	**50**						
			Max.	**284**						
			Average	**188**						

* 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

	Start	Finish	Weather	TSP Concentration	Action Level	Limit Level	Site Conditions /	Temperature	Wind Speed *	Sampler
Date	Time	Time		($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)	Observations / Remarks	(°C)	(m/s)	ID
04-May-16	8:30	9:30	Cloudy	106	355	500	N.A.	25	<5	LD-3B (A.02.08)
	9:30	10:30	Cloudy	117	355	500	N.A.	25	<5	LD-3B (A.02.08)
	10:30	11:30	Cloudy	117	355	500	N.A.	25	<5	LD-3B (A.02.08)
10-May-16	13:10	14:10	Cloudy	82	355	500	N.A.	25	<5	LD-3B (A.02.08)
	14:10	15:10	Cloudy	82	355	500	N.A.	25	<5	LD-3B (A.02.08)
	15:10	16:10	Cloudy	81	355	500	N.A.	25	<5	LD-3B (A.02.08)
16-May-16	13:00	14:00	Sunny	113	355	500	N.A.	25	<5	LD-3B (A.02.08)
	14:00	15:00	Sunny	112	355	500	N.A.	25	<5	LD-3B (A.02.08)
	15:00	16:00	Sunny	113	355	500	N.A.	25	<5	LD-3B (A.02.08)
20-May-16	9:00	10:00	Cloudy	259	355	500	N.A.	20	<5	LD-3B (A.02.06)
	10:00	11:00	Cloudy	254	355	500	N.A.	20	<5	LD-3B (A.02.06)
	11:00	12:00	Cloudy	268	355	500	N.A.	20	<5	LD-3B (A.02.06)
26-May-16	13:08	14:08	Fine	163	355	500	N.A.	24	<5	LD-3B (A.02.08)
	14:08	15:08	Fine	164	355	500	N.A.	24	<5	LD-3B (A.02.08)
	15:08	16:08	Fine	160	355	500	N.A.	24	<5	LD-3B (A.02.08)
			Min.	**81**						
			Max.	**268**						
			Average	**146**						

* 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	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)		ID	ID
04-Mar-16	9:00	05-Mar-16	9:00	Cloudy	3.2717	3.5577	9312.20	9336.20	24.00	1.20	1.20	1.20	166	181	260	N.A.	TE-5170 A-01-48	160202/085
10-Mar-16	9:00	11-Mar-16	9:00	Cloudy	3.2793	3.3875	9336.20	9360.20	24.00	1.21	1.21	1.21	62	181	260	N.A.	TE-5170 A-01-48	160202/075
16-Mar-16	9:00	17-Mar-16	9:00	Cloudy	3.2958	3.5262	6581.99	6605.99	24.00	1.21	1.21	1.21	132	181	260	N.A.	TE-5170 A-01-48	160202/091
22-Mar-16	9:00	23-Mar-16	9:00	Cloudy	3.3092	3.4954	6605.99	6629.99	24.00	1.20	1.20	1.20	108	181	260	N.A.	TE-5170 A-01-48	160203/077
24-Mar-16	9:00	25-Mar-16	9:00	Cloudy	3.2667	3.5745	6629.99	6653.99	24.00	1.20	1.20	1.20	178	181	260	N.A.	TE-5170 A-01-48	160203/082
30-Mar-16	9:00	31-Mar-16	9:00	Cloudy	3.3582	3.5470	6657.99	6681.99	24.00	1.20	1.20	1.20	109	181	260	N.A.	TE-5170 A-01-48	160302/080
												Min.	**62**					
												Max.	**178**					
												Average	**126**					

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	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)		ID	ID
05-Apr-16	9:00	06-Apr-16	9:00	Sunny	3.3186	3.5351	6700.62	6724.62	24.00	1.21	1.21	1.21	125	181	260	N.A.	TE-5170 A-01-48	160203/096
11-Apr-16	9:00	12-Apr-16	9:00	Cloudy	3.2603	3.4130	6724.62	6748.62	24.00	1.20	1.20	1.20	89	181	260	N.A.	TE-5170 A-01-48	160303/026
15-Apr-16	9:00	16-Apr-16	9:00	Cloudy	3.3559	3.6119	6748.62	6772.62	24.00	1.21	1.21	1.21	148	181	260	N.A.	TE-5170 A-01-48	160306/030
21-Apr-16	9:00	22-Apr-16	9:00	Cloudy	3.3514	3.6311	6772.62	6796.62	24.00	1.20	1.20	1.20	161	181	260	N.A.	TE-5170 A-01-48	160304/012
27-Apr-16	9:00	28-Apr-16	9:00	Cloudy	3.3390	3.5408	6796.62	6820.62	24.00	1.19	1.19	1.19	118	181	260	N.A.	TE-5170 A-01-48	160401/029
												Min.	**89**					
												Max.	**161**					
												Average	**128**					

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	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)		ID	ID
03-May-16	9:00	04-May-16	9:00	Cloudy	3.3234	3.5084	6820.62	6844.62	24.00	1.19	1.19	1.19	108	181	260	N.A.	TE-5170 A-01-48	160401/035
09-May-16	9:00	10-May-16	9:00	Cloudy	3.3340	3.5831	6845.67	6869.67	24.00	1.19	1.19	1.19	145	181	260	N.A.	TE-5170 A-01-48	160401/038
13-May-16	9:00	14-May-16	9:00	Cloudy	3.3229	3.5729	6869.67	6893.67	24.00	1.20	1.20	1.20	145	181	260	N.A.	TE-5170 A-01-48	160402/050
19-May-16	9:00	20-May-16	9:00	Cloudy	3.3025	3.5554	6893.67	6917.67	24.00	1.20	1.20	1.20	146	181	260	N.A.	TE-5170 A-01-48	160304/012
25-May-16	9:00	26-May-16	9:00	Cloudy	3.3327	3.4985	6917.67	6941.67	24.00	1.19	1.19	1.19	97	181	260	N.A.	TE-5170 A-01-48	160402/068
31-May-16	9:00	01-Jun-16	9:00	Cloudy	3.3093	3.4254	6941.67	6965.67	24.00	1.20	1.20	1.20	67	181	260	N.A.	TE-5170 A-01-48	160501/053
												Min.	**67**					
												Max.	**146**					
												Average	**118**					

Meteorological Data Extracted from the Hong Kong Observatory

		King's Park Station				
Date	Weather	Average Air Temperature (°C)	Average Relative Humidity (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
2016/03/01	Sunny	16	58-82	0.0	8-25	E
2016/03/04	Cloudy	21	75-87	0.0	0-15	SE
2016/03/05	Fine	21	69-85	Trace	0-14	E
2016/03/07	Cloudy	20	86-94	0.2	0-18	E
2016/03/10	Cloudy	13	81-98	16.8	0-28	N/NE
2016/03/11	Cloudy	12	68-86	1.7	0-14	E/SE
2016/03/13	Cloudy	15	93-98	3.4	0-22	N/NE
2016/03/16	Cloudy	14	87-96	1.1	6-24	E
2016/03/17	Cloudy	16	96-98	2.2	10-25	SE
2016/03/22	Cloudy	16	94-98	1.7	10-29	E
2016/03/23	Cloudy	19	94-99	8.7	0-24	E/SE
2016/03/26	Cloudy	16	53-83	0.0	0-18	E
2016/03/29	Fine	18	48-71	Trace	0-15	E

		Tsing Yi Station				
Date	Weather	Average Air Temperature (°C)	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2016/03/01	Sunny	18	58-82	0.0	3-21	SE
2016/03/04	Cloudy	21	75-87	0.0	0-15	E/SE
2016/03/05	Fine	21	69-85	Trace	0-11	SE
2016/03/07	Cloudy	20	86-94	0.2	0-22	SE
2016/03/10	Cloudy	14	81-98	16.8	0-18	SE
2016/03/11	Cloudy	12	68-96	1.7	0-15	NW
2016/03/13	Cloudy	17	93-98	3.4	3--24	SE
2016/03/16	Cloudy	16	87-96	2.7	2-14	E/SE
2016/03/17	Cloudy	18	96-98	2.2	0-28	SE
2016/03/22	Cloudy	18	94-98	1.7	4-25	E/SE
2016/03/23	Cloudy	20	94-99	8.7	0-16	E
2016/03/26	Cloudy	16	53-83	0.0	0-24	E/SE
2016/03/29	Fine	18	48-71	Trace	0-15	E/SE

		Kai Tak Station				
Date	Weather	Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2016/03/01	Sunny	16	58-82	0.0	13-27	SE
2016/03/04	Cloudy	21	75-87	0.0	0-19	SE
2016/03/05	Fine	21	69-85	Trace	0-18	SW
2016/03/07	Cloudy	20	86-94	0.2	0-20	SE
2016/03/10	Cloudy	13	81-98	16.8	1-24	E
2016/03/11	Cloudy	12	68-86	1.7	2-16	E
2016/03/13	Cloudy	15	93-98	3.4	0-21	E
2016/03/16	Cloudy	14	87-96	1.1	12-26	SE
2016/03/17	Cloudy	16	96-98	2.2	11-25	E
2016/03/22	Cloudy	16	94-98	1.7	10-31	SE
2016/03/23	Cloudy	19	94-99	8.7	2-22	SW
2016/03/26	Cloudy	16	53-83	0.0	0-21	SE
2016/03/29	Fine	18	48-71	Trace	0-22	SE

		Green Island Station				
Date	Weather	Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2016/03/01	Sunny	18	58-82	0.0	5-48	NE
2016/03/04	Cloudy	21	75-87	0.0	0-25	E
2016/03/05	Fine	21	69-85	Trace	0-27	SE/E
2016/03/07	Cloudy	20	86-94	0.2	0-35	NE
2016/03/10	Cloudy	14	81-98	16.8	10-63	SE/E
2016/03/11	Cloudy	12	68-96	1.7	13-39	NE
2016/03/13	Cloudy	17	93-98	3.4	6-43	E
2016/03/16	Cloudy	16	87-96	2.7	30-47	NE
2016/03/17	Cloudy	18	96-98	2.2	13-43	SE/E
2016/03/22	Cloudy	18	94-98	1.7	28-60	NE
2016/03/23	Cloudy	20	94-99	8.7	0-48	E
2016/03/26	Cloudy	16	53-83	0.0	0-27	NE
2016/03/29	Fine	18	48-71	Trace	3-33	SE/E

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

Meteorological Data Extracted from the Hong Kong Observatory

		King's Park Station				
Date	Weather	Average Air Temperature (°C)	Average Relative Humidity (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
2016-04-01	Sunny	23	73-96	0.0	0-14	N/NE
2016-04-05	Cloudy	23	87-96	Trace	0-19	SE
2016-04-07	Sunny	25	79-96	0.0	0-14	E/SE
2016-04-11	Cloudy	21	87-95	0.4	0-18	E
2016-04-13	Rainy	23	93-100	76.4	0-19	N/NE
2016-04-15	Cloudy	21	95-98	3.4	0-24	E
2016-04-19	Cloudy	20	80-90	Trace	9-25	E
2016-04-22	Cloudy	24	71-96	8.3	6-24	E
2016-04-25	Rainy	26	80-99	12.4	0-12	SE
2016-04-29	Cloudy	24	66-87	Trace	1-23	E

		Tsing Yi Station				
Date	Weather	Average Air Temperature (°C)	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2016-04-01	Sunny	22	73-96	0.0	0-18	E
2016-04-05	Cloudy	23	87-96	Trace	0-17	E/SE
2016-04-07	Sunny	26	79-96	0.0	0-13	E/SE
2016-04-11	Cloudy	22	87-95	0.4	0-15	E/SE
2016-04-13	Rainy	23	93-100	76.4	0-25	SE
2016-04-15	Cloudy	23	68-96	1.7	0-27	NW
2016-04-19	Cloudy	21	80-90	Trace	0-25	SE
2016-04-22	Cloudy	24	71-96	2.7	0-32	E/SE
2016-04-25	Rainy	26	80-99	12.4	0-18	SE
2016-04-29	Cloudy	24	66-87	Trace	0-21	E/SE

		Kai Tak Station				
Date	Weather	Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2016-04-01	Sunny	23	73-96	0.0	0-22	SE
2016-04-05	Cloudy	23	87-96	Trace	0-18	SE
2016-04-07	Sunny	25	79-96	0.0	4-18	SW
2016-04-11	Cloudy	21	87-95	0.4	2-10	SE
2016-04-13	Rainy	23	93-100	76.4	0-35	E
2016-04-15	Cloudy	21	95-98	3.4	10-24	SE
2016-04-19	Cloudy	20	80-90	Trace	12-28	E
2016-04-22	Cloudy	24	71-96	8.3	0-40	E
2016-04-25	Rainy	26	80-99	12.4	0-14	E
2016-04-29	Cloudy	24	66-87	Trace	5-30	SW

		Green Island Station				
Date	Weather	Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2016-04-01	Sunny	22	73-96	0.0	0-35	E
2016-04-05	Cloudy	23	87-96	Trace	0-28	E
2016-04-07	Sunny	26	79-96	0.0	0-26	NE
2016-04-11	Cloudy	22	87-95	0.4	0-18	NE
2016-04-13	Rainy	23	93-100	76.4	0-48	E
2016-04-15	Cloudy	23	68-96	1.7	5-43	NE
2016-04-19	Cloudy	21	80-90	Trace	25-60	E
2016-04-22	Cloudy	24	71-96	2.7	0-35	NE
2016-04-25	Rainy	26	80-99	12.4	0-35	SE/E
2016-04-29	Cloudy	24	66-87	Trace	15-50	SE/E

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

Meteorological Data Extracted from the Hong Kong Observatory

		King's Park Station				
Date	Weather	Average Air Temperature (°C)	Average Relative Humidity (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
2016-05-03	Cloudy	27	72-96	30.7	0-15	E
2016-05-04	Cloudy	26	81-94	Trace	0-15	SE
2016-05-09	Cloudy	29	72-90	0.0	0-18	E/SE
2016-05-10	Cloudy	25	90-98	60.3	0-16	E
2016-05-13	Sunny	26	73-88	Trace	4-18	N/NE
2016-05-16	Cloudy	25	57-90	0.3	0-17	E
2016-05-20	Cloudy	25	89-98	16.1	0-18	SE
2016-05-25	Cloudy	28	71-90	Trace	0-20	E/SE
2016-05-26	Cloudy	28	79-90	0.1	4-22	E/SE
2016-05-31	Sunny	30	72-84	0.0	1-16	E

		Tsing Yi Station				
Date	Weather	Average Air Temperature (°C)	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2016-05-03	Cloudy	26	72-96	30.7	0-22	NW
2016-05-04	Cloudy	26	81-94	Trace	0-12	NW
2016-05-09	Cloudy	29	72-90	0.0	0-22	E/SE
2016-05-10	Cloudy	26	90-98	60.3	0-24	E/SE
2016-05-13	Sunny	27	73-88	Trace	3-18	SE
2016-05-16	Cloudy	26	68-96	1.7	3-27	NW
2016-05-20	Cloudy	26	89-98	16.1	3-31	SE
2016-05-25	Cloudy	28	71-90	2.7	0-21	E/SE
2016-05-26	Cloudy	29	79-90	0.1	0-20	E/SE
2016-05-31	Sunny	30	72-84	0.0	1-18	E/SE

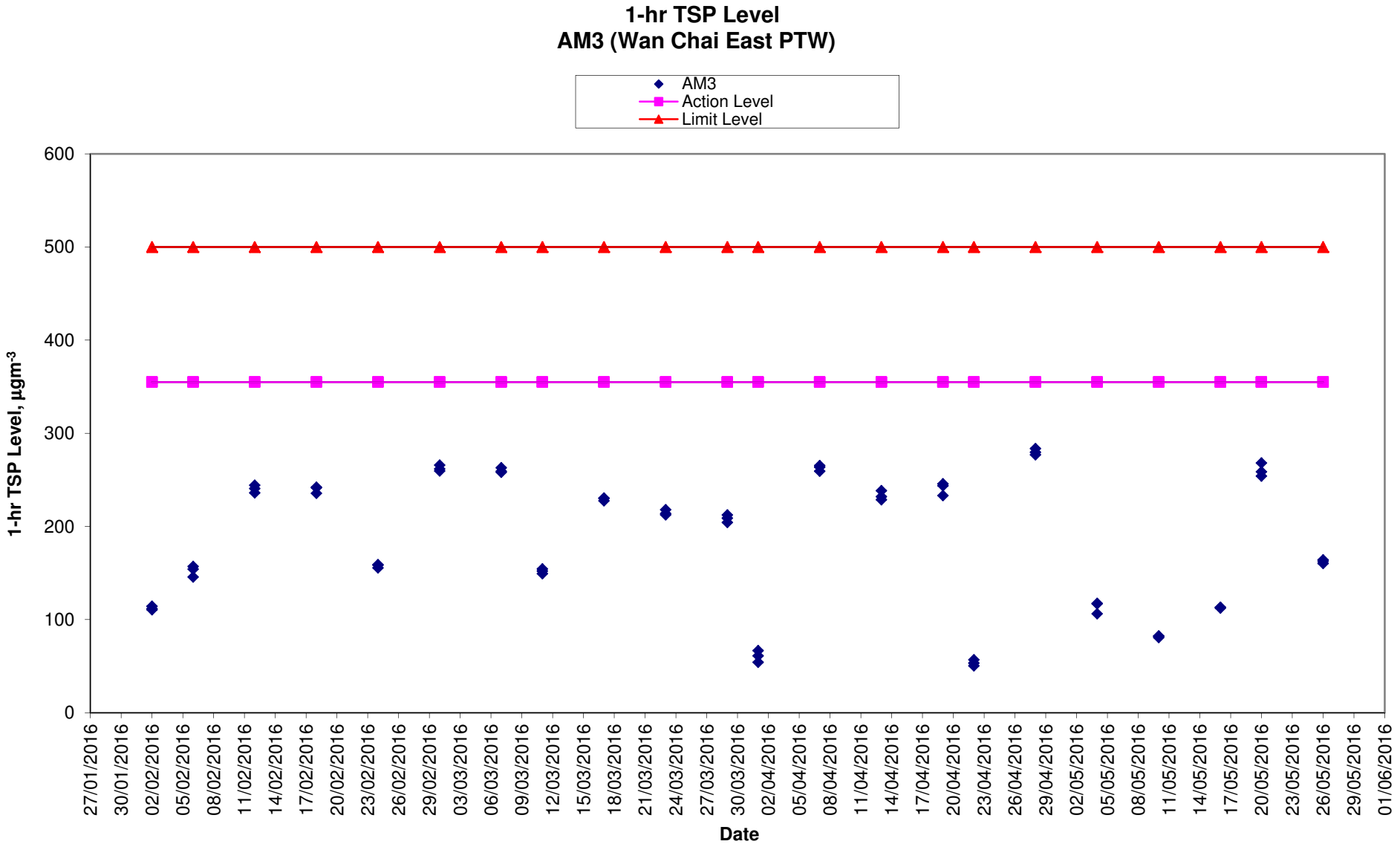
		Kai Tak Station				
Date	Weather	Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2016-05-03	Cloudy	27	72-96	30.7	0-24	SW
2016-05-04	Cloudy	26	81-94	Trace	0-19	E
2016-05-09	Cloudy	29	72-90	0.0	3-16	SE
2016-05-10	Cloudy	25	90-98	60.3	0-25	SE
2016-05-13	Sunny	26	73-88	Trace	8-23	E
2016-05-16	Cloudy	25	57-90	0.3	0-23	SE
2016-05-20	Cloudy	25	89-98	16.1	1-21	E
2016-05-25	Cloudy	28	71-90	Trace	1-24	E
2016-05-26	Cloudy	28	79-90	0.1	8-29	SE
2016-05-31	Sunny	30	72-84	0.0	2-20	E

		Green Island Station				
Date	Weather	Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2016-05-03	Cloudy	26	72-96	30.7	0-43	E
2016-05-04	Cloudy	26	81-94	Trace	0-25	SE/E
2016-05-09	Cloudy	29	72-90	0.0	6-35	E
2016-05-10	Cloudy	26	90-98	60.3	0-38	SE/E
2016-05-13	Sunny	27	73-88	Trace	10-45	E
2016-05-16	Cloudy	26	68-96	1.7	5-40	NE
2016-05-20	Cloudy	26	89-98	16.1	8-37	SE/E
2016-05-25	Cloudy	28	71-90	2.7	0-40	NE
2016-05-26	Cloudy	29	79-90	0.1	26-47	SE/E
2016-05-31	Sunny	30	72-84	0.0	16-34	SE/E

* King's Park's data

\- Data was not available

\# less than 24 hourly observations per day


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
27/01/2016
30/01/2016
02/02/2016
05/02/2016
08/02/2016
11/02/2016
14/02/2016
17/02/2016
20/02/2016
23/02/2016
26/02/2016
29/02/2016
03/03/2016
06/03/2016
09/03/2016
12/03/2016
15/03/2016
18/03/2016
21/03/2016
24/03/2016
27/03/2016
30/03/2016
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11/04/2016
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23/04/2016
26/04/2016
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02/05/2016
05/05/2016
08/05/2016
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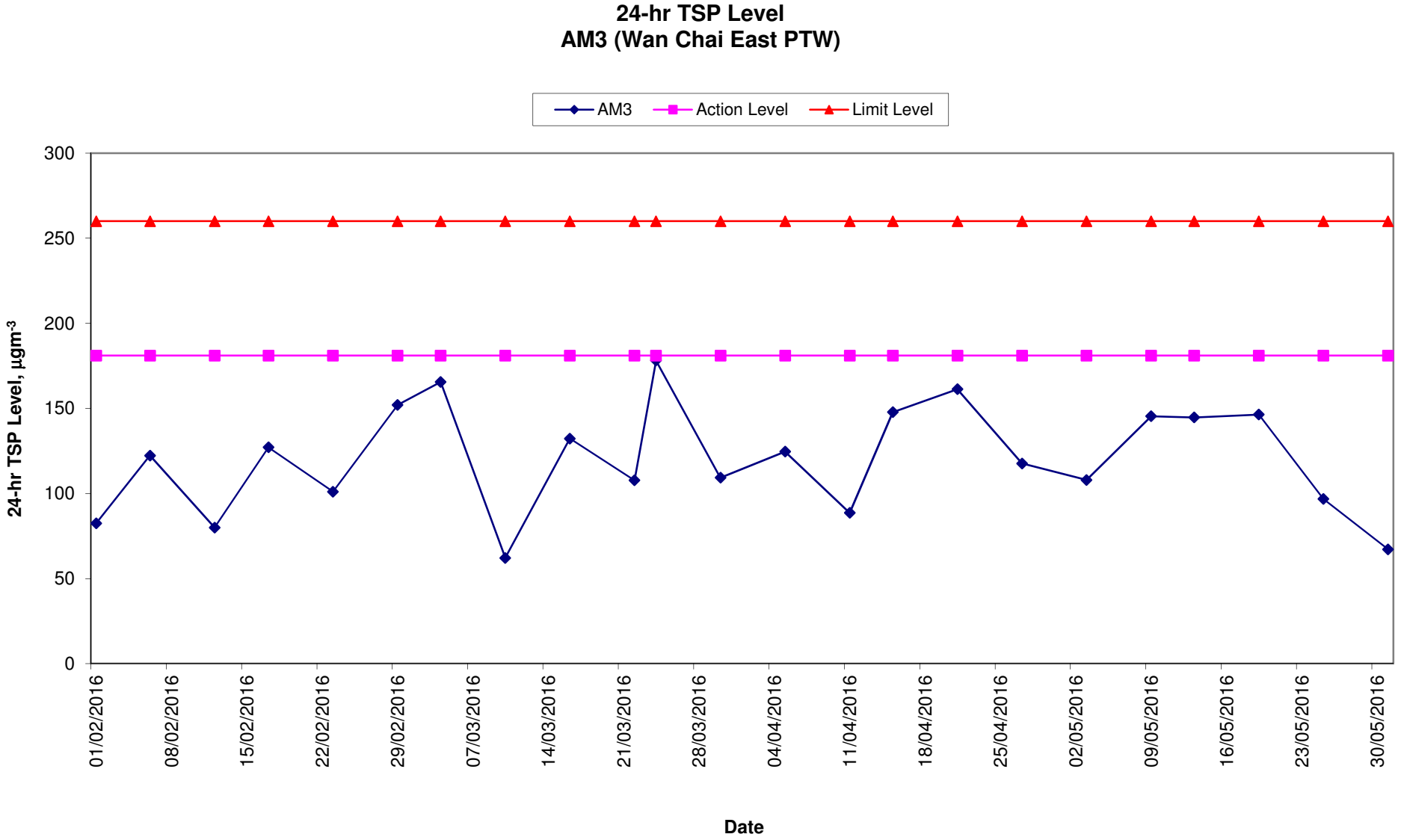
23/05/2016
26/05/2016
29/05/2016
01/06/2016
Date


24-hr TSP Level
AM3 (Wan Chai East PTW)
AM3
Action Level
Limit Level
24-hr TSP Level, µgm-3
300
250
200
150
100
50
0
01/02/2016
08/02/2016
15/02/2016
22/02/2016
29/02/2016
07/03/2016
14/03/2016
21/03/2016
28/03/2016
04/04/2016
11/04/2016
18/04/2016
25/04/2016
02/05/2016
09/05/2016
16/05/2016
23/05/2016
30/05/2016
Date

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							
01-Mar-16	11:20	11:50	Sunny	73	74	71	N.A.	Traffic noise	-	10	1.0	SVAN957 (N.08.08)	B&K4231 (N.02.03)
07-Mar-16	13:15	13:45	Cloudy	75	76	73	N.A.	Traffic noise	-	20	0.5	SVAN957 (N.08.08)	B&K4231 (N.02.03)
17-Mar-16	9:30	10:00	Cloudy	74	77	74	N.A.	Traffic noise	-	13	1.0	SVAN957 (N.08.08)	B&K4231 (N.02.03)
23-Mar-16	9:10	9:40	Cloudy	74	76	72	N.A.	Traffic noise	-	13	0.8	SVAN957 (N.08.08)	B&K4231 (N.02.03)
29-Mar-16	10:30	11:00	Fine	71	72	68	N.A.	Traffic noise	-	20	0.5	SVAN957 (N.08.08)	B&K4231 (N.02.03)
			Min.	**71**									
			Max.	**75**									

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							
07-Apr-16	9:45	10:15	Fine	**75**	77	74	N.A.	Traffic noise	-	25	1.0	SVAN957 (N.08.08)	B&K4231 (N.02.03)
14-Apr-16	14:15	14:45	Cloudy	71	73	66	N.A.	Traffic noise	-	22	1.0	SVAN957 (N.08.08)	B&K4231 (N.02.03)
19-Apr-16	10:30	11:00	Cloudy	73	75	71	N.A.	Traffic noise	-	20	0.5	SVAN957 (N.08.08)	B&K4231 (N.02.03)
28-Apr-16	13:15	13:45	Fine	**75**	77	74	N.A.	Traffic noise	-	24	1.0	SVAN957 (N.08.08)	B&K4231 (N.02.03)
			Min.	**71**									
			Max.	**75**									

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-May-16	11:00	11:30	Cloudy	71	72	70	N.A.	Traffic noise	-	25	1.0	SVAN957 (N.08.08)	B&K4231 (N.02.03)
10-May-16	13:40	14:10	Cloudy	69	70	67	N.A.	Traffic noise	-	25	1.0	SVAN957 (N.08.08)	B&K4231 (N.02.03)
16-May-16	13:00	13:30	Sunny	74	75	73	N.A.	Traffic noise	-	25	0.5	SVAN957 (N.08.08)	B&K4231 (N.02.03)
26-May-16	14:20	14:50	Fine	72	73	70	N.A.	Traffic noise	-	24	1.0	SVAN957 (N.08.08)	B&K4231 (N.02.03)
			Min.	**69**									
			Max.	**74**									

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							
01-Mar-16	19:00	19:05	Fine	72	74	71	-	Traffic noise	-	10	0.2	SVAN957 (N.08.08)	B&K4231 (N.02.03)
	19:05	19:10	Fine	72	73	71			-				
	19:10	19:15	Fine	72	73	71			-				
	19:00	19:15	Fine	72	-	-			-				
06-Mar-16	13:00	13:05	Sunny	74	75	72	-	Traffic noise	-	20	0.5	SVAN957 (N.08.12)	SV30A (N.09.03)
	13:05	13:10	Sunny	74	76	72			-				
	13:10	13:15	Sunny	74	75	73			-				
	13:00	13:15	Sunny	74	-	-			-				
17-Mar-16	19:15	19:20	Cloudy	72	73	71	-	Traffic noise	-	12	0.3	SVAN957 (N.08.08)	B&K4231 (N.02.03)
	19:20	19:25	Cloudy	72	73	71			-				
	19:25	19:30	Cloudy	72	73	71			-				
	19:15	19:30	Cloudy	72	-	-			-				
25-Mar-16	13:00	13:05	Cloudy	74	75	72	-	Traffic noise	-	14	0.2	SVAN957 (N.08.08)	B&K4231 (N.02.03)
	13:05	13:10	Cloudy	74	75	72			-				
	13:10	13:15	Cloudy	74	75	72			-				
	13:00	13:15	Cloudy	74	-	-			-				
29-Mar-16	19:00	19:05	Cloudy	72	73	71	-	Traffic noise	-	18	0.6	SVAN957 (N.08.08)	B&K4231 (N.02.03)
	19:05	19:10	Cloudy	72	73	71			-				
	19:10	19:15	Cloudy	72	73	71			-				
	19:00	19:15	Cloudy	72	-	-			-				
			Min.	**72**									
			Max.	**74**									

Annex D6 Noise Monitoring Results

Restricted Hours Noise Monitoring Results

Station NM2

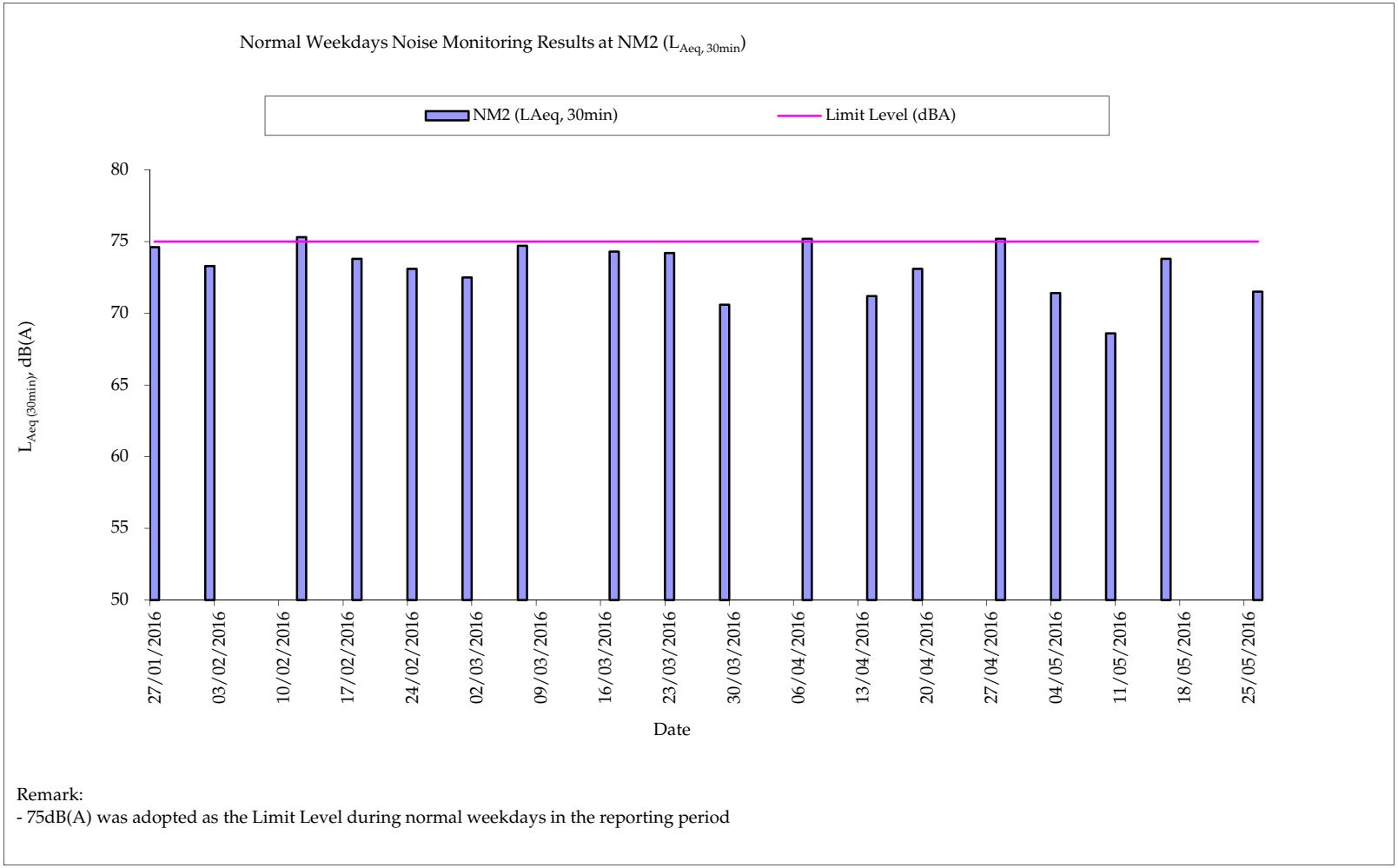
Date	Start Time	End Time	Weather	Noise level (dB(A)), 5 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
07-Apr-16	19:45	19:50	Fine	71	72	69	-	Traffic noise	-	25	0.2	SVAN957 (N.08.08)	B&K4231 (N.02.03)
	19:50	19:55	Fine	70	71	69			-				
	19:55	20:00	Fine	70	71	69			-				
	19:45	20:00	Fine	71	-	-			-				
10-Apr-16	15:25	15:30	Cloudy	70	72	70	-	Traffic noise	-	20	0.5	SVAN957 (N.08.08)	B&K4231 (N.02.03)
	15:30	15:35	Cloudy	70	72	70			-				
	15:35	15:40	Cloudy	70	72	70			-				
	15:25	15:40	Cloudy	70	-	-			-				
19-Apr-16	19:40	19:45	Cloudy	73	75	70	-	Traffic noise	-	20	0.2	SVAN957 (N.08.08)	B&K4231 (N.02.03)
	19:45	19:50	Cloudy	74	75	70			-				
	19:50	19:55	Cloudy	74	75	70			-				
	19:40	19:55	Cloudy	73	-	-			-				
24-Apr-16	13:25	13:30	Cloudy	72	74	70	-	Traffic noise	-	25	0.5	SVAN957 (N.08.07)	SV30A (N.09.03)
	13:30	13:35	Cloudy	72	74	70			-				
	13:35	13:40	Cloudy	72	74	69			-				
	13:25	13:40	Cloudy	72	-	-			-				
			Min.	**70**									
			Max.	**74**									

Annex D6 Noise Monitoring Results

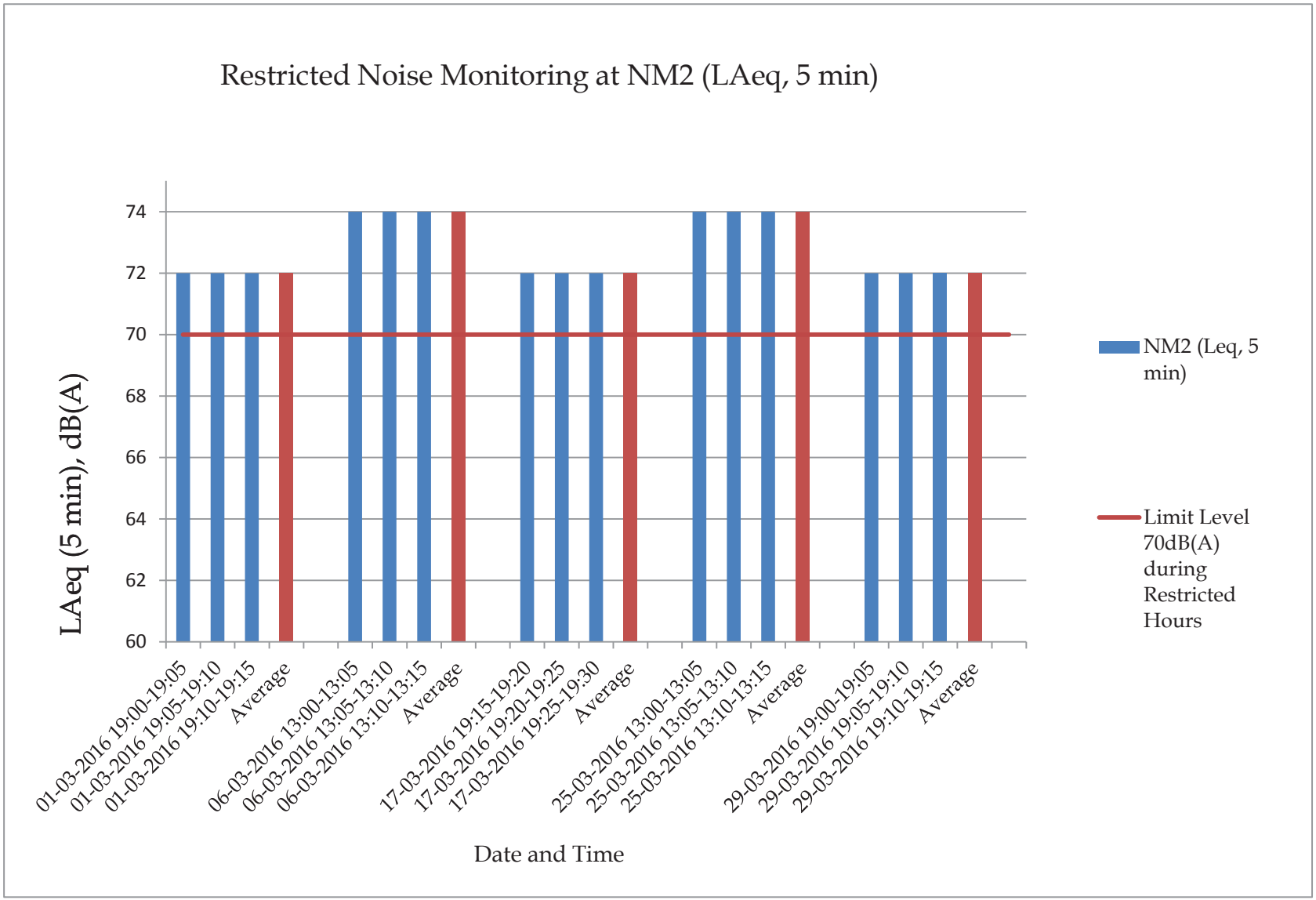
Restricted Hours Noise Monitoring Results

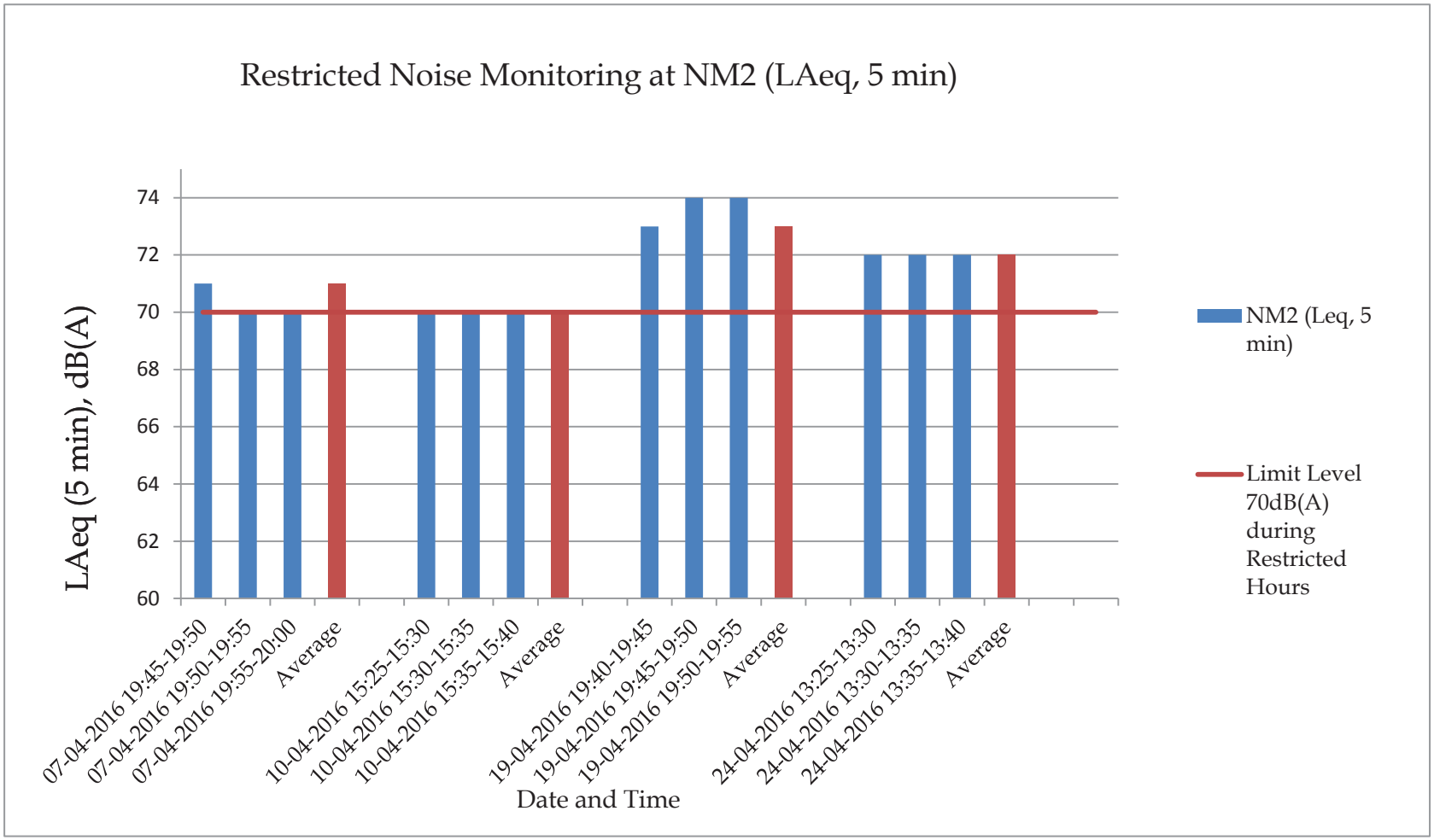
Station NM2

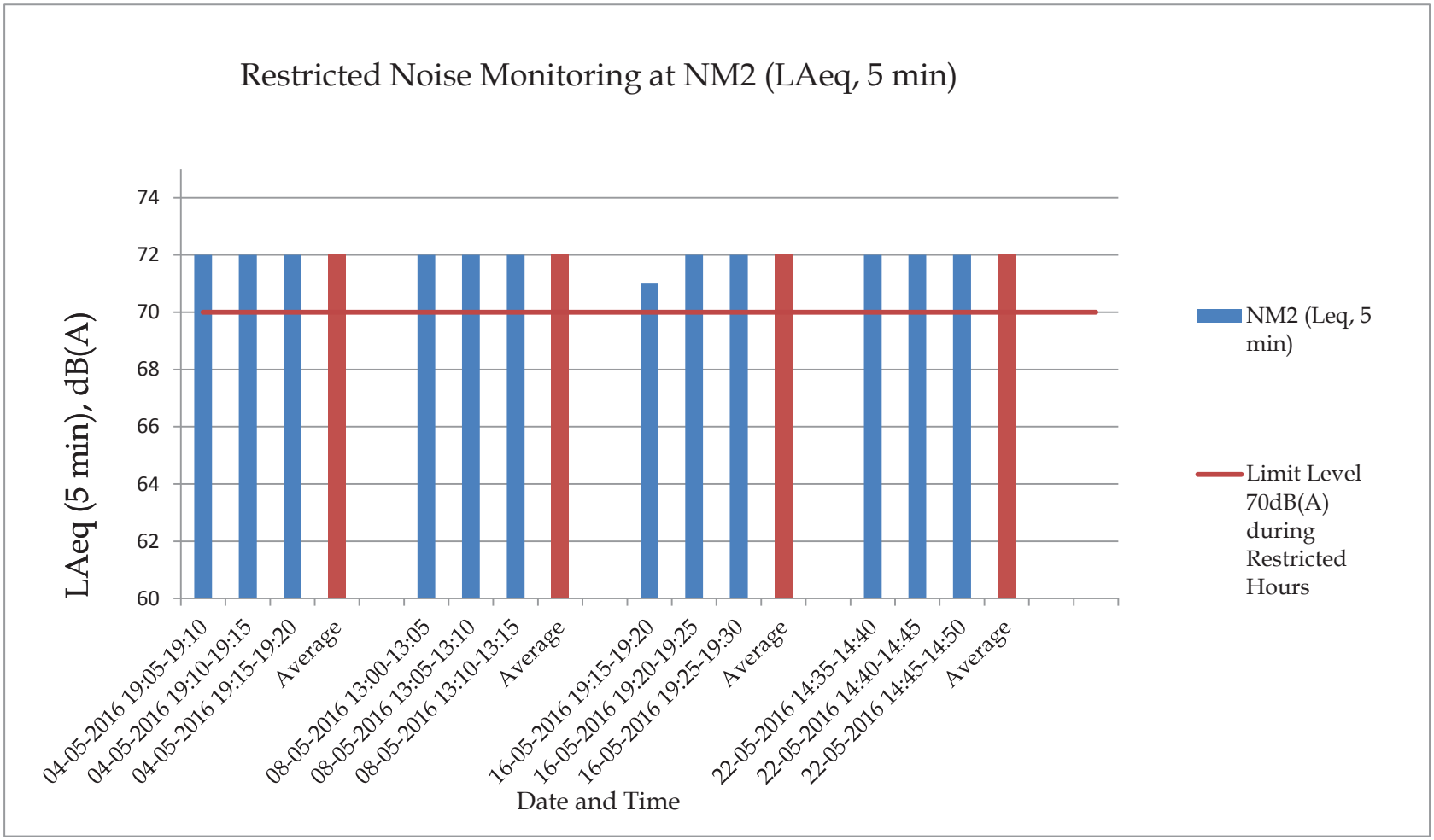
Date	Start Time	End Time	Weather	Noise level (dB(A)), 5 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
04-May-16	19:05	19:10	Fine	72	73	70	-	Traffic noise	-	25	0.2	SVAN957 (N.08.08)	B&K4231 (N.02.03)
	19:10	19:15	Fine	72	74	70			-				
	19:15	19:20	Fine	72	73	70			-				
	19:05	19:20	Fine	72	-	-			-				
08-May-16	13:00	13:05	Sunny	72	74	71	-	Traffic noise	-	25	0.5	SVAN957 (N.08.03)	SV30A (N.09.05)
	13:05	13:10	Sunny	72	74	70			-				
	13:10	13:15	Sunny	72	73	71			-				
	13:00	13:15	Sunny	72	-	-			-				
16-May-16	19:15	19:20	Fine	71	74	70	-	Traffic noise	-	25	0.2	SVAN957 (N.08.08)	B&K4231 (N.02.03)
	19:20	19:25	Fine	72	74	70			-				
	19:25	19:30	Fine	72	74	70			-				
	19:15	19:30	Fine	72	-	-			-				
22-May-16	14:35	14:40	Sunny	72	75	71	-	Traffic noise	-	25	0.5	SVAN957 (N.08.07)	SV30A (N.09.03)
	14:40	14:45	Sunny	72	74	70			-				
	14:45	14:50	Sunny	72	74	69			-				
	14:35	14:50	Sunny	72	-	-			-				
			Min.	**71**									
			Max.	**72**									



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
01-03-2016 19:00-19:05
01-03-2016 19:05-19:10
01-03-2016 19:10-19:15
Average
06-03-2016 13:00-13:05
06-03-2016 13:05-13:10
06-03-2016 13:10-13:15
Average
17-03-2016 19:15-19:20
17-03-2016 19:20-19:25
17-03-2016 19:25-19:30
Average
25-03-2016 13:00-13:05
25-03-2016 13:05-13:10
25-03-2016 13:10-13:15
Average
29-03-2016 19:00-19:05
29-03-2016 19:05-19:10
29-03-2016 19:10-19:15
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
07-04-2016 19:45-19:50
07-04-2016 19:50-19:55
07-04-2016 19:55-20:00
Average
10-04-2016 15:25-15:30
10-04-2016 15:30-15:35
10-04-2016 15:35-15:40
Average
19-04-2016 19:40-19:45
19-04-2016 19:45-19:50
19-04-2016 19:50-19:55
Average
24-04-2016 13:25-13:30
24-04-2016 13:30-13:35
24-04-2016 13:35-13:40
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
04-05-2016 19:05-19:10
04-05-2016 19:10-19:15
04-05-2016 19:15-19:20
Average
08-05-2016 13:00-13:05
08-05-2016 13:05-13:10
08-05-2016 13:10-13:15
Average
16-05-2016 19:15-19:20
16-05-2016 19:20-19:25
16-05-2016 19:25-19:30
Average
22-05-2016 14:35-14:40
22-05-2016 14:40-14:45
22-05-2016 14:45-14:50
Average
Date and Time
NM2 (Leq, 5 min)
Limit Level 70dB(A) during Restricted Hours

Annex D7

Summary of Exceedance Investigation

Contract No. DC/2009/23 – HATS Stage 2A
Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central
Report No. 160301_noise_NM2

Date of Measurement: 1st March 2016
Time of Measurement: 19:00 (3 consecutive 5-min measurements)

Location	Parameter	Measured Level (Leq dB(A))	Action Level	Limit Level (Leq dB(A))	Level exceeded
NM2	Construction Noise	72.4	When one documented complaint is received	70.0*	Limit
		71.8			
		71.9			

Remarks

(a) Statement of exceedance(s)

Construction noise measured at NM2(Wan Chai East PTW) - The roof of Hyde Building exceeded the construction noise limit (70dB(A)) during the restricted hour (07:00 to 23:00 holidays & 19:00 to 23:00 on all other days).

(b) Cause of exceedance(s)

The exceedance was considered not due to the Contract No. DC/2009/23 based on the following reason(s):-

1) During the continuous measurements, the major noise source was the traffic noise.
2) According to information provided by the Contractor, no construction works for the Contract No. DC/2009/23 was carried out during the restricted hours noise monitoring.
3) Comparing with the similar monitoring period during the baseline noise monitoring, the average of the noise level on 1st March 2016 is well within the range of baseline noise levels (68.6 – 76.8dB(A)).

Therefore, the exceedance was considered to be non-project related.

(c) Conclusions and Recommendations:

- The exceedance was considered not due to the Contract No. DC/2009/23.
- The Contractor was reminded to review the effectiveness of the implemented noise mitigation measures from time to time during different construction phases.

ETL Signature: _____ Date: 22 March 2016

Contract No. DC/2009/23 – HATS Stage 2A
Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central
Report No. 160306_noise_NM2

Date of Measurement: 6th March 2016
Time of Measurement: 13:00 (3 consecutive 5-min measurements)

Location	Parameter	Measured Level (Leq dB(A))	Action Level	Limit Level (Leq dB(A))	Level exceeded
NM2	Construction Noise	73.6	When one documented complaint is received	70.0*	Limit
		73.9			
		74.0			

* 70dB (A) was adopted as the Limit Level during restricted hours in March 2016.

Remarks

(a) Statement of exceedance(s)

Construction noise measured at NM2(Wan Chai East PTW) - The roof of Hyde Building exceeded the construction noise limit (70dB(A)) during the restricted hour (07:00 to 23:00 holidays & 19:00 to 23:00 on all other days).

(b) Cause of exceedance(s)

The exceedance was considered not due to the Contract No. DC/2009/23 based on the following reason(s):-

1) During the continuous measurements, the major noise source was the traffic noise.
2) According to information provided by the Contractor, no construction works for the Contract No. DC/2009/23 was carried out during the restricted hours noise monitoring.
3) Comparing with the similar monitoring period during the baseline noise monitoring, the average of the noise level on 6th March 2016 is well within the range of baseline noise levels (68.6 – 76.8dB(A)).

Therefore, the exceedance was considered to be non-project related.

(c) Conclusions and Recommendations:

- The exceedance was considered not due to the Contract No. DC/2009/23.
- The Contractor was reminded to review the effectiveness of the implemented noise mitigation measures from time to time during different construction phases.

ETL Signature: _____ Date: 12 April 2016

Contract No. DC/2009/23 – HATS Stage 2A
Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central
Report No. 160317_noise_NM2

Date of Measurement: 17th March 2016
Time of Measurement: 19:15 (3 consecutive 5-min measurements)

Location	Parameter	Measured Level (Leq dB(A))	Action Level	Limit Level (Leq dB(A))	Level exceeded
NM2	Construction Noise	71.8	When one documented complaint is received	70.0*	Limit
		71.9			
		71.9			

* 70dB (A) was adopted as the Limit Level during restricted hours in March 2016.

Remarks

(a) Statement of exceedance(s)

Construction noise measured at NM2(Wan Chai East PTW) - The roof of Hyde Building exceeded the construction noise limit (70dB(A)) during the restricted hour (07:00 to 23:00 holidays & 19:00 to 23:00 on all other days).

(b) Cause of exceedance(s)

The exceedance was considered not due to the Contract No. DC/2009/23 based on the following reason(s):-

1) During the continuous measurements, the major noise source was the traffic noise.
2) According to information provided by the Contractor, no construction works for the Contract No. DC/2009/23 was carried out during the restricted hours noise monitoring.
3) Comparing with the similar monitoring period during the baseline noise monitoring, the average of the noise level on 17th March 2016 is well within the range of baseline noise levels (68.6 – 76.8dB(A)).

Therefore, the exceedance was considered to be non-project related.

(c) Conclusions and Recommendations:

- The exceedance was considered not due to the Contract No. DC/2009/23.
- The Contractor was reminded to review the effectiveness of the implemented noise mitigation measures from time to time during different construction phases.

ETL Signature: _____ Date: 12 April 2016

Contract No. DC/2009/23 – HATS Stage 2A
Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central
Report No. 160325_noise_NM2

Date of Measurement: 25th March 2016
Time of Measurement: 13:00 (3 consecutive 5-min measurements)

Location	Parameter	Measured Level (Leq dB(A))	Action Level	Limit Level (Leq dB(A))	Level exceeded
NM2	Construction Noise	73.9	When one documented complaint is received	70.0*	Limit
		73.9			
		73.8			

* 70dB (A) was adopted as the Limit Level during restricted hours in March 2016.

Remarks

(a) Statement of exceedance(s)

Construction noise measured at NM2(Wan Chai East PTW) - The roof of Hyde Building exceeded the construction noise limit (70dB(A)) during the restricted hour (07:00 to 23:00 holidays & 19:00 to 23:00 on all other days).

(b) Cause of exceedance(s)

The exceedance was considered not due to the Contract No. DC/2009/23 based on the following reason(s):-

1) During the continuous measurements, the major noise source was the traffic noise.
2) According to information provided by the Contractor, no construction works for the Contract No. DC/2009/23 was carried out during the restricted hours noise monitoring.
3) Comparing with the similar monitoring period during the baseline noise monitoring, the average of the noise level on 25th March 2016 is well within the range of baseline noise levels (68.6 – 76.8dB(A)).

Therefore, the exceedance was considered to be non-project related.

(c) Conclusions and Recommendations:

- The exceedance was considered not due to the Contract No. DC/2009/23.
- The Contractor was reminded to review the effectiveness of the implemented noise mitigation measures from time to time during different construction phases.

ETL Signature: _____ Date: 12 April 2016

Contract No. DC/2009/23 – HATS Stage 2A
Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central
Report No. 160329_noise_NM2

Date of Measurement: 29th March 2016
Time of Measurement: 19:00 (3 consecutive 5-min measurements)

Location	Parameter	Measured Level (Leq dB(A))	Action Level	Limit Level (Leq dB(A))	Level exceeded
NM2	Construction Noise	72.0	When one documented complaint is received	70.0*	Limit
		71.9			
		72.1			

* 70dB (A) was adopted as the Limit Level during restricted hours in March 2016.

Remarks

(a) Statement of exceedance(s)

Construction noise measured at NM2(Wan Chai East PTW) - The roof of Hyde Building exceeded the construction noise limit (70dB(A)) during the restricted hour (07:00 to 23:00 holidays & 19:00 to 23:00 on all other days).

(b) Cause of exceedance(s)

The exceedance was considered not due to the Contract No. DC/2009/23 based on the following reason(s):-

1) During the continuous measurements, the major noise source was the traffic noise.
2) According to information provided by the Contractor, no construction works for the Contract No. DC/2009/23 was carried out during the restricted hours noise monitoring.
3) Comparing with the similar monitoring period during the baseline noise monitoring, the average of the noise level on 29th March 2016 is well within the range of baseline noise levels (68.6 – 76.8dB(A)).

Therefore, the exceedance was considered to be non-project related.

(c) Conclusions and Recommendations:

- The exceedance was considered not due to the Contract No. DC/2009/23.
- The Contractor was reminded to review the effectiveness of the implemented noise mitigation measures from time to time during different construction phases.

ETL Signature: _____ Date: 12 April 2016

Contract No. DC/2009/23 – HATS Stage 2A
Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central
Report No. 160407_noise_NM2

Date of Measurement: 7th April 2016
Time of Measurement: 09:45 (30-min measurement)

Location	Parameter	Measured Level (Leq dB(A))	Action Level	Limit Level (Leq dB(A))	Level exceeded
NM2	Construction Noise	75.2	When one documented complaint is received	75.0	Limit

Remarks

(a) Statement of exceedance(s)

Construction noise measured at NM2(Wan Chai East PTW) - The roof of Hyde Building exceeded the construction noise limit (75dB(A)) during the daytime (07:00 to 19:00 on normal weekdays).

(b) Cause of exceedance(s)

The exceedance was considered not due to the Contract No. DC/2009/23 based on the following reason(s):-

1) During the continuous measurements, the major noise source was the traffic noise.
2) According to information provided by the Contractor, no construction plant for the Contract No. DC/2009/23 was operated during the daytime noise monitoring.
3) Comparing with the similar monitoring period during the baseline noise monitoring, the average of the noise level on 7th April 2016 is well within the range of baseline noise levels (70.6 – 76.3dB(A)).

Therefore, the exceedance was considered to be non-project related.

(c) Conclusions and Recommendations:

- The exceedance was considered not due to the Contract No. DC/2009/23.
- The Contractor was reminded to review the effectiveness of the implemented noise mitigation measures from time to time during different construction phases.

ETL Signature: _____ Date: 3 May 2016

Contract No. DC/2009/23 – HATS Stage 2A
Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central
Report No. 160407_noise_NM2_RN

Date of Measurement: 7th April 2016
Time of Measurement: 19:45 (3 consecutive 5-min measurements)

Location	Parameter	Measured Level (Leq dB(A))	Action Level	Limit Level (Leq dB(A))	Level exceeded
NM2	Construction Noise	71.3	When one documented complaint is received	70.0*	Limit
		70.4			
		70.4			

* 70dB (A) was adopted as the Limit Level during restricted hours in April 2016.

Remarks

(a) Statement of exceedance(s)

Construction noise measured at NM2(Wan Chai East PTW) - The roof of Hyde Building exceeded the construction noise limit (70dB(A)) during the restricted hour (07:00 to 23:00 holidays & 19:00 to 23:00 on all other days).

(b) Cause of exceedance(s)

The exceedance was considered not due to the Contract No. DC/2009/23 based on the following reason(s):-

1) During the continuous measurements, the major noise source was the traffic noise.
2) According to information provided by the Contractor, no construction works for the Contract No. DC/2009/23 was carried out during the restricted hours noise monitoring.
3) Comparing with the similar monitoring period during the baseline noise monitoring, the average of the noise level on 7th April 2016 is well within the range of baseline noise levels (68.6 – 76.8dB(A)).

Therefore, the exceedance was considered to be non-project related.

(c) Conclusions and Recommendations:

- The exceedance was considered not due to the Contract No. DC/2009/23.
- The Contractor was reminded to review the effectiveness of the implemented noise mitigation measures from time to time during different construction phases.

ETL Signature: _____ Date: 3 May 2016

Contract No. DC/2009/23 – HATS Stage 2A
Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central
Report No. 160419_noise_NM2_RN

Date of Measurement: 19th April 2016
Time of Measurement: 19:40 (3 consecutive 5-min measurements)

Location	Parameter	Measured Level (Leq dB(A))	Action Level	Limit Level (Leq dB(A))	Level exceeded
NM2	Construction Noise	73.3	When one documented complaint is received	70.0*	Limit
		73.5			
		73.5			

* 70dB (A) was adopted as the Limit Level during restricted hours in April 2016.

Remarks

(a) Statement of exceedance(s)

Construction noise measured at NM2(Wan Chai East PTW) - The roof of Hyde Building exceeded the construction noise limit (70dB(A)) during the restricted hour (07:00 to 23:00 holidays & 19:00 to 23:00 on all other days).

(b) Cause of exceedance(s)

The exceedance was considered not due to the Contract No. DC/2009/23 based on the following reason(s):-

1) During the continuous measurements, the major noise source was the traffic noise.
2) According to information provided by the Contractor, no construction works for the Contract No. DC/2009/23 was carried out during the restricted hours noise monitoring.
3) Comparing with the similar monitoring period during the baseline noise monitoring, the average of the noise level on 19th April 2016 is well within the range of baseline noise levels (68.6 – 76.8dB(A)).

Therefore, the exceedance was considered to be non-project related.

(c) Conclusions and Recommendations:

- The exceedance was considered not due to the Contract No. DC/2009/23.
- The Contractor was reminded to review the effectiveness of the implemented noise mitigation measures from time to time during different construction phases.

ETL Signature: _____ Date: 3 May 2016

Contract No. DC/2009/23 – HATS Stage 2A
Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central
Report No. 160424_noise_NM2

Date of Measurement: 24th April 2016
Time of Measurement: 13:25 (3 consecutive 5-min measurements)

Location	Parameter	Measured Level (Leq dB(A))	Action Level	Limit Level (Leq dB(A))	Level exceeded
NM2	Construction Noise	71.8	When one documented complaint is received	70.0*	Limit
		72.1			
		71.5			

* 70dB (A) was adopted as the Limit Level during restricted hours in April 2016.

Remarks

(a) Statement of exceedance(s)

Construction noise measured at NM2(Wan Chai East PTW) - The roof of Hyde Building exceeded the construction noise limit (70dB(A)) during the restricted hour (07:00 to 23:00 holidays & 19:00 to 23:00 on all other days).

(b) Cause of exceedance(s)

The exceedance was considered not due to the Contract No. DC/2009/23 based on the following reason(s):-

1) During the continuous measurements, the major noise source was the traffic noise.
2) According to information provided by the Contractor, no construction works for the Contract No. DC/2009/23 was carried out during the restricted hours noise monitoring.
3) Comparing with the similar monitoring period during the baseline noise monitoring, the average of the noise level on 24th April 2016 is well within the range of baseline noise levels (68.6 – 76.8dB(A)).

Therefore, the exceedance was considered to be non-project related.

(c) Conclusions and Recommendations:

- The exceedance was considered not due to the Contract No. DC/2009/23.
- The Contractor was reminded to review the effectiveness of the implemented noise mitigation measures from time to time during different construction phases.

ETL Signature: _____ Date: 9 May 2016

Contract No. DC/2009/23 – HATS Stage 2A
Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central
Report No. 160428_noise_NM2

Date of Measurement: 28th April 2016
Time of Measurement: 13:15 (30-min measurement)

Location	Parameter	Measured Level (Leq dB(A))	Action Level	Limit Level (Leq dB(A))	Level exceeded
NM2	Construction Noise	75.2	When one documented complaint is received	75.0	Limit

Remarks

(a) Statement of exceedance(s)

Construction noise measured at NM2(Wan Chai East PTW) - The roof of Hyde Building exceeded the construction noise limit (75dB(A)) during the daytime (07:00 to 19:00 on normal weekdays).

(b) Cause of exceedance(s)

The exceedance was considered not due to the Contract No. DC/2009/23 based on the following reason(s):-

1) During the continuous measurements, the major noise source was the traffic noise.
2) According to information provided by the Contractor, no construction plant for the Contract No. DC/2009/23 was operated during the daytime noise monitoring.
3) Comparing with the similar monitoring period during the baseline noise monitoring, the average of the noise level on 28th April 2016 is well within the range of baseline noise levels (70.6 – 76.3dB(A)).

Therefore, the exceedance was considered to be non-project related.

(c) Conclusions and Recommendations:

- The exceedance was considered not due to the Contract No. DC/2009/23.
- The Contractor was reminded to review the effectiveness of the implemented noise mitigation measures from time to time during different construction phases.

ETL Signature: _____ Date: 9 May 2016

Contract No. DC/2009/23 – HATS Stage 2A
Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central
Report No. 160504_noise_NM2_RN

Date of Measurement: 4th May 2016
Time of Measurement: 19:05 (3 consecutive 5-min measurements)

Location	Parameter	Measured Level (Leq dB(A))	Action Level	Limit Level (Leq dB(A))	Level exceeded
NM2	Construction Noise	71.8	When one documented complaint is received	70.0*	Limit
		71.8			
		71.8			

* 70dB (A) was adopted as the Limit Level during restricted hours in May 2016.

Remarks

(a) Statement of exceedance(s)

Construction noise measured at NM2(Wan Chai East PTW) - The roof of Hyde Building exceeded the construction noise limit (70dB(A)) during the restricted hour (07:00 to 23:00 holidays & 19:00 to 23:00 on all other days).

(b) Cause of exceedance(s)

The exceedance was considered not due to the Contract No. DC/2009/23 based on the following reason(s):-

1) During the continuous measurements, the major noise source was the traffic noise.
2) According to information provided by the Contractor, no construction works for the Contract No. DC/2009/23 was carried out during the restricted hours noise monitoring.
3) Comparing with the similar monitoring period during the baseline noise monitoring, the average of the noise level on 4th May 2016 is well within the range of baseline noise levels (68.6 – 76.8dB(A)).

Therefore, the exceedance was considered to be non-project related.

(c) Conclusions and Recommendations:

- The exceedance was considered not due to the Contract No. DC/2009/23.
- The Contractor was reminded to review the effectiveness of the implemented noise mitigation measures from time to time during different construction phases.

ETL Signature: _____ Date: 27 May 2016

Contract No. DC/2009/23 – HATS Stage 2A
Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central
Report No. 160508_noise_NM2_RN

Date of Measurement: 8th May 2016
Time of Measurement: 13:00 (3 consecutive 5-min measurements)

Location	Parameter	Measured Level (Leq dB(A))	Action Level	Limit Level (Leq dB(A))	Level exceeded
NM2	Construction Noise	72.4	When one documented complaint is received	70.0*	Limit
		71.9			
		72.3			

* 70dB (A) was adopted as the Limit Level during restricted hours in May 2016.

Remarks

(a) Statement of exceedance(s)

Construction noise measured at NM2(Wan Chai East PTW) - The roof of Hyde Building exceeded the construction noise limit (70dB(A)) during the restricted hour (07:00 to 23:00 holidays & 19:00 to 23:00 on all other days).

(b) Cause of exceedance(s)

The exceedance was considered not due to the Contract No. DC/2009/23 based on the following reason(s):-

1) During the continuous measurements, the major noise source was the traffic noise.
2) According to information provided by the Contractor, no construction works for the Contract No. DC/2009/23 was carried out during the restricted hours noise monitoring.
3) Comparing with the similar monitoring period during the baseline noise monitoring, the average of the noise level on 8th May 2016 is well within the range of baseline noise levels (68.6 – 76.8dB(A)).

Therefore, the exceedance was considered to be non-project related.

(c) Conclusions and Recommendations:

- The exceedance was considered not due to the Contract No. DC/2009/23.
- The Contractor was reminded to review the effectiveness of the implemented noise mitigation measures from time to time during different construction phases.

ETL Signature: _____ Date: 27 May 2016

Contract No. DC/2009/23 – HATS Stage 2A
Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central
Report No. 160516_noise_NM2_RN

Date of Measurement: 16th May 2016
Time of Measurement: 19:15 (3 consecutive 5-min measurements)

Location	Parameter	Measured Level (Leq dB(A))	Action Level	Limit Level (Leq dB(A))	Level exceeded
NM2	Construction Noise	71.3	When one documented complaint is received	70.0*	Limit
		72.1			
		72.3			

* 70dB (A) was adopted as the Limit Level during restricted hours in May 2016.

Remarks

(a) Statement of exceedance(s)

Construction noise measured at NM2(Wan Chai East PTW) - The roof of Hyde Building exceeded the construction noise limit (70dB(A)) during the restricted hour (07:00 to 23:00 holidays & 19:00 to 23:00 on all other days).

(b) Cause of exceedance(s)

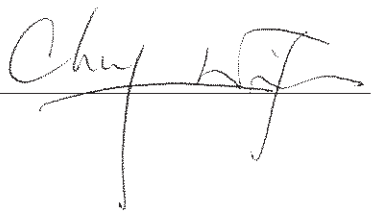
The exceedance was considered not due to the Contract No. DC/2009/23 based on the following reason(s):-

1) During the continuous measurements, the major noise source was the traffic noise.
2) According to information provided by the Contractor, no construction works for the Contract No. DC/2009/23 was carried out during the restricted hours noise monitoring.
3) Comparing with the similar monitoring period during the baseline noise monitoring, the average of the noise level on 16th May 2016 is well within the range of baseline noise levels (68.6 – 76.8dB(A)).

Therefore, the exceedance was considered to be non-project related.

(c) Conclusions and Recommendations:

- The exceedance was considered not due to the Contract No. DC/2009/23.
- The Contractor was reminded to review the effectiveness of the implemented noise mitigation measures from time to time during different construction phases.

ETL Signature:  Date: 27 May 2016

Contract No. DC/2009/23 – HATS Stage 2A
Upgrading of Preliminary Treatment Works at North Point, Wan Chai East and Central
Report No. 160522_noise_NM2_RN

Date of Measurement: 22nd May 2016
Time of Measurement: 14:35 (3 consecutive 5-min measurements)

Location	Parameter	Measured Level (Leq dB(A))	Action Level	Limit Level (Leq dB(A))	Level exceeded
NM2	Construction Noise	72.3	When one documented complaint is received	70.0*	Limit
		71.8			
		71.9			

* 70dB (A) was adopted as the Limit Level during restricted hours in May 2016.

Remarks

(a) Statement of exceedance(s)

Construction noise measured at NM2(Wan Chai East PTW) - The roof of Hyde Building exceeded the construction noise limit (70dB(A)) during the restricted hour (07:00 to 23:00 holidays & 19:00 to 23:00 on all other days).

(b) Cause of exceedance(s)

The exceedance was considered not due to the Contract No. DC/2009/23 based on the following reason(s):-

1) During the continuous measurements, the major noise source was the traffic noise.
2) According to information provided by the Contractor, no construction works for the Contract No. DC/2009/23 was carried out during the restricted hours noise monitoring.
3) Comparing with the similar monitoring period during the baseline noise monitoring, the average of the noise level on 22nd May 2016 is well within the range of baseline noise levels (68.6 – 76.8dB(A)).

Therefore, the exceedance was considered to be non-project related.

(c) Conclusions and Recommendations:

- The exceedance was considered not due to the Contract No. DC/2009/23.
- The Contractor was reminded to review the effectiveness of the implemented noise mitigation measures from time to time during different construction phases.

ETL Signature: _____ Date: 3 June 2016

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
December 2014	0	0
January 2015	0	0
February 2015	0	0
March 2015	0	0
April 2015	0	0
May 2015	0	0
June 2015	0	0
July 2015	0	0
August 2015	0	0
September 2015	0	0
October 2015	0	0
November 2015	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 2015	0	0
January 2016	0	0
February 2016	0	0
March 2016	0	0
April 2016	0	0
May 2016	0	0
Overall Total	1	0

Annex E

Central Drop Shaft

Annex E1

Approval Letter from EPD for Termination of Construction Phase EM&A Programme

本署檔號
OUR REF: ( ) in EP2/G/F/137 Pt. 6

來函檔號
YOUR REF: 0104887_let_20160202
電 話
TEL. NO. : 2835 1105
圖文傳真
FAX NO : 2591 0558
電子郵件
E-MAIL: :
網 址
HOMEPAGE: http://www.epd.gov.hk

Environmental Protection Department
Branch Office
27th Floor, Southorn Centre,
130 Hennessy Road,
Wan Chai, Hong Kong.

環境保護署分署
香港灣仔
軒尼詩道
一百三十號
修頓中心廿七樓

By Fax: 2723 5660

22 February 2016

Environmental Resources Management – Hong Kong Ltd.
16/F Berkshire House
25 Westlands Road
Quarry Bay
Hong Kong
(Attn: Ms. Mandy To, Environmental Team Leader)

Dear Ms. To,

Environmental Impact Assessment Ordinance, Cap.499
Harbour Area Treatment Scheme Stage 2A (HATS 2A) -
Contract No. DC/2007/23
Construction of Sewage Conveyance System from North Point to Stonecutters Island
Proposal for Termination of Construction Phase Environmental Monotoring and Audit (EM&A) Program at the Worksites within CENPTW
(Environmental Permit No. EP-322/2008/G)

I refer to your letter of 2 Feb 2016 received on 4 Feb 2016 proposing to terminate the construction phase EM&A within Central Preliminary Treatment Works (CENPTW) for the Contract No. DC/2007/23 Construction of Sewage Conveyance System from North Point to Stonecutters Island.

Based on the justifications provided in your submission and pursuant to Condition 4.1 of the Environmental Permit No. EP-322/2008/G, I hereby approve the termination of construction phase EM&A at the worksite within CENPTW for Contract No. DC/2007/23 Construction of Sewage Conveyance System from North Point to Stonecutters Island.

Should you have any queries, please contact our Mr. Vincent Lau at 2835 1115.

Receipt Chop
To: MTo → Tina
Received by:
Date: 22 FEB 2016
ERM Login Ref.: F78
GMS No:
Action taken:

Yours faithfully,

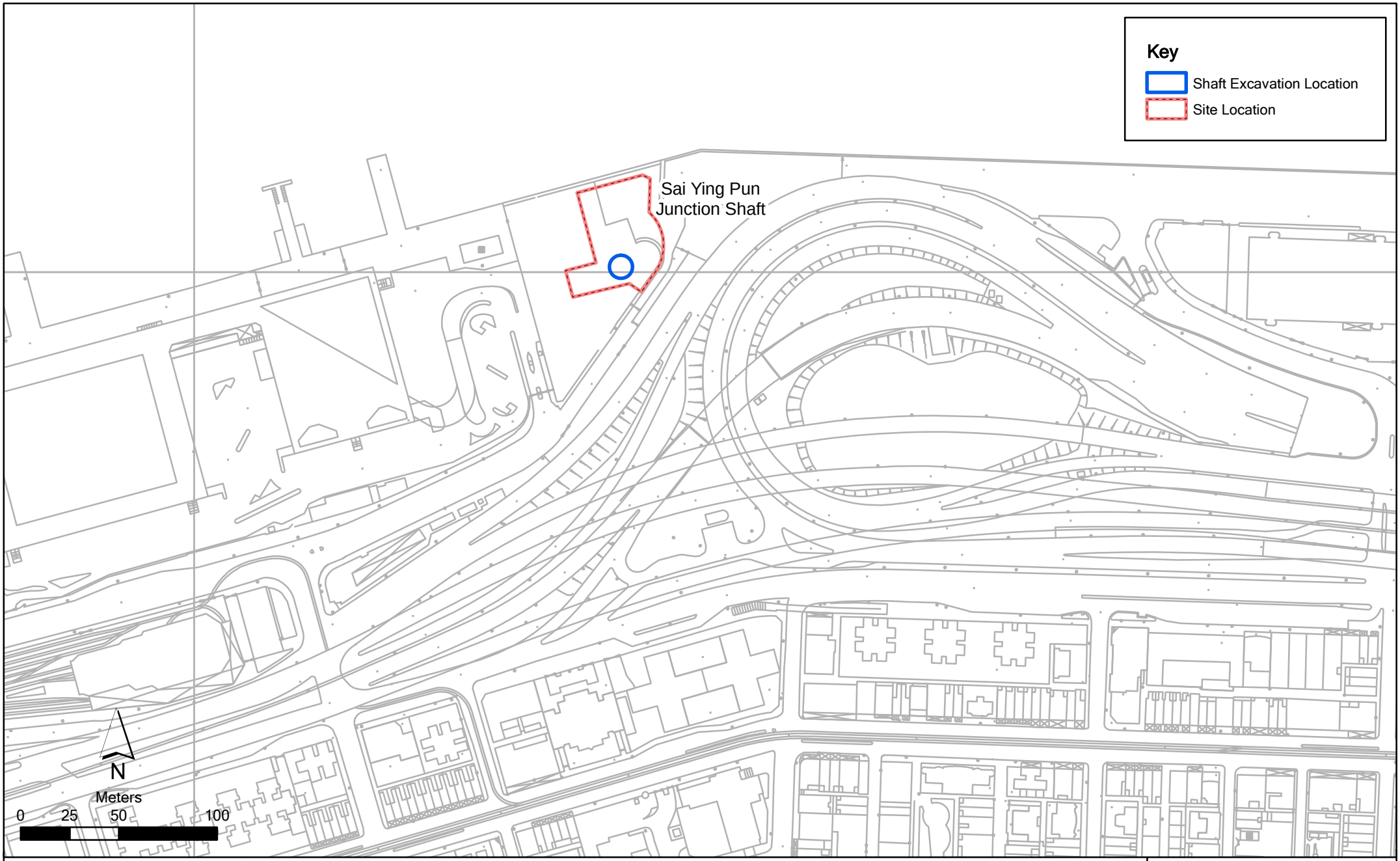
(Louis P. L. CHAN)
Principal Environmental Protection Officer
for Director of Environmental Protection

c.c.
HATS, DSD (Attn: Mr. P F Ma & Mr. Danny Tang) Fax: 2833 9162
AECOM (Attn: Mr. Chan Kai Yuen) Fax: 2344 7702
Mott MacDonald (Attn: Dr. Anne Kerr) Fax: 2827 1823

Internal
S(RS)1 (with ERM's submission)

Annex F

Sai Ying Pun Junction Shaft



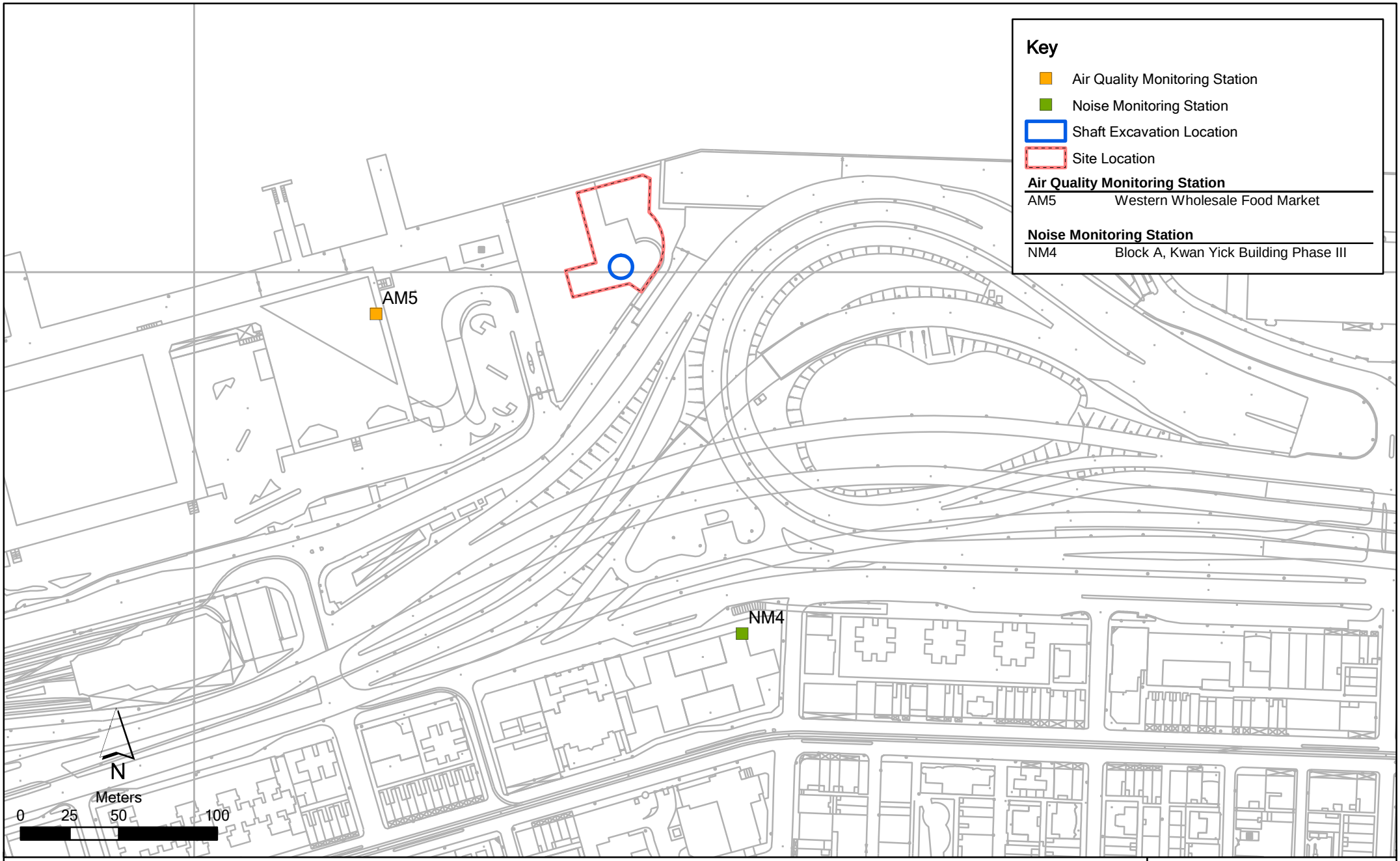
Annex F1

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 (°C)	Wind Speed (m/s)	Sampler ID
05-Mar-16	8:00	9:00	Fine	52	332	500	Construction work in progress	21	<5	GMW GS-2310 (S/N 0143)
	9:02	10:02	Fine	65	332	500	Construction work in progress	21	<5	GMW GS-2310 (S/N 0143)
	10:04	11:04	Fine	71	332	500	Construction work in progress	21	<5	GMW GS-2310 (S/N 0143)
11-Mar-16	8:00	9:00	Cloudy	93	332	500	Construction work in progress	12	<5	GMW GS-2310 (S/N 0143)
	11:00	12:00	Cloudy	95	332	500	Construction work in progress	12	<5	GMW GS-2310 (S/N 0143)
	13:15	14:15	Cloudy	96	332	500	Construction work in progress	12	<5	GMW GS-2310 (S/N 0143)
17-Mar-16	8:00	9:00	Cloudy	88	332	500	Construction work in progress	19	<5	GMW GS-2310 (S/N 0143)
	11:05	12:05	Cloudy	93	332	500	Construction work in progress	19	<5	GMW GS-2310 (S/N 0143)
	13:40	14:40	Cloudy	101	332	500	Construction work in progress	19	<5	GMW GS-2310 (S/N 0143)
23-Mar-16	8:00	9:00	Cloudy	52	332	500	Construction work in progress	19	<5	GMW GS-2310 (S/N 0143)
	9:10	10:10	Cloudy	63	332	500	Construction work in progress	19	<5	GMW GS-2310 (S/N 0143)
	10:12	11:12	Cloudy	73	332	500	Construction work in progress	19	<5	GMW GS-2310 (S/N 0143)
29-Mar-16	8:00	9:00	Fine	169	332	500	Construction work in progress	18	<5	GMW GS-2310 (S/N 0143)
	9:02	10:02	Fine	187	332	500	Construction work in progress	18	<5	GMW GS-2310 (S/N 0143)
	10:04	11:04	Fine	180	332	500	Construction work in progress	18	<5	GMW GS-2310 (S/N 0143)
			Min.	**52**						
			Max.	**187**						
			Average	**99**						

* 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
01-Apr-16	8:00	9:00	Cloudy	115	332	500	Construction work in progress	23	<5	GMW GS-2310 (S/N 0143)
	9:20	10:20	Cloudy	104	332	500	Construction work in progress	23	<5	GMW GS-2310 (S/N 0143)
	10:22	11:22	Cloudy	115	332	500	Construction work in progress	23	<5	GMW GS-2310 (S/N 0143)
07-Apr-16	8:00	9:00	Fine	95	332	500	Construction work in progress	25	<5	GMW GS-2310 (S/N 0143)
	10:04	11:04	Fine	101	332	500	Construction work in progress	25	<5	GMW GS-2310 (S/N 0143)
	11:06	12:06	Fine	69	332	500	Construction work in progress	25	<5	GMW GS-2310 (S/N 0143)
17-Apr-16	8:00	9:00	Rainy	79	332	500	Construction work in progress	21	<5	GMW GS-2310 (S/N 0143)
	9:02	10:02	Rainy	68	332	500	Construction work in progress	21	<5	GMW GS-2310 (S/N 0143)
	10:04	11:04	Rainy	68	332	500	Construction work in progress	21	<5	GMW GS-2310 (S/N 0143)
19-Apr-16	8:00	9:00	Cloudy	79	332	500	Construction work in progress	20	<5	GMW GS-2310 (S/N 0143)
	9:02	10:02	Cloudy	73	332	500	Construction work in progress	20	<5	GMW GS-2310 (S/N 0143)
	10:04	11:04	Cloudy	77	332	500	Construction work in progress	20	<5	GMW GS-2310 (S/N 0143)
25-Apr-16	8:00	9:00	Fine	75	332	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 0143)
	10:25	11:25	Fine	81	332	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 0143)
	11:30	12:30	Fine	88	332	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 0143)
29-Apr-16	8:00	9:00	Sunny	60	332	500	Construction work in progress	24	<9	GMW GS-2310 (S/N 0147)
	9:02	10:02	Sunny	65	332	500	Construction work in progress	26	<10	GMW GS-2310 (S/N 0148)
	11:04	12:04	Sunny	68	332	500	Construction work in progress	24	<11	GMW GS-2310 (S/N 0149)
			Min.	**68**						
			Max.	**115**						
			Average	**86**						

* 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
05-May-16	8:00	9:00	Fine	56	332	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 0143)
	11:00	12:00	Fine	60	332	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 0143)
	13:10	14:10	Fine	60	332	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 0143)
11-May-16	9:05	10:05	Cloudy	90	332	500	Construction work in progress	25	<5	GMW GS-2310 (S/N 0143)
	11:07	12:07	Cloudy	88	332	500	Construction work in progress	25	<5	GMW GS-2310 (S/N 0143)
	13:25	14:25	Cloudy	90	332	500	Construction work in progress	25	<5	GMW GS-2310 (S/N 0143)
17-May-16	8:30	9:30	Fine	78	332	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 0143)
	12:15	13:15	Fine	79	332	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 0143)
	13:17	14:17	Fine	86	332	500	Construction work in progress	26	<5	GMW GS-2310 (S/N 0143)
23-May-16	8:00	9:00	Sunny	133	332	500	Construction work in progress	20	<5	GMW GS-2310 (S/N 0143)
	9:02	10:02	Sunny	140	332	500	Construction work in progress	20	<5	GMW GS-2310 (S/N 0143)
	10:04	11:04	Sunny	158	332	500	Construction work in progress	20	<5	GMW GS-2310 (S/N 0143)
28-May-16	8:00	9:00	Cloudy	124	332	500	Construction work in progress	28	<5	GMW GS-2310 (S/N 0143)
	9:02	10:02	Cloudy	131	332	500	Construction work in progress	28	<5	GMW GS-2310 (S/N 0143)
	10:04	11:04	Cloudy	103	332	500	Construction work in progress	28	<5	GMW GS-2310 (S/N 0143)
			Min.	**56**						
			Max.	**158**						
			Average	**98**						

* 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	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)		ID	ID
05-Mar-16	11:06	06-Mar-16	11:06	Fine	2.7822	2.8692	19867.51	19891.51	24.00	1.25	1.25	1.25	48	189	260	N.A.	GMW GS-2310 (S/N 0143)	7617
11-Mar-16	14:17	12-Mar-16	14:17	Cloudy	2.7644	2.8791	19894.51	19918.51	24.00	1.25	1.25	1.25	64	189	260	N.A.	GMW GS-2310 (S/N 0143)	7621
17-Mar-16	14:10	18-Mar-16	14:10	Cloudy	2.7820	2.9007	19921.51	19945.51	24.00	1.25	1.25	1.25	66	189	260	N.A.	GMW GS-2310 (S/N 0143)	7701
23-Mar-16	11:14	24-Mar-16	11:14	Cloudy	2.7692	2.8709	19948.51	19972.51	24.00	1.25	1.25	1.25	56	189	260	N.A.	GMW GS-2310 (S/N 0143)	7704
29-Mar-16	11:10	30-Mar-16	11:10	Fine	2.8001	2.9526	19975.51	19999.51	24.00	1.24	1.25	1.25	85	189	260	N.A.	GMW GS-2310 (S/N 0143)	7705
												Min.	**48**					
												Max.	**85**					
												Average	**64**					

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
01-Apr-16	11:25	02-Apr-16	11:25	Cloudy	2.7886	2.9300	20002.51	20026.51	24.00	1.25	1.25	1.25	79	189	260	N.A.	GMW GS-2310 (S/N 0143)	7617
07-Apr-16	12:10	08-Apr-16	12:10	Fine	2.7844	2.9112	20029.51	20053.51	24.00	1.25	1.25	1.25	70	189	260	N.A.	GMW GS-2310 (S/N 0143)	7621
17-Apr-16	11:06	18-Apr-16	11:06	Rainy	2.7749	2.8621	20030.51	20054.51	24.00	1.25	1.25	1.25	48	189	260	N.A.	GMW GS-2310 (S/N 0143)	7701
19-Apr-16	11:06	20-Apr-16	11:06	Cloudy	2.7829	2.8900	20058.51	20082.51	24.00	1.25	1.25	1.25	60	189	260	N.A.	GMW GS-2310 (S/N 0143)	7721
25-Apr-16	13:45	26-Apr-16	13:45	Fine	2.7791	2.8900	20085.51	20109.51	24.00	1.25	1.25	1.25	62	189	260	N.A.	GMW GS-2310 (S/N 0143)	7801
29-Apr-16	14:45	30-Apr-16	14:45	Fine	2.7791	2.8900	20085.51	20109.51	24.00	1.25	1.25	1.25	62	189	260	N.A.	GMW GS-2310 (S/N 0144)	7802
												Min.	**48**					
												Max.	**79**					
												Average	**63**					

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	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)		ID	ID
05-May-16	11:25	06-May-16	11:25	Fine	2.7900	2.8800	20139.51	20163.51	24.00	1.20	1.20	1.20	52	189	260	N.A.	GMW GS-2310 (S/N 0143)	7809
11-May-16	14:26	12-May-16	14:26	Cloudy	2.7911	2.8991	20166.51	20190.51	24.00	1.20	1.20	1.20	62	189	260	N.A.	GMW GS-2310 (S/N 0143)	7813
17-May-16	14:40	18-May-16	14:40	Fine	2.7912	2.9031	20193.51	20217.51	24.00	1.20	1.20	1.20	65	189	260	N.A.	GMW GS-2310 (S/N 0143)	7817
23-May-16	11:06	24-May-16	11:06	Sunny	2.7699	2.9011	20220.51	20244.51	24.00	1.20	1.20	1.20	76	189	260	N.A.	GMW GS-2310 (S/N 0143)	7821
28-May-16	11:06	29-May-16	11:06	Cloudy	2.8121	2.9462	20247.51	20271.51	24.00	1.20	1.20	1.20	78	189	260	N.A.	GMW GS-2310 (S/N 0143)	7901
												Min.	**52**					
												Max.	**78**					
												Average	**67**					

Meteorological Data Extracted from the Hong Kong Observatory

		King's Park Station				
Date	Weather	Average Air Temperature (°C)	Average Relative Humidity (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
2016/03/01	Sunny	16	58-82	0.0	8-25	E
2016/03/04	Cloudy	21	75-87	0.0	0-15	SE
2016/03/05	Fine	21	69-85	Trace	0-14	E
2016/03/07	Cloudy	20	86-94	0.2	0-18	E
2016/03/10	Cloudy	13	81-98	16.8	0-28	N/NE
2016/03/11	Cloudy	12	68-86	1.7	0-14	E/SE
2016/03/13	Cloudy	15	93-98	3.4	0-22	N/NE
2016/03/16	Cloudy	14	87-96	1.1	6-24	E
2016/03/17	Cloudy	16	96-98	2.2	10-25	SE
2016/03/22	Cloudy	16	94-98	1.7	10-29	E
2016/03/23	Cloudy	19	94-99	8.7	0-24	E/SE
2016/03/26	Cloudy	16	53-83	0.0	0-18	E
2016/03/29	Fine	18	48-71	Trace	0-15	E

		Tsing Yi Station				
Date	Weather	Average Air Temperature (°C)	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2016/03/01	Sunny	18	58-82	0.0	3-21	SE
2016/03/04	Cloudy	21	75-87	0.0	0-15	E/SE
2016/03/05	Fine	21	69-85	Trace	0-11	SE
2016/03/07	Cloudy	20	86-94	0.2	0-22	SE
2016/03/10	Cloudy	14	81-98	16.8	0-18	SE
2016/03/11	Cloudy	12	68-96	1.7	0-15	NW
2016/03/13	Cloudy	17	93-98	3.4	3--24	SE
2016/03/16	Cloudy	16	87-96	2.7	2-14	E/SE
2016/03/17	Cloudy	18	96-98	2.2	0-28	SE
2016/03/22	Cloudy	18	94-98	1.7	4-25	E/SE
2016/03/23	Cloudy	20	94-99	8.7	0-16	E
2016/03/26	Cloudy	16	53-83	0.0	0-24	E/SE
2016/03/29	Fine	18	48-71	Trace	0-15	E/SE

		Kai Tak Station				
Date	Weather	Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2016/03/01	Sunny	16	58-82	0.0	13-27	SE
2016/03/04	Cloudy	21	75-87	0.0	0-19	SE
2016/03/05	Fine	21	69-85	Trace	0-18	SW
2016/03/07	Cloudy	20	86-94	0.2	0-20	SE
2016/03/10	Cloudy	13	81-98	16.8	1-24	E
2016/03/11	Cloudy	12	68-86	1.7	2-16	E
2016/03/13	Cloudy	15	93-98	3.4	0-21	E
2016/03/16	Cloudy	14	87-96	1.1	12-26	SE
2016/03/17	Cloudy	16	96-98	2.2	11-25	E
2016/03/22	Cloudy	16	94-98	1.7	10-31	SE
2016/03/23	Cloudy	19	94-99	8.7	2-22	SW
2016/03/26	Cloudy	16	53-83	0.0	0-21	SE
2016/03/29	Fine	18	48-71	Trace	0-22	SE

		Green Island Station				
Date	Weather	Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2016/03/01	Sunny	18	58-82	0.0	5-48	NE
2016/03/04	Cloudy	21	75-87	0.0	0-25	E
2016/03/05	Fine	21	69-85	Trace	0-27	SE/E
2016/03/07	Cloudy	20	86-94	0.2	0-35	NE
2016/03/10	Cloudy	14	81-98	16.8	10-63	SE/E
2016/03/11	Cloudy	12	68-96	1.7	13-39	NE
2016/03/13	Cloudy	17	93-98	3.4	6-43	E
2016/03/16	Cloudy	16	87-96	2.7	30-47	NE
2016/03/17	Cloudy	18	96-98	2.2	13-43	SE/E
2016/03/22	Cloudy	18	94-98	1.7	28-60	NE
2016/03/23	Cloudy	20	94-99	8.7	0-48	E
2016/03/26	Cloudy	16	53-83	0.0	0-27	NE
2016/03/29	Fine	18	48-71	Trace	3-33	SE/E

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

Meteorological Data Extracted from the Hong Kong Observatory

		King's Park Station				
Date	Weather	Average Air Temperature (°C)	Average Relative Humidity (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
2016-04-01	Sunny	23	73-96	0.0	0-14	N/NE
2016-04-05	Cloudy	23	87-96	Trace	0-19	SE
2016-04-07	Sunny	25	79-96	0.0	0-14	E/SE
2016-04-11	Cloudy	21	87-95	0.4	0-18	E
2016-04-13	Rainy	23	93-100	76.4	0-19	N/NE
2016-04-15	Cloudy	21	95-98	3.4	0-24	E
2016-04-19	Cloudy	20	80-90	Trace	9-25	E
2016-04-22	Cloudy	24	71-96	8.3	6-24	E
2016-04-25	Rainy	26	80-99	12.4	0-12	SE
2016-04-29	Cloudy	24	66-87	Trace	1-23	E

		Tsing Yi Station				
Date	Weather	Average Air Temperature (°C)	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2016-04-01	Sunny	22	73-96	0.0	0-18	E
2016-04-05	Cloudy	23	87-96	Trace	0-17	E/SE
2016-04-07	Sunny	26	79-96	0.0	0-13	E/SE
2016-04-11	Cloudy	22	87-95	0.4	0-15	E/SE
2016-04-13	Rainy	23	93-100	76.4	0-25	SE
2016-04-15	Cloudy	23	68-96	1.7	0-27	NW
2016-04-19	Cloudy	21	80-90	Trace	0-25	SE
2016-04-22	Cloudy	24	71-96	2.7	0-32	E/SE
2016-04-25	Rainy	26	80-99	12.4	0-18	SE
2016-04-29	Cloudy	24	66-87	Trace	0-21	E/SE

		Kai Tak Station				
Date	Weather	Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2016-04-01	Sunny	23	73-96	0.0	0-22	SE
2016-04-05	Cloudy	23	87-96	Trace	0-18	SE
2016-04-07	Sunny	25	79-96	0.0	4-18	SW
2016-04-11	Cloudy	21	87-95	0.4	2-10	SE
2016-04-13	Rainy	23	93-100	76.4	0-35	E
2016-04-15	Cloudy	21	95-98	3.4	10-24	SE
2016-04-19	Cloudy	20	80-90	Trace	12-28	E
2016-04-22	Cloudy	24	71-96	8.3	0-40	E
2016-04-25	Rainy	26	80-99	12.4	0-14	E
2016-04-29	Cloudy	24	66-87	Trace	5-30	SW

		Green Island Station				
Date	Weather	Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2016-04-01	Sunny	22	73-96	0.0	0-35	E
2016-04-05	Cloudy	23	87-96	Trace	0-28	E
2016-04-07	Sunny	26	79-96	0.0	0-26	NE
2016-04-11	Cloudy	22	87-95	0.4	0-18	NE
2016-04-13	Rainy	23	93-100	76.4	0-48	E
2016-04-15	Cloudy	23	68-96	1.7	5-43	NE
2016-04-19	Cloudy	21	80-90	Trace	25-60	E
2016-04-22	Cloudy	24	71-96	2.7	0-35	NE
2016-04-25	Rainy	26	80-99	12.4	0-35	SE/E
2016-04-29	Cloudy	24	66-87	Trace	15-50	SE/E

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

Meteorological Data Extracted from the Hong Kong Observatory

		King's Park Station				
Date	Weather	Average Air Temperature (°C)	Average Relative Humidity (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
2016-05-03	Cloudy	27	72-96	30.7	0-15	E
2016-05-04	Cloudy	26	81-94	Trace	0-15	SE
2016-05-09	Cloudy	29	72-90	0.0	0-18	E/SE
2016-05-10	Cloudy	25	90-98	60.3	0-16	E
2016-05-13	Sunny	26	73-88	Trace	4-18	N/NE
2016-05-16	Cloudy	25	57-90	0.3	0-17	E
2016-05-20	Cloudy	25	89-98	16.1	0-18	SE
2016-05-25	Cloudy	28	71-90	Trace	0-20	E/SE
2016-05-26	Cloudy	28	79-90	0.1	4-22	E/SE
2016-05-31	Sunny	30	72-84	0.0	1-16	E

		Tsing Yi Station				
Date	Weather	Average Air Temperature (°C)	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2016-05-03	Cloudy	26	72-96	30.7	0-22	NW
2016-05-04	Cloudy	26	81-94	Trace	0-12	NW
2016-05-09	Cloudy	29	72-90	0.0	0-22	E/SE
2016-05-10	Cloudy	26	90-98	60.3	0-24	E/SE
2016-05-13	Sunny	27	73-88	Trace	3-18	SE
2016-05-16	Cloudy	26	68-96	1.7	3-27	NW
2016-05-20	Cloudy	26	89-98	16.1	3-31	SE
2016-05-25	Cloudy	28	71-90	2.7	0-21	E/SE
2016-05-26	Cloudy	29	79-90	0.1	0-20	E/SE
2016-05-31	Sunny	30	72-84	0.0	1-18	E/SE

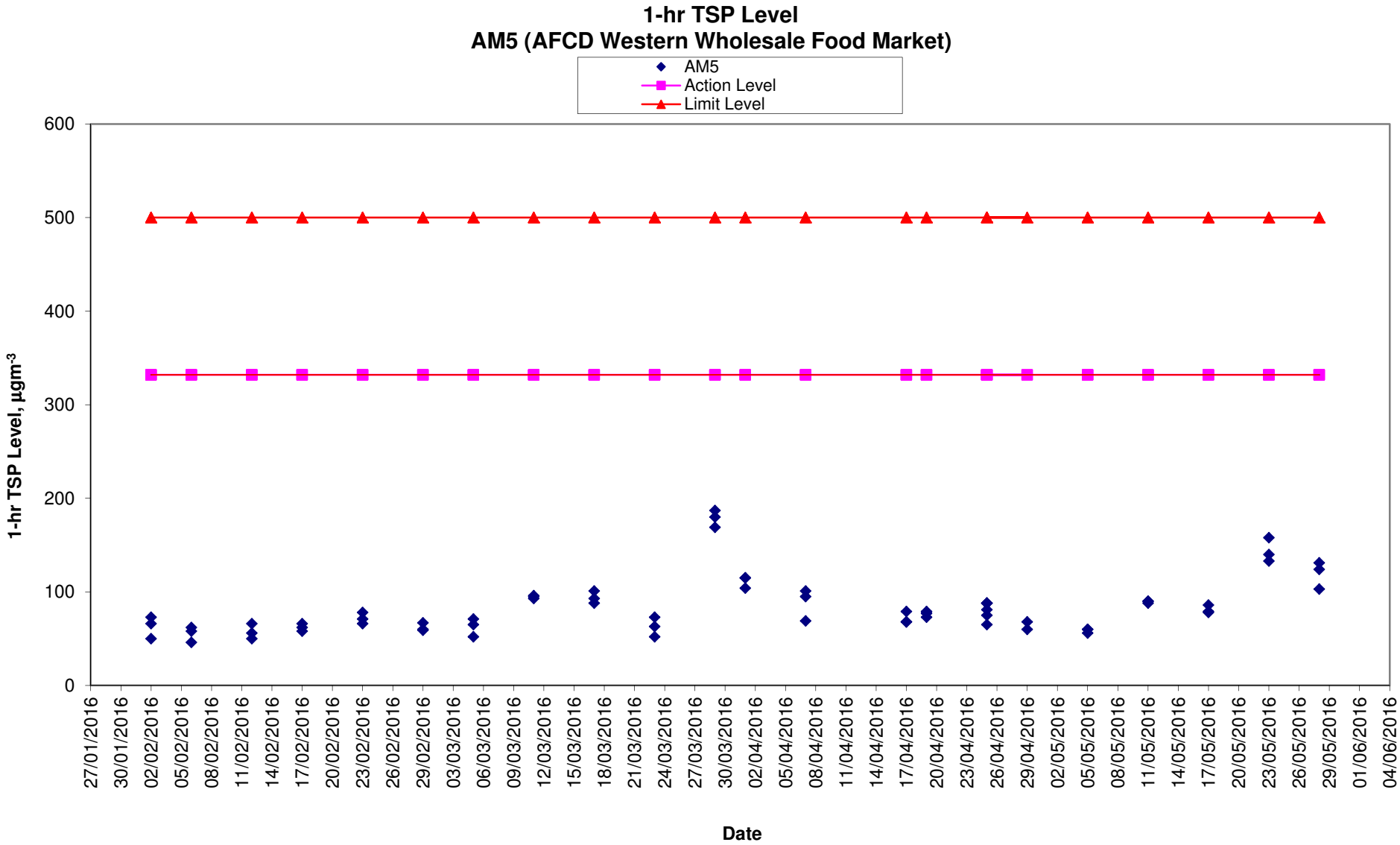
		Kai Tak Station				
Date	Weather	Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2016-05-03	Cloudy	27	72-96	30.7	0-24	SW
2016-05-04	Cloudy	26	81-94	Trace	0-19	E
2016-05-09	Cloudy	29	72-90	0.0	3-16	SE
2016-05-10	Cloudy	25	90-98	60.3	0-25	SE
2016-05-13	Sunny	26	73-88	Trace	8-23	E
2016-05-16	Cloudy	25	57-90	0.3	0-23	SE
2016-05-20	Cloudy	25	89-98	16.1	1-21	E
2016-05-25	Cloudy	28	71-90	Trace	1-24	E
2016-05-26	Cloudy	28	79-90	0.1	8-29	SE
2016-05-31	Sunny	30	72-84	0.0	2-20	E

		Green Island Station				
Date	Weather	Average Air Temperature (°C) *	Average Relative Humidity (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2016-05-03	Cloudy	26	72-96	30.7	0-43	E
2016-05-04	Cloudy	26	81-94	Trace	0-25	SE/E
2016-05-09	Cloudy	29	72-90	0.0	6-35	E
2016-05-10	Cloudy	26	90-98	60.3	0-38	SE/E
2016-05-13	Sunny	27	73-88	Trace	10-45	E
2016-05-16	Cloudy	26	68-96	1.7	5-40	NE
2016-05-20	Cloudy	26	89-98	16.1	8-37	SE/E
2016-05-25	Cloudy	28	71-90	2.7	0-40	NE
2016-05-26	Cloudy	29	79-90	0.1	26-47	SE/E
2016-05-31	Sunny	30	72-84	0.0	16-34	SE/E

* King's Park's data

\- Data was not available

\# less than 24 hourly observations per day


1-hr TSP Level
AM5 (AFCD Western Wholesale Food Market)
AM5
Action Level
Limit Level
1-hr TSP Level, µgm-3
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500
400
300
200
100
0
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30/01/2016
02/02/2016
05/02/2016
08/02/2016
11/02/2016
14/02/2016
17/02/2016
20/02/2016
23/02/2016
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14/05/2016
17/05/2016
20/05/2016
23/05/2016
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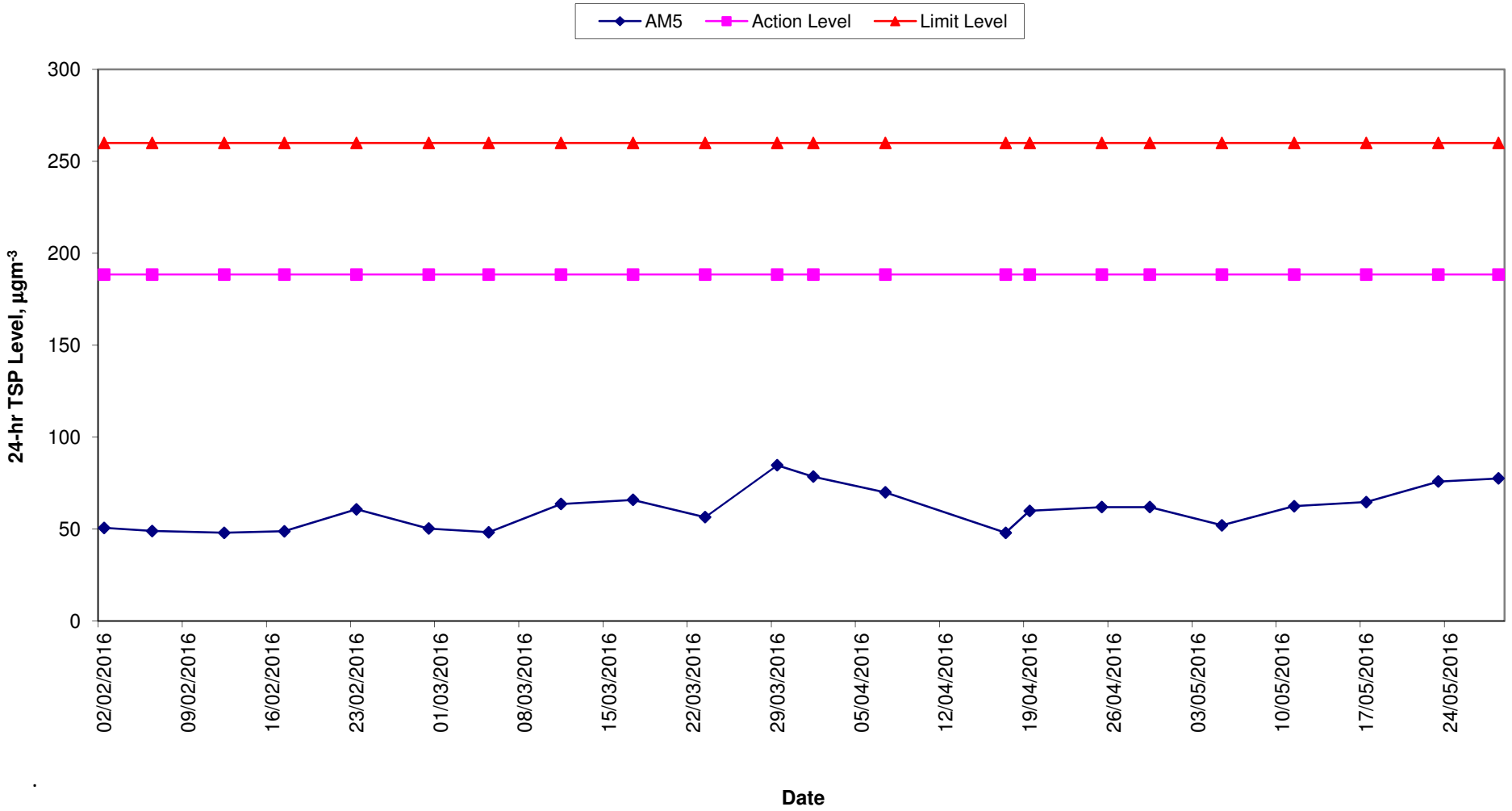
29/05/2016
01/06/2016
04/06/2016
Date

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



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							
11-Mar-16	13:30	14:00	Cloudy	67	68	65	N.A	Traffic Noise	-	10	1.0	Casella CEL-633A (S/N 3521757)	Casella CEL-120/1 (S/N 3421612)
17-Mar-16	13:25	13:55	Cloudy	67	68	66	N.A	Traffic Noise	-	20	1.0	Casella CEL-633A (S/N 3521757)	Casella CEL-120/1 (S/N 3421612)
23-Mar-16	9:25	9:55	Cloudy	67	68	65	N.A	Traffic Noise	-	14	0.4	Casella CEL-633A (S/N 3521757)	Casella CEL-120/1 (S/N 3421612)
29-Mar-16	10:17	10:47	Fine	67	69	65	N.A	Traffic Noise	-	21	0.5	Casella CEL-633A (S/N 3521757)	Casella CEL-120/1 (S/N 3421612)
			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							
07-Apr-16	11:20	11:50	Cloudy	67	68	66	N.A	Traffic Noise	-	25	1.0	SVAN957 (N.08.08)	B&K4231 (N.02.03)
13-Apr-16	11:20	11:50	Cloudy	67	69	66	N.A	Traffic Noise	-	23	1.0	Casella CEL-633A (S/N 3521757)	Casella CEL-120/1 (S/N 3421612)
19-Apr-16	10:20	10:50	Cloudy	67	69	66	N.A	Traffic Noise	-	20	0.4	Casella CEL-633A (S/N 3521757)	Casella CEL-120/1 (S/N 3421612)
25-Apr-16	13:00	13:30	Fine	67	69	66	N.A	Traffic Noise	-	26	0.5	Casella CEL-633A (S/N 3521757)	Casella CEL-120/1 (S/N 3421612)
			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							
05-May-16	13:30	14:00	Fine	67	69	66	N.A	Traffic Noise	-	26	0.5	Casella CEL-633A (S/N 3521757)	Casella CEL-120/1 (S/N 3421612)
11-May-16	13:40	14:10	Cloudy	62	68	66	N.A	Traffic Noise	-	25	1.0	Casella CEL-633A (S/N 3521757)	Casella CEL-120/1 (S/N 3421612)
17-May-16	14:00	14:30	Cloudy	67	69	66	N.A	Traffic Noise	-	26	0.8	Casella CEL-633A (S/N 3521757)	Casella CEL-120/1 (S/N 3421612)
23-May-16	9:15	9:45	Sunny	67	68	66	N.A	Traffic Noise	-	29	0.3	Casella CEL-633A (S/N 3521757)	Casella CEL-120/1 (S/N 3421612)
			Min.	**62**									
			Max.	**67**									

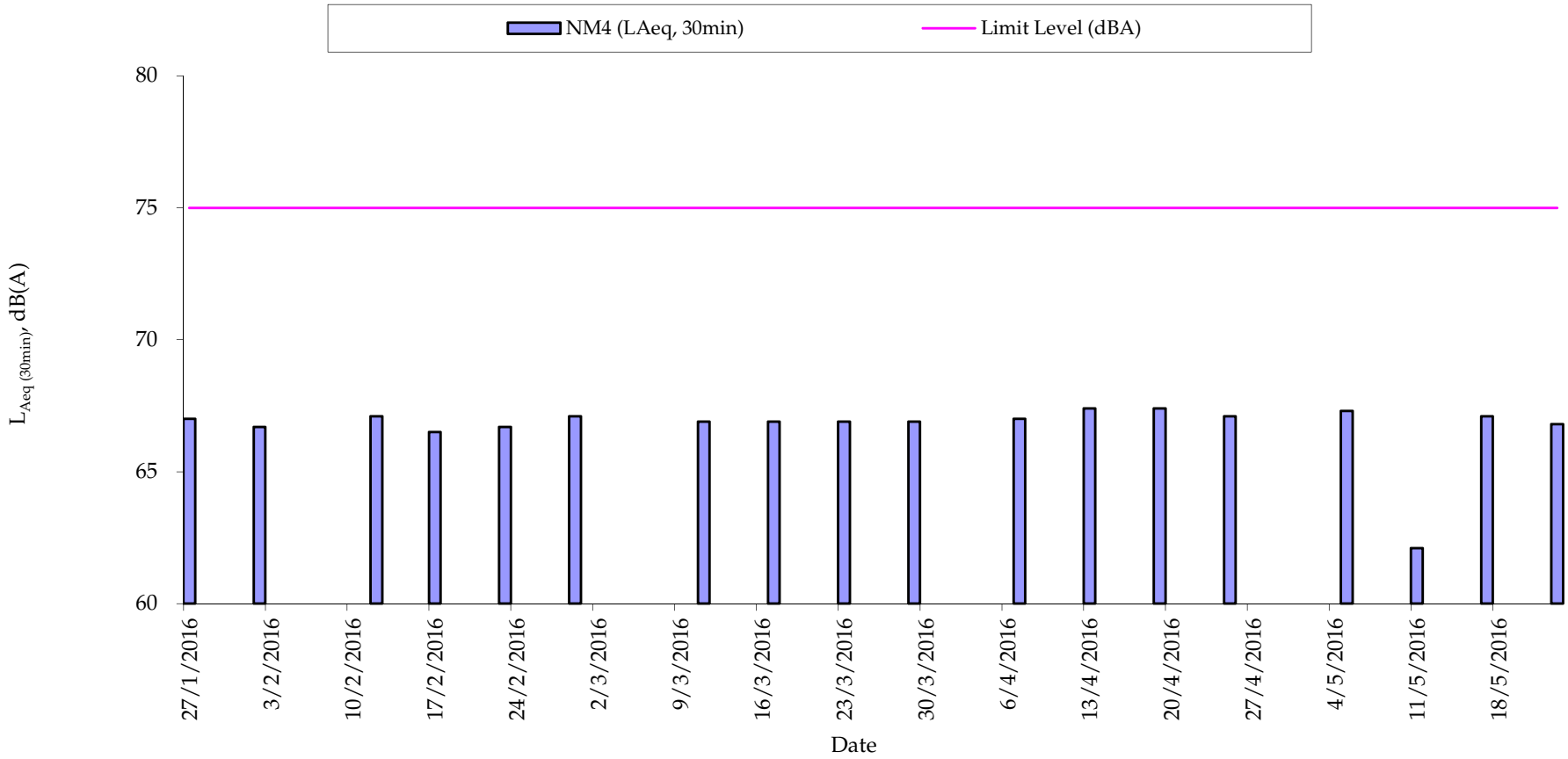
Annex F6 Noise Monitoring Results

Restricted Hours Noise Monitoring Results

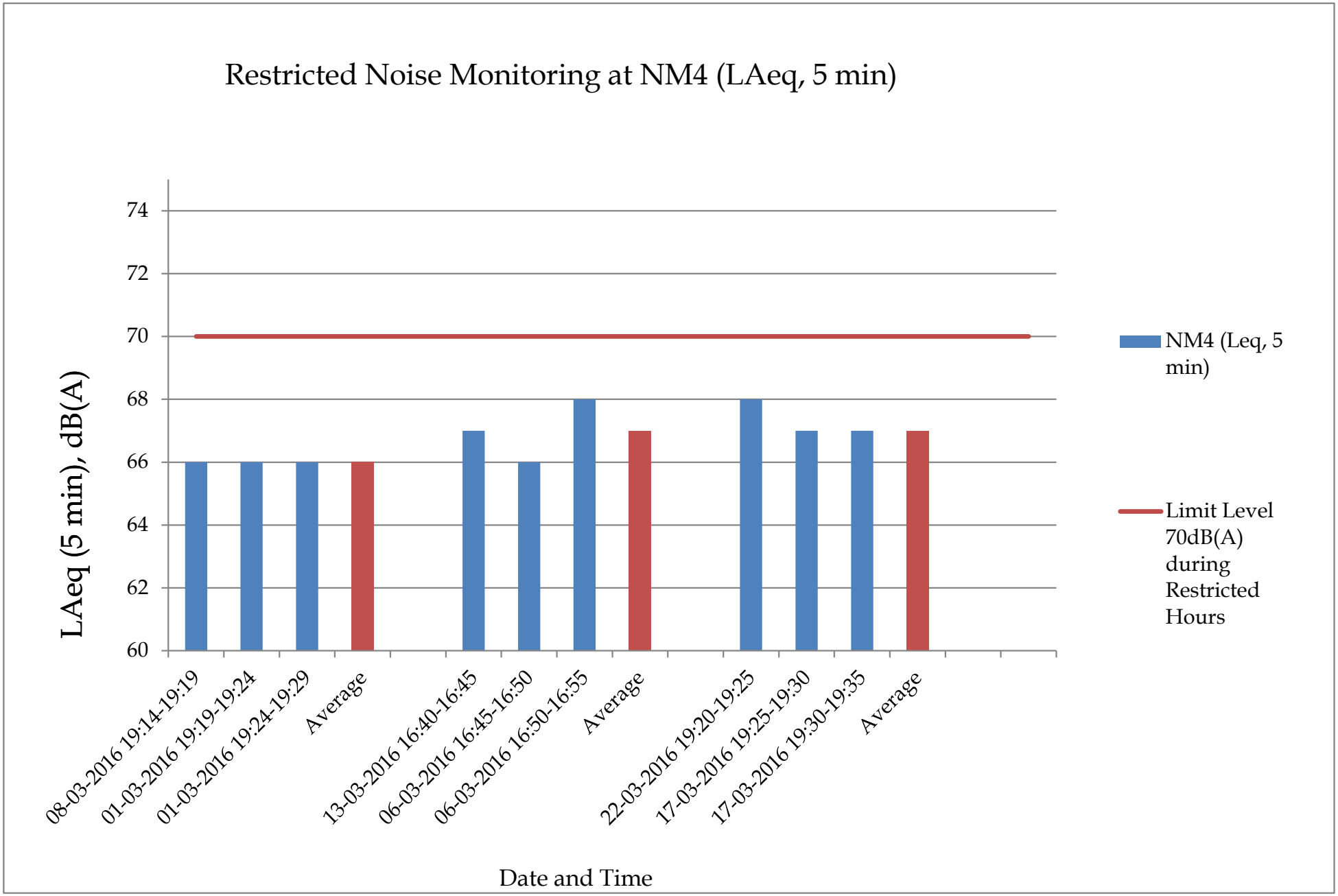
Station NM4

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							
08-Mar-16	19:14	19:19	Fine	66	67	64	-	Traffic noise	-	15	0.8	Casella CEL-633A (S/N 3521757)	Casella CEL-120/1 (S/N 3421612)
	19:19	19:24	Fine	66	68	65			-				
	19:24	19:29	Fine	66	67	64			-				
	19:14	19:29	Fine	66	-	-			-				
13-Mar-16	16:40	16:45	Cloudy	67	69	66	-	Traffic noise	-	17	1.0	Casella CEL-633A (S/N 3521757)	Casella CEL-120/1 (S/N 3421612)
	16:45	16:50	Cloudy	66	67	65			-				
	16:50	16:55	Cloudy	68	69	66			-				
	16:40	16:55	Cloudy	67	-	-			-				
22-Mar-16	19:20	19:25	Cloudy	68	69	65	-	Traffic noise	-	10	1.2	Casella CEL-633A (S/N 3521757)	Casella CEL-120/1 (S/N 3421612)
	19:25	19:30	Cloudy	67	68	65			-				
	19:30	19:35	Cloudy	67	68	65			-				
	19:20	19:35	Cloudy	67	-	-			-				
			Min.	**66**									
			Max.	**68**									

Normal Weekdays Noise Monitoring Results at NM4 ($L_{Aeq, 30min}$)



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
08-03-2016 19:14-19:19
01-03-2016 19:19-19:24
01-03-2016 19:24-19:29
Average
13-03-2016 16:40-16:45
06-03-2016 16:45-16:50
06-03-2016 16:50-16:55
Average
22-03-2016 19:20-19:25
17-03-2016 19:25-19:30
17-03-2016 19:30-19:35
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
December 2014	0	0
January 2015	0	0
February 2015	0	0
March 2015	0	0
April 2015	0	0
May 2015	0	0
June 2015	0	0
July 2015	0	0
August 2015	0	0
September 2015	0	0
October 2015	0	0
November 2015	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 2015	0	0
January 2016	0	0
February 2016	0	0
March 2016	0	0
April 2016	0	0
May 2016	0	0
Overall Total	7	0

Annex G

Stonecutters Island Production and Riser Shafts

Annex G1

Approval Letter from EPD for Termination of Construction Phase EM&A Programme

本署檔號
OUR REF: ( ) in EP2/G/F/137 Pt. 6

來函檔號
YOUR REF: 0104887_let_201501101

電 話
TEL. NO. : 2835 1105
圖文傳真
FAX NO : 2591 0558
電子郵件 :
E-MAIL: :
網 址
HOMEPAGE: http://www.epd.gov.hk

Environmental Protection Department
Branch Office

27th Floor, Southorn Centre,
130 Hennessy Road,
Wan Chai, Hong Kong.

環境保護署分署
香港灣仔
軒尼詩道
一百三十號
修頓中心廿七樓

By Fax: 2723 5660

24 November 2015

Environmental Resources Management – Hong Kong Ltd.
16/F Berkshire House
25 Westlands Road
Quarry Bay
Hong Kong
(Attn: Ms. Winne Ko, Environmental Team Leader)

Dear Ms. Ko,

Environmental Impact Assessment Ordinance, Cap. 499
Harbour Area Treatment Scheme Stage 2A (HATS 2A) -
Contract No. DC/2007/23 Construction of Sewage Conveyance System from North Point to Stonecutters Island
Proposal for Termination of Construction Phase Environmental Monitoring and Audit (EM&A) Program at the Worksites within SCISTW
(Environmental Permit No. EP-322/2008/G)

I refer to your letter of 1 Nov 2015 received on 9 Nov 2015 proposing to terminate the construction phase EM&A within Stonecutters Island Sewage Treatment Works (SCISTW) for Contract No. DC/2007/23 Construction of Sewage Conveyance System from North Point to Stonecutters Island.

Based on the justifications provided in your submission and pursuant to Condition 4.1 of the Environmental Permit No. EP-322/2008/G, I hereby approve the termination of construction phase EM&A at the worksites within SCISTW for Contract No. DC/2007/23 Construction of Sewage Conveyance System from North Point to Stonecutters Island.

Should you have any query, please contact our Victor Yeung at 2835 1102.

Yours faithfully,

(Louis P. L. CHAN)
Principal Environmental Protection Officer
for Director of Environmental Protection

c.c.

HATS, DSD	(Attn: Mr. P F Ma & Mr. Danny Tang)	Fax: 2833 9162
AECOM	(Attn: Mr. Chan Kai Yuen)	Fax: 2344 7702
Mott MacDonald	(Attn: Dr. Anne Kerr)	Fax: 2827 1823

Internal
S(RW)5 (with ERM's submission)

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)	TE-5170 A-01-46	ORIFICE A-04-06	27 January 2016	26 March 2016
		TE-5170 A-01-46	ORIFICE A-04-06	29 March 2016	28 May 2016
AM2	Rooftop of Hong Kong & Islands Regional Office, WSD	TE-5170 A-01-44	ORIFICE A-04-06	27 January 2016	26 March 2016
		TE-5170 A-01-44	ORIFICE A-04-06	29 March 2016	28 May 2016
AM3	Rooftop of Wan Chai East PTW	TE-5170 A-01-48	ORIFICE A-04-06	27 January 2016	26 March 2016
		TE-5170 A-01-48	ORIFICE A-04-06	29 March 2016	28 May 2016
AM5	Western Wholesale Food Market	GMW GS-2310 (S/N 0143)	CM-AIR-43 (S/N 0438320)	2 January 2015	2 March 2016
		GMW GS-2310 (S/N 0143)	CM-AIR-43 (S/N 0438320)	2 March 2016	1 May 2016
1-hr TSP					
		LD-3B (A-02-04)		11 January 2016	10 March 2016
		LD-3B (A-02-04)		7 March 2016	6 May 2016
		LD-3B (A-02-07)		7 March 2016	6 May 2016
		LD-3B (A-02-08)		29 February 2016	25 April 2016
		LD-3B (A-02-10)		29 February 2016	25 April 2016

Monitoring Equipment

Monitoring Equipment	Model & Serial No.	Last Calibration Date	Next Calibration Date
Calibrator	B&K4231 (N.02.03)	24 August 2015	23 August 2016
	SV30A (N.09.03)	4 October 2015	3 October 2016
	Casella CEL-120/1 (S/N 3421612)	15 December 2015	15 December 2016
Sound Level Meter	SVAN957 (N.08.07)	31 August 2015	30 August 2016
	SVAN957 (N.08.08)	24 August 2015	23 August 2016
	SVAN957 (N.08.09)	24 August 2015	23 August 2016
	SVAN957 (N.08.12)	30 November 2015	29 November 2016
	Casella CEL-633A (S/N 3521757)	15 December 2015	15 December 2016

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
NM4	Rooftop of Block A, Kwan Yick Building Phase III

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AM5
Calibrated by	:	K.T.Ho
Date	:	02/01/2016

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 0143

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	14 Mar 2015
Slope (m)	:	2.09532
Intercept (b)	:	-0.03812
Correlation Coefficient(r)	:	0.99994

Standard Condition

Pstd (hpa)	:	1013
Tstd (K)	:	298.18

Calibration Condition

Pa (hpa)	:	1022
Ta(K)	:	293

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	10.6	3.298	1.592	57	57.74
2	13 holes	8.5	2.953	1.428	50	50.65
3	10 holes	6.5	2.583	1.251	44	44.57
4	7 holes	4.4	2.125	1.032	36	36.47
5	5 holes	2.7	1.664	0.813	27	27.35

Sampler Calibration Relationship

Slope(m):38.354 Intercept(b): -3.555 Correlation Coefficient(r): 0.9994

Checked by: Magnum Fan Date: 08/01/2016

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AM5
Calibrated by	:	K.T.Ho
Date	:	02/03/2016

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 0143

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	14 Mar 2015
Slope (m)	:	2.09532
Intercept (b)	:	-0.03812
Correlation Coefficient(r)	:	0.99994

Standard Condition

Pstd (hpa)	:	1013
Tstd (K)	:	298.18

Calibration Condition

Pa (hpa)	:	1013
Ta(K)	:	296

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	10.2	3.205	1.548	57	57.19
2	13 holes	8.8	2.976	1.439	53	53.18
3	10 holes	6.4	2.538	1.230	46	46.16
4	7 holes	4.0	2.007	0.976	35	35.12
5	5 holes	2.4	1.554	0.760	27	27.09

Sampler Calibration Relationship

Slope(m):38.527 Intercept(b): -2.114 Correlation Coefficient(r): 0.9991

Checked by: Magnum Fan Date: 10/03/2016

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 - Mar 24, 2015 Rootsmeter S/N 0438320 Ta (K) - 292
Operator Tisch Orifice I.D. - 2454 Pa (mm) - 756.92

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	1.4460	3.2	2.00
2	NA	NA	1.00	1.0300	6.4	4.00
3	NA	NA	1.00	0.9180	7.9	5.00
4	NA	NA	1.00	0.8780	8.7	5.50
5	NA	NA	1.00	0.7240	12.6	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
1.0121	0.6999	1.4258		0.9958	0.6886	0.8784
1.0078	0.9785	2.0163		0.9916	0.9627	1.2422
1.0057	1.0955	2.2543		0.9895	1.0779	1.3888
1.0047	1.1443	2.3644		0.9885	1.1258	1.4566
0.9994	1.3805	2.8515		0.9833	1.3582	1.7568
Qstd slope (m) =		2.09532		Qa slope (m) =		1.31205
intercept (b) =		-0.03812		intercept (b) =		-0.02349
coefficient (r) =		0.99994		coefficient (r) =		0.99994
y axis = SQRT[H2O(Pa/760)(298/Ta)]				y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

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

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

For subsequent flow rate calculations:

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

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. : C156917
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC15-2756) Date of Receipt / 收件日期 : 4 December 2015

Description / 儀器名稱	:	Acoustic Calibrator
Manufacturer / 製造商	:	Casella
Model No. / 型號	:	CEL-120/1
Serial No. / 編號	:	3421612
Supplied By / 委託者	:	Envirotech Services Co. Room 113, 1/F, My Loft, 9 Hoi Wing Road, Tuen Mun, New Territories, 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 : 15 December 2015

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results do not exceed 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 / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By 測試 : H T Wong, Technical Officer

Certified By 核證 : K C Lee, Project Engineer

Date of Issue 簽發日期 : 15 December 2015

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. : C156917
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	C153519
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	94.1	± 0.25	± 0.2
114 dB, 1 kHz	114.1		

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	1.000 0	1 kHz ± 5 Hz	± 0.1

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

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. : C156918
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序号編號 : IC15-2756) Date of Receipt / 收件日期 : 4 December 2015

Description / 儀器名稱	:	Sound Level Meter
Manufacturer / 製造商	:	Casella
Model No. / 型號	:	CEL-633A
Serial No. / 編號	:	3521757
Supplied By / 委託者	:	Envirotech Services Co. Room 113, 1/F, My Loft, 9 Hoi Wing Road, Tuen Mun, New Territories, 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 : 15 December 2015

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results do not exceed 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 / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By 測試 : H T Wong, Technical Officer

Certified By 核證 : K C Lee, Project Engineer

Date of Issue 簽發日期 : 15 December 2015

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. : C156918
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 using the Casella Acoustic Calibrator CEL-120/1, S/N : 3421612 was performed before the test.

3. The results presented are the mean of 3 measurement at each calibration point.

4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C150014
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)
Time Weighting	Frequency Weighting	Level (dB)	Freq. (kHz)		
L_F	A	114.00	1	113.9	± 1.1

6.1.2 Linearity

UUT Setting		Applied Value		UUT Reading (dB)
Time Weighting	Frequency Weighting	Level (dB)	Freq. (kHz)	
L_F	A	114.00	1	113.9 (Ref.)
		104.00		103.9
		94.00		93.9

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)
Time Weighting	Frequency Weighting	Level (dB)	Freq. (kHz)		
L_F	A	114.00	1	113.9	Ref.
L_S				113.9	± 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
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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. : C156918
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)
Time Weighting	Frequency Weighting	Level (dB)	Freq.		
L_F	A	94.00	63 Hz	87.7	-26.2 ± 1.5
			125 Hz	97.7	-16.1 ± 1.5
			250 Hz	105.2	-8.6 ± 1.4
			500 Hz	110.6	-3.2 ± 1.4
			1 kHz	113.9	Ref.
			2 kHz	115.1	+1.2 ± 1.6
			4 kHz	114.8	+1.0 ± 1.6
			8 kHz	112.4	-1.1(+2.1 ; -3.1)
			12.5 kHz	108.3	-4.3(+3.0 ; -6.0)

6.3.2 C-Weighting

UUT Setting		Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Time Weighting	Frequency Weighting	Level (dB)	Freq.		
L_F	C	94.00	63 Hz	113.0	-0.8 ± 1.5
			125 Hz	113.7	-0.2 ± 1.0
			250 Hz	113.9	0.0 ± 1.0
			500 Hz	113.9	0.0 ± 1.0
			1 kHz	113.9	Ref.
			2 kHz	113.7	-0.2 ± 1.0
			4 kHz	113.0	-0.8 ± 1.0
			8 kHz	110.6	-3.0 (+1.5 ; -3.0)
			12.5 kHz	106.4	-6.2 (+3.0 ; -6.0)

Remarks : - UUT Microphone Model No. : CEL-251 & S/N : 1950

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value :

114 dB	: 63 Hz - 125 Hz	: ± 0.45 dB
	250 Hz - 500 Hz	: ± 0.40 dB
	1 kHz	: ± 0.30 dB
	2 kHz - 4 kHz	: ± 0.45 dB
	8 kHz	: ± 0.55 dB
	12.5 kHz	: ± 0.80 dB
104 dB	: 1 kHz	: ± 0.10 dB (Ref. 114 dB)
94 dB	: 1 kHz	: ± 0.10 dB (Ref. 114 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。

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA11003/46/0003

Station: AM1 - Chan's Creative School Operator: WK

Date: 27-Jan-16 Next Due Date: 26-Mar-16

Equipment No.: A-01-46 Serial No. 1315

Ambient Condition			
Temperature, Ta (K)	281.5	Pressure, Pa (mmHg)	770.8

Orifice Transfer Standard Information					
Equipment No.:	A-04-06	Slope, mc (CFM)	0.0593	Intercept, bc	-0.02195
Last Calibration Date:	4-Feb-15	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	3-Feb-16	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	11.8	3.56	60.43	8.2	2.97
2	9.4	3.18	53.98	6.6	2.66
3	7.2	2.78	47.29	5.0	2.32
4	5.1	2.34	39.86	3.4	1.91
5	3.4	1.91	32.61	2.2	1.54

By Linear Regression of Y on X

Slope , mw = 0.0518 **Intercept, bw :** -0.1475

Correlation coefficient* = 0.9997

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.03**

Remarks:

Conducted by: Wk-Tang Signature: Kwai Date: 27/1/16

Checked by: LV Signature: Date: 27 January 2016

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA11003/46/0004

Station: AM1 - Chan's Creative School Operator: WK

Date: 29-Mar-16 Next Due Date: 28-May-16

Equipment No.: A-01-46 Serial No. 1315

Ambient Condition			
Temperature, Ta (K)	291.1	Pressure, Pa (mmHg)	768.5

Orifice Transfer Standard Information					
Serial No.:	2896	Slope, mc (CFM)	0.0598	Intercept, bc	-0.05079
Last Calibration Date:	4-Mar-16	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	3-Mar-17	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.3	3.42	58.05	7.4	2.77
2	9.4	3.12	53.02	6.2	2.53
3	7.7	2.82	48.07	5.0	2.28
4	5.1	2.30	39.28	3.4	1.88
5	3.3	1.85	31.76	2.1	1.47

By Linear Regression of Y on X

Slope , mw = 0.0489 **Intercept, bw =** -0.0663

Correlation coefficient* = 0.9996

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.01**

Remarks:

Conducted by: Wk Tang Signature: Kwai Date: 29/3/16

Checked by: TA Signature: Date: 29 March 2016

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA11003/44/0003

Station: AM2 - Hong Kong & Islands Regional Office, WSD Operator: WK

Date: 27-Jan-16 Next Due Date: 26-Mar-16

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

Ambient Condition			
Temperature, Ta (K)	281.7	Pressure, Pa (mmHg)	771.5

Orifice Transfer Standard Information					
Equipment No.:	A-04-06	Slope, mc (CFM)	0.0593	Intercept, bc	-0.02195
Last Calibration Date:	4-Feb-15	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	3-Feb-16	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.5	3.51	59.67	8.0	2.93
2	9.9	3.26	55.39	6.8	2.70
3	7.6	2.86	48.58	5.3	2.39
4	5.3	2.39	40.63	3.4	1.91
5	3.2	1.85	31.65	2.1	1.50

By Linear Regression of Y on X

Slope , mw = 0.0515 **Intercept, bw :** -0.1450

Correlation coefficient* = 0.9991

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **3.99**

Remarks:

Conducted by: Wk Tang Signature: Kwan Date: 27/1/16

Checked by: [illegible] Signature: Date: 27 January 2016

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA11003/44/0004

Station: AM2 - Hong Kong & Islands Regional Office, WSD Operator: WK

Date: 29-Mar-16 Next Due Date: 28-May-16

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

Ambient Condition			
Temperature, Ta (K)	290.6	Pressure, Pa (mmHg)	768.4

Orifice Transfer Standard Information					
Serial No.:	2896	Slope, mc (CFM)	0.0598	Intercept, bc	-0.05079
Last Calibration Date:	4-Mar-16	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	3-Mar-17	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.2	3.41	57.84	7.4	2.77
2	9.2	3.09	52.51	6.2	2.54
3	7.4	2.77	47.18	5.0	2.28
4	5.1	2.30	39.31	3.3	1.85
5	3.2	1.82	31.31	2.2	1.51

By Linear Regression of Y on X

Slope , mw = 0.0484 **Intercept, bw =** -0.0197

Correlation coefficient* = 0.9991

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.10**

Remarks:

Conducted by: WK Tang Signature: Kwan Date: 29/3/16

Checked by: [illegible] Signature: Date: 29 March 2016

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA11003/48/0003

Station: AM3 - Wan Chai East PTW Operator: WK

Date: 27-Jan-16 Next Due Date: 26-Mar-16

Equipment No.: A-01-48 Serial No. 1792

Ambient Condition			
Temperature, Ta (K)	282.2	Pressure, Pa (mmHg)	770.4

Orifice Transfer Standard Information					
Equipment No.:	A-04-06	Slope, mc (CFM)	0.0593	Intercept, bc	-0.02195
Last Calibration Date:	4-Feb-15	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	3-Feb-16	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.3	3.48	59.06	7.9	2.91
2	9.9	3.26	55.30	6.8	2.70
3	7.4	2.81	47.86	5.1	2.34
4	5.1	2.34	39.80	3.4	1.91
5	3.3	1.88	32.08	2.1	1.50

By Linear Regression of Y on X

Slope , mw = 0.0519 **Intercept, bw :** -0.1616

Correlation coefficient* = 0.9999

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.01**

Remarks:

Conducted by: W.K. Tang Signature: Date: 27/1/16

Checked by: Signature: Date: 27 January 2016

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA11003/48/0004

Station: AM3 - Wan Chai East PTW Operator: WK

Date: 29-Mar-16 Next Due Date: 28-May-16

Equipment No.: A-01-48 Serial No. 1792

Ambient Condition			
Temperature, Ta (K)	290.6	Pressure, Pa (mmHg)	769.4

Orifice Transfer Standard Information					
Serial No.:	2896	Slope, mc (CFM)	0.0598	Intercept, bc	-0.05079
Last Calibration Date:	4-Mar-16	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	3-Mar-17	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.4	3.44	58.39	7.7	2.83
2	9.9	3.21	54.47	6.6	2.62
3	7.6	2.81	47.83	5.2	2.32
4	5.0	2.28	38.96	3.3	1.85
5	3.2	1.82	31.33	2.1	1.48

By Linear Regression of Y on X

Slope , mw = 0.0499 **Intercept, bw =** -0.0842

Correlation coefficient* = 0.9997

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.09**

Remarks:

Conducted by: Wk Tang Signature: Kwai Date: 29/3/16

Checked by: LAV Signature: Date: 29 March 2016

TISCH ENVIRONMENTAL, INC.
145 SOUTH MIAMI AVE
VILLAGE OF CLEVES, OH
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513.467.9009 FAX

TISCH Environmental

Equipment No A-04-06

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Feb 04, 2015 Rootsmeter S/N 0438320 Ta (K) - 293
Operator Tisch Orifice I.D. - 2896 Pa (mm) - 756.92

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	1.4590	3.2	2.00
2	NA	NA	1.00	1.0330	6.4	4.00
3	NA	NA	1.00	0.9250	7.9	5.00
4	NA	NA	1.00	0.8800	8.8	5.50
5	NA	NA	1.00	0.7260	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
1.0086	0.6913	1.4233		0.9958	0.6825	0.8799
1.0044	0.9723	2.0129		0.9916	0.9599	1.2443
1.0023	1.0835	2.2505		0.9895	1.0697	1.3912
1.0011	1.1377	2.3603		0.9884	1.1231	1.4591
0.9959	1.3718	2.8467		0.9832	1.3542	1.7598
Qstd slope (m) =		2.09317		Qa slope (m) =		1.31071
intercept (b) =		-0.02195		intercept (b) =		-0.01357
coefficient (r) =		0.99997		coefficient (r) =		0.99997
y axis = SQRT[H2O(Pa/760)(298/Ta)]				y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

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

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

For subsequent flow rate calculations:

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

TISCH Environmental

TISCH ENVIRONMENTAL, INC.
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ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Mar 04, 2016 Rootsmeter S/N 0438320 Ta (K) - 295
Operator Tisch Orifice I.D. - 2896 Pa (mm) - 755.65

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	1.4340	3.2	2.00
2	NA	NA	1.00	1.0250	6.4	4.00
3	NA	NA	1.00	0.9150	7.9	5.00
4	NA	NA	1.00	0.8770	8.7	5.50
5	NA	NA	1.00	0.7210	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)
1.0001	0.6974	1.4173
0.9959	0.9716	2.0044
0.9938	1.0861	2.2410
0.9928	1.1320	2.3503
0.9875	1.3696	2.8346

Qstd slope (m) = 2.11176
intercept (b) = -0.05079
coefficient (r) = 0.99982

y axis = SQRT[H2O(Pa/760)(298/Ta)]

Va	(x axis) Qa	(y axis)
0.9957	0.6944	0.8836
0.9915	0.9674	1.2496
0.9894	1.0814	1.3971
0.9885	1.1271	1.4653
0.9831	1.3636	1.7672

Qa slope (m) = 1.32235
intercept (b) = -0.03166
coefficient (r) = 0.99982

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}

WELLAB 匯力 Testing & Research

WELLAB LIMITED
Rms 1516, 1701 & 1716, Technology Park,
18 On Lai Street, Shatin, N.T., Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

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

Test Report No.:	C/160108/2
Date of Issue:	2016-01-11
Date Received:	2016-01-08
Date Tested:	2016-01-08
Date Completed:	2016-01-11
Next Due Date:	2016-03-10

ATTN: **Mr. W. K. Tang**

Page: 1 of 1

Certificate of Calibration

Item for Calibration:

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

Test Conditions:

Room Temperature	: 22 degree Celsius
Relative Humidity	: 59 %

Test Specifications & Methodology:

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

Results:

Correlation Factor (CF)	0.0033

****

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

PATRICK TSE
Laboratory Manager

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Website: www.wellab.com.hk

TEST REPORT

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

ATTN: **Mr. W. K. Tang**

Test Report No.:	C/160304/2
Date of Issue:	2016-03-07
Date Received:	2016-03-04
Date Tested:	2016-03-04
Date Completed:	2016-03-07
Next Due Date:	2016-05-06
Page:	1 of 1

Certificate of Calibration

Item for Calibration:

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

Test Conditions:

Room Temperature	: 24 degree Celsius
Relative Humidity	: 63 %

Test Specifications & Methodology:

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

Results:

Correlation Factor (CF)	0.0036

****

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

PATRICK TSE
Laboratory Manager

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Website: www.wellab.com.hk

TEST REPORT

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

ATTN: **Mr. W. K. Tang**

Test Report No.:	C/160304/4
Date of Issue:	2016-03-07
Date Received:	2016-03-04
Date Tested:	2016-03-04
Date Completed:	2016-03-07
Next Due Date:	2016-05-06
Page:	1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3B
Serial No.	: 541146
Sensitivity (K) 1 CPM	: 0.001 mg/m^3
Sen. Adjustment Scale Setting	: 625 CPM
Equipment No.	: A-02-07

Test Conditions:

Room Temperature	: 24 degree Celsius
Relative Humidity	: 63 %

Test Specifications & Methodology:

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

Results:

Correlation Factor (CF)	0.0036

****

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

PATRICK TSE
Laboratory Manager

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TEST REPORT

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

ATTN: **Mr. W. K. Tang**

Test Report No.:	C/160226/1
Date of Issue:	2016-02-29
Date Received:	2016-02-26
Date Tested:	2016-02-26
Date Completed:	2016-02-29
Next Due Date:	2016-04-25
Page:	1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3B
Serial No.	: 095039
Sensitivity (K) 1 CPM	: 0.001 mg/m^3
Sen. Adjustment Scale Setting	: 764 CPM
Equipment No.	: A-02-08

Test Conditions:

Room Temperature	: 22 degree Celsius
Relative Humidity	: 54 %

Test Specifications & Methodology:

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

Results:

Correlation Factor (CF)	0.0033

****

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

Patrick Tse

PATRICK TSE
Laboratory Manager

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Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

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

ATTN: **Mr. W. K. Tang**

Test Report No.:	C/160226/3
Date of Issue:	2016-02-29
Date Received:	2016-02-26
Date Tested:	2016-02-26
Date Completed:	2016-02-29
Next Due Date:	2016-04-25
Page:	1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3B
Serial No.	: 095029
Sensitivity (K) 1 CPM	: 0.001 mg/m^3
Sen. Adjustment Scale Setting	: 551 CPM
Equipment No.	: A-02-10

Test Conditions:

Room Temperature	: 22 degree Celsius
Relative Humidity	: 54 %

Test Specifications & Methodology:

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

Results:

Correlation Factor (CF)	0.0032

****

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PATRICK TSE
Laboratory Manager

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TEST REPORT

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

ATTN: **Mr. W.K. Tang**

Test Report No.:	C/N/150828/1
Date of Issue:	2015-08-31
Date Received:	2015-08-28
Date Tested:	2015-08-28
Date Completed:	2015-08-31
Next Due Date:	2016-08-30
Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 957
Serial No.	: 21455
Microphone No.	: 43730
Equipment No.	: N-08-07

Test conditions:

Room Temperatre	: 24 degree Celsius
Relative Humidity	: 58%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

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

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

Patrick Tse
PATRICK TSE
Laboratory Manager

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TEST REPORT

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

ATTN: **Mr. W.K. Tang**

Test Report No.:	C/N/150821/3
Date of Issue:	2015-08-24
Date Received:	2015-08-21
Date Tested:	2015-08-21
Date Completed:	2015-08-24
Next Due Date:	2016-08-23
Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 957
Serial No.	: 21459
Microphone No.	: 43676
Equipment No.	: N-08-08

Test conditions:

Room Temperatre	: 22 degree Celsius
Relative Humidity	: 54%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

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

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PATRICK TSE
Laboratory Manager

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TEST REPORT

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

ATTN: **Mr. W.K. Tang**

Test Report No.:	C/N/150821/1
Date of Issue:	2015-08-24
Date Received:	2015-08-21
Date Tested:	2015-08-21
Date Completed:	2015-08-24
Next Due Date:	2016-08-23
Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 957
Serial No.	: 21460
Microphone No.	: 43679
Equipment No.	: N-08-09

Test conditions:

Room Temperatre	: 22 degree Celsius
Relative Humidity	: 54%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

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

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Laboratory Manager

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TEST REPORT

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

ATTN: **Mr. W.K. Tang**

Test Report No.:	C/N/151127/3
Date of Issue:	2015-11-30
Date Received:	2015-11-27
Date Tested:	2015-11-27
Date Completed:	2015-11-30
Next Due Date:	2016-11-29
Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 957
Serial No.	: 23851
Microphone No.	: 48532
Equipment No.	: N-08-12

Test conditions:

Room Temperatre	: 24 degree Celsius
Relative Humidity	: 62%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

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

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

Patrick Tse

PATRICK TSE
Laboratory Manager

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TEST REPORT

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

Test Report No.:	C/N/151003/1
Date of Issue:	2015-10-04
Date Received:	2015-10-03
Date Tested:	2015-10-03
Date Completed:	2015-10-04
Next Due Date:	2016-10-03

ATTN: **Mr. W.K. Tang**

Page: 1 of 1

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 24803
Equipment No.	: N-09-03

Test conditions:

Room Temperatre	: 23 degree Celsius
Relative Humidity	: 57%

Methodology:

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

Results:

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

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

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Laboratory Manager

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TEST REPORT

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

ATTN: **Mr. W.K. Tang**

Test Report No.:	C/N/150821/4
Date of Issue:	2015-08-24
Date Received:	2015-08-21
Date Tested:	2015-08-21
Date Completed:	2015-08-24
Next Due Date:	2016-08-23
Page:	1 of 1

Certificate of Calibration

Item for calibration:

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

Test conditions:

Room Temperatre	: 22 degree Celsius
Relative Humidity	: 54%

Methodology:

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

Results:

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

PREPARED AND CHECKED BY:
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PATRICK TSE
Laboratory Manager

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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)	TE-5170 A-01-46	ORIFICE A-04-06	29 March 2016	28 May 2016
AM2	Rooftop of Hong Kong & Islands Regional Office, WSD	TE-5170 A-01-44	ORIFICE A-04-06	29 March 2016	28 May 2016
AM3	Rooftop of Wan Chai East PTW	TE-5170 A-01-48	ORIFICE A-04-06	29 March 2016	28 May 2016
AM5	Western Wholesale Food Market	GMW GS-2310 (S/N 0143)	CM-AIR-43 (S/N 0438320)	2 March 2016	1 May 2016
1-hr TSP					
		Hal-HPC300 (A.26.01)		11 February 2016	10 April 2016
		LD-3B (A-02-01)		7 March 2016	6 May 2016
		LD-3B (A-02-05)		22 February 2016	21 April 2016
		LD-3B (A-02-07)		7 March 2016	6 May 2016
		LD-3B (A-02-08)		29 February 2016	25 April 2016
				25 April 2016	24 June 2016
		LD-3B (A-02-10)		29 February 2016	25 April 2016

Monitoring Equipment

Monitoring Equipment	Model & Serial No.	Last Calibration Date	Next Calibration Date
Calibrator	B&K4231 (N.02.03)	24 August 2015	23 August 2016
	SV30A (N.09.01)	21 September 2015	20 September 2016
	SV30A (N.09.03)	4 October 2015	3 October 2016
	Casella CEL-120/1 (S/N 3421612)	15 December 2015	15 December 2016
Sound Level Meter	SVAN957 (N.08.07)	31 August 2015	30 August 2016
	SVAN957 (N.08.08)	24 August 2015	23 August 2016
	SVAN957 (N.08.10)	30 November 2015	29 November 2016
	Casella CEL-633A (S/N 3521757)	15 December 2015	15 December 2016

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
NM4	Rooftop of Block A, Kwan Yick Building Phase III

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AM5
Calibrated by	:	K.T.Ho
Date	:	02/03/2016

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 0143

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	14 Mar 2015
Slope (m)	:	2.09532
Intercept (b)	:	-0.03812
Correlation Coefficient(r)	:	0.99994

Standard Condition

Pstd (hpa)	:	1013
Tstd (K)	:	298.18

Calibration Condition

Pa (hpa)	:	1013
Ta(K)	:	296

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	10.2	3.205	1.548	57	57.19
2	13 holes	8.8	2.976	1.439	53	53.18
3	10 holes	6.4	2.538	1.230	46	46.16
4	7 holes	4.0	2.007	0.976	35	35.12
5	5 holes	2.4	1.554	0.760	27	27.09

Sampler Calibration Relationship

Slope(m):38.527 Intercept(b): -2.114 Correlation Coefficient(r): 0.9991

Checked by: Magnum Fan Date: 10/03/2016

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. : C156917
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC15-2756) Date of Receipt / 收件日期 : 4 December 2015

Description / 儀器名稱	:	Acoustic Calibrator
Manufacturer / 製造商	:	Casella
Model No. / 型號	:	CEL-120/1
Serial No. / 編號	:	3421612
Supplied By / 委託者	:	Envirotech Services Co. Room 113, 1/F, My Loft, 9 Hoi Wing Road, Tuen Mun, New Territories, 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 : 15 December 2015

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results do not exceed 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 / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By 測試 : H T Wong, Technical Officer

Certified By 核證 : K C Lee, Project Engineer

Date of Issue 簽發日期 : 15 December 2015

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。

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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. : C156917
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	C153519
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	94.1	± 0.25	± 0.2
114 dB, 1 kHz	114.1		

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	1.000 0	1 kHz ± 5 Hz	± 0.1

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.
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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. : C156918
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序号編號 : IC15-2756) Date of Receipt / 收件日期 : 4 December 2015

Description / 儀器名稱	:	Sound Level Meter
Manufacturer / 製造商	:	Casella
Model No. / 型號	:	CEL-633A
Serial No. / 編號	:	3521757
Supplied By / 委託者	:	Envirotech Services Co. Room 113, 1/F, My Loft, 9 Hoi Wing Road, Tuen Mun, New Territories, 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 : 15 December 2015

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results do not exceed 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 / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By 測試 : H T Wong, Technical Officer

Certified By 核證 : K C Lee, Project Engineer

Date of Issue 簽發日期 : 15 December 2015

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.
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Certificate of Calibration
校正證書

Certificate No. : C156918
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 using the Casella Acoustic Calibrator CEL-120/1, S/N : 3421612 was performed before the test.

3. The results presented are the mean of 3 measurement at each calibration point.

4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C150014
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)
Time Weighting	Frequency Weighting	Level (dB)	Freq. (kHz)		
L_F	A	114.00	1	113.9	± 1.1

6.1.2 Linearity

UUT Setting		Applied Value		UUT Reading (dB)
Time Weighting	Frequency Weighting	Level (dB)	Freq. (kHz)	
L_F	A	114.00	1	113.9 (Ref.)
		104.00		103.9
		94.00		93.9

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)
Time Weighting	Frequency Weighting	Level (dB)	Freq. (kHz)		
L_F	A	114.00	1	113.9	Ref.
L_S				113.9	± 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.
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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. : C156918
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)
Time Weighting	Frequency Weighting	Level (dB)	Freq.		
L_F	A	94.00	63 Hz	87.7	-26.2 ± 1.5
			125 Hz	97.7	-16.1 ± 1.5
			250 Hz	105.2	-8.6 ± 1.4
			500 Hz	110.6	-3.2 ± 1.4
			1 kHz	113.9	Ref.
			2 kHz	115.1	+1.2 ± 1.6
			4 kHz	114.8	+1.0 ± 1.6
			8 kHz	112.4	-1.1(+2.1 ; -3.1)
			12.5 kHz	108.3	-4.3(+3.0 ; -6.0)

6.3.2 C-Weighting

UUT Setting		Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Time Weighting	Frequency Weighting	Level (dB)	Freq.		
L_F	C	94.00	63 Hz	113.0	-0.8 ± 1.5
			125 Hz	113.7	-0.2 ± 1.0
			250 Hz	113.9	0.0 ± 1.0
			500 Hz	113.9	0.0 ± 1.0
			1 kHz	113.9	Ref.
			2 kHz	113.7	-0.2 ± 1.0
			4 kHz	113.0	-0.8 ± 1.0
			8 kHz	110.6	-3.0 (+1.5 ; -3.0)
			12.5 kHz	106.4	-6.2 (+3.0 ; -6.0)

Remarks : - UUT Microphone Model No. : CEL-251 & S/N : 1950

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value :

114 dB	: 63 Hz - 125 Hz	: ± 0.45 dB
	250 Hz - 500 Hz	: ± 0.40 dB
	1 kHz	: ± 0.30 dB
	2 kHz - 4 kHz	: ± 0.45 dB
	8 kHz	: ± 0.55 dB
	12.5 kHz	: ± 0.80 dB
104 dB	: 1 kHz	: ± 0.10 dB (Ref. 114 dB)
94 dB	: 1 kHz	: ± 0.10 dB (Ref. 114 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.
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TISCH Environmental

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513.467.9000
877.263.7610 TOLL FREE
513.467.9009 FAX

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Mar 24, 2015 Rootsmeter S/N 0438320 Ta (K) - 292
Operator Tisch Orifice I.D. - 2454 Pa (mm) - 756.92

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	1.4460	3.2	2.00
2	NA	NA	1.00	1.0300	6.4	4.00
3	NA	NA	1.00	0.9180	7.9	5.00
4	NA	NA	1.00	0.8780	8.7	5.50
5	NA	NA	1.00	0.7240	12.6	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
1.0121	0.6999	1.4258		0.9958	0.6886	0.8784
1.0078	0.9785	2.0163		0.9916	0.9627	1.2422
1.0057	1.0955	2.2543		0.9895	1.0779	1.3888
1.0047	1.1443	2.3644		0.9885	1.1258	1.4566
0.9994	1.3805	2.8515		0.9833	1.3582	1.7568
Qstd slope (m) =		2.09532		Qa slope (m) =		1.31205
intercept (b) =		-0.03812		intercept (b) =		-0.02349
coefficient (r) =		0.99994		coefficient (r) =		0.99994
y axis = SQRT[H2O(Pa/760)(298/Ta)]				y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

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

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

For subsequent flow rate calculations:

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

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA11003/46/0004

Station: AM1 - Chan's Creative School Operator: WK

Date: 29-Mar-16 Next Due Date: 28-May-16

Equipment No.: A-01-46 Serial No. 1315

Ambient Condition			
Temperature, Ta (K)	291.1	Pressure, Pa (mmHg)	768.5

Orifice Transfer Standard Information					
Serial No.:	2896	Slope, mc (CFM)	0.0598	Intercept, bc	-0.05079
Last Calibration Date:	4-Mar-16	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	3-Mar-17	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.3	3.42	58.05	7.4	2.77
2	9.4	3.12	53.02	6.2	2.53
3	7.7	2.82	48.07	5.0	2.28
4	5.1	2.30	39.28	3.4	1.88
5	3.3	1.85	31.76	2.1	1.47

By Linear Regression of Y on X

Slope , mw = 0.0489 **Intercept, bw =** -0.0663

Correlation coefficient* = 0.9996

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.01**

Remarks:

Conducted by: Wk Tang Signature: Kwai Date: 29/3/16

Checked by: TA Signature: Date: 29 March 2016

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA11003/44/0004

Station: AM2 - Hong Kong & Islands Regional Office, WSD Operator: WK

Date: 29-Mar-16 Next Due Date: 28-May-16

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

Ambient Condition			
Temperature, Ta (K)	290.6	Pressure, Pa (mmHg)	768.4

Orifice Transfer Standard Information					
Serial No.:	2896	Slope, mc (CFM)	0.0598	Intercept, bc	-0.05079
Last Calibration Date:	4-Mar-16	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	3-Mar-17	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.2	3.41	57.84	7.4	2.77
2	9.2	3.09	52.51	6.2	2.54
3	7.4	2.77	47.18	5.0	2.28
4	5.1	2.30	39.31	3.3	1.85
5	3.2	1.82	31.31	2.2	1.51

By Linear Regression of Y on X

Slope , mw = 0.0484 **Intercept, bw =** -0.0197

Correlation coefficient* = 0.9991

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.10**

Remarks:

Conducted by: WK Tang Signature: Kwan Date: 29/3/16

Checked by: [illegible] Signature: Date: 29 March 2016

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA11003/48/0004

Station: AM3 - Wan Chai East PTW Operator: WK

Date: 29-Mar-16 Next Due Date: 28-May-16

Equipment No.: A-01-48 Serial No. 1792

Ambient Condition			
Temperature, Ta (K)	290.6	Pressure, Pa (mmHg)	769.4

Orifice Transfer Standard Information					
Serial No.:	2896	Slope, mc (CFM)	0.0598	Intercept, bc	-0.05079
Last Calibration Date:	4-Mar-16	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	3-Mar-17	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.4	3.44	58.39	7.7	2.83
2	9.9	3.21	54.47	6.6	2.62
3	7.6	2.81	47.83	5.2	2.32
4	5.0	2.28	38.96	3.3	1.85
5	3.2	1.82	31.33	2.1	1.48

By Linear Regression of Y on X

Slope , mw = 0.0499 **Intercept, bw =** -0.0842

Correlation coefficient* = 0.9997

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.09**

Remarks:

Conducted by: Wk Tang Signature: Kwai Date: 29/3/16

Checked by: LAV Signature: Date: 29 March 2016

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA11003/15/0004

Station: AM4_2 - A location within the DSD Central PTW Operator: WK

Date: 29-Mar-16 Next Due Date: 28-May-16

Equipment No.: A-01-15 Serial No. 10576

Ambient Condition			
Temperature, Ta (K)	291.6	Pressure, Pa (mmHg)	769.2

Orifice Transfer Standard Information					
Serial No.:	2896	Slope, mc (CFM)	0.0598	Intercept, bc	-0.05079
Last Calibration Date:	4-Mar-16	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	3-Mar-17	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.8	3.49	59.28	7.9	2.86
2	9.6	3.15	53.55	6.5	2.59
3	7.5	2.79	47.43	5.2	2.32
4	5.1	2.30	39.26	3.4	1.88
5	3.4	1.88	32.21	2.2	1.51

By Linear Regression of Y on X

Slope , mw = 0.0501 **Intercept, bw =** -0.0901

Correlation coefficient* = 0.9993

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.12**

Remarks:

Conducted by: WK Tang Signature: Kwei Date: 29/3/16

Checked by: KY Signature: Date: 29 March 2016

TISCH Environmental

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ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Mar 04, 2016 Rootsmeter S/N 0438320 Ta (K) - 295
Operator Tisch Orifice I.D. - 2896 Pa (mm) - 755.65

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	1.4340	3.2	2.00
2	NA	NA	1.00	1.0250	6.4	4.00
3	NA	NA	1.00	0.9150	7.9	5.00
4	NA	NA	1.00	0.8770	8.7	5.50
5	NA	NA	1.00	0.7210	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)
1.0001	0.6974	1.4173
0.9959	0.9716	2.0044
0.9938	1.0861	2.2410
0.9928	1.1320	2.3503
0.9875	1.3696	2.8346

Qstd slope (m) = 2.11176
intercept (b) = -0.05079
coefficient (r) = 0.99982

y axis = SQRT[H2O(Pa/760)(298/Ta)]

Va	(x axis) Qa	(y axis)
0.9957	0.6944	0.8836
0.9915	0.9674	1.2496
0.9894	1.0814	1.3971
0.9885	1.1271	1.4653
0.9831	1.3636	1.7672

Qa slope (m) = 1.32235
intercept (b) = -0.03166
coefficient (r) = 0.99982

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}

WELLAB 匯力 Testing & Research

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Rms 1516, 1701 & 1716, Technology Park,
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Website: www.wellab.com.hk

TEST REPORT

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

ATTN: **Mr. W.K. Tang**

Test Report No.:	C/160304/1
Date of Issue:	2016-03-07
Date Received:	2016-03-04
Date Tested:	2016-03-04
Date Completed:	2016-03-07
Next Due Date:	2016-05-06
Page:	1 of 1

Certificate of Calibration

Item for Calibration:

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

Test Conditions:

Room Temperature	: 24 degree Celsius
Relative Humidity	: 63 %

Test Specifications & Methodology:

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

Results:

Correlation Factor (CF)	0.0034

****

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

Patrick Tse

PATRICK TSE
Laboratory Manager

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TEST REPORT

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

ATTN: **Mr. WK Tang**

Test Report No.:	C/160219/1
Date of Issue:	2016-02-22
Date Received:	2016-02-19
Date Tested:	2016-02-19
Date Completed:	2016-02-22
Next Due Date:	2016-04-21
Page:	1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3B
Serial No.	: 954253
Sensitivity (K) 1 CPM	: 0.001 mg/m^3
Sen. Adjustment Scale Setting	: 772 CPM
Equipment No.	: A-02-05

Test Conditions:

Room Temperature	: 21 degree Celsius
Relative Humidity	: 55 %

Test Specifications & Methodology:

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

Results:

Correlation Factor (CF)	0.0034

****

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PATRICK TSE
Laboratory Manager

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TEST REPORT

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

ATTN: **Mr. W. K. Tang**

Test Report No.:	C/160226/1
Date of Issue:	2016-02-29
Date Received:	2016-02-26
Date Tested:	2016-02-26
Date Completed:	2016-02-29
Next Due Date:	2016-04-25
Page:	1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3B
Serial No.	: 095039
Sensitivity (K) 1 CPM	: 0.001 mg/m^3
Sen. Adjustment Scale Setting	: 764 CPM
Equipment No.	: A-02-08

Test Conditions:

Room Temperature	: 22 degree Celsius
Relative Humidity	: 54 %

Test Specifications & Methodology:

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

Results:

Correlation Factor (CF)	0.0033

****

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

Patrick Tse

PATRICK TSE
Laboratory Manager

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
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Shatin, NT, Hong Kong

Test Report No.:	C/160422/1
Date of Issue:	2016-04-25
Date Received:	2016-04-22
Date Tested:	2016-04-22
Date Completed:	2016-04-25
Next Due Date:	2016-06-24

ATTN: **Mr. W. K. Tang**

Page: 1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3B
Serial No.	: 095039
Sensitivity (K) 1 CPM	: 0.001 mg/m^3
Sen. Adjustment Scale Setting	: 764 CPM
Equipment No.	: A-02-08

Test Conditions:

Room Temperature	: 24 degree Celsius
Relative Humidity	: 56 %

Test Specifications & Methodology:

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

Results:

Correlation Factor (CF)	0.0035

****

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Laboratory Manager

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TEST REPORT

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

ATTN: **Mr. W. K. Tang**

Test Report No.:	C/160226/4
Date of Issue:	2016-02-29
Date Received:	2016-02-26
Date Tested:	2016-02-26
Date Completed:	2016-02-29
Next Due Date:	2016-04-25
Page:	1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Dust Monitor
Manufacturer	: Met One Instruments
Model No.	: AEROCET-531
Serial No.	: N6734
Flow rate	:0.1 cfm
Zero Count Test	:0 mg (The result of the 2-minute sample)
Equipment No.	: A-02-13

Test Conditions:

Room Temperature	: 22 degree Celsius
Relative Humidity	: 54 %

Test Specifications & Methodology:

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

Results:

Correlation Factor (CF)	1.099

****

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TEST REPORT

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

ATTN: **Mr. W. K. Tang**

Test Report No.:	C/160205/1
Date of Issue:	2016-02-11
Date Received:	2016-02-05
Date Tested:	2016-02-05
Date Completed:	2016-02-11
Next Due Date:	2016-04-10
Page:	1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Handheld Particle Counter
Manufacturer	: Hal Technology
Model No.	: Hal-HPC300
Serial No.	: 3020408
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 5 minutes
Equipment No.	: A-26-01

Test Conditions:

Room Temperature	: 20 degree Celsius
Relative Humidity	: 55 %

Test Specifications & Methodology:

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

Results:

Correlation Factor (CF)	1.109

****

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PATRICK TSE
Laboratory Manager

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TEST REPORT

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

ATTN: **Mr. W. K. Tang**

Test Report No.:	C/160205/2
Date of Issue:	2016-02-11
Date Received:	2016-02-05
Date Tested:	2016-02-05
Date Completed:	2016-02-11
Next Due Date:	2016-04-10
Page:	1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Handheld Particle Counter
Manufacturer	: Hal Technology
Model No.	: Hal-HPC300
Serial No.	: 3020410
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 5 minutes
Equipment No.	: A-26-03

Test Conditions:

Room Temperature	: 20 degree Celsius
Relative Humidity	: 55 %

Test Specifications & Methodology:

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

Results:

Correlation Factor (CF)	1.161

****

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

PATRICK TSE
Laboratory Manager

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

TEST REPORT

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

ATTN: **Mr. W.K. Tang**

Test Report No.:	C/N/150828/1
Date of Issue:	2015-08-31
Date Received:	2015-08-28
Date Tested:	2015-08-28
Date Completed:	2015-08-31
Next Due Date:	2016-08-30
Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 957
Serial No.	: 21455
Microphone No.	: 43730
Equipment No.	: N-08-07

Test conditions:

Room Temperatre	: 24 degree Celsius
Relative Humidity	: 58%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

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

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

Patrick Tse
PATRICK TSE
Laboratory Manager

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TEST REPORT

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

ATTN: **Mr. W.K. Tang**

Test Report No.:	C/N/150821/3
Date of Issue:	2015-08-24
Date Received:	2015-08-21
Date Tested:	2015-08-21
Date Completed:	2015-08-24
Next Due Date:	2016-08-23
Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 957
Serial No.	: 21459
Microphone No.	: 43676
Equipment No.	: N-08-08

Test conditions:

Room Temperatre	: 22 degree Celsius
Relative Humidity	: 54%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

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

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

Patrick Tse
PATRICK TSE
Laboratory Manager

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Website: www.wellab.com.hk

TEST REPORT

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

ATTN: **Mr. W.K. Tang**

Test Report No.:	C/N/151127/1
Date of Issue:	2015-11-30
Date Received:	2015-11-27
Date Tested:	2015-11-27
Date Completed:	2015-11-30
Next Due Date:	2016-11-29
Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 957
Serial No.	: 23853
Microphone No.	: 48530
Equipment No.	: N-08-10

Test conditions:

Room Temperatre	: 24 degree Celsius
Relative Humidity	: 62%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

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

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

PATRICK TSE
Laboratory Manager

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Website: www.wellab.com.hk

TEST REPORT

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

Test Report No.:	C/N/150918/3
Date of Issue:	2015-09-21
Date Received:	2015-09-18
Date Tested:	2015-09-18
Date Completed:	2015-09-21
Next Due Date:	2016-09-20
Page:	1 of 1

ATTN: **Mr. W.K. Tang**

Item for calibration:

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

Test conditions:

Room Temperatre	: 25 degree Celsius
Relative Humidity	: 58%

Methodology:

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

Results:

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

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

PATRICK TSE
Laboratory Manager

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Website: www.wellab.com.hk

TEST REPORT

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

Test Report No.:	C/N/151003/1
Date of Issue:	2015-10-04
Date Received:	2015-10-03
Date Tested:	2015-10-03
Date Completed:	2015-10-04
Next Due Date:	2016-10-03
Page:	1 of 1

ATTN: **Mr. W.K. Tang**

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 24803
Equipment No.	: N-09-03

Test conditions:

Room Temperatre	: 23 degree Celsius
Relative Humidity	: 57%

Methodology:

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

Results:

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

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

PATRICK TSE
Laboratory Manager

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Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

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

ATTN: **Mr. W.K. Tang**

Test Report No.:	C/N/150821/4
Date of Issue:	2015-08-24
Date Received:	2015-08-21
Date Tested:	2015-08-21
Date Completed:	2015-08-24
Next Due Date:	2016-08-23
Page:	1 of 1

Certificate of Calibration

Item for calibration:

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

Test conditions:

Room Temperatre	: 22 degree Celsius
Relative Humidity	: 54%

Methodology:

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

Results:

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

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

PATRICK TSE
Laboratory Manager

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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)	TE-5170 A-01-46	ORIFICE A-04-06	29 March 2016	28 May 2016
		TE-5170 A-01-46	ORIFICE A-04-06	26 May 2016	25 July 2016
AM2	Rooftop of Hong Kong & Islands Regional Office, WSD	TE-5170 A-01-44	ORIFICE A-04-06	29 March 2016	28 May 2016
		TE-5170 A-01-44	ORIFICE A-04-06	26 May 2016	25 July 2016
AM3	Rooftop of Wan Chai East PTW	TE-5170 A-01-48	ORIFICE A-04-06	29 March 2016	28 May 2016
		TE-5170 A-01-48	ORIFICE A-04-06	26 May 2016	25 July 2016
AM5	Western Wholesale Food Market	GMW GS-2310 (S/N 0143)	CM-AIR-43 (S/N 0438320)	2 March 2016	1 May 2016
		GMW GS-2310 (S/N 0143)	CM-AIR-43 (S/N 0438320)	2 May 2016	1 July 2016
1-hr TSP					
		LD-3B (A-02-01)		7 March 2016	6 May 2016
		LD-3B (A-02-01)		9 May 2016	5 July 2016
		LD-3B (A-02-04)		9 May 2016	5 July 2016
		LD-3B (A-02-06)		9 May 2016	5 July 2016
		LD-3B (A-02-08)		25 April 2016	24 June 2016
		LD-3B (A-02-09)		25 April 2016	24 June 2016

Monitoring Equipment

Monitoring Equipment	Model & Serial No.	Last Calibration Date	Next Calibration Date
Calibrator	B&K4231 (N.02.01)	7 November 2015	6 November 2016
	B&K4231 (N.02.03)	24 August 2015	23 August 2016
	SV30A (N.09.03)	4 October 2015	3 October 2016
	SV30A (N.09.04)	4 October 2015	3 October 2016
	SV30A (N.09.05)	4 October 2015	3 October 2016
	Casella CEL-120/1 (S/N 3421612)	15 December 2015	15 December 2016
Sound Level Meter	SVAN957 (N.08.07)	31 August 2015	30 August 2016
	SVAN957 (N.08.08)	24 August 2015	23 August 2016
	SVAN957 (N.08.10)	30 November 2015	29 November 2016
	Casella CEL-633A (S/N 3521757)	15 December 2015	15 December 2016

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
NM4	Rooftop of Block A, Kwan Yick Building Phase III

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AM5
Calibrated by	:	K.T.Ho
Date	:	02/03/2016

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 0143

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	14 Mar 2015
Slope (m)	:	2.09532
Intercept (b)	:	-0.03812
Correlation Coefficient(r)	:	0.99994

Standard Condition

Pstd (hpa)	:	1013
Tstd (K)	:	298.18

Calibration Condition

Pa (hpa)	:	1013
Ta(K)	:	296

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	10.2	3.205	1.548	57	57.19
2	13 holes	8.8	2.976	1.439	53	53.18
3	10 holes	6.4	2.538	1.230	46	46.16
4	7 holes	4.0	2.007	0.976	35	35.12
5	5 holes	2.4	1.554	0.760	27	27.09

Sampler Calibration Relationship

Slope(m):38.527 Intercept(b): -2.114 Correlation Coefficient(r): 0.9991

Checked by: Magnum Fan Date: 10/03/2016

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AM5
Calibrated by	:	K.T.Ho
Date	:	02/05/2016

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 0143

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	14 Mar 2016
Slope (m)	:	2.10326
Intercept (b)	:	-0.06696
Correlation Coefficient(r)	:	0.99989

Standard Condition

Pstd (hpa)	:	1013
Tstd (K)	:	298.18

Calibration Condition

Pa (hpa)	:	1012
Ta(K)	:	298

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	11.2	3.345	1.622	58	57.97
2	13 holes	9.4	3.064	1.489	52	51.97
3	10 holes	7.2	2.682	1.307	46	45.98
4	7 holes	4.9	2.213	1.084	38	37.98
5	5 holes	2.7	1.642	0.813	27	26.99

Sampler Calibration Relationship

Slope(m):37.534 Intercept(b): -3.233 Correlation Coefficient(r): 0.9992

Checked by: Magnum Fan Date: 12/05/2016

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 - Mar 24, 2015 Rootsmeter S/N 0438320 Ta (K) - 292
Operator Tisch Orifice I.D. - 2454 Pa (mm) - 756.92

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	1.4460	3.2	2.00
2	NA	NA	1.00	1.0300	6.4	4.00
3	NA	NA	1.00	0.9180	7.9	5.00
4	NA	NA	1.00	0.8780	8.7	5.50
5	NA	NA	1.00	0.7240	12.6	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
1.0121	0.6999	1.4258		0.9958	0.6886	0.8784
1.0078	0.9785	2.0163		0.9916	0.9627	1.2422
1.0057	1.0955	2.2543		0.9895	1.0779	1.3888
1.0047	1.1443	2.3644		0.9885	1.1258	1.4566
0.9994	1.3805	2.8515		0.9833	1.3582	1.7568
Qstd slope (m) =		2.09532		Qa slope (m) =		1.31205
intercept (b) =		-0.03812		intercept (b) =		-0.02349
coefficient (r) =		0.99994		coefficient (r) =		0.99994
y axis = SQRT[H2O(Pa/760)(298/Ta)]				y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

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

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

For subsequent flow rate calculations:

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

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. : C156918
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序号編號 : IC15-2756) Date of Receipt / 收件日期 : 4 December 2015

Description / 儀器名稱	:	Sound Level Meter
Manufacturer / 製造商	:	Casella
Model No. / 型號	:	CEL-633A
Serial No. / 編號	:	3521757
Supplied By / 委託者	:	Envirotech Services Co. Room 113, 1/F, My Loft, 9 Hoi Wing Road, Tuen Mun, New Territories, 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 : 15 December 2015

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results do not exceed 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 / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By 測試 : H T Wong, Technical Officer

Certified By 核證 : K C Lee, Project Engineer

Date of Issue 簽發日期 : 15 December 2015

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.
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Certificate of Calibration
校正證書

Certificate No. : C156918
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 using the Casella Acoustic Calibrator CEL-120/1, S/N : 3421612 was performed before the test.

3. The results presented are the mean of 3 measurement at each calibration point.

4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C150014
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)
Time Weighting	Frequency Weighting	Level (dB)	Freq. (kHz)		
L_F	A	114.00	1	113.9	± 1.1

6.1.2 Linearity

UUT Setting		Applied Value		UUT Reading (dB)
Time Weighting	Frequency Weighting	Level (dB)	Freq. (kHz)	
L_F	A	114.00	1	113.9 (Ref.)
		104.00		103.9
		94.00		93.9

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)
Time Weighting	Frequency Weighting	Level (dB)	Freq. (kHz)		
L_F	A	114.00	1	113.9	Ref.
L_S				113.9	± 0.3

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Sun Creation Engineering Limited – Calibration & Testing Laboratory
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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. : C156918
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)
Time Weighting	Frequency Weighting	Level (dB)	Freq.		
L_F	A	94.00	63 Hz	87.7	-26.2 ± 1.5
			125 Hz	97.7	-16.1 ± 1.5
			250 Hz	105.2	-8.6 ± 1.4
			500 Hz	110.6	-3.2 ± 1.4
			1 kHz	113.9	Ref.
			2 kHz	115.1	+1.2 ± 1.6
			4 kHz	114.8	+1.0 ± 1.6
			8 kHz	112.4	-1.1(+2.1 ; -3.1)
			12.5 kHz	108.3	-4.3(+3.0 ; -6.0)

6.3.2 C-Weighting

UUT Setting		Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Time Weighting	Frequency Weighting	Level (dB)	Freq.		
L_F	C	94.00	63 Hz	113.0	-0.8 ± 1.5
			125 Hz	113.7	-0.2 ± 1.0
			250 Hz	113.9	0.0 ± 1.0
			500 Hz	113.9	0.0 ± 1.0
			1 kHz	113.9	Ref.
			2 kHz	113.7	-0.2 ± 1.0
			4 kHz	113.0	-0.8 ± 1.0
			8 kHz	110.6	-3.0 (+1.5 ; -3.0)
			12.5 kHz	106.4	-6.2 (+3.0 ; -6.0)

Remarks : - UUT Microphone Model No. : CEL-251 & S/N : 1950

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value :

114 dB	: 63 Hz - 125 Hz	: ± 0.45 dB
	250 Hz - 500 Hz	: ± 0.40 dB
	1 kHz	: ± 0.30 dB
	2 kHz - 4 kHz	: ± 0.45 dB
	8 kHz	: ± 0.55 dB
	12.5 kHz	: ± 0.80 dB
104 dB	: 1 kHz	: ± 0.10 dB (Ref. 114 dB)
94 dB	: 1 kHz	: ± 0.10 dB (Ref. 114 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。

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. : C156917
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC15-2756) Date of Receipt / 收件日期 : 4 December 2015

Description / 儀器名稱	:	Acoustic Calibrator
Manufacturer / 製造商	:	Casella
Model No. / 型號	:	CEL-120/1
Serial No. / 編號	:	3421612
Supplied By / 委託者	:	Envirotech Services Co. Room 113, 1/F, My Loft, 9 Hoi Wing Road, Tuen Mun, New Territories, 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 : 15 December 2015

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results do not exceed 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 / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By 測試 : H T Wong, Technical Officer

Certified By 核證 : K C Lee, Project Engineer

Date of Issue 簽發日期 : 15 December 2015

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.
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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
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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. : C156917
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	C153519
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	94.1	± 0.25	± 0.2
114 dB, 1 kHz	114.1		

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	1.000 0	1 kHz ± 5 Hz	± 0.1

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.
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Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA11003/46/0004

Station: AM1 - Chan's Creative School Operator: WK

Date: 29-Mar-16 Next Due Date: 28-May-16

Equipment No.: A-01-46 Serial No. 1315

Ambient Condition			
Temperature, Ta (K)	291.1	Pressure, Pa (mmHg)	768.5

Orifice Transfer Standard Information					
Serial No.:	2896	Slope, mc (CFM)	0.0598	Intercept, bc	-0.05079
Last Calibration Date:	4-Mar-16	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	3-Mar-17	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.3	3.42	58.05	7.4	2.77
2	9.4	3.12	53.02	6.2	2.53
3	7.7	2.82	48.07	5.0	2.28
4	5.1	2.30	39.28	3.4	1.88
5	3.3	1.85	31.76	2.1	1.47

By Linear Regression of Y on X

Slope , mw = 0.0489 **Intercept, bw =** -0.0663

Correlation coefficient* = 0.9996

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.01**

Remarks:

Conducted by: Wk Tang Signature: Kwai Date: 29/3/16

Checked by: TA Signature: Date: 29 March 2016

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA11003/46/0005

Station: AM1 - Chan's Creative School
Operator: WK
Date: 26-May-16
Next Due Date: 25-Jul-16
Equipment No.: A-01-46
Serial No. 1315

Ambient Condition			
Temperature, Ta (K)	299.7	Pressure, Pa (mmHg)	768.6

Orifice Transfer Standard Information					
Serial No.:	2896	Slope, mc (CFM)	0.0598	Intercept, bc	-0.05079
Last Calibration Date:	4-Mar-16	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	3-Mar-17	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.4	3.39	57.48	7.6	2.76
2	9.8	3.14	53.35	6.8	2.61
3	7.2	2.69	45.85	4.9	2.22
4	5.0	2.24	38.35	3.3	1.82
5	3.3	1.82	31.32	2.1	1.45

By Linear Regression of Y on X

Slope , mw = 0.0509 **Intercept, bw =** -0.1315

Correlation coefficient* = 0.9991

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.22**

Remarks:

Conducted by: Wk. Tang Signature: Kwon Date: 26/5/16
Checked by: KT Signature: Date: 26 May 2016

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA11003/44/0004

Station: AM2 - Hong Kong & Islands Regional Office, WSD Operator: WK

Date: 29-Mar-16 Next Due Date: 28-May-16

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

Ambient Condition			
Temperature, Ta (K)	290.6	Pressure, Pa (mmHg)	768.4

Orifice Transfer Standard Information					
Serial No.:	2896	Slope, mc (CFM)	0.0598	Intercept, bc	-0.05079
Last Calibration Date:	4-Mar-16	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	3-Mar-17	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.2	3.41	57.84	7.4	2.77
2	9.2	3.09	52.51	6.2	2.54
3	7.4	2.77	47.18	5.0	2.28
4	5.1	2.30	39.31	3.3	1.85
5	3.2	1.82	31.31	2.2	1.51

By Linear Regression of Y on X

Slope , mw = 0.0484 **Intercept, bw =** -0.0197

Correlation coefficient* = 0.9991

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.10**

Remarks:

Conducted by: WK Tang Signature: Kwan Date: 29/3/16

Checked by: [illegible] Signature: Date: 29 March 2016

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA11003/44/0005

Station: AM2 - Hong Kong & Islands Regional Office, WSD Operator: WK

Date: 26-May-16 Next Due Date: 25-Jul-16

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

Ambient Condition			
Temperature, Ta (K)	299.1	Pressure, Pa (mmHg)	767.9

Orifice Transfer Standard Information					
Serial No.:	2896	Slope, mc (CFM)	0.0598	Intercept, bc	-0.05079
Last Calibration Date:	4-Mar-16	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	3-Mar-17	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.3	3.37	57.26	7.9	2.82
2	9.1	3.03	51.47	6.1	2.48
3	7.8	2.80	47.72	5.2	2.29
4	5.0	2.24	38.37	3.4	1.85
5	3.1	1.77	30.40	2.0	1.42

By Linear Regression of Y on X

Slope , mw = 0.0512 **Intercept, bw =** -0.1339

Correlation coefficient* = 0.9992

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.24**

Remarks:

Conducted by: Wk Tang Signature: Kwan Date: 26/5/16

Checked by: KF Signature: Date: 26 May 2016

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA11003/48/0004

Station: AM3 - Wan Chai East PTW Operator: WK

Date: 29-Mar-16 Next Due Date: 28-May-16

Equipment No.: A-01-48 Serial No. 1792

Ambient Condition			
Temperature, Ta (K)	290.6	Pressure, Pa (mmHg)	769.4

Orifice Transfer Standard Information					
Serial No.:	2896	Slope, mc (CFM)	0.0598	Intercept, bc	-0.05079
Last Calibration Date:	4-Mar-16	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	3-Mar-17	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.4	3.44	58.39	7.7	2.83
2	9.9	3.21	54.47	6.6	2.62
3	7.6	2.81	47.83	5.2	2.32
4	5.0	2.28	38.96	3.3	1.85
5	3.2	1.82	31.33	2.1	1.48

By Linear Regression of Y on X

Slope , mw = 0.0499 **Intercept, bw =** -0.0842

Correlation coefficient* = 0.9997

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.09**

Remarks:

Conducted by: Wk Tang Signature: Kwai Date: 29/3/16

Checked by: LAV Signature: Date: 29 March 2016

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA11003/48/0005

Station: AM3 - Wan Chai East PTW Operator: WK

Date: 26-May-16 Next Due Date: 25-Jul-16

Equipment No.: A-01-48 Serial No. 1792

Ambient Condition			
Temperature, Ta (K)	299	Pressure, Pa (mmHg)	768.5

Orifice Transfer Standard Information					
Serial No.:	2896	Slope, mc (CFM)	0.0598	Intercept, bc	-0.05079
Last Calibration Date:	4-Mar-16	**mc x Qstd + bc = [ΔH x (Pa/760) x (298/Ta)]$^{1/2}$**			
Next Calibration Date:	3-Mar-17	**Qstd = {[ΔH x (Pa/760) x (298/Ta)]$^{1/2}$ -bc} / mc**			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	[ΔH x (Pa/760) x (298/Ta)]$^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	[ΔW x (Pa/760) x (298/Ta)]$^{1/2}$ **Y-axis**
1	11.7	3.43	58.28	7.6	2.77
2	9.6	3.11	52.87	6.1	2.48
3	7.8	2.80	47.74	5.0	2.24
4	5.1	2.27	38.77	3.3	1.82
5	3.3	1.82	31.35	2.0	1.42

By Linear Regression of Y on X

Slope , mw = **0.0493** **Intercept, bw =** **-0.1116**

Correlation coefficient* = **0.9995**

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

mw x Qstd + bw = [ΔW x (Pa/760) x (298/Ta)]$^{1/2}$

Therefore, Set Point; W = (mw x Qstd + bw)^2 x (760 / Pa) x (Ta / 298) = **4.00**

Remarks:

Conducted by: Ivan Tang Signature: Kwan Date: 26/5/16

Checked by: KL Signature: Date: 26 May 2016

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 - Mar 04, 2016 Rootsmeter S/N 0438320 Ta (K) - 295
Operator Tisch Orifice I.D. - 2896 Pa (mm) - 755.65

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	1.4340	3.2	2.00
2	NA	NA	1.00	1.0250	6.4	4.00
3	NA	NA	1.00	0.9150	7.9	5.00
4	NA	NA	1.00	0.8770	8.7	5.50
5	NA	NA	1.00	0.7210	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)
1.0001	0.6974	1.4173
0.9959	0.9716	2.0044
0.9938	1.0861	2.2410
0.9928	1.1320	2.3503
0.9875	1.3696	2.8346

Qstd slope (m) = 2.11176
intercept (b) = -0.05079
coefficient (r) = 0.99982

y axis = SQRT[H2O(Pa/760)(298/Ta)]

Va	(x axis) Qa	(y axis)
0.9957	0.6944	0.8836
0.9915	0.9674	1.2496
0.9894	1.0814	1.3971
0.9885	1.1271	1.4653
0.9831	1.3636	1.7672

Qa slope (m) = 1.32235
intercept (b) = -0.03166
coefficient (r) = 0.99982

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}

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WELLAB LIMITED
Rms 1516, 1701 & 1716, Technology Park,
18 On Lai Street, Shatin, N.T., Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

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

ATTN: **Mr. W.K. Tang**

Test Report No.:	C/160304/1
Date of Issue:	2016-03-07
Date Received:	2016-03-04
Date Tested:	2016-03-04
Date Completed:	2016-03-07
Next Due Date:	2016-05-06
Page:	1 of 1

Certificate of Calibration

Item for Calibration:

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

Test Conditions:

Room Temperature	: 24 degree Celsius
Relative Humidity	: 63 %

Test Specifications & Methodology:

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

Results:

Correlation Factor (CF)	0.0034

****

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

Patrick Tse

PATRICK TSE
Laboratory Manager

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Website: www.wellab.com.hk

TEST REPORT

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

Test Report No.:	C/160506/1
Date of Issue:	2016-05-09
Date Received:	2016-05-06
Date Tested:	2016-05-06
Date Completed:	2016-05-09
Next Due Date:	2016-07-05

ATTN: **Mr. W.K. Tang**

Page: 1 of 1

Certificate of Calibration

Item for Calibration:

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

Test Conditions:

Room Temperature	: 23 degree Celsius
Relative Humidity	: 60 %

Test Specifications & Methodology:

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

Results:

Correlation Factor (CF)	0.0034

****

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

Patrick Tse

PATRICK TSE
Laboratory Manager

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Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

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

Test Report No.:	C/160506/2
Date of Issue:	2016-05-09
Date Received:	2016-05-06
Date Tested:	2016-05-06
Date Completed:	2016-05-09
Next Due Date:	2016-07-05

ATTN: **Mr. W. K. Tang** Page: 1 of 1

Certificate of Calibration

Item for Calibration:

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

Test Conditions:

Room Temperature	: 23 degree Celsius
Relative Humidity	: 60 %

Test Specifications & Methodology:

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

Results:

Correlation Factor (CF)	0.0036

****

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

PATRICK TSE
Laboratory Manager

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TEST REPORT

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

Test Report No.:	C/160506/3
Date of Issue:	2016-05-09
Date Received:	2016-05-06
Date Tested:	2016-05-06
Date Completed:	2016-05-09
Next Due Date:	2016-07-05

ATTN: **Mr. W. K. Tang**

Page: 1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3B
Serial No.	: 014750
Sensitivity (K) 1 CPM	: 0.001 mg/m^3
Sen. Adjustment Scale Setting	: 790 CPM
Equipment No.	: A-02-06

Test Conditions:

Room Temperature	: 23 degree Celsius
Relative Humidity	: 60 %

Test Specifications & Methodology:

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

Results:

Correlation Factor (CF)	0.0033

****

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

PATRICK TSE
Laboratory Manager

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TEST REPORT

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

ATTN: **Mr. W. K. Tang**

Test Report No.:	C/160422/1
Date of Issue:	2016-04-25
Date Received:	2016-04-22
Date Tested:	2016-04-22
Date Completed:	2016-04-25
Next Due Date:	2016-06-24
Page:	1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3B
Serial No.	: 095039
Sensitivity (K) 1 CPM	: 0.001 mg/m^3
Sen. Adjustment Scale Setting	: 764 CPM
Equipment No.	: A-02-08

Test Conditions:

Room Temperature	: 24 degree Celsius
Relative Humidity	: 56 %

Test Specifications & Methodology:

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

Results:

Correlation Factor (CF)	0.0035

****

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

PATRICK TSE
Laboratory Manager

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TEST REPORT

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

ATTN: **Mr. W. K. Tang**

Test Report No.:	C/160422/2
Date of Issue:	2016-04-25
Date Received:	2016-04-22
Date Tested:	2016-04-22
Date Completed:	2016-04-25
Next Due Date:	2016-06-24
Page:	1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3B
Serial No.	: 095050
Sensitivity (K) 1 CPM	: 0.001 mg/m^3
Sen. Adjustment Scale Setting	: 577 CPM
Equipment No.	: A-02-09

Test Conditions:

Room Temperature	: 24 degree Celsius
Relative Humidity	: 56 %

Test Specifications & Methodology:

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

Results:

Correlation Factor (CF)	0.0034

****

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Laboratory Manager

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
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Shatin, NT, Hong Kong

Test Report No.:	C/N/150828/1
Date of Issue:	2015-08-31
Date Received:	2015-08-28
Date Tested:	2015-08-28
Date Completed:	2015-08-31
Next Due Date:	2016-08-30

ATTN: **Mr. W.K. Tang**

Page: 1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 957
Serial No.	: 21455
Microphone No.	: 43730
Equipment No.	: N-08-07

Test conditions:

Room Temperatre	: 24 degree Celsius
Relative Humidity	: 58%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

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

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Patrick Tse
PATRICK TSE
Laboratory Manager

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
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Shatin, NT, Hong Kong

ATTN: **Mr. W.K. Tang**

Test Report No.:	C/N/150821/3
Date of Issue:	2015-08-24
Date Received:	2015-08-21
Date Tested:	2015-08-21
Date Completed:	2015-08-24
Next Due Date:	2016-08-23
Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 957
Serial No.	: 21459
Microphone No.	: 43676
Equipment No.	: N-08-08

Test conditions:

Room Temperatre	: 22 degree Celsius
Relative Humidity	: 54%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

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

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Patrick Tse
PATRICK TSE
Laboratory Manager

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
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ATTN: **Mr. W.K. Tang**

Test Report No.:	C/N/151127/1
Date of Issue:	2015-11-30
Date Received:	2015-11-27
Date Tested:	2015-11-27
Date Completed:	2015-11-30
Next Due Date:	2016-11-29
Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 957
Serial No.	: 23853
Microphone No.	: 48530
Equipment No.	: N-08-10

Test conditions:

Room Temperatre	: 24 degree Celsius
Relative Humidity	: 62%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

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

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Laboratory Manager

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
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Shatin, NT, Hong Kong

ATTN: **Mr. W.K. Tang**

Test Report No.:	C/N/151003/1
Date of Issue:	2015-10-04
Date Received:	2015-10-03
Date Tested:	2015-10-03
Date Completed:	2015-10-04
Next Due Date:	2016-10-03
Page:	1 of 1

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 24803
Equipment No.	: N-09-03

Test conditions:

Room Temperatre	: 23 degree Celsius
Relative Humidity	: 57%

Methodology:

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

Results:

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

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Laboratory Manager

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
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Test Report No.:	C/N/151003/3
Date of Issue:	2015-10-04
Date Received:	2015-10-03
Date Tested:	2015-10-03
Date Completed:	2015-10-04
Next Due Date:	2016-10-03
Page:	1 of 1

ATTN: **Mr. W.K. Tang**

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 24791
Equipment No.	: N-09-04

Test conditions:

Room Temperatre	: 23 degree Celsius
Relative Humidity	: 57%

Methodology:

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

Results:

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

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TEST REPORT

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Test Report No.:	C/N/151003/2
Date of Issue:	2015-10-04
Date Received:	2015-10-03
Date Tested:	2015-10-03
Date Completed:	2015-10-04
Next Due Date:	2016-10-03

ATTN: **Mr. W.K. Tang**

Page: 1 of 1

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 24780
Equipment No.	: N-09-05

Test conditions:

Room Temperatre	: 23 degree Celsius
Relative Humidity	: 57%

Methodology:

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

Results:

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

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
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Test Report No.:	C/N/151106/1
Date of Issue:	2015-11-07
Date Received:	2015-11-06
Date Tested:	2015-11-06
Date Completed:	2015-11-07
Next Due Date:	2016-11-06
Page:	1 of 1

ATTN: **Mr. W.K. Tang**

Item for calibration:

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

Test conditions:

Room Temperatre	: 23 degree Celsius
Relative Humidity	: 56 %

Methodology:

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

Results:

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

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
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Shatin, NT, Hong Kong

ATTN: **Mr. W.K. Tang**

Test Report No.:	C/N/150821/4
Date of Issue:	2015-08-24
Date Received:	2015-08-21
Date Tested:	2015-08-21
Date Completed:	2015-08-24
Next Due Date:	2016-08-23
Page:	1 of 1

Certificate of Calibration

Item for calibration:

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

Test conditions:

Room Temperatre	: 22 degree Celsius
Relative Humidity	: 54%

Methodology:

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

Results:

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

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Annex I

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

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:
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(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:
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(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	1.043	0	0	0	0.608	0.435	0.005	0.144	0	0	0.301
Total	129.187	0	0	107.963	12.049	9.175	0.067	0.936	0	1.6	2.356

Notes:
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(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 2015 (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)
					Dry	Wet					
Jan	0.795	0	0	0	0.460	0.335	7	0	0	1.6	0.235
Feb	1.352	0	0	0	1.019	0.333	7	0	0	0	0.283
Mar	2.510	0	0	0	2.199	0.311	0	0.27	0	0	0.328
Apr	0.403	0	0	0	0.132	0.271	0	0.36	0	4	0.420
May	0.834	0	0	0	0.551	0.283	0	0	0	0	0.175
June	1.084	0	0	0	1.019	0.065	0	0	0	0	0.288
Sub-total	6.978	0	0	0	5.380	1.598	14	0.63	0	5.6	1.729
July	0.847	0	0	0	0.829	0.018	0	0	0	0	0.253
Aug	0.847	0	0	0	0.829	0.018	0	0	0	0	0.253
Sept	1.892	0	0	0	1.892	0	0	0	0	0	0.210
Oct	1.436	0	0	0	1.432	0.004	0	0	0	0	0.118
Nov	0.888	0	0	0	0.879	0.009	0	0	0	0	0.118
Dec	0.980	0	0	0	0.980	0	0	0	0	0	0.131
Total	13.796	0	0	0	12.149	1.647	14	0.63	0	5.6	2.799

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.
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(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 2016 (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	1.009	0	0	0	Dry 1.009	Wet 0	0	0	0	0	0.0733
Feb	0.3791	0	0	0	0.376	0.003	0	0	0	0	0.0068
Mar	0.7600	0	0	0	0.760	0.000	0	0.00	0	0	0.0570
Apr	0.3050	0	0	0	0.305	0.000	0	0.00	0	0	0.0396
May	0.0100	0	0	0	0.010	0.000	0	0	0	0	0.0448
June											
Sub-total	2.463	0	0	0	2.460	0.003	0	0	0	0	0.222
July											
Aug											
Sept											
Oct											
Nov											
Dec											
Total	2.463	0	0	0	2.460	0.003	0	0	0	0	0.222

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

Yearly Summary Waste Flow Table

Year	Estimated (Est.) and Actual (Act.) Annual Quantities of Inert C&D Materials										Estimated (Est.) and Actual (Act.) Annual Quantities of C&D Wastes									
	(a)=(b)+(c)+(d)+(e) Total Quantity Generated		(b) Broken Concrete (see Note 4)		(c) Reused in the Contract		(d) Reused in other Projects		(e) Disposed as Public Fill		(f) Metals		(g) Paper/ cardboard packaging		(h) Plastics (see Note 3)		(i) Chemical Waste		(j) Others, e.g. general refuse disposed at Landfill (See Note 5)	
	(in '000m^3)		(in '000m^3)		(in '000m^3)		(in '000m^3)		(in '000m^3)		(in '000 kg)		(in '000kg)		(in '000kg)		(in '000kg)		(in '000m³)	
	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.
2009 (3rd)	(Note 4)	0.016	(Note 4)	0	(Note 4)	0	(Note 4)	0	(Note 4)	0.016	(Note 4)	0	(Note 4)	0	(Note 4)	0	(Note 4)	0	(Note 4)	0.068
2009 (4th)		6.657		0		0		0		6.657		101.2		0.036		0		0		0.335
2010 (1st)		13.155		0		0		0		13.155		0		0.234		0		0.8		0.493
2010 (2nd)		18.146		0		0		0		18.146		0		0.288		0		0.7		0.772
2010 (3rd)		13.764		0.15		0		0.58	Dry	Wet 13.034		0		0.342		0		1.4		0.67
2010 (4th)		13.214		0		0		0		13.214		0		0.216		0		0.8		0.234
2011 (1st)		25.858		0		0		1.375		24.483		0		0.19		0		1.2		0.321
2011 (2nd)		21.764		0		0		3.556		18.198		0		0.517		0.028		1.2		0.218
2011 (3rd)		17.654		0		0		7.739		9.915		0		0.699		0.067		0.4		0.361
2011 (4th)	56.468	15.768	0.7	0	0	0.159	43.630	3.219	11.946	0.192 12.39	7	0	0.25	0.74	0.1	0.015	1.2	0.6	0.077	0.361
2012 (1st)	76.033	20.584	0.379	0	0	0	66.440	3.284	9.022	0.192 17.3	7	0	0.25	0.324	0.1	0	1.2	0.4	0.015	0.361
2012 (2nd)	76.249	23.273	0.266	0	0	0.021	66.455	7.382	9.336	0.192 15.87	7	0.014	0.25	0.4	0.1	0	1.2	0.4	0.017	0.985
2012 (3rd)	79.259	22.693	0.178	0	0	0.172	70.535	11.179	8.354	0.192 11.342	7	8.371	0.25	0.289	0.1	0	1.2	1.4	0.017	0.402

2012 (4th)	58.550	45.546	0	0	0	0	52.168	39.267	6.190	0.192	6.279	7	0.017	0.25	0.433	0.1	0	1.2	2.4	0.011	0.322
2013 (1st)	58.474	46.236	0.46	0	0	0	52.114	26.88	5.708	0.192	19.356	2	0.01	0.25	0.322	0.1	0	1.2	0.8	0.009	0.317
2013 (2nd)	45.516	52.542	0	0	0	0	39.963	27.415	5.361	0.192	25.127	2	0.005	0.25	0.356	0.1	0	1.2	2.2	0.063	0.460
2013 (3rd)	11.124	60.113	0	0	0	0	8.765	41.346	2.167	0.192	18.767	2	0.011	0.25	0.374	0.1	0	1.2	0.6	0.072	0.608
2013 (4th)	10.95	15.878	0	0.016	0	0	5.23	7.345	2.12	3.6	8.517	2	0.012	0.25	0.324	0.1	0	1.2	1.4	0.086	0.461
2014 (1st)	32.89	44.379	0	0	0	0	26.600	38.349	2.09	4.2	6.03	1	0.021	0.25	0.234	0	0	0.8	0	0.12	0.425
2014 (2nd)	32.1	46.035	0	0	0	0	24.700	43.227	2.1	5.3	2.808	1	0.015	0.25	0.144	0	0	0	0	0.48	0.236
2014 (3rd)	25.45	31.497	0	0	0	0	18.900	26.387	2.05	4.5	5.11	1	0.019	0.25	0.108	0	0	0	0.8	0.56	0.618
2014 (4th)	11.2	7.276	0	0	0	0	5.200	0	2.5	3.5	7.276	1	0.012	0.25	0.45	0	0	0.8	0.4	0.56	0.82
2015 (1st)	2	4.657	0	0	0	0	0	0	0.8	1.2	4.657	1	14	0.25	0.27	0	0	0	1.6	0.42	0.846
2015 (2nd)	1	2.321	0	0	0	0	0	0	0.5	0.5	2.321	1	0	0.2	0.36	0	0	0.5	4	0.42	0.883
2015 (3rd)	0.5	3.514	0	0	0	0	0	0	0.3	0.2	3.514	1	0	0.2	0	0	0	0	0	0.42	0.703
2015 (4th)	0.5	3.304	0	0	0	0	0	0	0.3	0.2	3.304	1	0	0.1	0	0	0	0.2	0	0.42	0.367
2016 (1st)	0.5	2.148	0	0	0	0	0	0	0.5	0.0	2.148	0	0	0	0	0	0	0	0	0.4	0.137
2016 (2nd)	0.5	0	0	0	0	0	0	0	0.5	0.0	0	0	0	0	0	0	0	0.1	0	0.4	0
2016 (3rd)	0.2	0	0	0	0	0	0	0	0.2	0.0	0	0	0	0	0	0	0	0	0	0.4	0
2016 (4th)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	703.135	575.844	1.983	0.166	0	0.352	488.418	288.540	210.751		286.786	109	122.707	4.25	7.83	1.7	0.11	20.9	23.9	7.235	12.647

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) Plastic refer to plastic bottles/containers, plastic sheets/foam from packaging material
(3) Broken concrete for recycling into aggregates
(4) The Yearly Waste Flow Table shown above was updated in Jan 2015, and it will be further updated if there is any changed.

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: 2 March 2016

Follow-up Actions Taken after Previous Site Audit

Wan Chai East Production Shaft

- The Contractor had provided sufficient drip trays for the chemical containers.

Observations and Recommendations

Wan Chai East Production Shaft

- There were no major observations during site inspection.

North Point Production Shaft

- The Contractor was reminded to remove stagnant water on the tarpaulin.

North Point Sewage By-Pass Structure from Sea Front

- The Contractor was reminded to remove stagnant water and apply mosquito repellent.

Inspection date: 9 March 2016

Follow-up Actions Taken after Previous Site Audit

North Point Production Shaft

- The Contractor had removed stagnant water on the tarpaulin.

North Point Sewage By-Pass Structure from Sea Front

- The Contractor had removed stagnant water and applied mosquito repellent.

Observations and Recommendations

Wan Chai East Production Shaft

- The Contractor was reminded to fix the water leakage problem of the pipe.
- The Contractor was reminded to apply mosquito repellent a least twice a week.

North Point Production Shaft

- The Contractor was reminded to fix the water leakage problem at the office entrance.
- The Contractor was reminded to remove stagnant water on the tarpaulin.

North Point Sewage By-Pass Structure from Sea Front

- There were no major observations during site inspection.

Inspection date: 16 March 2016

Follow-up Actions Taken after Previous Site Audit

Wan Chai East Production Shaft

- The Contractor had fixed the water leakage problem of the pipe.

North Point Production Shaft

- The Contractor had fixed the water leakage problem at the office entrance.
- The Contractor had removed stagnant water on the tarpaulin.

Observations and Recommendations

Wan Chai East Production Shaft

- There were no major observations during site inspection.

North Point Production Shaft

- There were no major observations during site inspection.

North Point Sewage By-Pass Structure from Sea Front

- There were no major observations during site inspection.

Inspection date: 23 March 2016

Follow-up Actions Taken after Previous Site Audit

- There were no major observations during site inspection.

Observations and Recommendations

Wan Chai East Production Shaft

- The Contractor was reminded to provide sufficient drip trays for the chemical containers.

North Point Production Shaft

- There were no major observations during site inspection..

North Point Sewage By-Pass Structure from Sea Front

- It was observed that there was no cover to the soil heap during the heavy rain. A tarpaulin was used for covering immediately.

Inspection date: 30 March 2016

Follow-up Actions Taken after Previous Site Audit

Wan Chai East Production Shaft

- The Contractor had provided sufficient drip trays for the chemical containers.

Observations and Recommendations

Sai Ying Pun Production Shaft

- There were no major observations during site inspection.

Wan Chai East Production Shaft

- The Contractor was reminded to fix the water leakage problem of the pipe.

North Point Production Shaft

- Surface run-off was observed to be discharged into public drain. Sand traps were immediately placed to prevent further inappropriate discharge.

North Point Sewage By-Pass Structure from Sea Front

- There were no major observations during site inspection.

Annex K Summary of Site Inspections Observations and Follow-ups

Inspection date: 6 April 2016

Follow-up Actions Taken after Previous Site Audit

Wan Chai East Production Shaft

- The Contractor had fixed the water leakage problem of the pipe.

Observations and Recommendations

Sai Ying Pun Production Shaft

- There were no major observations during site inspection.

Wan Chai East Production Shaft

- There were no major observations during site inspection.

North Point Production Shaft

- The Contractor was reminded to maintain good housekeeping behind the site office.

North Point Sewage By-Pass Structure from Sea Front

The Contractor was reminded to maintain the access to the WetSep treatment facility.

Inspection date: 13 April 2016

Follow-up Actions Taken after Previous Site Audit

North Point Production Shaft

- The Contractor had maintained good housekeeping behind the site office.

North Point Sewage By-Pass Structure from Sea Front

The Contractor had cleared the obstacles and maintained the access to the WetSep treatment facility.

Observations and Recommendations

Sai Ying Pun Production Shaft

- The Contractor was reminded to remove the general refuse from the drain to prevent blockage.

Wan Chai East Production Shaft

- There were no major observations during site inspection.

North Point Production Shaft

- There were no major observations during site inspection.

North Point Sewage By-Pass Structure from Sea Front

- There were no major observations during site inspection.

Inspection date: 20 April 2016

Follow-up Actions Taken after Previous Site Audit

Sai Ying Pun Production Shaft

- The Contractor had removed the general refuse from the drain to allow water flow.

Observations and Recommendations

Sai Ying Pun Production Shaft

- The Contractor was reminded to remove stagnant water from the tarpaulin.

Wan Chai East Production Shaft

- There were no major observations during site inspection.

North Point Production Shaft

- There were no major observations during site inspection.

North Point Sewage By-Pass Structure from Sea Front

- There were no major observations during site inspection.

Inspection date: 27 April 2016

Follow-up Actions Taken after Previous Site Audit

Sai Ying Pun Production Shaft

- The Contractor had removed the stagnant water from the tarpaulin.

Observations and Recommendations

North Point Production Shaft

- There were no major observations during site inspection..

North Point Sewage By-Pass Structure from Sea Front

- Oil leakage was observed from the drip tray. The Contractor was reminded to replace the drip tray or seal the hole.
- The Contractor was reminded not to conduct construction works near the plantations as it may affect their growth.

Annex K Summary of Site Inspections Observations and Follow-ups

Inspection date: 4 May 2016

Follow-up Actions Taken after Previous Site Audit

North Point Sewage By-Pass Structure from Sea Front

- The Contractor had sealed the hole of the drip tray to prevent oil leakage.

Observations and Recommendations

North Point Production Shaft

- The Contractor was reminded to remove the stagnant water.

North Point Sewage By-Pass Structure from Sea Front

- The Contractor was reminded to maintain good housekeeping.

Inspection date: 11 May 2016

Follow-up Actions Taken after Previous Site Audit

North Point Production Shaft

- The Contractor had removed the stagnant water.

North Point Sewage By-Pass Structure from Sea Front

- The Contractor had maintained good housekeeping.

Observations and Recommendations

North Point Production Shaft

- The Contractor was reminded to maintain good housekeeping and prevent accumulation of stagnant water.

North Point Sewage By-Pass Structure from Sea Front

- A bucket of water was found. The Contractor was reminded to pour it if not in use.

Inspection date: 19 May 2016

Follow-up Actions Taken after Previous Site Audit

North Point Production Shaft

- The Contractor had maintained good housekeeping.

North Point Sewage By-Pass Structure from Sea Front

- The Contractor had removed the bucket of water.

Observations and Recommendations

North Point Production Shaft

- Oil leakage was observed at the mobile crane outside the site office. The Contractor was reminded to remove the oil stain and fixed the leakage problem.

North Point Sewage By-Pass Structure from Sea Front

- There were no major observations.

Inspection date: 25 May 2016

Follow-up Actions Taken after Previous Site Audit

North Point Production Shaft

- The Contractor had removed the oil stain at the mobile crane outside the site office.

Observations and Recommendations

North Point Production Shaft

- The Contractor was reminded to remove stagnant water.

North Point Sewage By-Pass Structure from Sea Front

- There were no major observations.