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: *Forty-sixth Monthly EM&A Report*

September 2013

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

Gammon Construction Limited

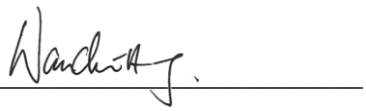
Contract No. DC/2007/23 Harbour Area Treatment Scheme Stage 2A Construction of Sewage Conveyance System from North Point to Stonecutters Island: *Forty-sixth Monthly EM&A Report*

September 2013

Reference 0104887

For and on behalf of
ERM-Hong Kong, Limited

Approved by: Frank Wan

Signed: 

Position: Partner

Certified by:
(Environmental Team Leader – Winnie Ko)

Date: 16 October 2013

Mott MacDonald

Our ref KMY/AFK/MR/TK/bw/T261332/22.01/L-0621
T 2828 5757
E Anne.Kerr@mottmac.com.hk
Your ref -

CE/Harbour Area Treatment Scheme
Drainage Services Department
Sewage Services Branch
Harbour Area Treatment Scheme Division
5/F, Western Magistracy
2A Pokfulam Road, Hong Kong

15 October 2013
By Post

Attn: Mr. Danny Tang

Dear Sir,

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

Contract No. DC/2007/23
Construction of Sewage Conveyance System from North Point to Stonecutters Island
Condition 4.4 – Submission of Monthly EM&A Report for September 2013 (no. 46)

I refer to the captioned revised Monthly EM&A Report received on 13 October 2013 via email. Pursuant to Condition 4.4 of Environmental Permit No. EP-322/2008/F, I hereby verify the captioned report.

Yours faithfully
for MOTT MACDONALD HONG KONG LIMITED

Dr. Anne F Kerr
Independent Environmental Checker

c.c.	AECOM	Mr. K Y Chan	By email
	Gammon	Mr. Max Ko	By email
	ERM	Ms. Winnie Ko	By email

CONTENTS

	EXECUTIVE SUMMARY	
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 MONTH*	*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*	*15*
3.5.5	*Waste Management*	*15*
3.6	*ENVIRONMENTAL SITE INSPECTION*	*15*
3.6.1	*Summary of Monitoring Exceedance*	*15*
3.6.2	*Summary of Environmental Non-Compliance/ Complaint/ Summons/ Prosecution*	*16*
3.7	*FUTURE KEY ISSUES*	*16*
3.7.1	*Key Issues for the Coming Months*	*16*
3.7.2	*Monitoring Schedule for the Next Month*	*16*
3.7.3	*Construction Programme for Next Month*	*16*
4	*WAN CHAI EAST PRODUCTION AND DROP SHAFTS*	*17*
4.1	*CONSTRUCTION ACTIVITIES DURING THE REPORTING MONTH*	*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*	*24*
4.5.4	*Cultural Heritage*	*24*
4.5.5	*Waste Management*	*24*
4.6	*ENVIRONMENTAL SITE INSPECTION*	*24*
4.7	*ENVIRONMENTAL NON-CONFORMANCE*	*25*
4.7.1	*Summary of Monitoring Exceedance*	*25*
4.7.2	*Summary of Environmental Non-Compliance/Complaint/Summons/ Prosecution*	*25*
4.8	*FUTURE KEY ISSUES*	*25*
4.8.1	*Key Issues for the Coming Month*	*25*
4.8.2	*Monitoring Schedule for Next Month*	*25*
4.8.3	*Construction Programme for the Next Month*	*26*
5	*CENTRAL DROP SHAFT*	*27*
5.1	*CONSTRUCTION ACTIVITIES DURING THE REPORTING MONTH*	*27*
5.2	*STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS*	*27*
5.3	*ENVIRONMENTAL MONITORING REQUIREMENTS*	*27*
5.3.1	*Air Quality Monitoring*	*27*
5.3.2	*Noise Monitoring*	*31*
5.3.3	*Cultural Heritage*	*32*
5.3.4	*Landscape and Visual Monitoring*	*32*
5.4	*IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS*	*33*
5.5	*MONITORING RESULTS*	*33*
5.5.1	*Air Quality*	*33*
5.5.2	*Noise*	*33*
5.5.3	*Landscape and Visual*	*33*
5.5.4	*Cultural Heritage*	*33*
5.5.5	*Waste Management*	*33*
5.6	*ENVIRONMENTAL SITE INSPECTION*	*34*
5.7	*ENVIRONMENTAL NON-CONFORMANCE*	*34*
5.7.1	*Summary of Monitoring Exceedance*	*34*
5.7.2	*Summary of Environmental Non-Compliance/ Complaint/ Summon/ Prosecution*	*34*
5.8	*FUTURE KEY ISSUES*	*35*
5.8.1	*Key Issues for the Coming Month*	*35*
5.8.2	*Monitoring Schedule for Next Month*	*35*
5.8.3	*Construction Programme for the Next Month*	*35*
6	*SAI YING PUN JUNCTION SHAFT*	*36*
6.1	*CONSTRUCTION ACTIVITIES DURING THE REPORTING MONTH*	*36*
6.2	*STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS*	*36*
6.3	*ENVIRONMENTAL MONITORING REQUIREMENTS*	*36*
6.3.1	*Air Quality Monitoring*	*36*
6.3.2	*Noise Monitoring*	*37*
6.3.3	*Cultural Heritage*	*39*
6.3.4	*Landscape and Visual Monitoring*	*39*
6.4	*IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS*	*39*

6.5	*MONITORING RESULTS*	*40*
6.5.1	*Air Quality*	*40*
6.5.2	*Noise*	*40*
6.5.3	*Landscape and Visual*	*40*
6.5.4	*Cultural Heritage*	*40*
6.5.5	*Waste Management*	*40*
6.6	*ENVIRONMENTAL SITE INSPECTION*	*41*
6.7	*ENVIRONMENTAL NON-CONFORMANCE*	*41*
6.7.1	*Summary of Monitoring Exceedance*	*41*
6.7.2	*Summary of Environmental Non-Compliance/ Complaint/ Summons / Prosecution*	*41*
6.8	*FUTURE KEY ISSUES*	*41*
6.8.1	*Key Issues for the Coming Month*	*41*
6.8.2	*Monitoring Schedule for Next Month*	*42*
6.8.3	*Construction Programme for the Next Month*	*42*
7	*STONECUTTERS ISLAND PRODUCTION AND RISER SHAFTS*	*43*
7.1	*CONSTRUCTION ACTIVITIES DURING THE REPORTING MONTH*	*43*
7.2	*STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS*	*43*
7.3	*ENVIRONMENTAL MONITORING REQUIREMENTS*	*43*
7.3.1	*Air Quality Monitoring*	*43*
7.3.2	*Noise Monitoring*	*47*
7.3.3	*Cultural Heritage*	*49*
7.3.4	*Landscape and Visual Monitoring*	*49*
7.4	*IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS*	*49*
7.5	*MONITORING RESULTS*	*49*
7.5.1	*Air Quality*	*49*
7.5.2	*Noise*	*49*
7.5.3	*Landscape and Visual*	*50*
7.5.4	*Cultural Heritage*	*50*
7.5.5	*Waste Management*	*50*
7.6	*ENVIRONMENTAL SITE INSPECTION*	*50*
7.7	*ENVIRONMENTAL NON-CONFORMANCE*	*51*
7.7.1	*Summary of Monitoring Exceedance*	*51*
7.7.2	*Summary of Environmental Non-Compliance/ Complaint/ Summons/ Prosecution*	*51*
7.8	*FUTURE KEY ISSUES*	*51*
7.8.1	*Key Issues for the Coming Month*	*51*
7.8.2	*Monitoring Schedule for the Next Month*	*51*
7.8.3	*Construction Programme for the Next Month*	*52*
8	*CONCLUSIONS*	*53*
8.1	*NORTH POINT PRODUCTION AND DROP SHAFTS*	*53*
8.2	*WAN CHAI EAST PRODUCTION AND DROP SHAFTS*	*53*
8.3	*CENTRAL DROP SHAFT*	*53*
8.4	*SAI YING PUN JUNCTION SHAFT*	*54*
8.5	*STONECUTTERS ISLAND PRODUCTION AND RISER SHAFTS*	*54*
8.6	*OVERALL*	*54*

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 to 30 September 2013 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 *Limit Levels for Noise Monitoring at North Point Production and Drop Shafts*

Table 3.8 *Construction Works to be Undertaken in the Coming Two Months at North Point Production and Drop Shafts*

Table 4.1 *Summary of Construction Activities Undertaken from 1 to 30 September 2013 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 *Limit Levels for Noise Monitoring at Wan Chai East Production and Drop Shafts*

Table 4.8 *Construction Works to be Undertaken in the Coming Two Months at Wan Chai East Production and Drop Shafts*

Table 5.1 *Summary of Construction Activities Undertaken from 1 to 30 September 2013 at Central Drop Shaft*

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

Table 5.3 *Construction Phase Air Monitoring Location at Central Drop Shaft*

Table 5.4 *TSP Monitoring Parameter and Frequency at Central Drop Shaft*

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

Table 5.6 *Construction Phase Noise Monitoring Station at Central Drop Shaft*

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

Table 5.8 Construction Works to be Undertaken in the Coming Two Months at Central Drop Shaft

Table 6.1 Suammary of Construction Activities Underttaken from 1 to 30 September 2013 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 Limit Levels for Noise Monitoring at Sai Ying Pun Junction Shaft

Table 6.8 Construction Works to be Undertaken in the Coming Two Months at Sai Ying Pun Junction Shaft

Table 7.1 Summary of Construction Activies Undertaken from 1 to 30 September 2013 at the Stonecutters Island Prodution and Riser Shaft

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

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

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

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

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

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

Table 7.8 Construction Works to be Undertaken in the Coming Two Months at Stonecutters Island Production and Riser Shafts

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 Month*
Annex C2 *Locations of Air Quality and Noise Monitoring Stations*
Annex C3 *Monitoring Schedule of the Reporting Month and Next Month*
Annex C4 *Summary of Implementation Status*
Annex C5 *24-hour and 1-hour averaged TSP Monitoring Results*
Annex C6 *Noise Monitoring Results*
Annex C7 *Cumulative Complaint and Summons/Prosecutions Log*
Annex C8 *Construction Programme for the Project*

Annex D **Wan Chai East Production and Drop Shafts**
Annex D1 *Locations of Construction Activities during the Reporting Month*
Annex D2 *Locations of Air Quality and Noise Monitoring Stations*
Annex D3 *Monitoring Schedule of the Reporting Month and Next Month*
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 Complaint and Summons/Prosecutions Log*
Annex D9 *Construction Programme for the Project*

Annex E **Central Drop Shaft**
Annex E1 *Locations of Construction Activities during the Reporting Month*
Annex E2 *Locations of Air Quality and Noise Monitoring Stations*
Annex E3 *Monitoring Schedule of the Reporting Month and Next Month*
Annex E4 *Summary of Implementation Status*
Annex E5 *24-hour and 1-hour averaged TSP Monitoring Results*
Annex E6 *Noise Monitoring Results*
Annex E7 *Cumulative Complaint and Summons/Prosecutions Log*
Annex E8 *Construction Programme for the Project*

Annex F **Sai Ying Pun Junction Shaft**
Annex F1 *Locations of Construction Activities during the Reporting Month*
Annex F2 *Locations of Air Quality and Noise Monitoring Stations*
Annex F3 *Monitoring Schedule of the Reporting Month and Next Month*
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 Complaint and Summons/Prosecutions Log*
Annex F8 *Construction Programme for the Project*

Annex G **Stonecutters Island Production and Riser Shafts**
Annex G1 *Locations of Construction Activities during the Reporting Month*
Annex G2 *Locations of Air Quality and Noise Monitoring Stations*
Annex G3 *Monitoring Schedule of the Reporting Month and Next Month*
Annex G4 *Summary of Implementation Status*
Annex G5 *24-hour and 1-hour averaged TSP Monitoring Results*
Annex G6 *Noise Monitoring Results*
Annex G7 *Cumulative Complaint and Summons/Prosecutions Log*
Annex G8 *Complaint Investigation Report*
Annex G9 *Construction Programme for the Project*

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 for All Sites**

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)** commenced on 1 December 2009. This is the 46th monthly Environmental Monitoring and Audit (EM&A) report presenting the EM&A activities carried out during the period from 1 to 30 September 2013 in accordance with the EM&A Manual.

North Point Production and Drop Shafts

Summary of Construction Works undertaken during the Reporting Month

The major construction works undertaken during the reporting month include:

- Construction of shaft bottom junction at Drop Shaft;
- Pre-excavation grouting at Production Shaft; and
- Drilling and blasting at Production Shaft.

Environmental Monitoring and Audit Progress

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

• 24-hour averaged TSP Monitoring at each monitoring station (AM1 and AM2)	5 sets
• 1-hour averaged TSP Monitoring at each monitoring station (AM1 and AM2)	15 sets
• Construction Noise Monitoring during Normal Weekdays at NM1	4 times
• Construction Noise Monitoring during Restricted Hours at NM1	5 times
• Joint Environmental Site Inspection	4 times
• Landscape & Visual Monitoring	1 time

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

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

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

No non-compliance event, environmental complaint and summon/prosecution was recorded during the reporting period.

Future Key Issues

Works to be undertaken in the next two months include:

- Drilling and blasting at Production Shaft;
- Installation of tunnel services and rail tracks at Production shaft;
- Permanent lining construction at Production Shaft; and
- Permanent structural lining construction at lower shaft at Drop Shaft.

Potential environmental impacts arising from the above construction activities are mainly associated with dust, construction noise, site runoffs and waste management.

Wan Chai East Production and Drop Shafts

Summary of Construction Works undertaken during the Reporting Month

The major construction works undertaken during the reporting month include:

- Pre-excavation grouting at Production Shaft;
- Drilling and blasting at Production Shaft;
- Permanent structural lining construction at lower shaft at Drop Shaft; and
- Permanent structural lining construction at upper shaft at Drop Shaft.

Environmental Monitoring and Audit Progress

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

• 24-hour averaged TSP Monitoring at AM3	5 sets
• 1-hour averaged TSP Monitoring at AM3	15 sets
• Construction Noise Monitoring during Normal Weekdays at NM2	4 times
• Construction Noise Monitoring during Restricted hours at NM2	5 times
• Joint Environmental Site Inspection	3 times
• Landscape & Visual Monitoring	1 time

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

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

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

Eleven exceedances of Limit Level during restricted hours were reported at NM2. Since no outdoor construction activities that had taken place during the period with exceedance, it is considered that the exceedances were not due to the Contract 23 construction works. Details of exceedances are presented in *Annex D7*.

No non-compliance event, environmental complaint and summon/prosecution was recorded during the reporting period.

Future Key Issues

Works to be undertaken in the next two months include:

- Drilling and blasting at Production Shaft;
- Installation of tunnel services and rail tracks at Production Shaft;
- Permanent lining construction at Production Shaft; and
- Permanent structural lining construction at upper shaft at Drop Shaft.

Potential environmental impacts arising from the above construction activities are mainly associated with dust, construction noise, site runoffs and waste management.

Central Drop Shaft

Summary of Construction Works undertaken during the Reporting Month

The major construction works undertaken during the reporting month include:

- Control hole drilling for grouting before raise boring at Drop Shaft.

Environmental Monitoring and Audit Progress

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

• 24-hour averaged TSP Monitoring at AM4_2	5 sets
• 1-hour averaged TSP Monitoring at AM4_2	15 sets
• Construction Noise Monitoring during Normal Weekdays at NM3	4 times
• Joint Environmental Site Inspection	1 time
• Landscape & Visual Monitoring	1 time

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

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

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

No non-compliance event, environmental complaint and summon/prosecution was recorded during the reporting period.

Future Key Issues

Works to be undertaken in the next two months include:

- Raise boring.

Potential environmental impacts arising from the above construction activities are mainly associated with dust, construction noise, site runoffs and waste management.

Sai Ying Pun Junction Shaft

Summary of Construction Works undertaken during the Reporting Month

The major construction works undertaken during the reporting month include:

- Pre-excavation grouting; and
- Drilling and blasting.

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	6 sets
• 1-hour averaged TSP Monitoring at AM5	18 sets
• Construction Noise Monitoring during Normal Weekdays at NM4	4 times
• Construction Noise Monitoring during Restricted hours at NM4	5 times
• Joint Environmental Site Inspection	4 times
• Landscape & Visual Monitoring	1 time

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

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

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

No vibration monitoring had been conducted during the reporting month due to the fact that there was no sensitive receiver in the influence zone of the blasting works.

No non-compliance event, environmental complaint and summon/prosecution was recorded during the reporting period.

Future Key Issues

Works to be undertaken in the next two months include:

- Drilling and blasting; and
- Installation of tunnel services and rail tracks.

Potential environmental impacts arising from the above construction activities are mainly associated with dust, construction noise, site runoffs and waste management.

Stonecutters Island Production and Riser Shafts

Summary of Construction Works undertaken during the Reporting Month

The major construction works undertaken during the reporting month include:

- Raise boring – reaming at Riser Shaft;
- Pre-excavation grouting at Production Shaft; and
- Drilling and blasting at Production Shaft.

Environmental Monitoring and Audit Progress

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

• 24-hour averaged TSP Monitoring at AM6	5 sets
• 1-hour averaged TSP Monitoring at AM6	15 sets
• Construction Noise Monitoring during Normal Weekdays at NM5	4 times
• Construction Noise Monitoring during Restricted Hours at NM5	5 times
• Joint Environmental Site Inspection	4 times
• Landscape & Visual Monitoring	1 time

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

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

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

No non-compliance event, environmental complaint and summon/prosecution was recorded during the reporting period.

A complaint about noise during restricted hours was received on 22 July 2013. Investigation of the complaint was conducted in August and the findings of the investigation are presented in this reporting month.

Future Key Issues

Works to be undertaken in the next two months include:

- Permanent structural lining construction at lower shaft at Riser Shaft;
- Drilling and blasting at Production Shaft; and
- Installation of tunnel services and rail tracks at Production Shaft.

Potential environmental impacts arising from the above construction activities are mainly associated with dust, construction noise, site runoffs and waste management.

1 INTRODUCTION

ERM-Hong Kong, Limited (ERM) has been appointed by Gammon Construction Limited (the Contractor) as the Environmental Team (ET) to undertake an Environmental Monitoring and Audit (EM&A) programme for the Contract - *No. 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 forty-sixth EM&A report which summarises the impact monitoring results and audit findings for the EM&A programme during the reporting period from **1 to 30 September 2013**.

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 month.
- **Status of Environmental Approval Documents**
  It summarises the environmental documents submitted under the EP condition during the reporting month.
- **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 schedule of the weekly site inspections undertaken within the reporting period.

- **Environmental Non-conformance**
  It summarises any monitoring exceedances, environmental complaints and summons within the reporting period.
- **Future Key Issues**
  It summarises the impact forecast and monitoring schedule for the next three months.

Section 4: Wan Chai East Production and Drop Shafts

- **Construction Activities**
  It summarises the construction activities conducted during the reporting month.
- **Status of Environmental Approval Documents**
  It summarises the environmental documents submitted under the EP condition during the reporting month.
- **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 schedule of the weekly site inspections undertaken within the reporting period.
- **Environmental Non-conformance**
  It summarises any monitoring exceedances, environmental complaints and summons within the reporting period.
- **Future Key Issues**
  It summarises the impact forecast and monitoring schedule for the next three months.

Section 5: Central Drop Shaft

- **Construction Activities**
  It summarises the construction activities conducted during the reporting month.
- **Status of Environmental Approval Documents**
  It summarises the environmental documents submitted under the EP condition during the reporting month.
- **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 schedule of the weekly site inspections undertaken within the reporting period.
- **Environmental Non-conformance**
  It summarises any monitoring exceedances, environmental complaints and summons within the reporting period.
- **Future Key Issues**
  It summarises the impact forecast and monitoring schedule for the next three months.

Section 6: Sai Ying Pun Junction Shaft

- **Construction Activities**
  It summarises the construction activities conducted during the reporting month.
- **Status of Environmental Approval Documents**
  It summarises the environmental documents submissions under the EP condition during the reporting month.
- **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 schedule of the weekly site inspections undertaken within the reporting period.
- **Environmental Non-conformance**
  It summarises any monitoring exceedances, environmental complaints and summons within the reporting period.
- **Future Key Issues**
  It summarises the impact forecast and monitoring schedule for the next three months.

Section 7: Stonecutters Island Production and Riser Shafts

- **Construction Activities**
  It summarises the construction activities conducted during the reporting month.

- **Status of Environmental Approval Documents**
  It summarises the environmental documents submitted under the EP condition during the reporting month.
- **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 schedule of the weekly site inspections undertaken within the reporting period.
- **Environmental Non-conformance**
  It summarises any monitoring exceedances, environmental complaints and summons within the reporting period.
- **Future Key Issues**
  It summarises the impact forecast and monitoring schedule for the next three months.

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 via Sai Ying Pun to Stonecutters Island. Shafts with 10 – 12 m diameter vary in depth from 140 m and 170 m below ground. 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 (NP PTW) to Stonecutters Island Sewage Treatment Works (SCI STW) via Wan Chai East Preliminary Treatment Works (WCE PTW), Central Preliminary Treatment Works (CEN PTW) and Fung Mat Street Sai Ying Pun (SYP) Junction Shaft;
- construction of drop shafts at NP PTW, WCE PTW and CEN PTW;
- construction of riser shafts at SCI STW;
- construction of a junction shaft at SYP;
- construction of temporary production shafts at NP PTW, WCE PTW and SCI STW to provide access for the construction of SCS;
- construction of connection channels, pipes, chambers and tunnel 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
- landscape 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 October 2012. Under the requirements of Condition 4.1 of Environmental Permit EP-322/2008/F, 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 2014.

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 December 2009 are 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-322/2008/F	Throughout the Contract	• Variation of the Permit granted on 10 October 2012
Notification of Construction Works under Air Pollution Control APC (Construction Dust) Regulation	--	04 August 2009 – 06 November 2013	• Reference number for Notification Pursuant to APC (Construction Dust) Regulation: 308136

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 EP-322/2008/F during the reporting period is presented in *Table 2.2.*

Table 2.2 Status of Required EP Submission for all Sites

EP Condition	Submission	Submission Date
Condition 4.4	Submission of Forty-fifth Monthly EM&A Report	13 September 2013

2.3 PROJECT ORGANISATION

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

3 NORTH POINT PRODUCTION AND DROP SHAFTS

3.1 CONSTRUCTION ACTIVITIES DURING THE REPORTING MONTH

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 to 30 September 2013 at the North Point Production and Drop Shafts

Worksite	Construction Activities Undertaken
Production Shaft (Tunnel J)	• Pre-excavation grouting; and • Drilling and blasting.
Drop Shaft	• Construction of shaft bottom junction.

3.2 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS

A summary of the relevant permits, licences, and/or notifications on environmental protection for this Project which are valid during the reporting month 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 WT00005153-2009	31 January 2012 - 31 October 2014	--
	North Point Production Shaft WT00007055-2010	9 July 2010 - 31 March 2015	--
	Discharge License (Public Car Parking Area, North of North Point Preliminary Treatment Plant) WT00012705-2012	12 April 2012 – 30 April 2017	--
Chemical Waste Producer Registration	North Point Production Shaft 5213-153-G2484-01	Throughout the Contract	--
	North Point PTW Drop Shaft 5213-153-G2483-01	Throughout the Contract	--
Construction Noise Permit CNP	North Point Production shaft GW-RS0177-13	13 March 2013 - 12 September 2013	--
	North Point Production shaft GW-RS0913-13	12 September 2013 – 11 March 2014	--
	North Point PTW Drop Shaft	1 May 2013 – 31 October 2013	--

Permit/ Licences/ Notification	Reference	Validity Period	Remarks
	GW-RS0367-13		

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 during construction phase. Since access to some of the proposed monitoring locations stated in the EM&A Manual were denied or not available, alternative locations were proposed and agreed by the Engineer Representative (ER) and the Independent Environmental Checker (IEC). Owing to the security issue with the High Volume Sampler (HVS) at the existing monitoring location (rooftop of Water Supplies Department office) especially under adverse weather conditions, an alternative location, which is one floor below the existing rooftop, was identified and agreed with the 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 rejected.
	CM_NP2	AM2	Hong Kong & Islands Regional Office, Water Supplies Department	

Monitoring Parameters, Frequency and Programme

Air quality monitoring was conducted in accordance with the requirements stipulated in the EM&A Manual (*Table 3.4*). The monitoring programme for this reporting period is shown in *Annex C3*.

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 averaged and three 1-hour averaged TSP monitoring were performed using HVS with appropriate sampling inlets installed and located at the designated monitoring stations. 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 were 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 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 (the Hong Kong Laboratory Accreditation Scheme) 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.

<u>Maintenance and Calibration</u>

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

Wind Data

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

Should non-compliance of the Action and Limit Levels occur, action will be taken in accordance with the Event and Action Plan (EAP) 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 was denied or not available; alternative locations were proposed and agreed by the ER and the IEC. Construction activities were conducted at restricted hours (1900 – 2300 on all days and 0700 – 2300 on general holidays and Sundays) during the reporting month. 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 the IEC. The construction noise monitoring location for this Contract is listed in *Table 3.6* and shown in *Annex C2*.

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

Worksite	Proposed Construction Noise Monitoring Station				
	ID in EM&A Manual	**ID**	**Location**	**Type of Measurement**	**Remark**
North Point	M1	NM1	Rooftop of Chan's Creative School (formerly known as Madam Chan Wai Chow Memorial School)	Façade	0700 to 1900 on Monday to Saturday
			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 required the EM&A Manual when works were carried out during the school closing periods. The monitoring programme for this reporting period is shown in *Annex C3*.

The construction noise levels were measured in terms of A-weighted equivalent continuous sound pressure level (L_{Aeq}) in decibels dB(A). $L_{Aeq(30min)}$ was used as the monitoring parameter for the period between 0700 – 1900 hours on normal weekdays, and $L_{Aeq\ (5min)}$ was used as the monitoring parameter for all the other 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 monitored 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 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 (A/L) 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	Action Level	Limit Level		Remark
		Measurement Parameter	Limit Level (dB(A))	
NM1	When one documented complaint is received	$L_{Aeq(30min)}$	70	During normal teaching period
		$L_{Aeq(30min)}$	69 (a)	During the school examination period
		$L_{Aeq(30min)}$	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 adopted as the Limit Level during the examination period at NM1.

Event and Action Plan

Should non-compliance of the Action and Limit Levels occur, action will be taken in accordance with the EAP presented in *Annex I*.

3.3.3 Cultural Heritage

No vibration monitoring is required for this reporting month 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 was 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 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 fulfilled requirements as stated in the EIA Report, Environmental Permit and

EM&A Manual. The implementation status during the reporting period is summarised in *Annex C4*.

3.5 MONITORING RESULTS

3.5.1 Air Quality

A total of 5 sets of 24-hour averaged and 15 sets of 1-hour averaged TSP measurements were carried out at AM1 and AM2 respectively during the reporting period. The weather conditions during the monitoring period varied from sunny, rainy to fine. The monitoring data for 24-hour and 1-hour averaged TSP together with wind data and graphical presentations are presented in *Annex C5*.

Other potential emission source in the vicinity (e.g. vehicle emissions) of the monitoring stations (AM1 to AM2) may also contribute to the local air quality. 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 4 sets of 30-minute construction noise measurements were carried out at the monitoring station NM1 during normal weekdays of the reporting period. The local impacts at normal hours during weekdays near the monitoring stations of NM1 included contributions from traffic noise from King's Road, Java Road and nearby roads; and noise from the ringing of school bells; students' activities and the construction works undertaken by other parties in the vicinity. No exceedance of the noise A/L Levels was recorded during normal working hours.

5 sets of 3 x 5-minute construction noise measurements were carried out at NM1 during between 1900 and 0700 hours on weekdays and any time on Sundays and public holidays on 1, 10, 15, 24 and 29 September 2013. No exceedance of the noise A/L Levels during the school's closing hours was recorded. The local impacts during these hours observed included contributions from traffic noise from King's Road, Java Road and nearby roads and noise from the construction works undertaken by other parties in the vicinity.

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

3.5.3 Landscape and Visual

Implementation and maintenance of landscape and visual mitigation measures were fully implemented and no major finding was made during the reporting month.

3.5.4 Cultural Heritage

No vibration monitoring was conducted for this reporting month 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. The inert C&D materials generated from this Project were disposed of at Tuen Mun Area 38/Tseung Kwan O Area 137 Fill Bank/Chai Wan Barging Point. The non-inert C&D materials other than steel and paper/cardboard packaging were disposed of at SENT Landfill. Steel, paper / cardboard packaging waste and plastics were sent to recyclers for recycling. No marine deposits was generated during the reporting month

The quantity of different types of wastes generated in the reporting month 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 ET. Site inspections were conducted on 5, 12, 19 and 26 September 2013. A representative of the IEC joined the site inspection on 26 September 2013. There were no non-compliances recorded during the site inspections.

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

3.6.1 Summary of Monitoring Exceedance

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

No exceedance of the Action and Limit Levels for noise was recorded in the reporting period.

3.6.2 *Summary of Environmental Non-Compliance/ Complaint/ Summons/ Prosecution*

No non-compliance event, complaint, summons and prosecution were recorded during the reporting period. The cumulative complaint /summons/prosecution log is shown in *Annex C7*.

3.7 *FUTURE KEY ISSUES*

3.7.1 *Key Issues for the Coming Months*

Works to be undertaken in the coming two monitoring periods are summarised in *Table 3.8*.

Table 3.8 Construction Works to be undertaken in the Coming Two Months at North Point Production and Drop Shafts

Worksite	Construction Activities to be Undertaken
Production Shaft (Tunnel J and Tunnel K)	• Drilling and blasting; • Installation of tunnel services and rail tracks; and • Permanent lining construction.
Drop Shaft	• Permanent structural lining construction at lower shaft.

Potential environmental impacts arising from the above construction activities are mainly associated with dust, construction noise, site runoffs and waste management.

3.7.2 *Monitoring Schedule for the Next Month*

The tentative schedule of TSP and noise monitoring for the next reporting period is presented in *Annex C3*. Environmental monitoring will be conducted at the same monitoring locations in the reporting period.

3.7.3 *Construction Programme for Next Month*

The most up-to-date construction programme for the Project is presented in *Annex C8*.

4 WAN CHAI EAST PRODUCTION AND DROP SHAFTS

4.1 CONSTRUCTION ACTIVITIES DURING THE REPORTING MONTH

A summary of the major construction activities undertaken in this 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 to 30 September 2013 at the Wan Chai East Production and Drop Shafts

Worksite	Construction Activities Undertaken
Production Shaft (Tunnel K and Tunnel J)	• Pre-excavation grouting; and • Drilling and blasting.
Drop Shaft	• Permanent structural lining construction at lower shaft; and • Permanent structural lining construction at upper shaft.

4.2 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS

A summary of the relevant permits, licences, and/or notifications on environmental protection for this Project which are valid during the reporting month 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 WT00008533-2011	21 February 2011 - 31 October 2014	--
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-RS0859-13	9 August 2013 - 8 February 2014	--
	Wan Chai East Drop Shaft GW-RS0768-13	14 July 2013 – 13 January 2014	--

4.3 ENVIRONMENTAL MONITORING REQUIREMENTS

4.3.1 Air Quality Monitoring

Monitoring Location

In accordance with the EM&A Manual, 24-hour and 1-hour averaged 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 the 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 the Society for the Prevention of Cruelty to Animals building (CM_WC1) was so crowded with existing facilities (eg water tanks) that the 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*). The monitoring programme for this reporting period is shown in *Annex D3*.

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 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 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 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

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 HKO and is presented in *Annex D5*.

Action and Limit Levels

The Action and Limit levels have been established and are 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 (EAP)

Should non-compliance of the Action and Limit Levels occur, action will be taken in accordance with the EAP 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 the non-existence of a 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 monitoring programme for this reporting period is shown in *Annex D3*.

The construction noise levels were measured in terms of A-weighted equivalent continuous sound pressure level (L_{Aeq}) 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*, 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 (A/L) Levels for noise monitoring during different monitoring periods are summarised 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	Action Level	Limit Level		Remark
		Measurement Parameter	Limit Level (dB(A))	
NM2	When one documented complaint is received	$L_{Aeq(30min)}$	75	Normal working hours during weekdays
		$L_{Aeq(5min)}$	70	Evening (1900-2300); and Sundays and public holidays (0700-2300)
		$L_{Aeq(5min)}$	55	Night-time (2300-0700)

Event and Action Plan (EAP)

Should non-compliance of the Action and Limit Levels occur, action will be taken in accordance with the EAP presented in *Annex I*.

4.3.3 Cultural Heritage

No vibration monitoring is required for this reporting month 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 was 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 has implemented environmental mitigation measures and fulfilled the requirements as stated in the EIA Report, Environmental Permit and EM&A Manual. The implementation status during the reporting period is summarised in *Annex D4*.

4.5 MONITORING RESULTS

4.5.1 Air Quality

A total of 5 sets of 24-hour averaged and 15 sets of 1-hour averaged TSP measurements were made at AM3 during the reporting period. The weather conditions during the monitoring period varied from sunny, rainy to fine. The monitoring data for 24-hour and 1-hour averaged TSP, together with the wind data and graphical presentations, are presented in *Annex D5*.

Other potential emission source in the vicinity (e.g. vehicle emissions) of the monitoring stations AM3 may also contribute to the local air quality. 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 4 sets of 30-minute construction noise measurements were carried out at the monitoring station NM2 during normal working hours in weekdays of the reporting period. No exceedance of Action and Limit Levels for noise monitoring during normal working hours was recorded.

5 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, 10, 15, 24 and 29 September 2013. Noise measurements during restricted hours on 1, 10, 15, 24 and 29 September 2013 exceeded the limit level at NM2. Investigation had been conducted to review the potential causes for the noise level recorded.

The monitoring results, together with their graphical presentations, are presented in *Annex D6*. A summary of the exceedances investigation result is presented in *Annex D7*.

4.5.3 Landscape and Visual

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

4.5.4 Cultural Heritage

No vibration monitoring is required for this reporting month 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. The inert C&D materials generated from the Project were disposed of at Tuen Mun Area 38/Tseung Kwan O Area 137 Fill Bank/Chai Wan Barging Point. The non-inert C&D materials other than steel and paper/cardboard packaging were disposed of at SENT Landfill. Steel, paper / cardboard packaging waste and plastics were sent to recyclers for recycling. No marine deposits was generated during the reporting month.

The quantity of different types of wastes generated in the reporting month 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 representatives of the Contractor, Engineer and ET. Site inspections were conducted on 5, 12 and 19 September 2013. Because of the scheduled SSEMC meeting on 26 September 2013 immediately after the joint inspection, inspection was not arranged for the Wai Chai site on that day. There was no non-compliance recorded during the site inspections.

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

4.7 ENVIRONMENTAL NON-CONFORMANCE

4.7.1 Summary of Monitoring Exceedance

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

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

Exceedances of noise Limit Level during restricted hours were reported at NM2 on 1, 10, 15, 24 and 29 September 2013. Investigation into the incidents had been made. Since no outdoor construction activities that had taken place during the period with exceedances, it is considered that the exceedances were not due to the Contract 23 construction works. A summary of the exceedances investigation result is presented in *Annex D7*.

4.7.2 Summary of Environmental Non-Compliance/Complaint/Summons/ Prosecution

No non-compliance event, complaint, summons, and prosecution were recorded during the reporting period. The cumulative complaint /summons/prosecution log is shown in *Annex D8*.

4.8 FUTURE KEY ISSUES

4.8.1 Key Issues for the Coming Month

Works to be undertaken for the coming two monitoring periods are summarised in *Table 4.8*.

Table 4.8 ***Construction Works to be Undertaken in the Coming Two Months at Wan Chai East Production and Drop Shafts***

Worksite	Construction Activities to be Undertaken
Production Shaft (Tunnel K and Tunnel J)	• Drilling and blasting; • Installation of tunnel services and rail tracks; and • Permanent lining construction.
Drop Shaft	• Permanent structural lining construction at upper shaft.

Potential environmental impacts arising from the above construction activities are mainly associated with dust, construction noise, site runoffs and waste management.

4.8.2 Monitoring Schedule for Next Month

The tentative schedule of TSP and noise monitoring for the next reporting period is presented in *Annex D3*. Environmental monitoring will be conducted at the same monitoring locations in the reporting period.

4.8.3 Construction Programme for the Next Month

The most up-to-date construction programme for the Project is presented in *Annex D9*.

5 CENTRAL DROP SHAFT

5.1 CONSTRUCTION ACTIVITIES DURING THE REPORTING MONTH

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

Table 5.1 Summary of Construction Activities Undertaken from 1 to 30 September 2013 at Central Drop Shaft

Construction Activity Undertaken
• Control hole drilling for grouting before raise boring.

5.2 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS

A summary of the relevant permits, licences, and/or notifications on environmental protection for this Project which are valid during the reporting month is presented in *Table 5.2* below.

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

Permit/ Licences/ Notification	Reference	Validity Period	Remarks
Wastewater Discharge License	Central PTW Drop Shaft WT0005131-2009	9 October 2009 - 31 October 2014	--
Chemical Waste Producer Registration	Central PTW Drop Shaft 5213-115-G2347-06	Throughout the Contract	--
Construction Noise Permit CNP	Central PTW Drop Shaft GW-RS0904-13	19 August 2013 - 18 February 2014	--

5.3 ENVIRONMENTAL MONITORING REQUIREMENTS

5.3.1 *Air Quality Monitoring*

Monitoring Location

In accordance with the EM&A Manual, 24-hour and 1-hour averaged TSP levels should be conducted at designated monitoring stations. Since access to some of the proposed monitoring locations stated in the EM&A Manual was denied or not available, alternative locations were proposed and agreed by the ER and IEC. The construction air quality monitoring station for this Contract is listed in *Table 5.3* and shown in *Annex E2*.

Table 5.3 Construction Phase Air Monitoring Location at Central Drop Shaft

Worksite	Construction Air Quality Monitoring Station			
	ID in EM&A Manual	ID	Location	Remark
Central	-	AM4_2	A Location within the DSD Central PTW	• Access to Sheung Wan Fire Station (CM_C1) was declined. • All possible locations along Connaught Road West and Connaught Road East have been exhausted and no suitable location was identified owing to the rejection by the premise owner, security reasons, absence of guaranteed access or inaccessibility. AM4 was the alternative location. • Since air monitoring station AM4 has to return to DSD for other Work Contract, AM4_2 is the alternative location to replace AM4.

Monitoring Parameters, Frequency and Programme

Air quality monitoring has been conducted in accordance with the requirements stipulated in the EM&A Manual (*Table 5.4*). The monitoring programme for this reporting period is shown in *Annex E3*.

Table 5.4 TSP Monitoring Parameter and Frequency at Central Drop Shaft

Parameter	Frequency
24-hour averaged TSP	Once in every 6 days
1-hour averaged TSP	3 times in 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 E5*.

Monitoring Methodology

Installation

The setup location of the HVS was listed in *Table 5.3*. 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 AM4_2;
- 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

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

Action and Limit Levels

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

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

Parameter	Air Monitoring Station	Action Level, μgm^{-3}	Limit Level, μgm^{-3}
24-hour averaged TSP	AM4_2	211	260
1-hour averaged TSP	AM4_2	393	500

Event and Action Plan (EAP)

Should non-compliance of the Action and Limit Levels occur, action will be taken in accordance with the EAP presented in *Annex I*.

5.3.2 Noise Monitoring

Monitoring Location

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

Table 5.6 Construction Phase Noise Monitoring Station at Central Drop Shaft

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

Monitoring Parameters, Frequency and Programme

Weekly construction noise monitoring was conducted in accordance with the requirements stipulated in the EM&A Manual. Additional noise monitoring was also conducted as per required in the EM&A Manual when works were carried out during restricted periods. The monitoring programme for this reporting period is shown in *Annex E3*.

The construction noise levels were measured in terms of A-weighted equivalent continuous sound pressure level (L_{Aeq}) in decibels dB(A). $L_{Aeq(30min)}$ was used as the monitoring parameter for the time period in 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 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 E6*, 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 (A/L) Levels for noise monitoring during different monitoring periods are summarised in *Table 5.7*.

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

Noise Monitoring Location	Action Level	Limit Level		Remark
		Measurement Parameters	Limit Level (dB(A))	
NM3	When one documented complaint is received	$L_{Aeq(30min)}$	75	Normal working hours during weekdays
		$L_{Aeq(5min)}$	70	Evening (1900-2300); and Sundays and public holidays (0700-2300)
		$L_{Aeq(5min)}$	55	Night-time (2300-0700)

Event and Action Plan (EAP)

Should non-compliance of the Action and Limit Levels occur, action will be taken in accordance with the EAP presented in *Annex I*.

5.3.3 Cultural Heritage

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

5.3.4 Landscape and Visual Monitoring

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

Event and Action Plan

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

5.4 IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS

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

5.5 MONITORING RESULTS

5.5.1 *Air Quality*

A total of 5 sets of 24-hour averaged and 15 sets of 1-hour averaged TSP measurements have been carried out at AM4_2 during the reporting period. The weather conditions during the monitoring period varied from sunny, rainy to fine. The monitoring data for 24-hour and 1-hour average TSP together with the wind data and graphical presentations are presented in *Annex E5*.

Other potential emission source in the vicinity (e.g. vehicle emissions) of the monitoring stations AM4_2 may also contribute to the local air quality. No exceedance of Action and Limit Levels of 1-hr and 24-hr TSP was recorded during the reporting period.

5.5.2 *Noise*

A total of 4 sets of 30-minute construction noise measurements were carried out at the monitoring station NM3 during normal weekdays of the reporting period. The monitoring results together with their graphical presentations are presented in *Annex E6*. The local impacts observed near the monitoring stations of NM3 were due to traffic noise from Connaught Road Central.

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

5.5.3 *Landscape and Visual*

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

5.5.4 *Cultural Heritage*

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

5.5.5 *Waste Management*

Waste generated from this Project includes inert C&D materials, non-inert C&D materials, and marine deposit. Non-inert C&D materials are made up of general refuse, steel and paper/cardboard packaging materials. Steel

materials generated from the project are also grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials. The inert C&D materials generated from this Project were disposed of at Tuen Mun Area 38/Tseung Kwan O Area 137 Fill Bank/Chai Wan Barging Point. The non-inert C&D materials other than steel and paper/cardboard packaging were disposed of at SENT Landfill. Steel, paper / cardboard packaging waste and plastics were sent to recyclers for recycling. No marine deposits were generated during the reporting month.

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

5.6 ENVIRONMENTAL SITE INSPECTION

A weekly site inspection was carried out by representatives of the Contractor, Engineer and ET during the reporting month. The site inspection was conducted on 19 September 2013. Because of no major construction works on 5, 12 and 26 September 2013 and the scheduled SSEMC meeting on 26 September 2013 immediately after the joint inspection, inspection was not arranged for the Central Drop Shaft site on those days. No non-compliance was recorded during the site inspections.

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

5.7 ENVIRONMENTAL NON-CONFORMANCE

5.7.1 Summary of Monitoring Exceedance

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

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

5.7.2 Summary of Environmental Non-Compliance/ Complaint/ Summon/ Prosecution

No non-compliance event, complaint, summons, and prosecution were recorded during the reporting period.

The cumulative complaint/ summons/ prosecution log is shown in *Annex E7*.

5.8 FUTURE KEY ISSUES

5.8.1 Key Issues for the Coming Month

Works to be undertaken in the coming two monitoring periods are summarised in *Table 5.8*.

Table 5.8 ***Construction Works to be Undertaken in the Coming Two Months at Central Drop Shaft***

Construction Activity to be Undertaken
• Raise boring.

Potential environmental impacts arising from the above construction activity are mainly associated with dust, construction noise, site runoffs and waste management.

5.8.2 Monitoring Schedule for Next Month

The tentative schedule of TSP and noise monitoring for the next reporting period is presented in *Annex E3*. Environmental monitoring will be conducted at the same monitoring locations in the reporting period.

5.8.3 Construction Programme for the Next Month

The most up-to-date construction programme for the Project is presented in *Annex E8*.

6 SAI YING PUN JUNCTION SHAFT

6.1 CONSTRUCTION ACTIVITIES DURING THE REPORTING MONTH

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 to 30 September 2013 at the Sai Ying Pun Junction Shaft

Construction Activities Undertaken
• Pre-excavation grouting; and • Drilling and blasting.

6.2 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS

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

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

Permit/ Licences/ Notification	Reference	Validity Period	Remarks
Wastewater Discharge License	Sai Ying Pun Junction Shaft WT00006884-2010	11 June 2010 – 31 October 2014	--
Chemical Waste Producer Registration	Sai Ying Pun Junction Shaft 5213-112-G2347-05	Throughout the Contractor	--
Construction Noise Permit CNP	Sai Ying Pun Junction Shaft GW-RS0356-13	4 May 2013 – 3 November 2013	

6.3 ENVIRONMENTAL MONITORING REQUIREMENTS

6.3.1 *Air Quality Monitoring*

Because of the contractual arrangements, air quality monitoring was implemented by the Environmental Team of Contract No. *DC/2007/24 of Harbour Area Treatment Scheme Stage 2A (HATS2A) – Construction of Sewage Conveyance System from Aberdeen to Stonecutters Island.*

Monitoring Location

In accordance with the EM&A Manual, 24-hour and 1-hour averaged TSP levels should be conducted at designated monitoring stations. Since access to some of the proposed monitoring locations stated in the EM&A Manual was denied or not available, alternative locations were proposed and agreed by the

ER and 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*). The monitoring programme provided by *Contract No. DC/2007/24 – Harbour Area Treatment Scheme Stage 2A (HATS 2A) Construction of Sewage Conveyance System from Aberdeen to Sai Ying Pun* for this reporting period is shown in *Annex F3*.

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

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

Wind Data Monitoring

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

Action and Limit Levels

The Action and Limit levels have been established and are 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 (EAP)

Should non-compliance of the Action and Limit Levels occur, action will be taken in accordance with the EAP 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 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 6.6* and 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 monitoring programme for this reporting period is shown in *Annex F3*.

The construction noise levels were measured in terms of A-weighted equivalent continuous sound pressure level (L_{Aeq}) in decibels dB(A). $L_{Aeq(30min)}$ was used as the monitoring parameter for the time period in 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 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 F*, comply with IEC 651: 1979 and 804:1985 (Type 1) specifications. 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 (A/L) Levels for noise monitoring during different monitoring periods are summarised in *Table 6.7*.

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

Noise Monitoring Location	Action Level	Limit Level		Remark
		Measurement Parameter	Limit Level (dB(A))	
NM4	When one documented complaint is received	$L_{Aeq(30min)}$	75	Normal working hours during weekdays
		$L_{Aeq(5min)}$	70	Evening (1900-2300); and Sundays and public holidays (0700-2300)
		$L_{Aeq(5min)}$	55	Night-time (2300-0700)

Event and Action Plan

Should non-compliance of the Action and Limit Levels occur, action will be taken in accordance with the EAP presented in *Annex I*.

6.3.3 Cultural Heritage

No vibration monitoring was conducted in the reporting month as there were no blasting of tunnel / shaft works in the vicinity of the historical buildings listed in the EM&A Manual.

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 was 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 fulfilled requirements as stated in the EIA Report, the Environmental Permit and EM&A Manual. The implementation status during the reporting period is summarised in *Annex F4*.

6.5 MONITORING RESULTS

6.5.1 Air Quality

A total of 6 sets of 24-hour averaged and 18 sets of 1-hour averaged TSP measurements have been carried out at AM5 during the reporting period. The weather conditions during the monitoring period varied from sunny to fine. The monitoring data for 24-hour and 1-hour average TSP together with the wind data and graphical presentations are presented in *Annex F5*.

Other potential emission source in the vicinity (e.g. vehicle emissions) of the monitoring stations AM5 may also contribute to the local air quality. No exceedance of Action and Limit Levels of 1-hr and 24-hr TSP was recorded during the reporting period.

6.5.2 Noise

A total of 4 sets of 30-minute construction noise measurements were carried out at the monitoring station NM4 during normal weekdays of the reporting period. No exceedance of Action and Limit Level for noise monitoring during normal working hours was recorded.

5 sets of 3 x 5-minute construction noise measurements were carried out during restricted hours on 1, 10, 15, 24 and 29 September 2013. No exceedance of the Action and Limit Levels for noise monitoring during restricted hours was recorded.

The monitoring results together with graphical presentations are presented in *Annex F6*. The local impact observed near the monitoring station of NM4 was traffic noise from Connaught Road West.

6.5.3 Landscape and Visual

The implementation and maintenance of landscape and visual mitigation measures are fully achieved and no major finding was made during the reporting month.

6.5.4 Cultural Heritage

No vibration monitoring is required for this reporting month as no blasting of tunnel / shaft works was carried out 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. The inert C&D materials generated from this Project were disposed of at Tuen Mun Area 38/Tseung Kwan O Area 137 Fill Bank/Chai

Wan Barging Point. The non-inert C&D materials other than steel and paper/cardboard packaging were disposed of at SENT Landfill. Steel, paper / cardboard packaging waste and plastics were sent to recyclers for recycling. No marine deposits was generated during the reporting month.

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

6.6 ENVIRONMENTAL SITE INSPECTION

Joint site inspections were conducted by representatives of the Contractor, Engineer and the ET on 5, 12, 19 and 26 September 2013. A representative of the IEC joined the site inspection on 26 September 2013. There were no non-compliances recorded during the site inspections.

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

6.7 ENVIRONMENTAL NON-CONFORMANCE

6.7.1 Summary of Monitoring Exceedance

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

No exceedance of the Action and Limit Levels for noise was recorded during both normal working hours and restricted hours in the reporting period.

6.7.2 Summary of Environmental Non-Compliance/ Complaint/ Summons / Prosecution

No non-compliance event, complaint, summons and prosecution were recorded during the reporting period.

The cumulative complaint /summons/prosecution log is shown in *Annex F7*.

6.8 FUTURE KEY ISSUES

6.8.1 Key Issues for the Coming Month

Works to be undertaken for the coming two monitoring periods are summarised in *Table 6.8.*

Table 6.8 ***Construction Works to be Undertaken in the Coming Two Months at Sai Ying Pun Junction Shaft***

Construction Activities to be Undertaken
• Drilling and blasting; and • Installation of tunnel services and rail tracks.

Potential environmental impacts arising from the above construction activities are mainly associated with dust, construction noise, site runoffs and waste management.

6.8.2 Monitoring Schedule for Next Month

The tentative schedule of TSP and noise monitoring for the next reporting period is presented in *Annex F3*. Environmental monitoring will be conducted at the same monitoring locations in the reporting period.

6.8.3 Construction Programme for the Next Month

The most up-to-date construction programme for the Project is presented in *Annex F8*.

7 STONECUTTERS ISLAND PRODUCTION AND RISER SHAFTS

7.1 CONSTRUCTION ACTIVITIES DURING THE REPORTING MONTH

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

Table 7.1 Summary of Construction Activities Undertaken from 1 to 30 September 2013 at the Stonecutters Island Production and Riser Shafts

Worksite	Construction Activities Undertaken
Riser Shaft	• Raise boring – reaming.
Production Shaft (Tunnel L)	• Pre-excavation grouting; and • Drilling and blasting.

7.2 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS

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

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

Permit/ Licences/ Notification	Reference	Validity Period	Remarks
Wastewater Discharge License	Stonecutters Island Production Shaft and Riser Shaft WT00005069-2009	3 November 2010 – 31 October 2014	--
Chemical Waste Producer Registration	Stonecutters Island Production Shaft and Riser Shaft 5213-269-G2449-07	Throughout the Contract	--
Construction Noise Permit CNP	Stonecutters Island Production Shaft and Riser Shaft GW-RW0258-13	23 April 2013 – 22 October 2013	
	Stonecutters Island Area K-1 GW-RW0388-13	9 July 2013 – 8 January 2014	--

7.3 ENVIRONMENTAL MONITORING REQUIREMENTS

7.3.1 Air Quality Monitoring

Monitoring Location

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

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

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

Monitoring Parameters, Frequency and Programme

Air quality monitoring was conducted in accordance with the requirements stipulated in the EM&A Manual (*Table 7.4*). The monitoring programme for this reporting period is shown in *Annex G3*.

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

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

Monitoring Equipment

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

Monitoring Methodology

Installation

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

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

- appropriate support to secure the samplers against gusty wind was provided at AM6;
- 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 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 were calibrated using an orifice calibrator. Initial calibrations of the dust monitoring equipment were conducted upon installation and prior to commissioning. Five-point calibration was carried out for HVSs using CM-AIR-43 Calibration Kit. HVSs are calibrated on a bi-monthly basis. The calibration record for the HVS is given in *Annex H*.

Wind Data

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

Action and Limit Levels

The Action and Limit levels have been established and are presented in *Table 7.5*. The baseline air monitoring data (24-hr and 1-hr TSP average) measured

under *HATS2A – Provision of Disinfection Facilities at SCISTW* (DF) were also included to establish the Action Level at AM6.

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

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

Event and Action Plan

Should non-compliance of the Action and Limit Levels occur, action will be taken in accordance with the EAP presented in *Annex I*.

7.3.2 Noise Monitoring

Monitoring Location

In accordance with the EM&A Manual, monitoring of construction noise impact should be conducted at the designated monitoring stations. Since access to some of the proposed monitoring locations stated in the EM&A Manual were 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 7.6* and shown in *Annex G2*.

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

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

Monitoring Parameters, Frequency and Programme

Weekly construction noise monitoring was conducted in accordance with the requirements stipulated in the EM&A Manual. Additional noise monitoring was also conducted as per required the EM&A Manual when works were carried out during restricted periods. The monitoring programme for this reporting period is shown in *Annex G3*.

The construction noise levels were measured in terms of A-weighted equivalent continuous sound pressure level (L_{Aeq}) in decibels dB(A). $L_{Aeq(30min)}$ was used as the monitoring parameter for the time period in 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) were also recorded during the monitoring for reference. The measured noise levels were logged every 5 minutes throughout the impact monitoring period.

Monitoring Equipment and Methodology

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

The sound level meters and calibrator used for the noise measurement, as listed in *Annex G6*, 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.

A correction of +3 dB(A) was made to the free field measurement at NM5.

Action and Limit Levels

The Action and Limit (A/L) Levels for noise monitoring during different monitoring periods are summarised in *Table 7.7*.

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

Noise Monitoring Location	Action Level	Limit Level		Remark
		Measurement Parameter	Limit Level (dB(A))	
NM5	When one documented complaint is received	$L_{Aeq(30min)}$	75	Normal working hours during weekdays
		$L_{Aeq(5min)}$	70	Evening (1900-2300); and Sundays and public holidays (0700-2300)
		$L_{Aeq(5min)}$	55	Night-time (2300-0700)

Event and Action Plan

Should non-compliance of the Action and Limit Levels occur, action will be taken in accordance with the EAP presented in *Annex I*.

7.3.3 *Cultural Heritage*

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

7.3.4 *Landscape and Visual Monitoring*

In accordance with the EM&A Manual, landscape and visual monitoring is required to ensure that the design, implementation and maintenance of landscape and visual mitigation measures are fully achieved. The landscape and visual monitoring was 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*.

7.4 *IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS*

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

7.5 *MONITORING RESULTS*

7.5.1 *Air Quality*

A total of 5 sets of 24-hour averaged and 15 sets of 1-hour averaged TSP measurements were carried out at AM6 during the reporting period. The weather conditions during the monitoring period were varied from sunny to cloudy. The monitoring data for 24-hour and 1-hour averaged TSP together with wind data and graphical presentations are presented in *Annex G5*.

Other potential emission source in the vicinity (e.g. vehicle emissions) of the monitoring stations AM6 may also contribute to the local air quality. No exceedance of the Action and Limit Levels of 1-hr and 24-hr TSP was recorded during the reporting period.

7.5.2 *Noise*

A total of 4 sets of 30-minute construction noise measurements were carried out at the monitoring station NM5 during normal weekdays of the reporting period. No exceedance of the Action and Limit Levels for noise monitoring during normal working hours was recorded.

5 sets of 3 x 5-minute construction noise measurements were carried out during restricted hours on 3, 8, 17, 22 and 30 September 2013 during the

reporting month. No exceedance of the Action and Limit Levels for noise monitoring during restricted hours was recorded.

The monitoring results together with their graphical presentations are presented in *Annex G6*. The local impacts observed near the monitoring stations of NM5 included operations at the Government Dockyard, other construction sites activities and traffic within the SCISTW in the vicinity.

7.5.3 Landscape and Visual

The implementation and maintenance of landscape and visual mitigation measures are fully achieved and no major finding was made during the reporting month.

7.5.4 Cultural Heritage

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

7.5.5 Waste Management

Waste generated from this Project includes inert C&D materials, non-inert C&D materials, and marine deposit. Non-inert C&D materials are made up of general refuse, steel and paper/cardboard packaging materials. Steel materials generated from the project are also grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials. The inert C&D materials generated from this Project were disposed of at Tuen Mun Area 38/Tseung Kwan O Area 137 Fill Bank/Chai Wan Barging Point. The non-inert C&D materials other than steel and paper/cardboard packaging were disposed of at SENT Landfill. Steel, paper/cardboard packaging waste and plastics were sent to recyclers for recycling. No marine deposits was generated during the reporting month.

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

7.6 ENVIRONMENTAL SITE INSPECTION

Weekly site inspections were carried out by representatives of the Contractor, Engineer and the ET. Site inspections were conducted on 5, 12, 19 and 26 September 2013. The representative of the IEC joined the site inspection on 26 September 2013. 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 inspection were undertaken as reported

by the Contractor and confirmed in the following weekly site inspection conducted during the reporting period.

7.7 ENVIRONMENTAL NON-CONFORMANCE

7.7.1 Summary of Monitoring Exceedance

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

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

7.7.2 Summary of Environmental Non-Compliance/ Complaint/ Summons/ Prosecution

No non-compliance event, complaint, summons, and prosecution were recorded during the reporting period. The cumulative complaint /summons/prosecution log is shown in *Annex G7*.

A complaint about noise during restricted hour was received on 22 July 2013. Investigation of the complaint was conducted in August and the investigation report is issued in this reporting month. The complaint investigation report is shown in *Annex G8*.

7.8 FUTURE KEY ISSUES

7.8.1 Key Issues for the Coming Month

Works to be undertaken for the coming two monitoring periods are summarised in *Table 7.8*.

Table 7.8 Construction Works to be Undertaken in the Coming Two Months at Stonecutters Island Production and Riser Shafts

Worksite	Construction Activities Undertaken
Riser Shaft	• Permanent structural lining construction at lower shaft.
Production Shaft (Tunnel L)	• Drilling and blasting; and • Installation of tunnel services and rail tracks.

Potential environmental impacts arising from the above construction activities are mainly associated with dust, construction noise, site runoffs and waste management.

7.8.2 Monitoring Schedule for the Next Month

The tentative schedule of TSP and noise monitoring for the next reporting period is presented in *Annex G3*. Environmental monitoring will be conducted at the same monitoring locations in this reporting period.

7.8.3 Construction Programme for the Next Month

The most updated construction programme for the Project is presented in *Annex G9*.

8 CONCLUSIONS

This Environmental Monitoring and Audit (EM&A) Report presents the EM&A programme undertaken during the period from 1 to 30 September 2013 in accordance with EM&A Manual and the requirement under EP-322/2008/F. The conclusions for the five different sites are summarised below.

8.1 NORTH POINT PRODUCTION AND DROP SHAFTS

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

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

No non-compliance event, complaint, or summons/prosecution was recorded during the reporting period.

8.2 WAN CHAI EAST PRODUCTION AND DROP SHAFTS

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

No exceedance of Action and Limit Levels for construction works was recorded at the monitoring station during daytime on normal weekdays.

Limit Level for construction noise was exceeded on 1, 10, 15, 24 and 29 September 2013 during the restricted hours at the monitoring station. The findings of the investigation of exceedances indicated that the exceedances were attributed to other potential noise sources (such as traffic) but not due to this construction as no outdoor construction activities were being carried out during the period.

No non-compliance event, complaint, or summons/prosecution was recorded during the reporting period.

8.3 CENTRAL DROP SHAFT

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

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

No non-compliance event, complaint, or summons/prosecution was recorded during the reporting period.

8.4 SAI YING PUN JUNCTION SHAFT

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

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

No non-compliance event, complaint, or summons/prosecution was recorded during the reporting period.

8.5 STONECUTTERS ISLAND PRODUCTION AND RISER SHAFTS

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

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

No non-compliance event, complaint, or summons/prosecution was recorded during the reporting period.

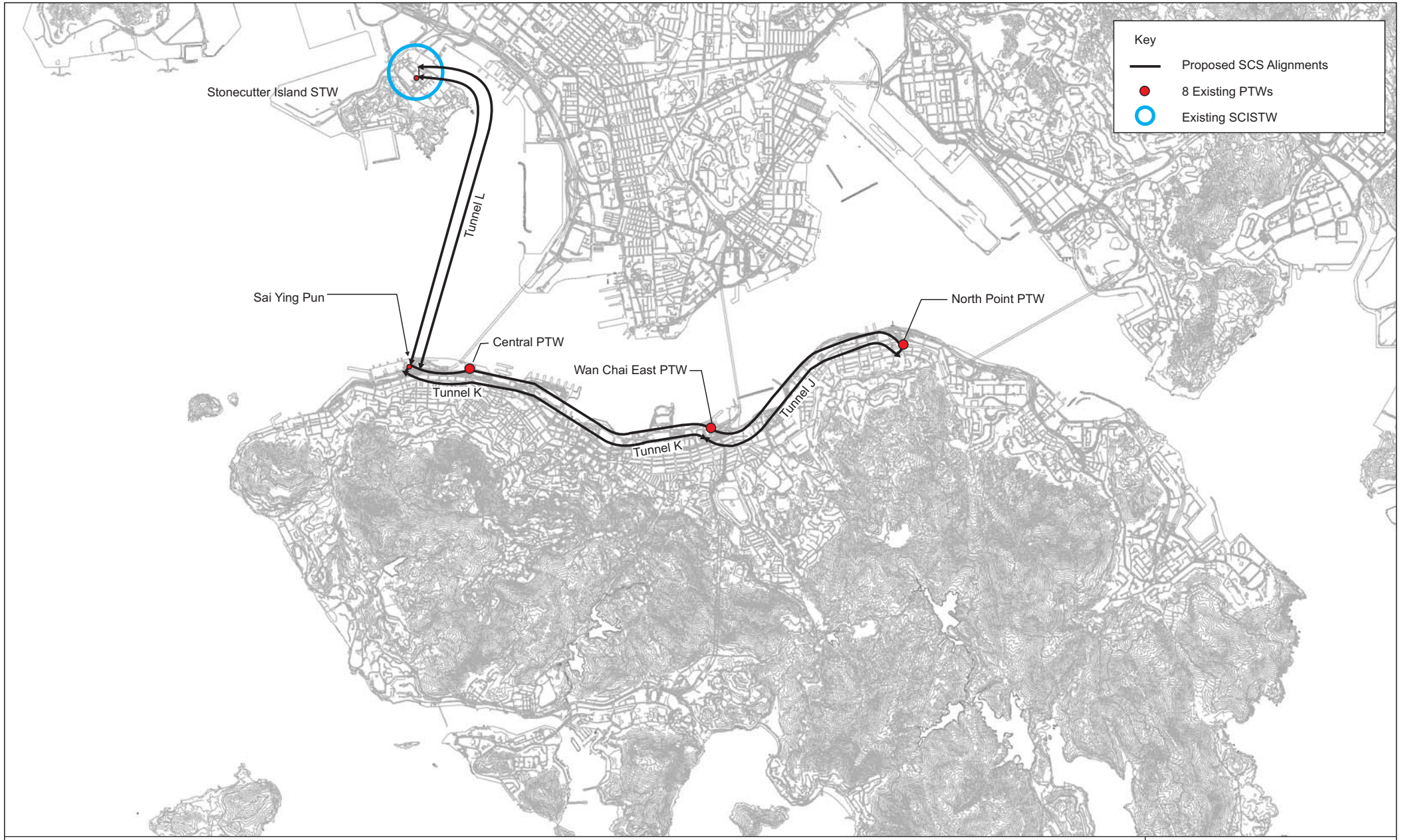
A complaint about noise during restricted hour was received on 22 July 2013. Investigation of the complaint was conducted in August and the findings of the investigation are presented in this reporting month.

8.6 OVERALL

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

Annex A

Locations of Works Areas



Annex A

General Layout Plan of HATS Stage 2A

FILE: 0104887h5
DATE: 17/05/2010

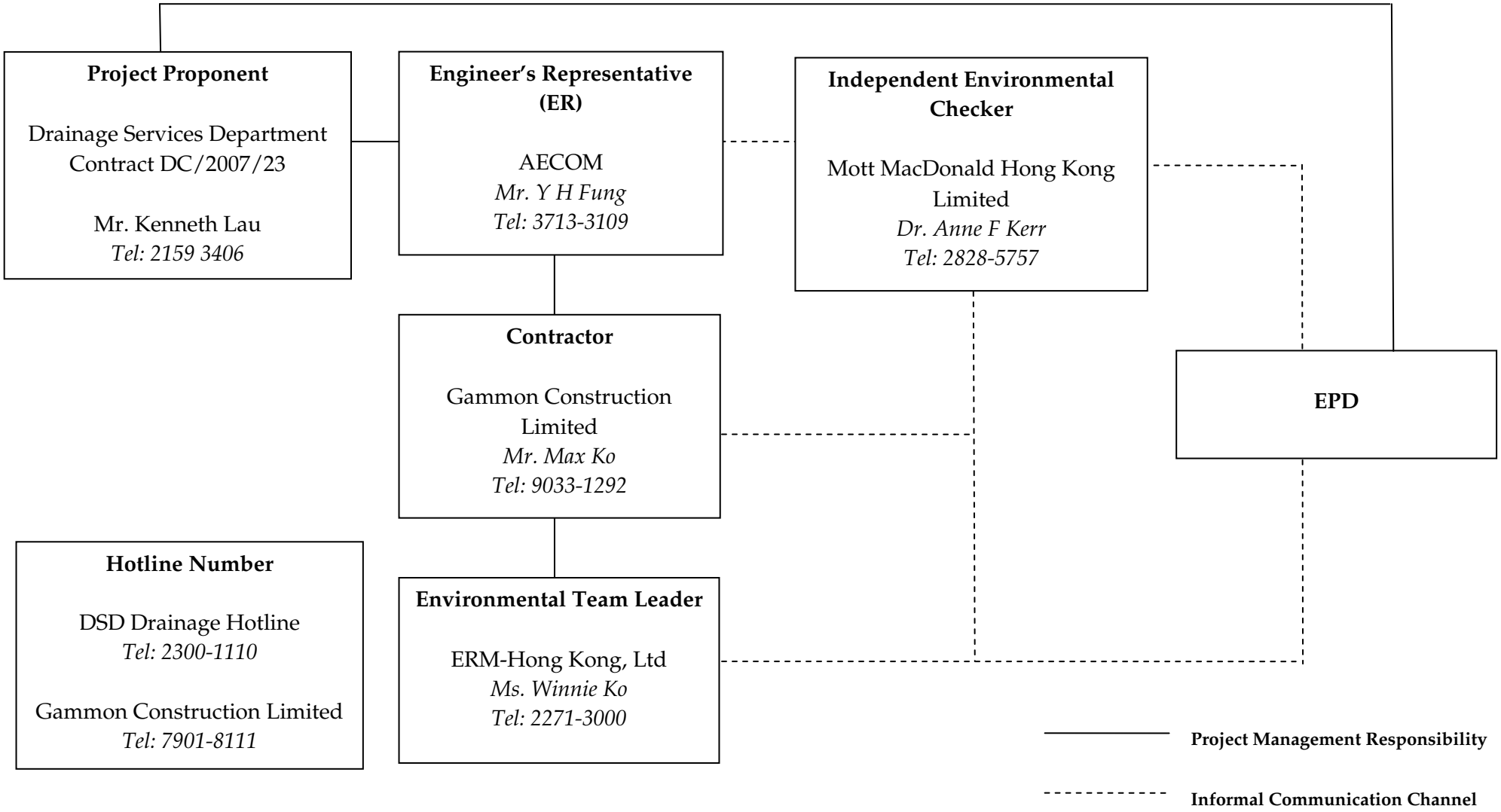
Environmental Resources Management

ERM

Annex B

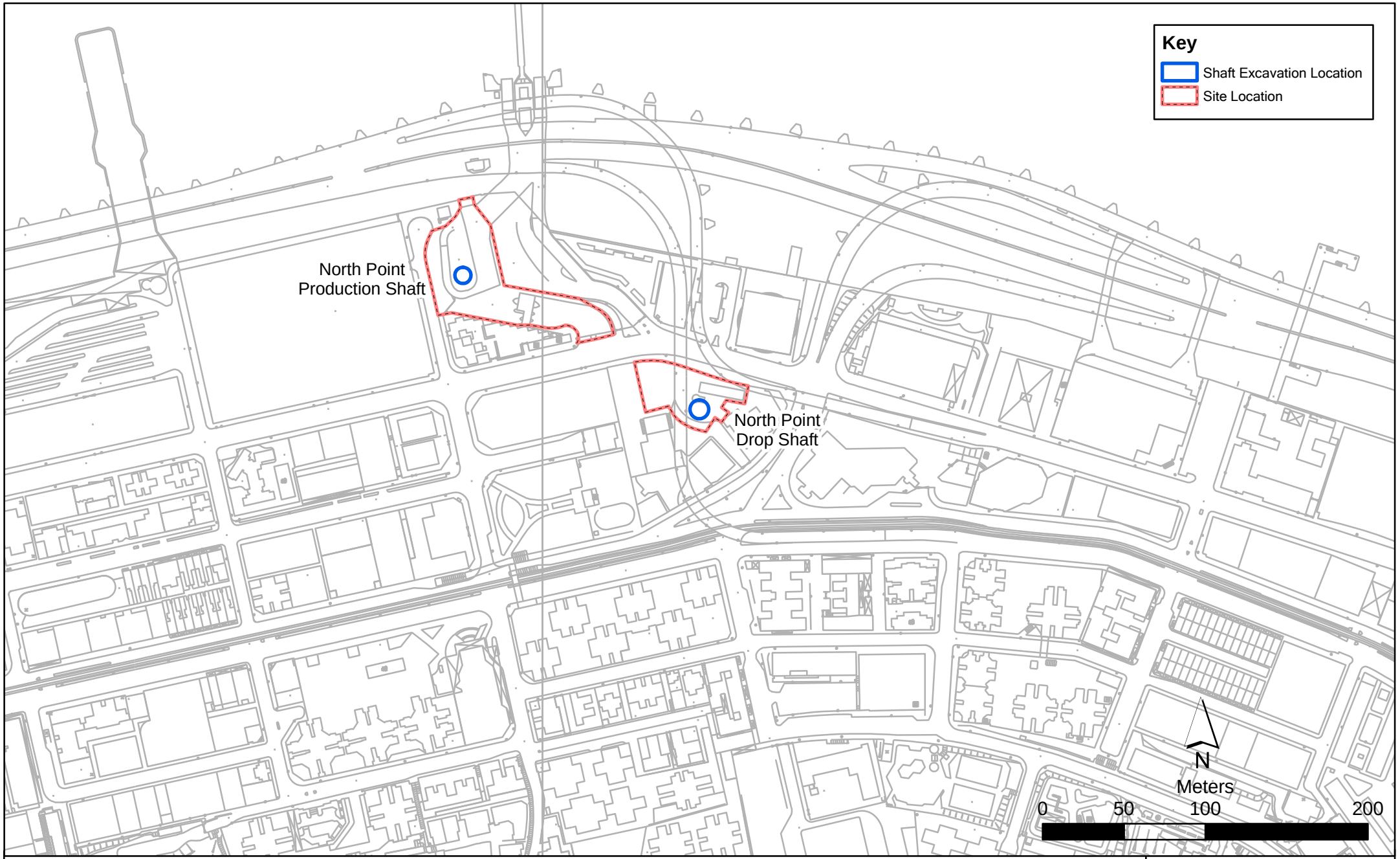
Project Organization Chart and Contact Detail

Project Organization



Annex C

North Point Production and Drop Shafts



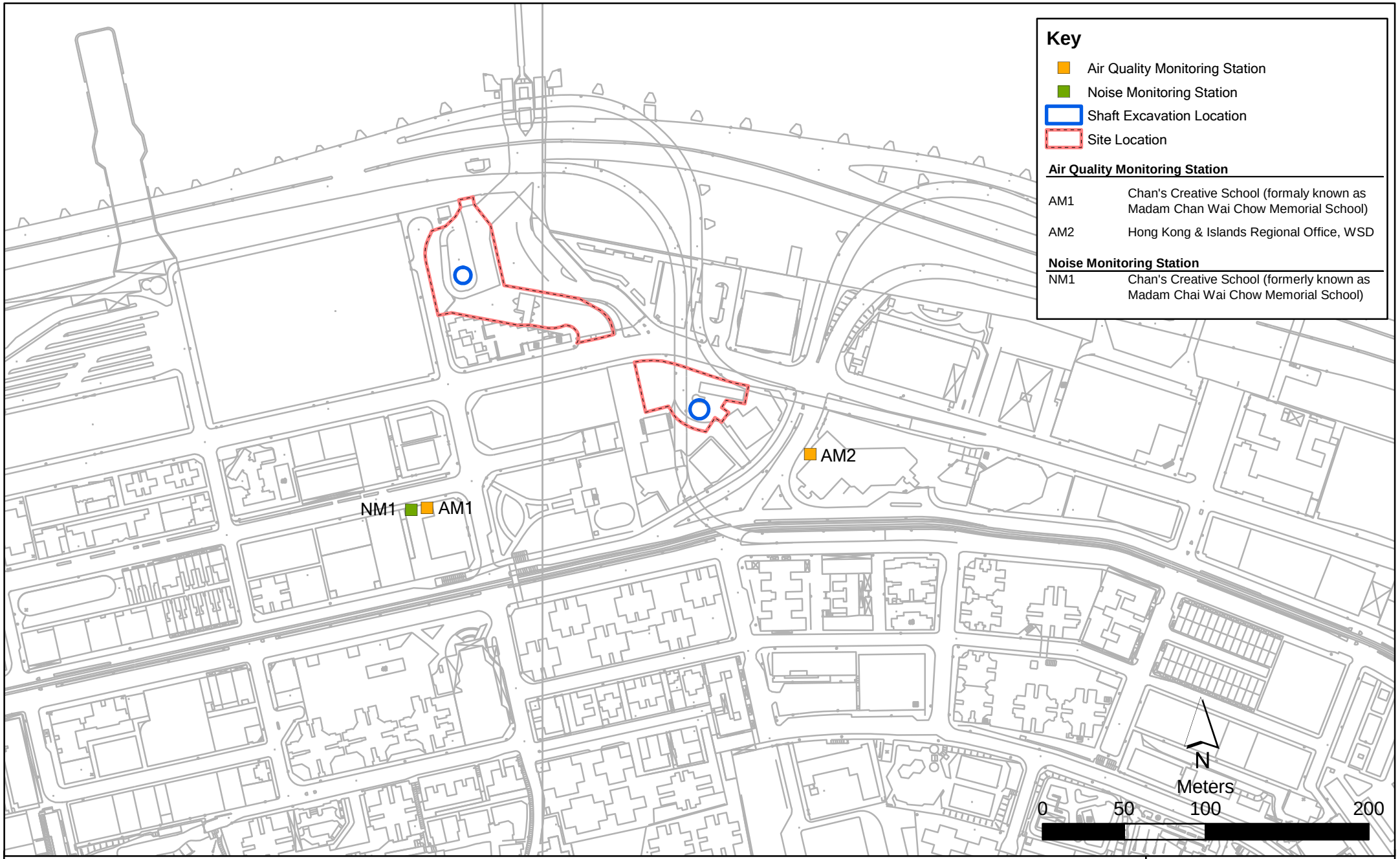
Annex C1

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

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

Environmental Resources Management

ERM



Annex C2

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

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

Environmental Resources Management

ERM

Annex C3 Monitoring Schedule of the Reporting Month and Next Month

DC/2007/23
Harbour Area Treatment Scheme Stage 2A
Construction of Sewage Conveyance System from North Point to Stonecutters Island
Impact Construction Air Quality Monitoring Schedule

AM1 - Chan's Creative School

Monitoring Month : September 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
01-Sep	02-Sep	03-Sep	04-Sep	05-Sep	06-Sep	07-Sep
			1-hr and 24-hr Monitoring			
08-Sep	09-Sep	10-Sep	11-Sep	12-Sep	13-Sep	14-Sep
		1-hr and 24-hr Monitoring				
15-Sep	16-Sep	17-Sep	18-Sep	19-Sep	20-Sep	21-Sep
	1-hr and 24-hr Monitoring				Public Holiday	1-hr and 24-hr Monitoring
22-Sep	23-Sep	24-Sep	25-Sep	26-Sep	27-Sep	28-Sep
					1-hr and 24-hr Monitoring	
29-Sep	30-Sep					

Monitoring Month : October 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		01-Oct	02-Oct	03-Oct	04-Oct	05-Oct
		Public Holiday		1-hr and 24-hr Monitoring		
06-Oct	07-Oct	08-Oct	09-Oct	10-Oct	11-Oct	12-Oct
			1-hr and 24-hr Monitoring			
13-Oct	14-Oct	15-Oct	16-Oct	17-Oct	18-Oct	19-Oct
	Public Holiday	1-hr and 24-hr Monitoring				
20-Oct	21-Oct	22-Oct	23-Oct	24-Oct	25-Oct	26-Oct
	1-hr and 24-hr Monitoring					1-hr and 24-hr Monitoring
27-Oct	28-Oct	29-Oct	30-Oct	31-Oct		

Annex C3 Monitoring Schedule of the Reporting Month and Next Month

DC/2007/23
Harbour Area Treatment Scheme Stage 2A
Construction of Sewage Conveyance System from North Point to Stonecutters Island
Impact Construction Air Quality Monitoring Schedule

AM2 - Hong Kong & Islands Regional Office, WSD
Monitoring Month : September 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
01-Sep	02-Sep	03-Sep	04-Sep	05-Sep	06-Sep	07-Sep
			1-hr and 24-hr Monitoring			
08-Sep	09-Sep	10-Sep	11-Sep	12-Sep	13-Sep	14-Sep
		1-hr and 24-hr Monitoring				
15-Sep	16-Sep	17-Sep	18-Sep	19-Sep	20-Sep	21-Sep
	1-hr and 24-hr Monitoring				Public Holiday	1-hr and 24-hr Monitoring
22-Sep	23-Sep	24-Sep	25-Sep	26-Sep	27-Sep	28-Sep
					1-hr and 24-hr Monitoring	
29-Sep	30-Sep					

Monitoring Month : October 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		01-Oct	02-Oct	03-Oct	04-Oct	05-Oct
		Public Holiday		1-hr and 24-hr Monitoring		
06-Oct	07-Oct	08-Oct	09-Oct	10-Oct	11-Oct	12-Oct
			1-hr and 24-hr Monitoring			
13-Oct	14-Oct	15-Oct	16-Oct	17-Oct	18-Oct	19-Oct
	Public Holiday	1-hr and 24-hr Monitoring				
20-Oct	21-Oct	22-Oct	23-Oct	24-Oct	25-Oct	26-Oct
	1-hr and 24-hr Monitoring					1-hr and 24-hr Monitoring
27-Oct	28-Oct	29-Oct	30-Oct	31-Oct		

Annex C3 Monitoring Schedule of the Reporting Month and Next Month

DC/2007/23

Harbour Area Treatment Scheme Stage 2A

Construction of Sewage Conveyance System from North Point to Stonecutters Island

Impact Construction Noise Quality Monitoring Schedule

NM1 - Chan's Creative School

Monitoring Month : September 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
01-Sep	02-Sep	03-Sep	04-Sep	05-Sep	06-Sep	07-Sep
Noise Monitoring			Noise Monitoring			
08-Sep	09-Sep	10-Sep	11-Sep	12-Sep	13-Sep	14-Sep
		Noise Monitoring (Daytime and Evening time)				
15-Sep	16-Sep	17-Sep	18-Sep	19-Sep	20-Sep	21-Sep
Noise Monitoring	Noise Monitoring				Public Holiday	
22-Sep	23-Sep	24-Sep	25-Sep	26-Sep	27-Sep	28-Sep
		Noise Monitoring (Evening time)			Noise Monitoring	
29-Sep	30-Sep					
Noise Monitoring						

Monitoring Month : October 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		01-Oct	02-Oct	03-Oct	04-Oct	05-Oct
		Public Holiday		Noise Monitoring		
06-Oct	07-Oct	08-Oct	09-Oct	10-Oct	11-Oct	12-Oct
		Noise Monitoring (Evening time)	Noise Monitoring			
13-Oct	14-Oct	15-Oct	16-Oct	17-Oct	18-Oct	19-Oct
Noise Monitoring	Public Holiday	Noise Monitoring				
20-Oct	21-Oct	22-Oct	23-Oct	24-Oct	25-Oct	26-Oct
	Noise Monitoring	Noise Monitoring (Evening time)				
27-Oct	28-Oct	29-Oct	30-Oct	31-Oct		
Noise Monitoring						

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; • 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	Filter ID
04-Sep-13	8:47	9:47	Rainy	115	340	500	Construction work in progress	29	<5	GMW GS 2310 (S/N 1808)	8274
	9:49	10:49	Rainy	127	340	500	Construction work in progress	29	<5	GMW GS 2310 (S/N 1808)	7951
	10:51	11:51	Rainy	190	340	500	Construction work in progress	29	<5	GMW GS 2310 (S/N 1808)	7952
10-Sep-13	13:35	14:35	Sunny	183	340	500	Construction work in progress	30	<5	GMW GS 2310 (S/N 1808)	7957
	14:37	15:37	Sunny	189	340	500	Construction work in progress	30	<5	GMW GS 2310 (S/N 1808)	7959
	15:39	16:39	Sunny	194	340	500	Construction work in progress	30	<5	GMW GS 2310 (S/N 1808)	7960
16-Sep-13	11:48	12:48	Sunny	134	340	500	Construction work in progress	30	<5	GMW GS 2310 (S/N 1808)	8373
	12:50	13:50	Sunny	149	340	500	Construction work in progress	30	<5	GMW GS 2310 (S/N 1808)	8395
	13:52	14:52	Sunny	125	340	500	Construction work in progress	30	<5	GMW GS 2310 (S/N 1808)	8376
21-Sep-13	9:00	10:00	Fine	149	340	500	Construction work in progress	29	<5	GMW GS 2310 (S/N 1808)	8393
	10:02	11:02	Fine	160	340	500	Construction work in progress	29	<5	GMW GS 2310 (S/N 1808)	8379
	11:04	12:04	Fine	154	340	500	Construction work in progress	29	<5	GMW GS 2310 (S/N 1808)	8382
27-Sep-13	11:10	12:10	Sunny	151	340	500	Construction work in progress	29	<5	GMW GS 2310 (S/N 1808)	8391
	12:12	13:12	Sunny	137	340	500	Construction work in progress	29	<5	GMW GS 2310 (S/N 1808)	8389
	13:14	14:14	Sunny	145	340	500	Construction work in progress	29	<5	GMW GS 2310 (S/N 1808)	8388
			Min.	**115**							
			Max.	**194**							
			Average	**153**							

* Wind Speed data is presented in the Meteorological Data table

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

1-hour TSP Monitoring Results

Station AM2

Date	Start Time	Finish Time	Weather	TSP Concentration ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Site Conditions / Observations / Remarks	Temperature (°C)	Wind Speed * (m/s)	Sampler ID	Filter ID
04-Sep-13	9:05	10:05	Rainy	149	352	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 0145)	8273
	10:07	11:07	Rainy	132	352	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 0145)	7950
	11:09	12:09	Rainy	139	352	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 0145)	7953
10-Sep-13	13:50	14:50	Sunny	191	352	500	Construction work in progress	30	<5	GMW GS-2310 (S/N 0145)	7956
	14:52	15:52	Sunny	187	352	500	Construction work in progress	30	<5	GMW GS-2310 (S/N 0145)	7958
	15:54	16:54	Sunny	190	352	500	Construction work in progress	30	<5	GMW GS-2310 (S/N 0145)	7961
16-Sep-13	12:10	13:10	Sunny	145	352	500	Construction work in progress	30	<5	GMW GS-2310 (S/N 0145)	8374
	13:12	14:12	Sunny	150	352	500	Construction work in progress	30	<5	GMW GS-2310 (S/N 0145)	8396
	14:14	15:14	Sunny	146	352	500	Construction work in progress	30	<5	GMW GS-2310 (S/N 0145)	8375
21-Sep-13	9:20	10:20	Fine	173	352	500	Construction work in progress	30	<5	GMW GS-2310 (S/N 0145)	8794
	10:22	11:22	Fine	161	352	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 0145)	8380
	11:24	12:24	Fine	178	352	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 0145)	8381
27-Sep-13	11:30	12:30	Sunny	127	352	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 0145)	8384
	12:32	13:32	Sunny	154	352	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 0145)	8390
	13:34	14:34	Sunny	138	352	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 0145)	8387
			Min.	**127**							
			Max.	**191**							
			Average	**157**							

* 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

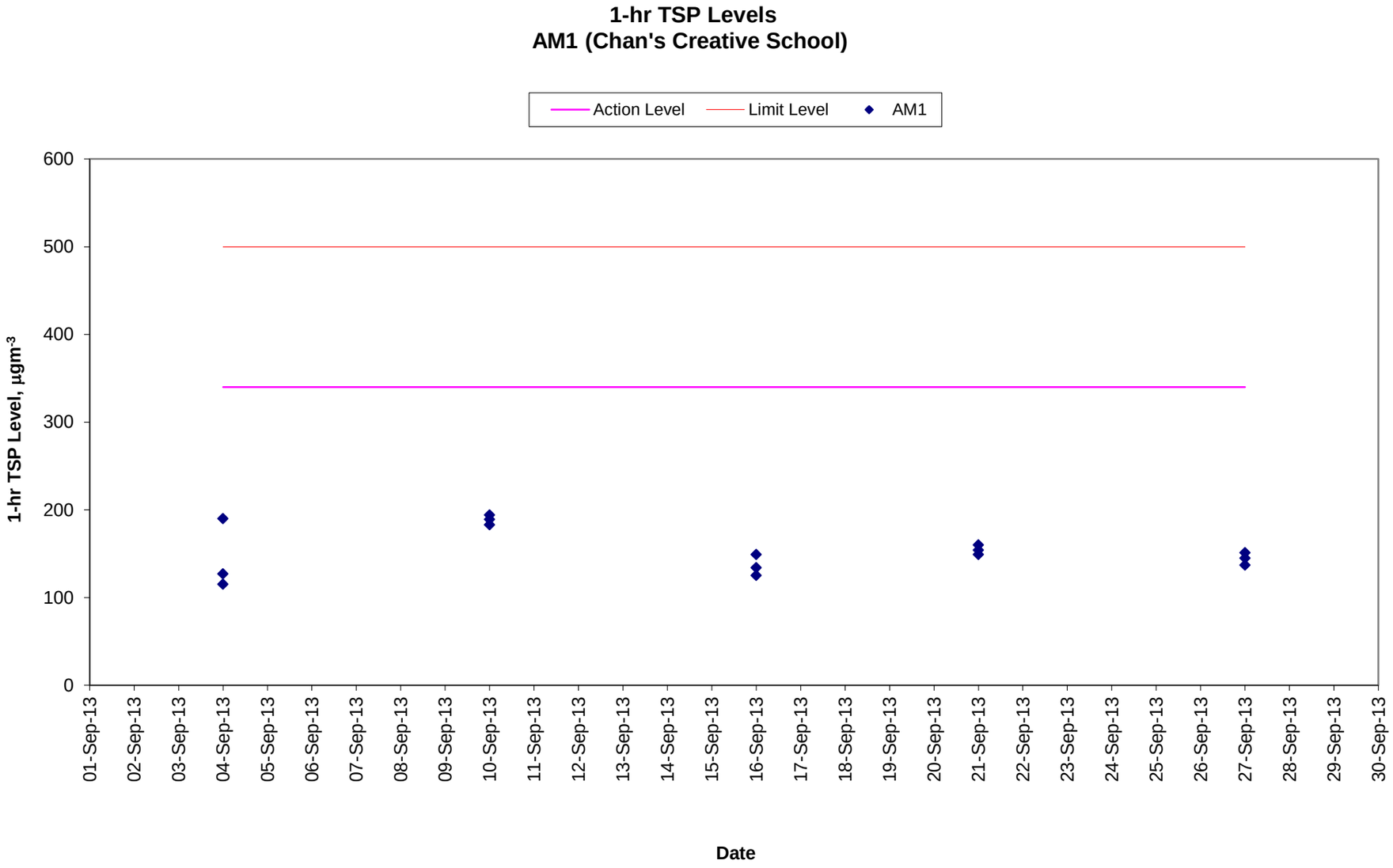
Station AM1

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-Sep-13	11:53	05-Sep-13	11:53	Rainy	2.7905	2.9427	16484.03	16508.03	24.00	1.22	1.22	1.22	87	185	260	Construction work in progress	GMW GS 2310 (S/N 1808)	7955
10-Sep-13	10:42	11-Sep-13	10:42	Sunny	2.7907	2.9415	16511.03	16535.03	24.00	1.22	1.22	1.22	86	185	260	Construction work in progress	GMW GS 2310 (S/N 1808)	8296
16-Sep-13	14:54	17-Sep-13	14:54	Sunny	2.8124	2.9676	16538.03	16562.03	24.00	1.22	1.22	1.22	87	185	260	Construction work in progress	GMW GS 2310 (S/N 1808)	8377
21-Sep-13	12:06	22-Sep-13	12:06	Fine	2.8242	2.9771	16565.03	16589.03	24.00	1.22	1.22	1.22	87	185	260	Construction work in progress	GMW GS 2310 (S/N 1808)	8383
27-Sep-13	14:16	28-Sep-13	14:16	Sunny	2.8049	2.9600	16592.03	16616.03	24.00	1.24	1.24	1.24	87	185	260	Construction work in progress	GMW GS 2310 (S/N 1808)	8386
												Min.	**86**					
												Max.	**87**					
												Average	**87**					

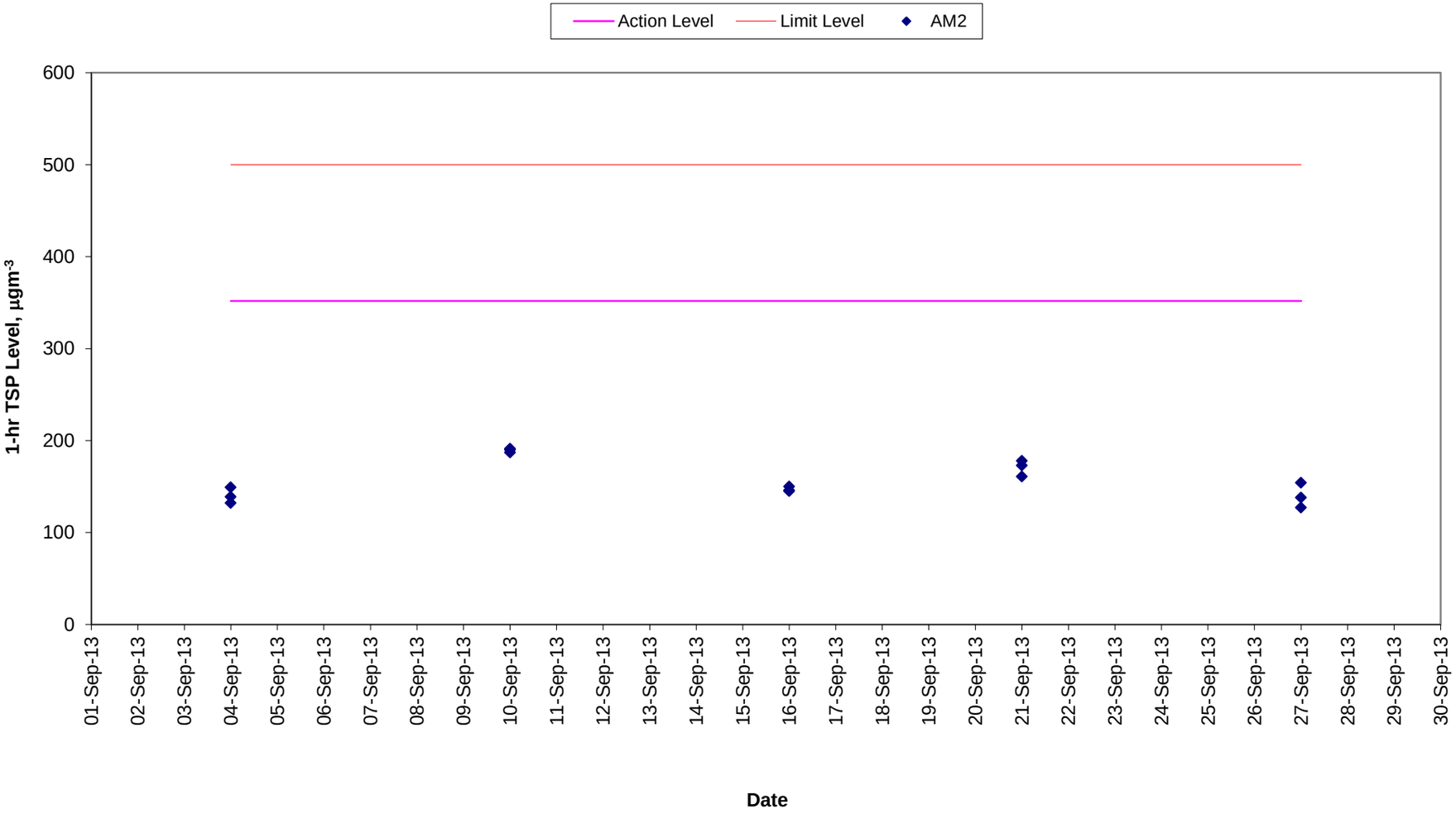
24-hour TSP Monitoring Results

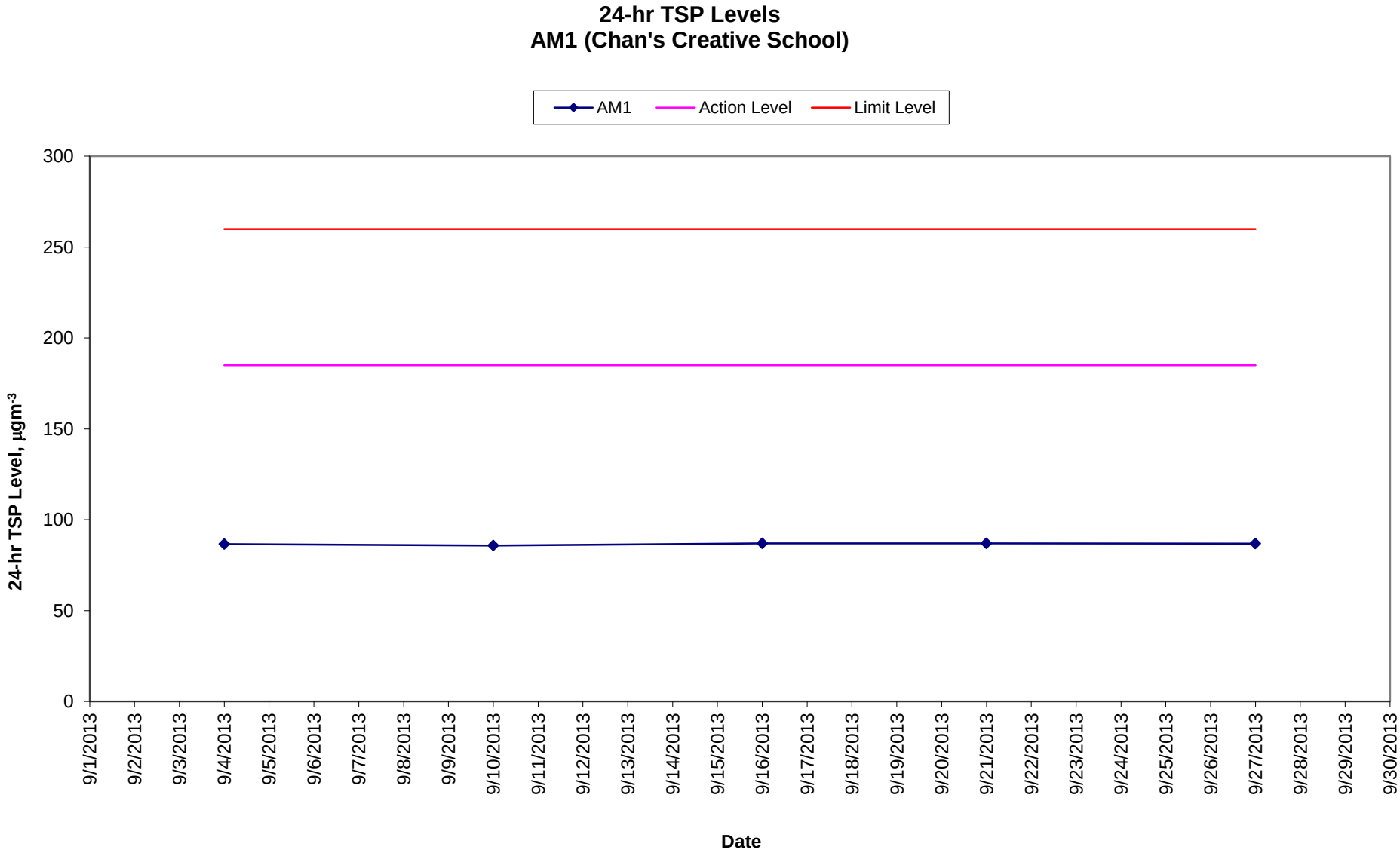
Station AM2

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-Sep-13	12:11	05-Sep-13	12:11	Rainy	2.7831	2.9300	12144.93	12168.93	24.00	1.21	1.21	1.21	84	182	260	Construction work in progress	GMW GS 2310 (S/N 0145)	7954
10-Sep-13	16:57	11-Sep-13	16:57	Sunny	2.7910	2.9449	12171.93	12195.93	24.00	1.21	1.21	1.21	88	182	260	Construction work in progress	GMW GS 2310 (S/N 0145)	8275
16-Sep-13	15:16	17-Sep-13	15:16	Sunny	2.8069	2.9579	12198.93	12222.93	24.00	1.21	1.21	1.21	87	182	260	Construction work in progress	GMW GS 2310 (S/N 0145)	8378
21-Sep-13	12:26	22-Sep-13	12:26	Fine	2.8243	2.9798	12225.93	12249.93	24.00	1.21	1.21	1.21	89	182	260	Construction work in progress	GMW GS 2310 (S/N 0145)	8392
27-Sep-13	14:36	28-Sep-13	14:36	Sunny	2.7986	2.9492	12252.93	12276.93	24.00	1.23	1.23	1.23	85	182	260	Construction work in progress	GMW GS 2310 (S/N 0145)	8385
												Min.	**84**					
												Max.	**89**					
												Average	**87**					

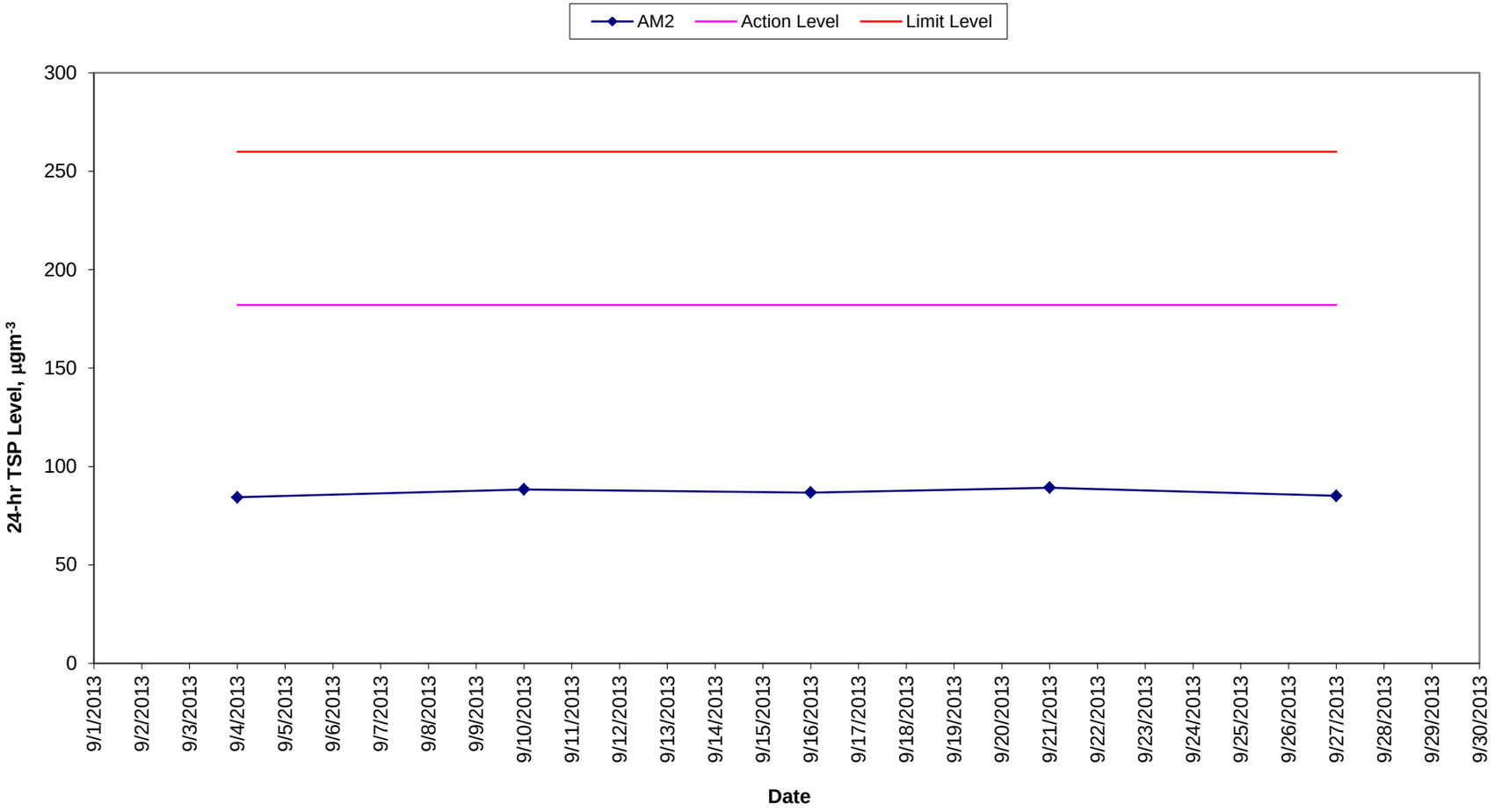

1-hr TSP Levels
AM1 (Chan's Creative School)
Action Level
Limit Level
AM1
1-hr TSP Level, µgm-3
600
500
400
300
200
100
0
01-Sep-13
02-Sep-13
03-Sep-13
04-Sep-13
05-Sep-13
06-Sep-13
07-Sep-13
08-Sep-13
09-Sep-13
10-Sep-13
11-Sep-13
12-Sep-13
13-Sep-13
14-Sep-13
15-Sep-13
16-Sep-13
17-Sep-13
18-Sep-13
19-Sep-13
20-Sep-13
21-Sep-13
22-Sep-13
23-Sep-13
24-Sep-13
25-Sep-13
26-Sep-13
27-Sep-13
28-Sep-13
29-Sep-13
30-Sep-13
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
9/1/2013
9/2/2013
9/3/2013
9/4/2013
9/5/2013
9/6/2013
9/7/2013
9/8/2013
9/9/2013
9/10/2013
9/11/2013
9/12/2013
9/13/2013
9/14/2013
9/15/2013
9/16/2013
9/17/2013
9/18/2013
9/19/2013
9/20/2013
9/21/2013
9/22/2013
9/23/2013
9/24/2013
9/25/2013
9/26/2013
9/27/2013
9/28/2013
9/29/2013
9/30/2013
Date

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



Meteorological Data Extracted from the Hong Kong Observatory

		King's Park Station				
Date	Weather	Average Air Temperature (°C)	Average Relative Humiditiy (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
2013-09-01	Cloudy	28	70-94	1.0	0-15	NW
2013-09-03	-	27	82-98	5.0	0-14	SE
2013-09-04	Sunny	25	90-99	88.9	0-21	SE
2013-09-08	-	28	63-88	0.0	2-17	SE
2013-09-10	Sunny	29	66-88	0.0	2-16	SE
2013-09-15	Sunny	28	66-94	15.2	0-20	SE/NW
2013-09-16	Sunny	25	68-95	0.8	1-24	SE
2013-09-17	-	28	61-82	0.0	7-23	SE
2013-09-19	Cloudy	29	62-86	0.0	0-27	SE
2013-09-20	-	30	58-87	0.0	0-12	SE/W
2013-09-21	Fine	31	51-88	0.0	0-21	N
2013-09-22	Cloudy	28	58-93	30.6	3-40	N/NW
2013-09-23	-	28	79-98	56.9	0-37	SW
2013-09-24	Sunny	29	78-94	1.3	7-20	SE
2013-09-26	Sunny	27	66-84	0.1	1-18	E
2013-09-27	Sunny	26	67-87	0.1	1-18	SE/NE
2013-09-29	Sunny	26	74-97	2.9	2-16	NE/E
2013-09-30	Fine	25	84-97	10.0	3-21	E

		Tsing Yi Station				
Date	Weather	Average Air Temperature (°C)	Average Relative Humiditiy (%) *	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
2013-09-01	Cloudy	27	70-94	1.0	1-18	S/NW
2013-09-03	-	26	82-98	5.0	1-16	S
2013-09-04	Rainy	25	90-99	88.9	1-21	E
2013-09-08	-	29	63-88	0.0	3-19	SE
2013-09-10	Sunny	30	66-88	0.0	1-20	N
2013-09-15	Sunny	28	66-94	15.2	1-14	--
2013-09-16	Sunny	29	68-95	0.8	1-22	--
2013-09-17	-	29	61-82	0.0	4-23	--
2013-09-19	Cloudy	29	62-86	0.0	1-26	--
2013-09-20	-	30	58-87	0.0	1-13	--
2013-09-21	Fine	31	51-88	0.0	1-22	--
2013-09-22	Cloudy	29	58-93	30.6	8-50	--
2013-09-23	-	27	79-98	56.9	8-48	--
2013-09-24	Sunny	29	78-94	1.3	6-22	--
2013-09-26	Sunny	28	66-84	0.1	1-15	--
2013-09-27	Sunny	27	67-87	0.1	1-15	--
2013-09-29	Sunny	26	74-97	2.9	1-10	--
2013-09-30	Fine	26	84-97	10.0	1-14	--

		Kai Tak Station				
Date	Weather	Average Air Temperature (°C) *	Average Relative Humiditiy (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2013-09-01	Cloudy	28	70-94	1.0	0-22	SE/NW
2013-09-03	-	27	82-98	5.0	1-18	SE
2013-09-04	Sunny	25	90-99	88.9	1-25	SE
2013-09-08	-	28	63-88	0.0	1-24	E/SE
2013-09-10	Sunny	29	66-88	0.0	4-22	E/SE
2013-09-15	Sunny	28	66-94	15.2	1-23	SE
2013-09-16	Sunny	25	68-95	0.8	8-31	E
2013-09-17	-	28	61-82	0.0	11-32	E
2013-09-19	Cloudy	29	62-86	0.0	2-31	E
2013-09-20	-	30	58-87	0.0	1-16	SE/SW
2013-09-21	Fine	31	51-88	0.0	3-25	NW
2013-09-22	Cloudy	28	58-93	30.6	3-52	NW
2013-09-23	-	28	79-98	56.9	2-39	S/SE
2013-09-24	Sunny	29	78-94	1.3	12-28	E
2013-09-26	Sunny	27	66-84	0.1	5-22	NE
2013-09-27	Sunny	26	67-87	0.1	3-24	E

		Green Island Station				
Date	Weather	Average Air Temperature (°C) *	Average Relative Humiditiy (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2013-09-01	Cloudy	28	70-94	1.0	1-39	SW
2013-09-03	-	27	82-98	5.0	1-21	S
2013-09-04	Sunny	25	90-99	88.9	5-45	SW/NE
2013-09-08	-	28	63-88	0.0	9-32	NE
2013-09-10	Sunny	29	66-88	0.0	17-38	NE
2013-09-15	Sunny	28	66-94	15.2	1-36	NW/NE
2013-09-16	Sunny	25	68-95	0.8	12-48	NE
2013-09-17	-	28	61-82	0.0	30-57	NE
2013-09-19	Cloudy	29	62-86	0.0	18-57	NE
2013-09-20	-	30	58-87	0.0	1-31	N/S
2013-09-21	Fine	31	51-88	0.0	8-38	N
2013-09-22	Cloudy	28	58-93	30.6	19-77	N
2013-09-23	-	28	79-98	56.9	19-79	S
2013-09-24	Sunny	29	78-94	1.3	10-40	E/NE
2013-09-26	Sunny	27	66-84	0.1	14-43	NE
2013-09-27	Sunny	26	67-87	0.1	14-35	NE

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-Sep-13	8:15	8:45	Sunny	68	69	66	Noise from nearby playground	Traffic Noise	-	30	0.5	RION- NL31 (S/N 00410224)	RION - NC73 (S/N 10997142)
10-Sep-13	13:02	13:32	Sunny	70	71	68	Noise from nearby playground	Traffic Noise	-	30	0.5	RION- NL31 (S/N 00410224)	RION - NC73 (S/N 10997142)
16-Sep-13	11:14	11:44	Sunny	68	70	66	Minor noise from nearby site	Traffic Noise	-	29	0.5	RION- NL31 (S/N 00410224)	RION - NC73 (S/N 10997142)
27-Sep-13	10:35	11:05	Sunny	69	71	66	-	Traffic Noise	-	29	0.5	RION- NL31 (S/N 00410224)	RION - NC73 (S/N 10997142)
			Min.	**68**									
			Max.	**70**									

Annex C6 Noise Monitoring Results

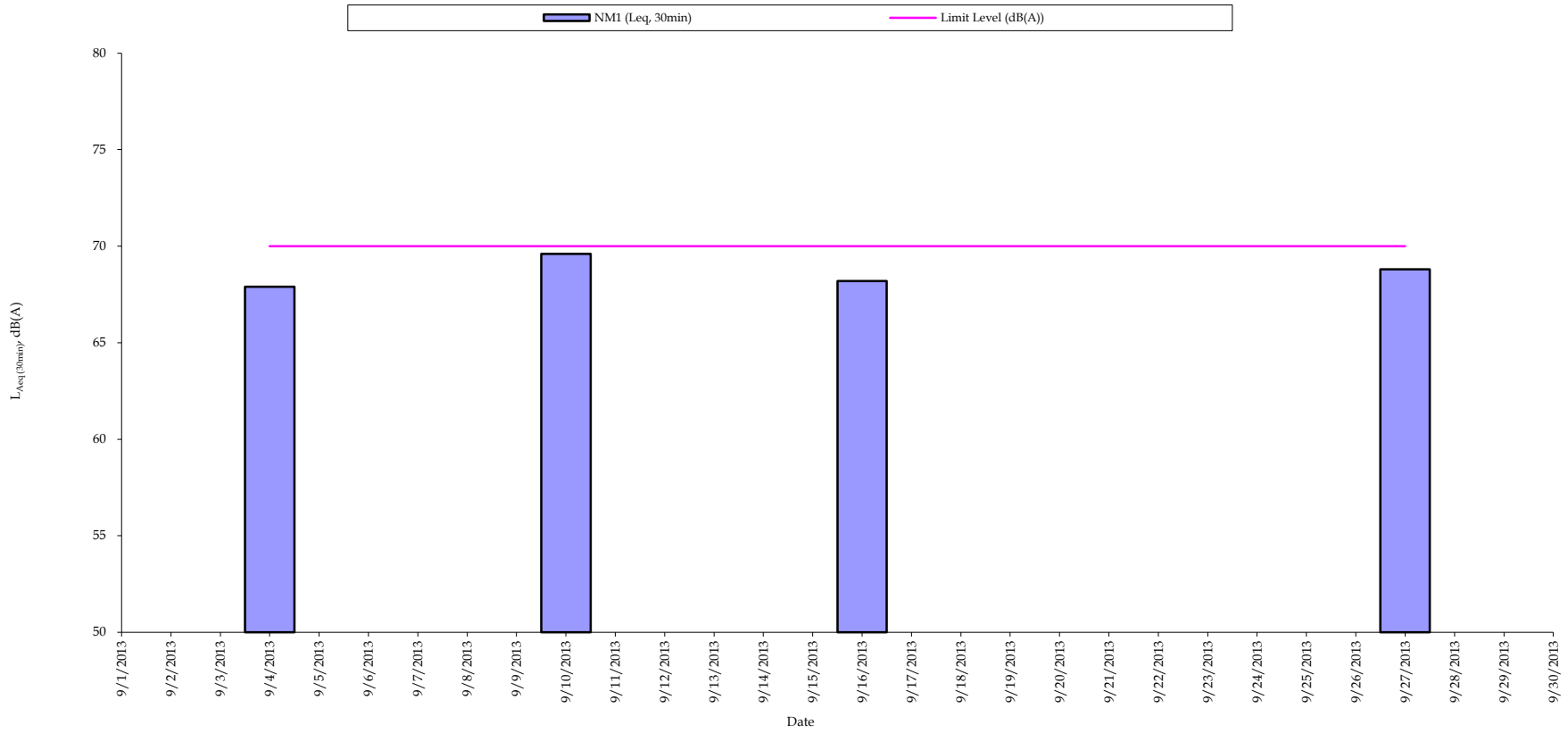
Restricted Hours Noise Monitoring Results [1]

Station NM1

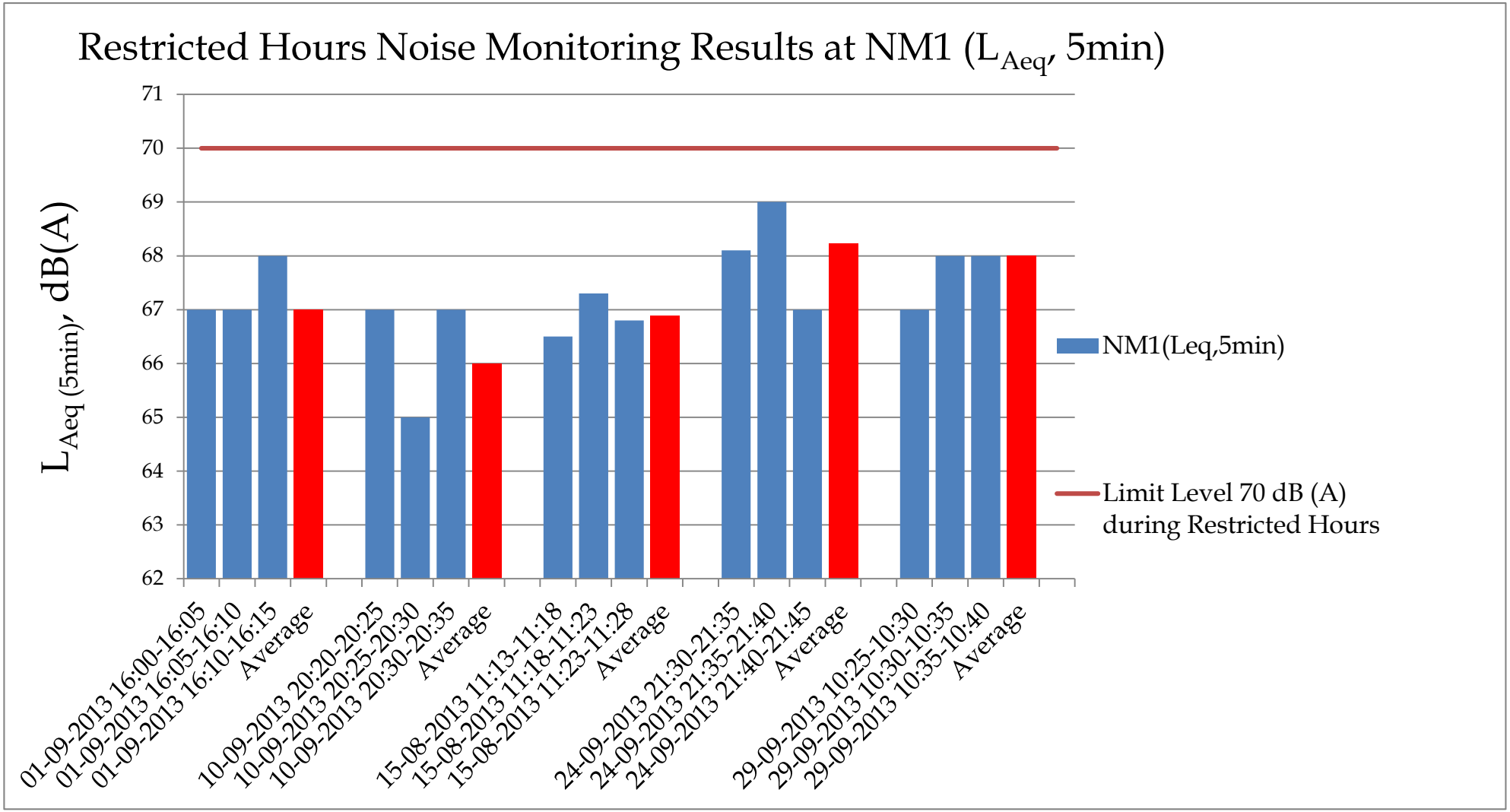
Date	Start Time	End Time	Weather	Noise level (dB(A)), 5 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
01-Sep-13	16:00	16:05	Fine	67	69	64	No outdoor construction noise	Traffic noise	-	31	0.3	RION- NL31 (S/N 00410224)	RION - NC73 (S/N 10997142)
	16:05	16:10	Fine	67	69	63			-				
	16:10	16:15	Fine	68	69	63			-				
	16:00	16:15	Fine	67	69	63			-				
10-Sep-13	20:20	20:25	Fine	67	69	63	No outdoor construction noise	Traffic noise	-	29	0.3	RION- NL31 (S/N 00410224)	RION - NC73 (S/N 10997142)
	20:25	20:30	Fine	65	67	62			-				
	20:30	20:35	Fine	67	68	63			-				
	20:20	20:35	Fine	66	68	63							
15-Sep-13	11:13	11:18	Sunny	67	68	64	No outdoor construction noise	Traffic noise	-	28	0.4	RION- NL31 (S/N 00410224)	RION - NC73 (S/N 10997142)
	11:18	11:23	Sunny	67	70	64			-				
	11:23	11:28	Sunny	67	69	64			-				
	11:13	11:28	Sunny	67	69	64			-				
24-Sep-13	21:30	21:35	Fine	68	71	64	No outdoor construction noise	Traffic noise	-	29	0.5	RION- NL31 (S/N 00410224)	RION - NC73 (S/N 10997142)
	21:35	21:40	Fine	69	72	65			-				
	21:40	21:45	Fine	67	70	64			-				
	21:30	21:45	Fine	68	71	64			-				
29-Sep-13	10:25	10:30	Sunny	67	70	65	No outdoor construction noise	Mainly traffic noise	-	29	0.5	RION- NL31 (S/N 00410224)	RION - NC73 (S/N 10997142)
	10:30	10:35	Sunny	68	70	65			-				
	10:35	10:40	Sunny	68	72	65			-				
	10:25	10:40	Sunny	68	71	65			-				
			Min.	**65**									
			Max.	**69**									

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

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



Remark:
- 70dB(A) was adopted as the Limit Level during restricted hours in the reporting period.


Restricted Hours Noise Monitoring Results at NM1 (L_{Aeq}, 5min)
$L_{Aeq\ (5min)}$, dB(A)
71
70
69
68
67
66
65
64
63
62
01-09-2013 16:00-16:05
01-09-2013 16:05-16:10
01-09-2013 16:10-16:15
Average
10-09-2013 20:20-20:25
10-09-2013 20:25-20:30
10-09-2013 20:30-20:35
Average
15-08-2013 11:13-11:18
15-08-2013 11:18-11:23
15-08-2013 11:23-11:28
Average
24-09-2013 21:30-21:35
24-09-2013 21:35-21:40
24-09-2013 21:40-21:45
Average
29-09-2013 10:25-10:30
29-09-2013 10:30-10:35
29-09-2013 10:35-10:40
Average
NM1(Leq,5min)
Limit Level 70 dB (A) during Restricted Hours

Annex C7 Cumulative Complaint and Summons/Prosecutions Log

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

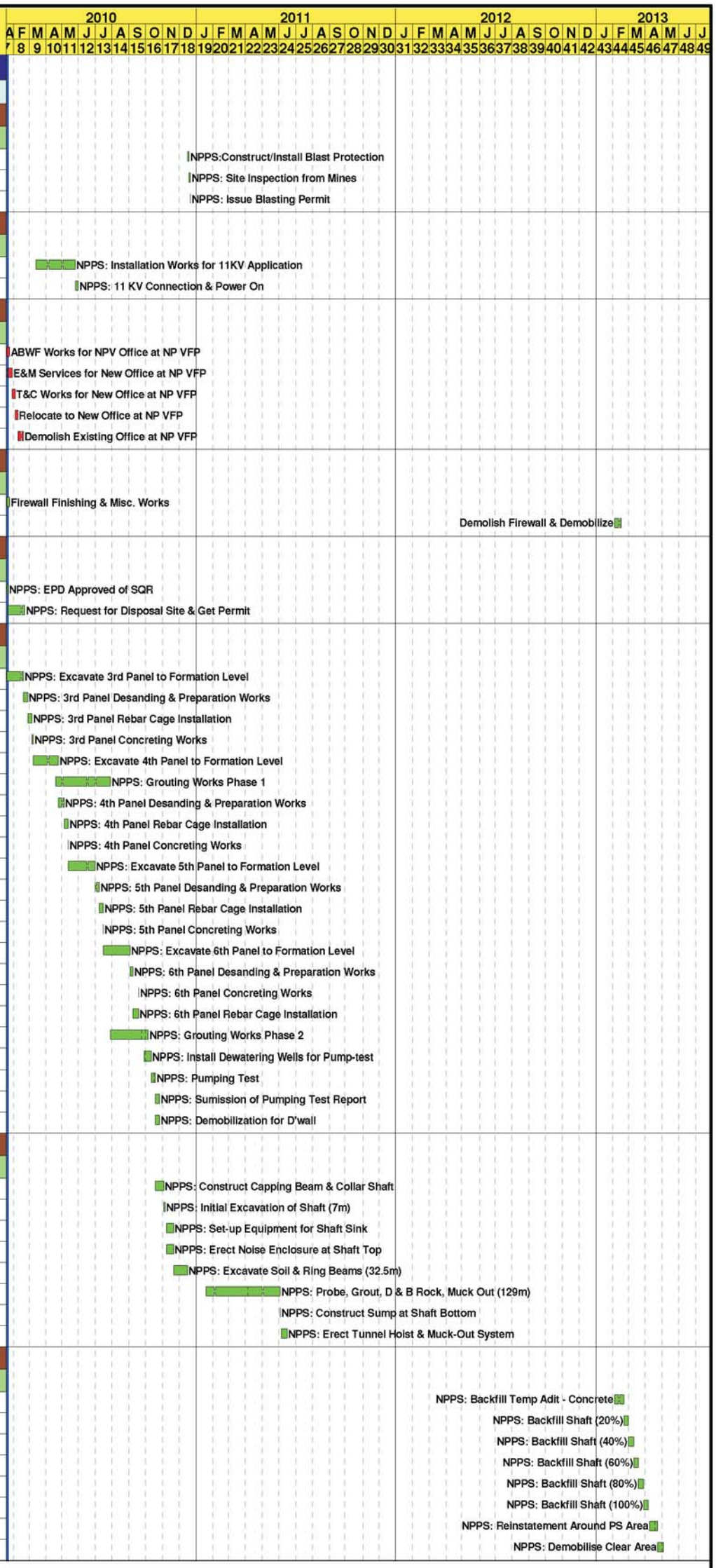
Annex C7 Cumulative Complaint and Summons/Prosecutions Log

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

Annex C7 Cumulative Complaint and Summons/Prosecutions Log

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

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	% Comp
HATS Stage 2A - Contract DC/2007/23					
North Point Production Shaft					
Preliminaries Works					
NPPS10180	NPPS:Construct/Install Blast Protection	2	17DEC10	18DEC10	0
NPPS10190	NPPS: Site Inspection from Mines	1	20DEC10	20DEC10	0
NPPS10200	NPPS: Issue Blasting Permit	1	21DEC10	21DEC10	0
Electrical & Mechanical Installations					
NPPS0620	NPPS: Installation Works for 11KV Application	60	15MAR10*	25MAY10	0
NPPS0625	NPPS: 11 KV Connection & Power On	4	26MAY10	29MAY10	0
Office at North Point Vehicular Ferry Pier					
NPPS1055	ABWF Works for NPV Office at NP VFP	18	21DEC09A	25JAN10	70
NPPS1065	E&M Services for New Office at NP VFP	18	26DEC09A	29JAN10	60
NPPS1075	T&C Works for New Office at NP VFP	4	30JAN10	03FEB10	0
NPPS1085	Relocate to New Office at NP VFP	4	04FEB10	08FEB10	0
NPPS1090	Demolish Existing Office at NP VFP	6	09FEB10	18FEB10	0
Fire Wall					
NPPS10120	Firewall Finishing & Misc. Works	12	12JAN10A	25JAN10	60
NPPS10130	Demolish Firewall & Demobilize	8	02FEB13	14FEB13	0
Marine Dumping Permit					
NPPS02012	NPPS: EPD Approved of SQR	24	31OCT09A	21JAN10	90
NPPS02013	NPPS: Request for Disposal Site & Get Permit	24	22JAN10	22FEB10	0
Diaphragm Wall					
NPPS0422	NPPS: Excavate 3rd Panel to Formation Level	40	08JAN10A	19FEB10	40
NPPS0424	NPPS: 3rd Panel Desanding & Preparation Works	6	20FEB10	26FEB10	0
NPPS0426	NPPS: 3rd Panel Rebar Cage Installation	7	27FEB10	06MAR10	0
NPPS0428	NPPS: 3rd Panel Concreting Works	1	08MAR10	08MAR10	0
NPPS0432	NPPS: Excavate 4th Panel to Formation Level	40	09MAR10	24APR10	0
NPPS0433	NPPS: Grouting Works Phase 1	84	19APR10	28JUL10	0
NPPS0434	NPPS: 4th Panel Desanding & Preparation Works	6	26APR10	03MAY10	0
NPPS0436	NPPS: 4th Panel Rebar Cage Installation	7	04MAY10	11MAY10	0
NPPS0438	NPPS: 4th Panel Concreting Works	1	12MAY10	12MAY10	0
NPPS0440	NPPS: Excavate 5th Panel to Formation Level	40	13MAY10	29JUN10	0
NPPS0442	NPPS: 5th Panel Desanding & Preparation Works	6	30JUN10	07JUL10	0
NPPS0444	NPPS: 5th Panel Rebar Cage Installation	7	08JUL10	15JUL10	0
NPPS0446	NPPS: 5th Panel Concreting Works	1	16JUL10	16JUL10	0
NPPS0448	NPPS: Excavate 6th Panel to Formation Level	40	17JUL10	01SEP10	0
NPPS0452	NPPS: 6th Panel Desanding & Preparation Works	6	02SEP10	08SEP10	0
NPPS0454	NPPS: 6th Panel Concreting Works	1	17SEP10	17SEP10	0
NPPS0456	NPPS: 6th Panel Rebar Cage Installation	7	09SEP10	16SEP10	0
NPPS0460	NPPS: Grouting Works Phase 2	56	29JUL10	04OCT10	0
NPPS0462	NPPS: Install Dewatering Wells for Pump-test	12	27SEP10	11OCT10	0
NPPS0464	NPPS: Pumping Test	6	12OCT10	19OCT10	0
NPPS0466	NPPS: Sumission of Pumping Test Report	6	20OCT10	26OCT10	0
NPPS0468	NPPS: Demobilization for D'wall	6	20OCT10	26OCT10	0
Shaft Excavation					
NPPS0310	NPPS: Construct Capping Beam & Collar Shaft	12	20OCT10	02NOV10	0
NPPS0320	NPPS: Initial Excavation of Shaft (7m)	4	03NOV10	06NOV10	0
NPPS0330	NPPS: Set-up Equipment for Shaft Sink	12	08NOV10	20NOV10	0
NPPS0333	NPPS: Erect Noise Enclosure at Shaft Top	12	08NOV10	20NOV10	0
NPPS0340	NPPS: Excavate Soil & Ring Beams (32.5m)	22	22NOV10	16DEC10	0
NPPS0355	NPPS: Probe, Grout, D & B Rock, Muck Out (129m)	110	20JAN11	02JUN11	0
NPPS0450	NPPS: Construct Sump at Shaft Bottom	2	03JUN11	04JUN11	0
NPPS0470	NPPS: Erect Tunnel Hoist & Muck-Out System	10	07JUN11	17JUN11	0
Backfill, Reinstatement & Landscaping					
NPPS0900	NPPS: Backfill Temp Adit - Concrete	12	02FEB13	19FEB13	0
NPPS0910	NPPS: Backfill Shaft (20%)	8	20FEB13	28FEB13	0
NPPS0920	NPPS: Backfill Shaft (40%)	8	01MAR13	09MAR13	0
NPPS0930	NPPS: Backfill Shaft (60%)	8	11MAR13	19MAR13	0
NPPS0940	NPPS: Backfill Shaft (80%)	8	20MAR13	28MAR13	0
NPPS0950	NPPS: Backfill Shaft (100%)	8	29MAR13	06APR13	0
NPPS0960	NPPS: Reinstatement Around PS Area	14	08APR13	24APR13	0
NPPS0970	NPPS: Demobilise Clear Area	6	25APR13	02MAY13	0



Start Date	31JUL09
Finish Date	15JAN15
Data Date	20JAN10
Run Date	01FEB10 09:20

© Primavera Systems, Inc.

Early Bar
Progress Bar
Critical Activity

WPU7 Sheet 1 of 1

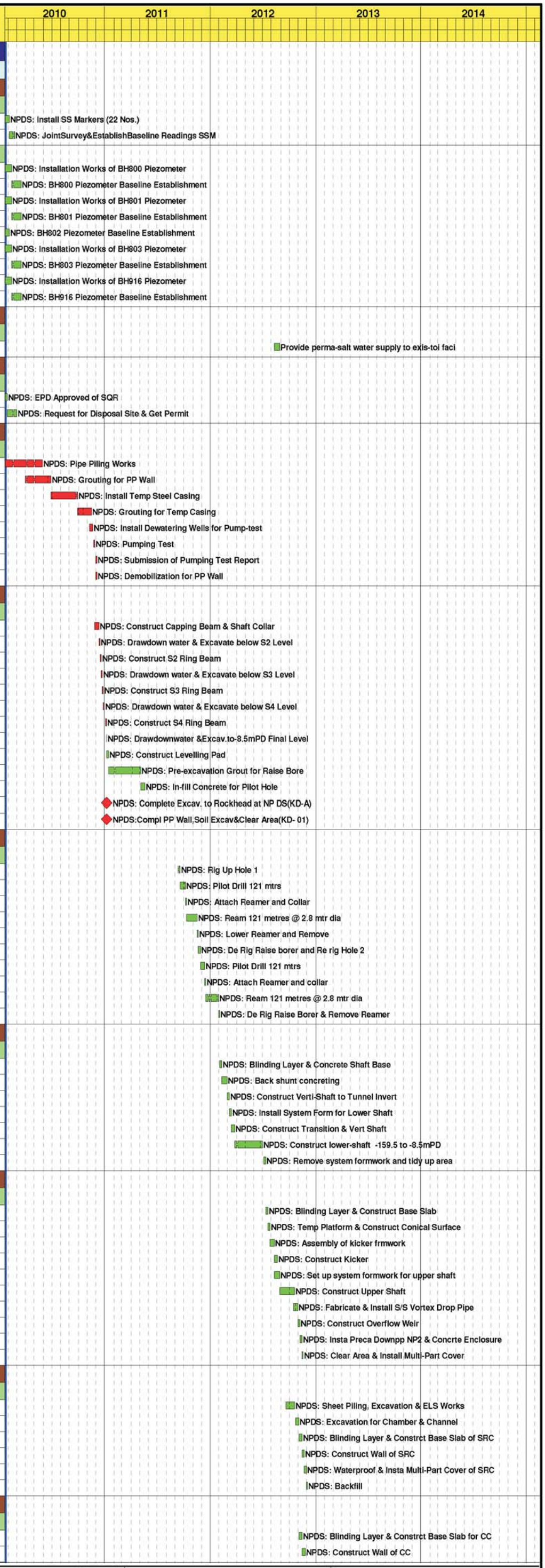
Habour Area Treatment Scheme Stage 2A
Contract No. DC/2007/23 - Construction of Sewage Conveyance from North Point to Stonecutters Island Programme

Annex C8 Construction Programme for the Project

Gammon

Date	Revision	Checked	Approved

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	% Comp
HATS Stage 2A - Contract DC/2007/23					
North Point PTW Drop Shaft					
EBS, Env. & Geotechnical Instrumentations					
Markers/UMP's/Others(Same note as Piez.)					
NPDS0263	NPDS: Install SS Markers (22 Nos.)	50	19OCT09A	02FEB10	76
NPDS0264	NPDS: JointSurvey&EstablishBaseline Readings SSM	14	03FEB10	22FEB10	0
Piezometers(NearbyPTWorPScovered inthisInstalln)					
NPDS0280	NPDS: Installation Works of BH800 Piezometer	21	18JAN10A	10FEB10	10
NPDS0290	NPDS: BH800 Piezometer Baseline Establishment	26	11FEB10	16MAR10	0
NPDS0383	NPDS: Installation Works of BH801 Piezometer	21	18JAN10A	10FEB10	10
NPDS0385	NPDS: BH801 Piezometer Baseline Establishment	26	11FEB10	16MAR10	0
NPDS0391	NPDS: BH802 Piezometer Baseline Establishment	26	23DEC09A	04FEB10	46
NPDS0395	NPDS: Installation Works of BH803 Piezometer	21	18JAN10A	10FEB10	10
NPDS0397	NPDS: BH803 Piezometer Baseline Establishment	26	11FEB10	16MAR10	0
NPDS0401	NPDS: Installation Works of BH916 Piezometer	21	28DEC09A	11FEB10	5
NPDS0403	NPDS: BH916 Piezometer Baseline Establishment	26	12FEB10	17MAR10	0
Diversion of Existing Utilities					
NPDS0100	Provide perma-salt water supply to exis-toi faci	18	09AUG12	29AUG12	0
Marine Dumping Permit					
NPDS0212	NPDS: EPD Approved of SQR	24	24NOV09A	27JAN10	70
NPDS0213	NPDS: Request for Disposal Site & Get Permit	24	28JAN10	27FEB10	0
Pipe Piling					
NPDS0305	NPDS: Pipe Piling Works	110	19JAN10A	27MAY10	5
NPDS0310	NPDS: Grouting for PP Wall	75	31MAR10	29JUN10	0
NPDS0320	NPDS: Install Temp Steel Casing	76	30JUN10	28SEP10	0
NPDS0330	NPDS: Grouting for Temp Casing	40	29SEP10	16NOV10	0
NPDS0340	NPDS: Install Dewatering Wells for Pump-test	12	08NOV10	20NOV10	0
NPDS0350	NPDS: Pumping Test	6	22NOV10	27NOV10	0
NPDS0360	NPDS: Submission of Pumping Test Report	6	29NOV10	04DEC10	0
NPDS0370	NPDS: Demobilization for PP Wall	6	29NOV10	04DEC10	0
Shaft Excavation					
NPDS0400	NPDS: Construct Capping Beam & Shaft Collar	12	27NOV10	10DEC10	0
NPDS0450	NPDS: Drawdown water & Excavate below S2 Level	5	11DEC10	16DEC10	0
NPDS0460	NPDS: Construct S2 Ring Beam	2	17DEC10	18DEC10	0
NPDS0470	NPDS: Drawdown water & Excavate below S3 Level	4	20DEC10	23DEC10	0
NPDS0480	NPDS: Construct S3 Ring Beam	2	24DEC10	27DEC10	0
NPDS0490	NPDS: Drawdown water & Excavate below S4 Level	4	28DEC10	31DEC10	0
NPDS0500	NPDS: Construct S4 Ring Beam	2	03JAN11	04JAN11	0
NPDS0510	NPDS: Drawdownwater &Excav.to-8.5mPD Final Level	3	05JAN11	07JAN11	0
NPDS0512	NPDS: Construct Levelling Pad	6	08JAN11	14JAN11	0
NPDS0514	NPDS: Pre-excavation Grout for Raise Bore	90	15JAN11	05MAY11	0
NPDS0516	NPDS: In-fill Concrete for Pilot Hole	12	06MAY11	19MAY11	0
NPDS0800	NPDS: Complete Excav. to Rockhead at NP DS(KD-A)	0		07JAN11	0
NPDS0810	NPDS:Compl PP Wall,Soil Excav&Clear Area(KD- 01)	0		07JAN11	0
Raised Boring					
NPDS0700	NPDS: Rig Up Hole 1	5	12SEP11	17SEP11	0
NPDS0710	NPDS: Pilot Drill 121 mtrs	15	19SEP11	07OCT11	0
NPDS0720	NPDS: Attach Reamer and Collar	3	08OCT11	11OCT11	0
NPDS0730	NPDS: Ream 121 metres @ 2.8 mtr dia	32	12OCT11	17NOV11	0
NPDS0740	NPDS: Lower Reamer and Remove	3	18NOV11	21NOV11	0
NPDS0750	NPDS: De Rig Raise borer and Re rig Hole 2	5	22NOV11	26NOV11	0
NPDS0760	NPDS: Pilot Drill 121 mtrs	15	28NOV11	14DEC11	0
NPDS0770	NPDS: Attach Reamer and collar	3	15DEC11	17DEC11	0
NPDS0780	NPDS: Ream 121 metres @ 2.8 mtr dia	32	19DEC11	30JAN12	0
NPDS0790	NPDS: De Rig Raise Borer & Remove Reamer	3	31JAN12	02FEB12	0
Lower Shaft Construction					
NPDS0895	NPDS: Blinding Layer & Concrete Shaft Base	6	03FEB12	09FEB12	0
NPDS0900	NPDS: Back shunt concreting	18	10FEB12	01MAR12	0
NPDS0905	NPDS: Construct Verti-Shaft to Tunnel Invert	6	02MAR12	08MAR12	0
NPDS0955	NPDS: Install System Form for Lower Shaft	6	09MAR12	15MAR12	0
NPDS0995	NPDS: Construct Transition & Vert Shaft	9	16MAR12	26MAR12	0
NPDS1015	NPDS: Construct lower-shaft -159.5 to -8.5mPD	80	27MAR12	30JUN12	0
NPDS1020	NPDS: Remove system formwork and tidy up area	6	03JUL12	09JUL12	0
Upper Shaft Construction					
NPDS1025	NPDS: Blinding Layer & Construct Base Slab	9	10JUL12	19JUL12	0
NPDS1065	NPDS: Temp Platform & Construct Conical Surface	6	20JUL12	26JUL12	0
NPDS1110	NPDS: Assembly of kicker frmwork	12	27JUL12	09AUG12	0
NPDS1135	NPDS: Construct Kicker	9	10AUG12	20AUG12	0
NPDS1140	NPDS: Set up system formwork for upper shaft	16	10AUG12	28AUG12	0
NPDS1145	NPDS: Construct Upper Shaft	44	29AUG12	20OCT12	0
NPDS1305	NPDS: Fabricate & Install S/S Vortex Drop Pipe	12	15OCT12	29OCT12	0
NPDS1345	NPDS: Construct Overflow Weir	6	30OCT12	05NOV12	0
NPDS1385	NPDS: Insta Preca Downpp NP2 & Concrte Enclosure	9	06NOV12	15NOV12	0
NPDS1395	NPDS: Clear Area & Install Multi-Part Cover	3	16NOV12	19NOV12	0
Scum Removal Chamber					
NPDS1533	NPDS: Sheet Piling, Excavation & ELS Works	24	21SEP12	20OCT12	0
NPDS1545	NPDS: Excavation for Chamber & Channel	9	22OCT12	01NOV12	0
NPDS1585	NPDS: Blinding Layer & Constrct Base Slab of SRC	9	02NOV12	12NOV12	0
NPDS1625	NPDS: Construct Wall of SRC	9	13NOV12	22NOV12	0
NPDS1645	NPDS: Waterproof & Insta Multi-Part Cover of SRC	6	23NOV12	29NOV12	0
NPDS1650	NPDS: Backfill	3	30NOV12	03DEC12	0
Connection Channel					
NPDS1455	NPDS: Blinding Layer & Constrct Base Slab for CC	9	02NOV12	12NOV12	0
NPDS1515	NPDS: Construct Wall of CC	12	13NOV12	26NOV12	0



Start Date	31JUL09
Finish Date	15JAN15
Data Date	20JAN10
Run Date	01FEB10 09:50

Early Bar
Progress Bar
Critical Activity

© Primavera Systems, Inc.

WPU7 Sheet 1 of 2

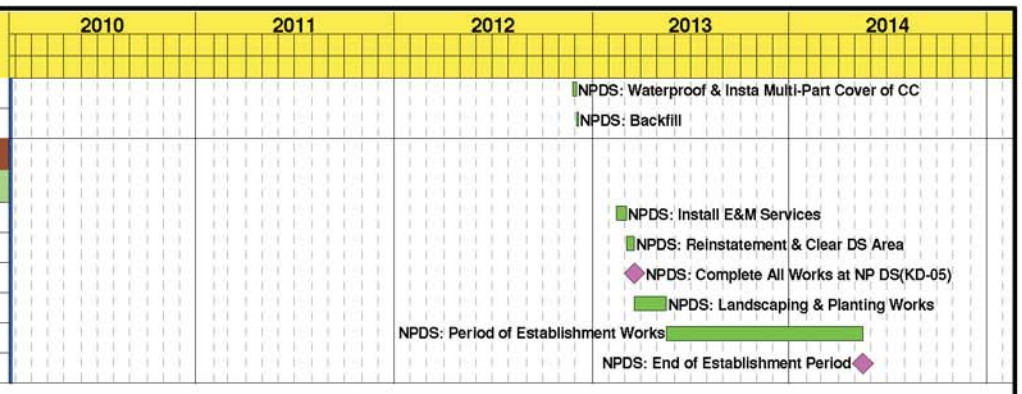
Habour Area Treatment Scheme Stage 2A
Contract No. DC/2007/23 - Construction of Sewage Conveyance from North Point to Stonecutters Island Programme

Annex C8 Construction Programme for the Project

Gammon

Date	Revision	Checked	Approved

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	% Comp
NPDS1525	NPDS: Waterproof & Insta Multi-Part Cover of CC	6	27NOV12	03DEC12	0
NPDS1540	NPDS: Backfill	3	04DEC12	06DEC12	0
Miscellaneous Works					
NPDS2010	NPDS: Install E&M Services	18	14FEB13	06MAR13	0
NPDS2020	NPDS: Reinstatement & Clear DS Area	12	07MAR13	20MAR13	0
NPDS2025	NPDS: Complete All Works at NP DS(KD-05)	0		20MAR13	0
NPDS2030	NPDS: Landscaping & Planting Works	60	21MAR13*	19MAY13	0
NPDS2040	NPDS: Period of Establishment Works	360	20MAY13	14MAY14	0
NPDS2050	NPDS: End of Establishment Period	0		14MAY14	0



Start Date	31JUL09
Finish Date	15JAN15
Data Date	20JAN10
Run Date	01FEB10 09:50

© Primavera Systems, Inc.

Early Bar
Progress Bar
Critical Activity

WPU7 Sheet 2 of 2

Habour Area Treatment Scheme Stage 2A
Contract No. DC/2007/23 - Construction of Sewage Conveyance from North Point to Stonecutters Island
Programme

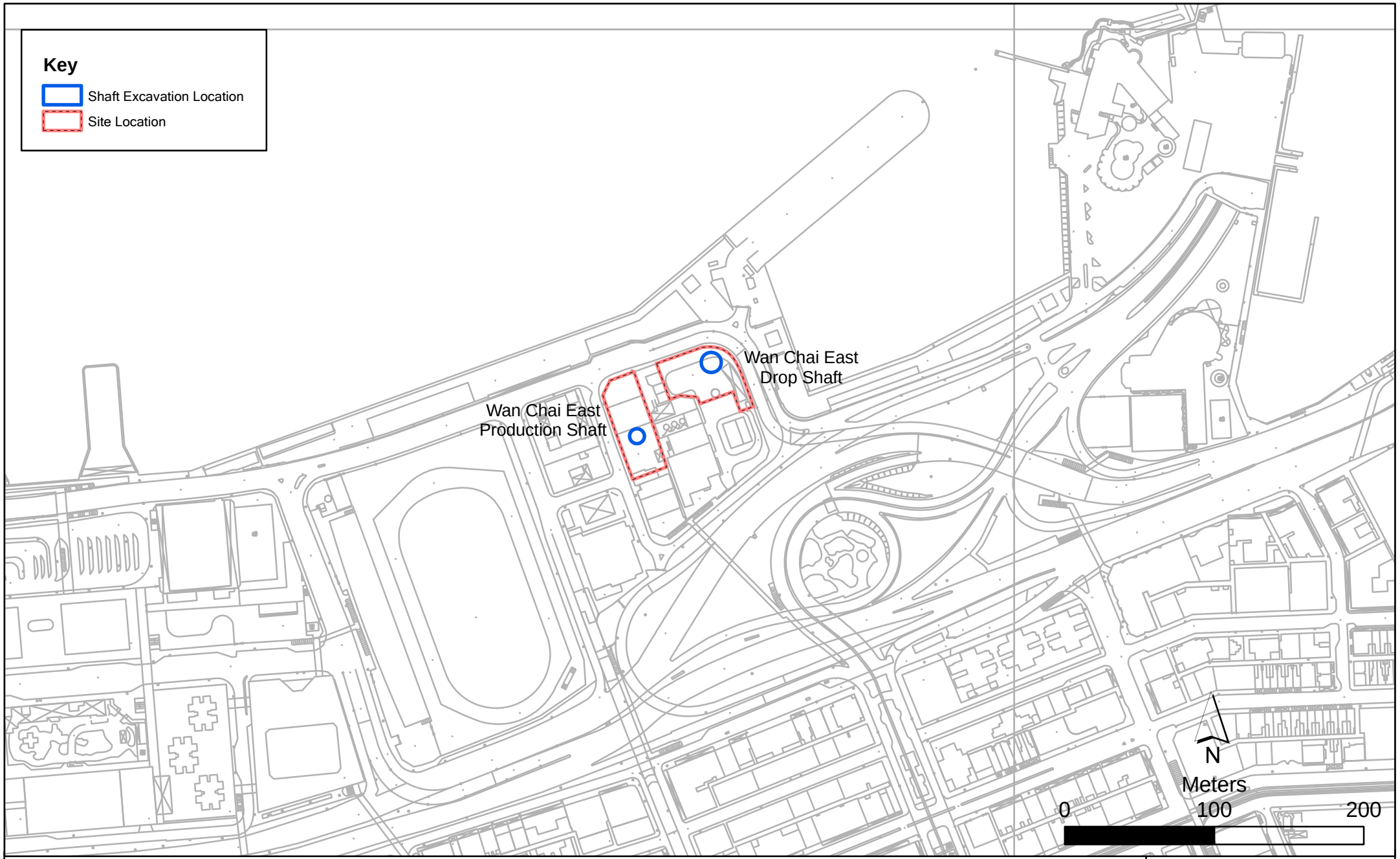
Annex C8 Construction Programme for the Project

Gammon

Date	Revision	Checked	Approved

Annex D

Wan Chai East Production and Drop Shafts



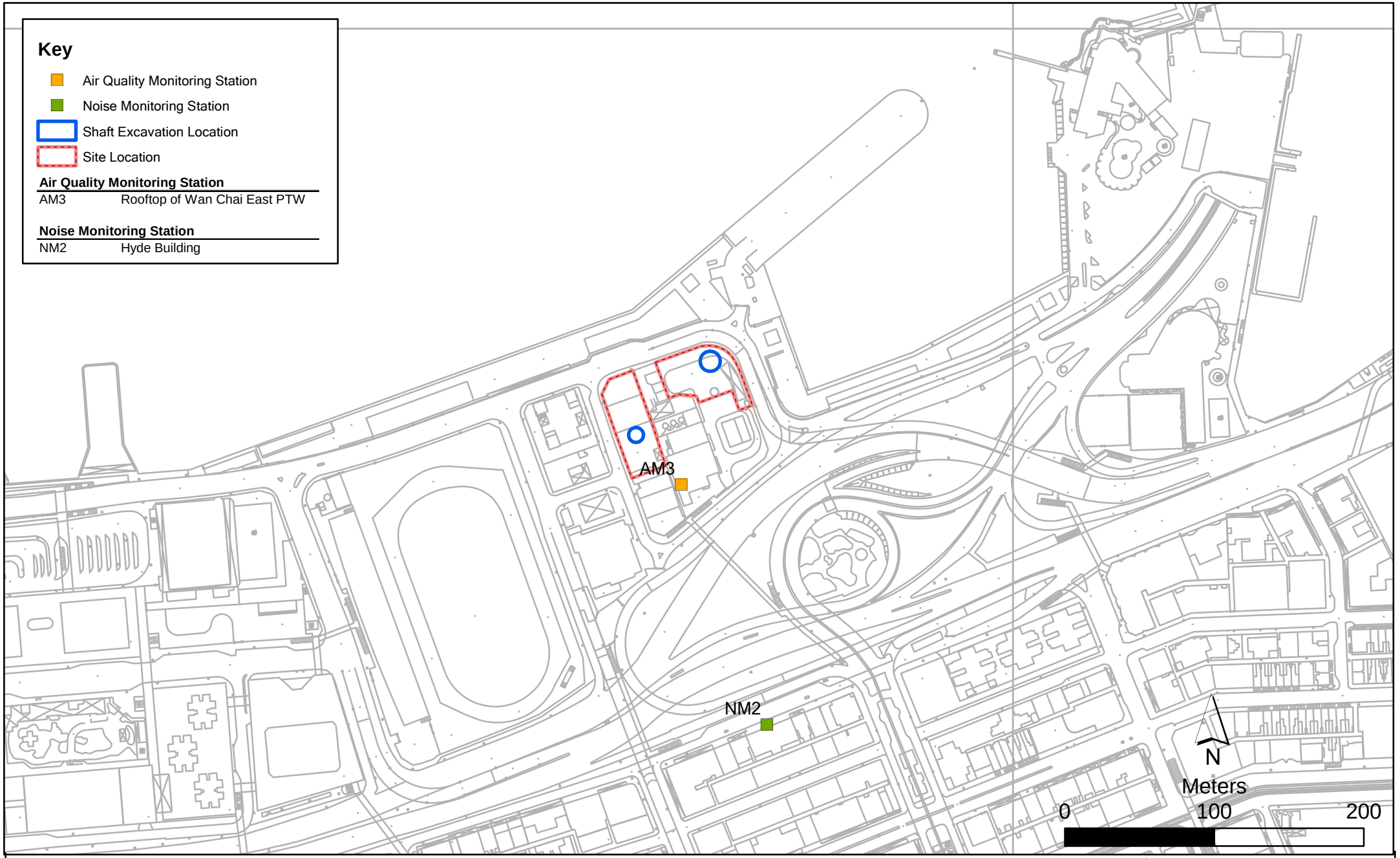
Annex D1

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

Annex D3 Monitoring Schedule of the Reporting Month and Next Month

DC/2007/23
Harbour Area Treatment Scheme Stage 2A
Construction of Sewage Conveyance System from North Point to Stonecutters Island
Impact Construction Air Quality Monitoring Schedule

AM3 - Wan Chai East PTW
Monitoring Month : September 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
01-Sep	02-Sep	03-Sep	04-Sep	05-Sep	06-Sep	07-Sep
			1-hr and 24-hr Monitoring			
08-Sep	09-Sep	10-Sep	11-Sep	12-Sep	13-Sep	14-Sep
		1-hr and 24-hr Monitoring				
15-Sep	16-Sep	17-Sep	18-Sep	19-Sep	20-Sep	21-Sep
	1-hr and 24-hr Monitoring				Public Holiday	1-hr and 24-hr Monitoring
22-Sep	23-Sep	24-Sep	25-Sep	26-Sep	27-Sep	28-Sep
					1-hr and 24-hr Monitoring	
29-Sep	30-Sep					

Monitoring Month : October 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		01-Oct	02-Oct	03-Oct	04-Oct	05-Oct
		Public Holiday		1-hr and 24-hr Monitoring		
06-Oct	07-Oct	08-Oct	09-Oct	10-Oct	11-Oct	12-Oct
			1-hr and 24-hr Monitoring			
13-Oct	14-Oct	15-Oct	16-Oct	17-Oct	18-Oct	19-Oct
	Public Holiday	1-hr and 24-hr Monitoring				
20-Oct	21-Oct	22-Oct	23-Oct	24-Oct	25-Oct	26-Oct
	1-hr and 24-hr Monitoring					1-hr and 24-hr Monitoring
27-Oct	28-Oct	29-Oct	30-Oct	31-Oct		

Annex D3 Monitoring Schedule of the Reporting Month and Next Month

DC/2007/23

Harbour Area Treatment Scheme Stage 2A

Construction of Sewage Conveyance System from North Point to Stonecutters Island

Impact Construction Noise Quality Monitoring Schedule

NM2 - Hyde Building

Monitoring Month : September 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
01-Sep	02-Sep	03-Sep	04-Sep	05-Sep	06-Sep	07-Sep
Noise Monitoring			Noise Monitoring			
08-Sep	09-Sep	10-Sep	11-Sep	12-Sep	13-Sep	14-Sep
		Noise Monitoring (Daytime and Evening time)				
15-Sep	16-Sep	17-Sep	18-Sep	19-Sep	20-Sep	21-Sep
Noise Monitoring	Noise Monitoring				Public Holiday	
22-Sep	23-Sep	24-Sep	25-Sep	26-Sep	27-Sep	28-Sep
		Noise Monitoring (Evening time)			Noise Monitoring	
29-Sep	30-Sep					
Noise Monitoring						

Monitoring Month : October 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		01-Oct	02-Oct	03-Oct	04-Oct	05-Oct
		Public Holiday		Noise Monitoring		
06-Oct	07-Oct	08-Oct	09-Oct	10-Oct	11-Oct	12-Oct
		Noise Monitoring (Evening time)	Noise Monitoring			
13-Oct	14-Oct	15-Oct	16-Oct	17-Oct	18-Oct	19-Oct
Noise Monitoring	Public Holiday	Noise Monitoring				
20-Oct	21-Oct	22-Oct	23-Oct	24-Oct	25-Oct	26-Oct
	Noise Monitoring	Noise Monitoring (Evening time)				
27-Oct	28-Oct	29-Oct	30-Oct	31-Oct		
Noise Monitoring						

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

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

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

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

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

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

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

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

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

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

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

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

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

1-hour TSP Monitoring Results

Station AM3

Date	Start Time	Finish Time	Weather	TSP Concentration ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Site Conditions / Observations / Remarks	Temperature (°C)	Wind Speed * (m/s)	Sampler ID	Filter ID
04-Sep-13	11:00	12:00	Rainy	123	355	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 0481)	2105
	12:02	13:02	Rainy	113	355	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 0481)	2106
	13:04	14:04	Rainy	123	355	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 0481)	2108
10-Sep-13	11:50	12:50	Sunny	129	355	500	Construction work in progress	30	<5	GMW GS-2310 (S/N 0481)	2109
	12:52	13:52	Sunny	128	355	500	Construction work in progress	30	<5	GMW GS-2310 (S/N 0481)	2121
	13:54	14:54	Sunny	136	355	500	Construction work in progress	30	<5	GMW GS-2310 (S/N 0481)	2122
16-Sep-13	8:00	9:00	Sunny	193	355	500	Construction work in progress	30	<5	GMW GS-2310 (S/N 0481)	2124
	9:02	10:02	Sunny	154	355	500	Construction work in progress	30	<5	GMW GS-2310 (S/N 0481)	2125
	10:04	11:04	Sunny	157	355	500	Construction work in progress	30	<5	GMW GS-2310 (S/N 0481)	2126
21-Sep-13	8:00	9:00	Fine	164	355	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 0481)	2127
	9:02	10:02	Fine	178	355	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 0481)	2128
	10:04	11:04	Fine	194	355	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 0481)	2130
27-Sep-13	8:00	9:00	Sunny	149	355	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 0481)	2079
	9:02	10:02	Sunny	138	355	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 0481)	2151
	10:04	11:04	Sunny	205	355	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 0481)	2152
			Min.	**113**							
			Max.	**205**							
			Average	**152**							

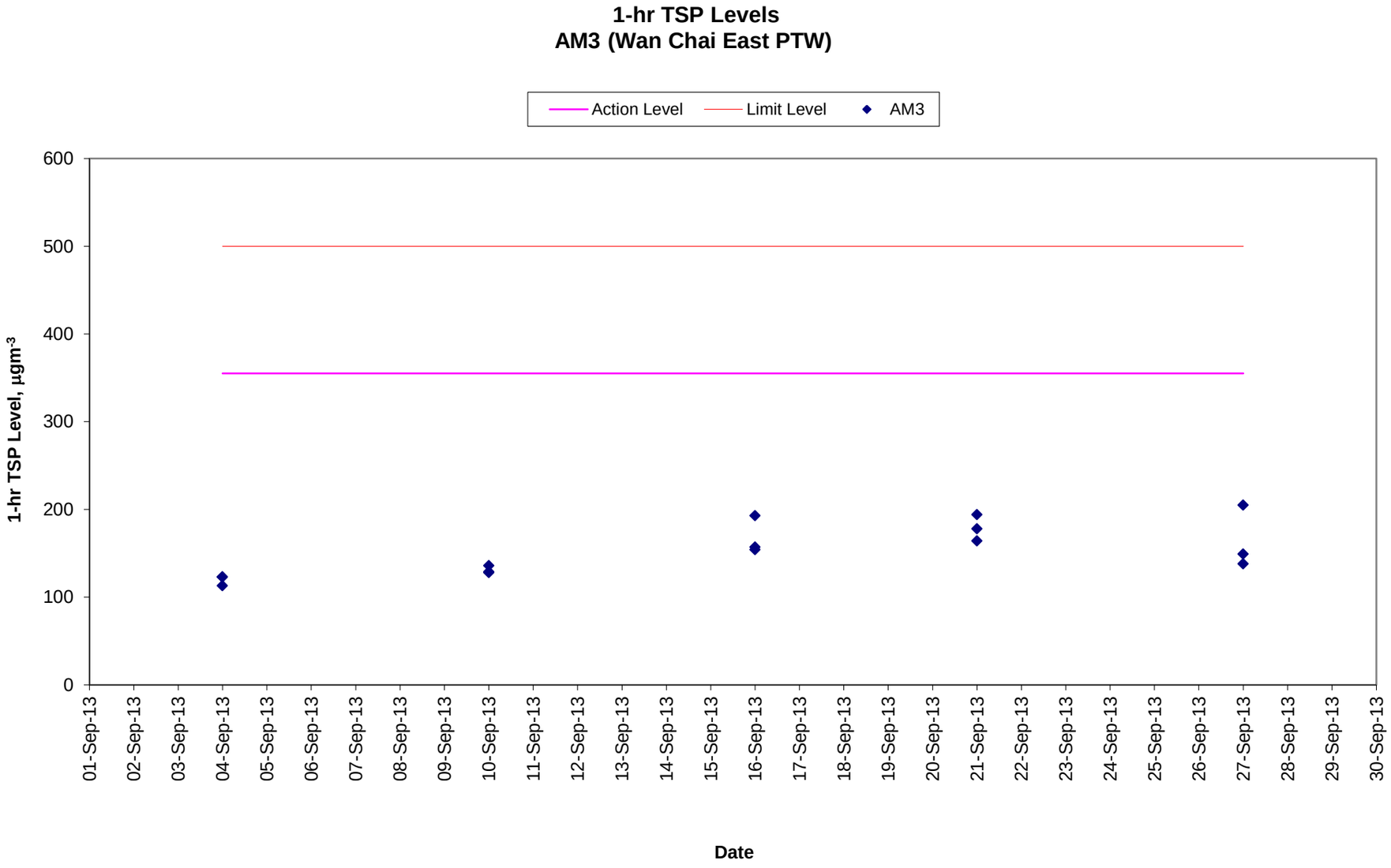
* Wind Speed data is presented in the Meteorological Data table

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

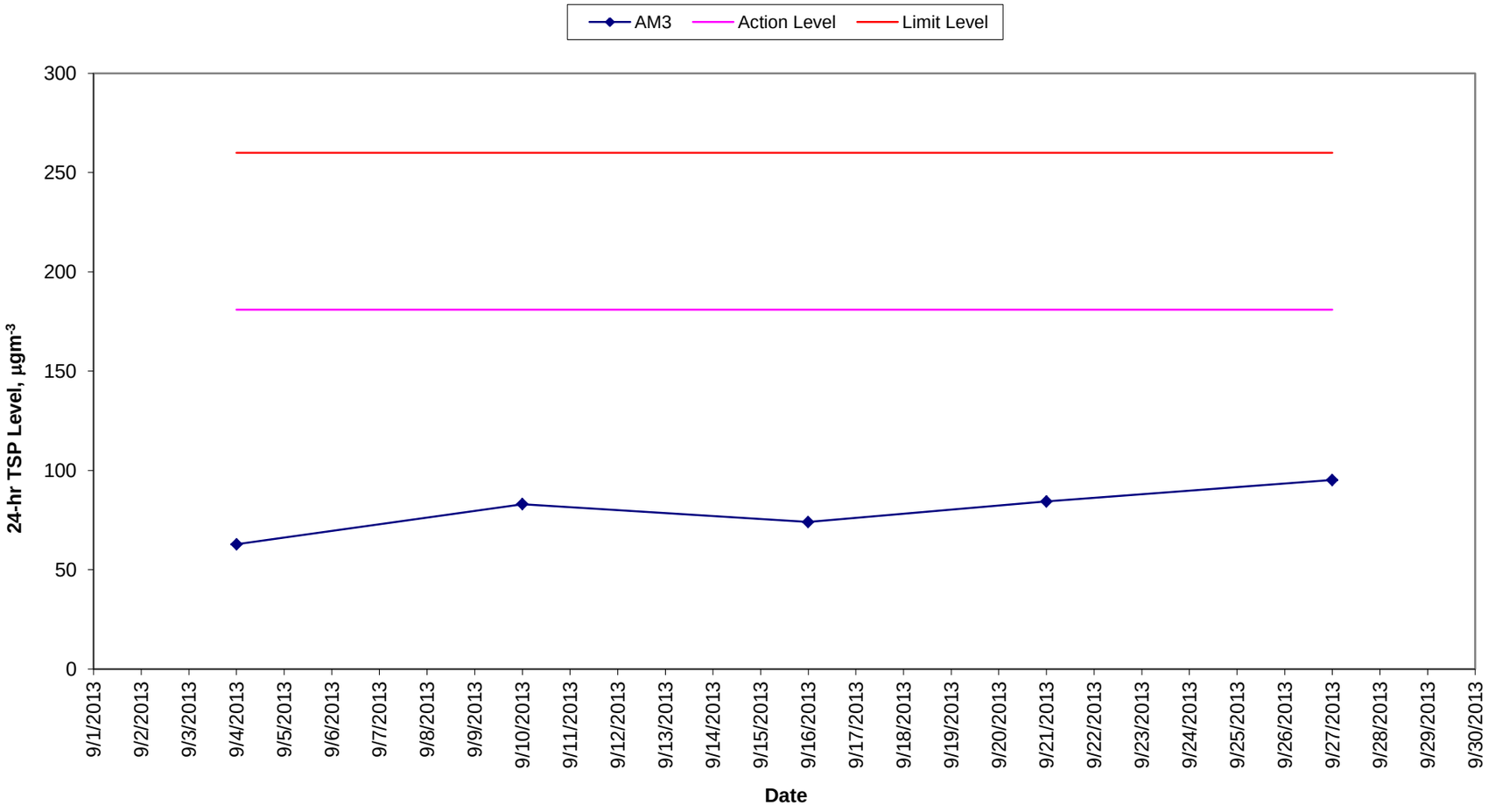
24-hour TSP Monitoring Results

Station AM3

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m^3/min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	(μg/m^3)	(μg/m^3)	(μg/m^3)		ID	ID
04-Sep-13	14:06	05-Sep-13	14:06	Rainy	2.8980	3.0129	8788.32	8812.72	24.40	1.25	1.25	1.25	63	181	260	Construction work in progress	GMW GS 2310 (S/N 0481)	2107
10-Sep-13	15:00	11-Sep-13	15:00	Sunny	2.8461	2.9956	8815.32	8839.32	24.00	1.25	1.25	1.25	83	181	260	Construction work in progress	GMW GS 2310 (S/N 0481)	2110
16-Sep-13	11:06	17-Sep-13	11:06	Sunny	2.8579	2.9911	8842.32	8866.32	24.00	1.25	1.25	1.25	74	181	260	Construction work in progress	GMW GS 2310 (S/N 0481)	2123
21-Sep-13	11:06	22-Sep-13	11:06	Fine	2.8477	2.9961	8869.32	8893.32	24.00	1.22	1.22	1.22	84	181	260	construction work in progress	GMW GS 2310 (S/N 0481)	2129
27-Sep-13	11:06	28-Sep-13	11:06	Sunny	2.8607	3.0279	8896.32	8920.32	24.00	1.22	1.22	1.22	95	181	260	construction work in progress	GMW GS 2310 (S/N 0481)	2153
												Min.	**63**					
												Max.	**95**					
												Average	**80**					


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

24-hr TSP Levels
AM3 (Wan Chai East PTW)



Meteorological Data Extracted from the Hong Kong Observatory

		King's Park Station				
Date	Weather	Average Air Temperature (°C)	Average Relative Humiditiy (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
2013-09-01	Cloudy	28	70-94	1.0	0-15	NW
2013-09-03	-	27	82-98	5.0	0-14	SE
2013-09-04	Sunny	25	90-99	88.9	0-21	SE
2013-09-08	-	28	63-88	0.0	2-17	SE
2013-09-10	Sunny	29	66-88	0.0	2-16	SE
2013-09-15	Sunny	28	66-94	15.2	0-20	SE/NW
2013-09-16	Sunny	25	68-95	0.8	1-24	SE
2013-09-17	-	28	61-82	0.0	7-23	SE
2013-09-19	Cloudy	29	62-86	0.0	0-27	SE
2013-09-20	-	30	58-87	0.0	0-12	SE/W
2013-09-21	Fine	31	51-88	0.0	0-21	N
2013-09-22	Cloudy	28	58-93	30.6	3-40	N/NW
2013-09-23	-	28	79-98	56.9	0-37	SW
2013-09-24	Sunny	29	78-94	1.3	7-20	SE
2013-09-26	Sunny	27	66-84	0.1	1-18	E
2013-09-27	Sunny	26	67-87	0.1	1-18	SE/NE
2013-09-29	Sunny	26	74-97	2.9	2-16	NE/E
2013-09-30	Fine	25	84-97	10.0	3-21	E

		Tsing Yi Station				
Date	Weather	Average Air Temperature (°C)	Average Relative Humiditiy (%) *	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
2013-09-01	Cloudy	27	70-94	1.0	1-18	S/NW
2013-09-03	-	26	82-98	5.0	1-16	S
2013-09-04	Rainy	25	90-99	88.9	1-21	E
2013-09-08	-	29	63-88	0.0	3-19	SE
2013-09-10	Sunny	30	66-88	0.0	1-20	N
2013-09-15	Sunny	28	66-94	15.2	1-14	--
2013-09-16	Sunny	29	68-95	0.8	1-22	--
2013-09-17	-	29	61-82	0.0	4-23	--
2013-09-19	Cloudy	29	62-86	0.0	1-26	--
2013-09-20	-	30	58-87	0.0	1-13	--
2013-09-21	Fine	31	51-88	0.0	1-22	--
2013-09-22	Cloudy	29	58-93	30.6	8-50	--
2013-09-23	-	27	79-98	56.9	8-48	--
2013-09-24	Sunny	29	78-94	1.3	6-22	--
2013-09-26	Sunny	28	66-84	0.1	1-15	--
2013-09-27	Sunny	27	67-87	0.1	1-15	--
2013-09-29	Sunny	26	74-97	2.9	1-10	--
2013-09-30	Fine	26	84-97	10.0	1-14	--

		Kai Tak Station				
Date	Weather	Average Air Temperature (°C) *	Average Relative Humiditiy (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2013-09-01	Cloudy	28	70-94	1.0	0-22	SE/NW
2013-09-03	-	27	82-98	5.0	1-18	SE
2013-09-04	Sunny	25	90-99	88.9	1-25	SE
2013-09-08	-	28	63-88	0.0	1-24	E/SE
2013-09-10	Sunny	29	66-88	0.0	4-22	E/SE
2013-09-15	Sunny	28	66-94	15.2	1-23	SE
2013-09-16	Sunny	25	68-95	0.8	8-31	E
2013-09-17	-	28	61-82	0.0	11-32	E
2013-09-19	Cloudy	29	62-86	0.0	2-31	E
2013-09-20	-	30	58-87	0.0	1-16	SE/SW
2013-09-21	Fine	31	51-88	0.0	3-25	NW
2013-09-22	Cloudy	28	58-93	30.6	3-52	NW
2013-09-23	-	28	79-98	56.9	2-39	S/SE
2013-09-24	Sunny	29	78-94	1.3	12-28	E
2013-09-26	Sunny	27	66-84	0.1	5-22	NE
2013-09-27	Sunny	26	67-87	0.1	3-24	E

		Green Island Station				
Date	Weather	Average Air Temperature (°C) *	Average Relative Humiditiy (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2013-09-01	Cloudy	28	70-94	1.0	1-39	SW
2013-09-03	-	27	82-98	5.0	1-21	S
2013-09-04	Sunny	25	90-99	88.9	5-45	SW/NE
2013-09-08	-	28	63-88	0.0	9-32	NE
2013-09-10	Sunny	29	66-88	0.0	17-38	NE
2013-09-15	Sunny	28	66-94	15.2	1-36	NW/NE
2013-09-16	Sunny	25	68-95	0.8	12-48	NE
2013-09-17	-	28	61-82	0.0	30-57	NE
2013-09-19	Cloudy	29	62-86	0.0	18-57	NE
2013-09-20	-	30	58-87	0.0	1-31	N/S
2013-09-21	Fine	31	51-88	0.0	8-38	N
2013-09-22	Cloudy	28	58-93	30.6	19-77	N
2013-09-23	-	28	79-98	56.9	19-79	S
2013-09-24	Sunny	29	78-94	1.3	10-40	E/NE
2013-09-26	Sunny	27	66-84	0.1	14-43	NE
2013-09-27	Sunny	26	67-87	0.1	14-35	NE

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-Sep-13	14:10	14:40	Sunny	74	75	72	Lifting	Traffic Noise	-	30	0.5	RION-NL31 (S/N 00410224)	RION-NC73 (S/N 10997142)
10-Sep-13	14:10	14:40	Sunny	73	75	72	Lifting	Traffic Noise	-	30	0.3	RION-NL31 (S/N 00410224)	RION-NC73 (S/N 10997142)
16-Sep-13	8:15	8:45	Sunny	73	74	71	Lifting	Traffic Noise	-	30	0.5	RION-NL31 (S/N 00410224)	RION-NC73 (S/N 10997142)
27-Sep-13	9:17	9:47	Sunny	73	74	72	Lifting	Traffic Noise	-	29	0.8	RION-NL31 (S/N 00410224)	RION-NC73 (S/N 10997142)
			Min.	**73**									
			Max.	**74**									

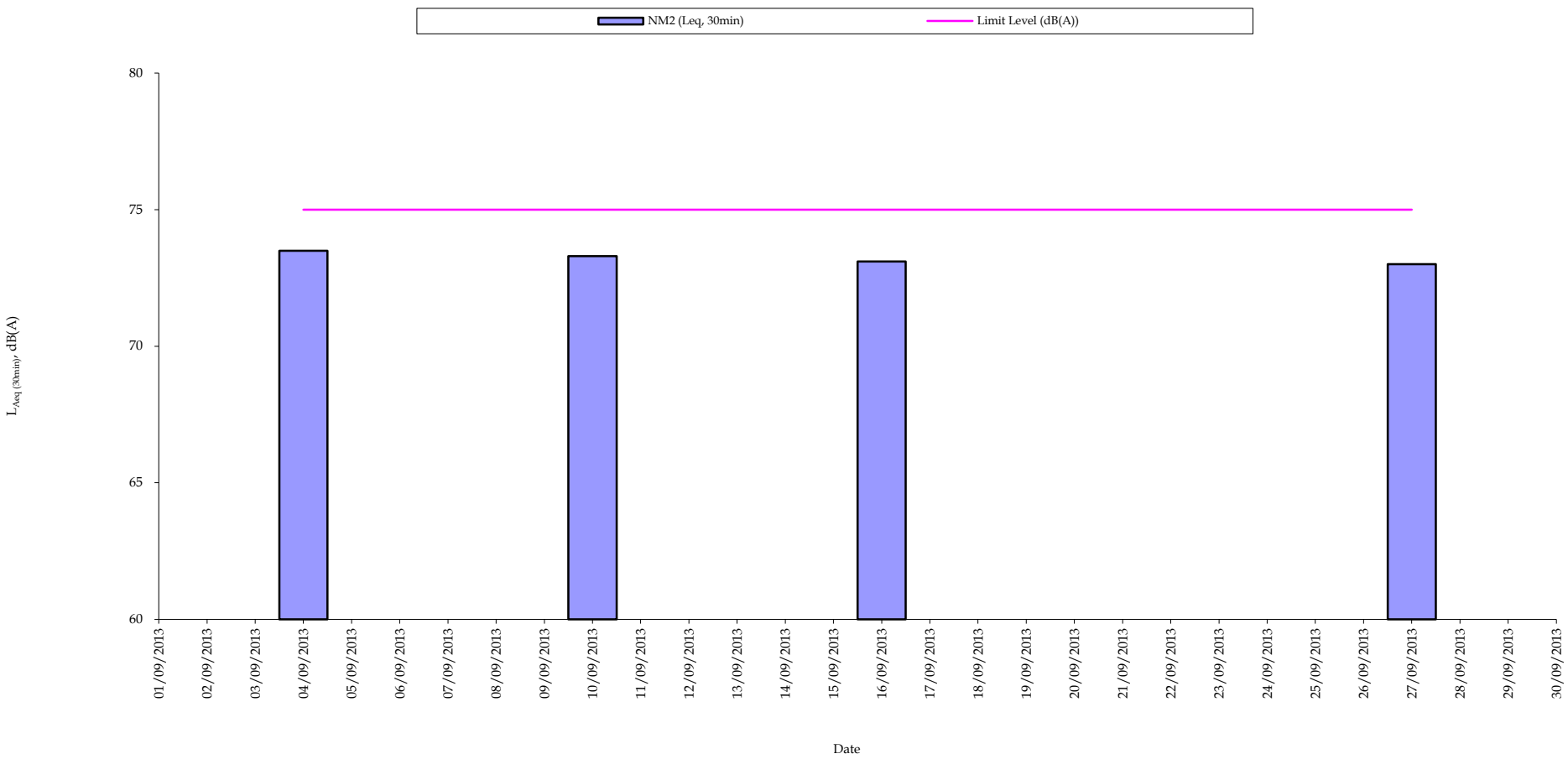
Annex D6 Noise Monitoring Results

Restricted Hours Noise Monitoring Results

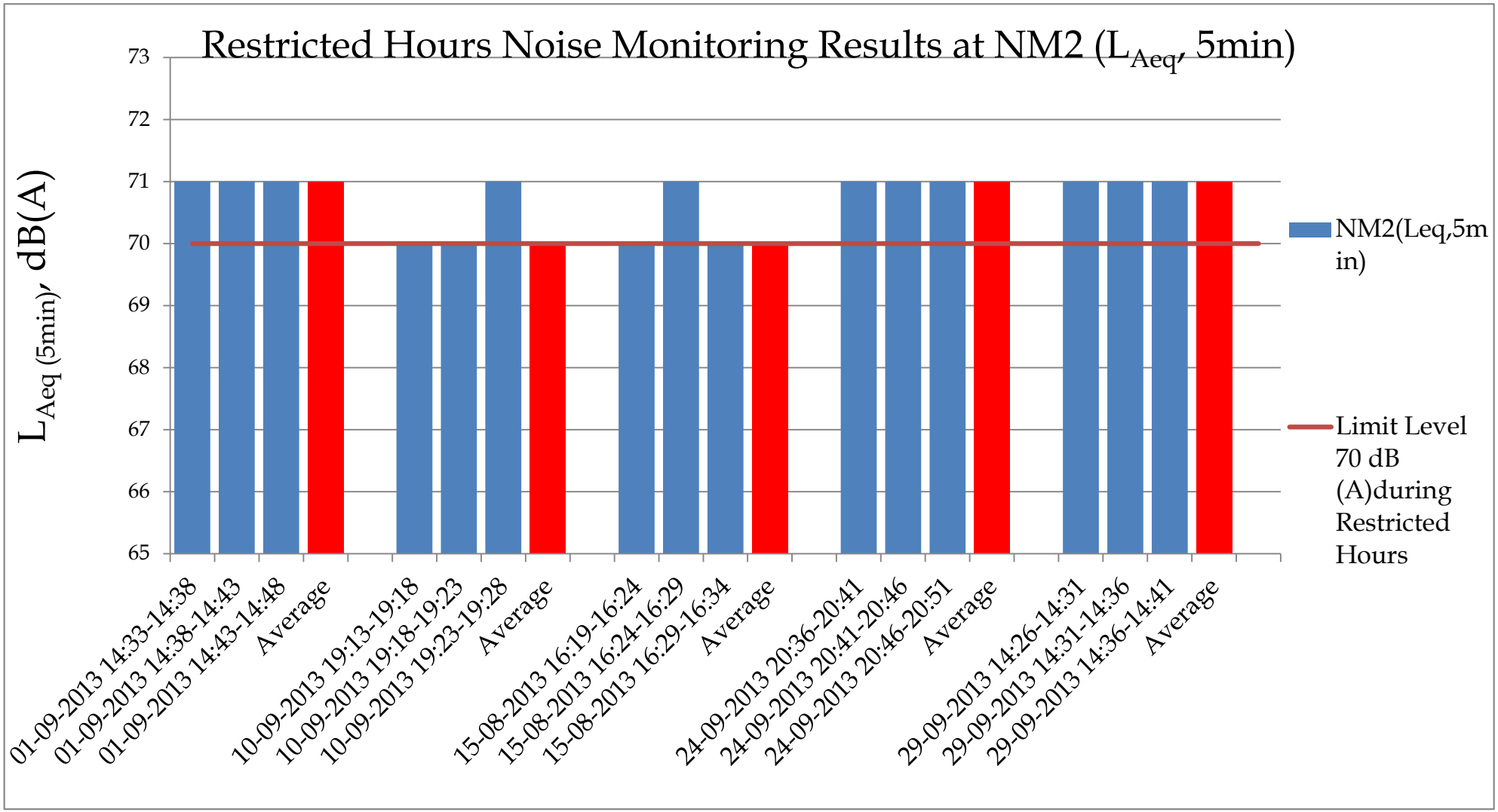
Station NM2

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-Sep-13	14:33	14:38	Cloudy	71	72	69	No outdoor construction noise	Traffic noise	-	31	0.5	RION- NL31 (S/N 00410224)	RION - NC73 (S/N 10997142)
	14:38	14:43	Cloudy	71	72	70			-				
	14:43	14:48	Cloudy	71	72	69			-				
	14:33	14:48	Cloudy	71	72	70			-				
10-Sep-13	19:13	19:18	Fine	70	71	69	No outdoor construction noise	Traffic noise	-	29	0.3	RION- NL31 (S/N 00410224)	RION - NC73 (S/N 10997142)
	19:18	19:23	Fine	70	72	69			-				
	19:23	19:28	Fine	71	72	69			-				
	19:13	19:28	Fine	70	72	69			-				
15-Sep-13	16:19	16:24	Sunny	70	71	69	No outdoor construction noise	Traffic noise	-	28	0.3	RION- NL31 (S/N 00410224)	RION - NC73 (S/N 10997142)
	16:24	16:29	Sunny	71	72	69			-				
	16:29	16:34	Sunny	70	71	69			-				
	16:19	16:34	Sunny	70	71	69			-				
24-Sep-13	20:36	20:41	Fine	71	72	69	No outdoor construction noise	Mainly traffic noise	-	29	0.5	RION- NL31 (S/N 00410224)	RION - NC73 (S/N 10997142)
	20:41	20:46	Fine	71	72	70			-				
	20:46	20:51	Fine	71	72	69			-				
	20:36	20:51	Fine	71	72	69			-				
29-Sep-13	14:26	14:31	Sunny	71	72	70	No outdoor construction noise	Mainly traffic noise	-	27	0.3	RION- NL31 (S/N 00410224)	RION - NC73 (S/N 10997142)
	14:31	14:36	Sunny	71	72	69			-				
	14:36	14:41	Sunny	71	72	70			-				
	14:26	14:41	Sunny	71	72	70			-				
			Min.	**70**									
			Max.	**71**									

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



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


Restricted Hours Noise Monitoring Results at NM2 (L_{Aeq}, 5min)
$L_{Aeq\ (5min)}$, dB(A)
73
72
71
70
69
68
67
66
65
01-09-2013 14:33-14:38
01-09-2013 14:38-14:43
01-09-2013 14:43-14:48
Average
10-09-2013 19:13-19:18
10-09-2013 19:18-19:23
10-09-2013 19:23-19:28
Average
15-08-2013 16:19-16:24
15-08-2013 16:24-16:29
15-08-2013 16:29-16:34
Average
24-09-2013 20:36-20:41
24-09-2013 20:41-20:46
24-09-2013 20:46-20:51
Average
29-09-2013 14:26-14:31
29-09-2013 14:31-14:36
29-09-2013 14:36-14:41
Average
NM2(Leq,5min)
Limit Level 70 dB (A)during Restricted Hours

Annex D7

Summary of Exceedance Investigation

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

NOTIFICATION OF EXCEEDANCE and INVESTIGATION REPORT

Log No.	**2007/23/Noise/197**
Date	1 September 2013 (Sunday) (14:33 – 14:38); (14: 38 – 14:43); (14:43 – 14:48)
Monitoring Station	NM2 (Rooftop of Hyde Building in Wanchai)
Worksite	Wan Chai East Production and Drop Shafts
Parameter	$L_{Aeq\ (5min)}$
Action Level	Not applicable for construction works during restricted hours
Limit Level	70 dB (A)
Maximum Measured Levels	70.6 dB (A) – (14:33 – 14:38) - exceeded limit level; 70.7 dB (A) – (14:38 – 14:43) - exceeded limit level; and 70.5 dB (A) – (14:43 – 14:48) - exceeded limit level.
Possible Reason for Action or Limit Level Non-compliance	According to the works summary provided by the Contractor, no works had been performed outside the noise enclosure. Other activities that took place during the noise monitoring session included cleaning and housekeeping; clearing bags of broken cement; moving to the shaft bottom and lifting to the surface; cleaning of grout plant; drilling of primary grout holes; operation of tally control room, alimak operation, electrical systems, kibble winder, gantry crane, and lift; and equipment repairing, cleaning and maintenance. These activities were carried out inside the noise enclosure. It was observed no outdoor construction activities at the Wan Chai East Production and Drop Shafts during the noise monitoring session. This is consistent with the works summary provided by the Contractor showing no outdoor construction activities that have taken place during the same period. Other potential noise source was also identified in the vicinity (i.e., traffic) to contribute to the measured noise level. In view of no outdoor construction works was carried out and contribution from other potential noise source in vicinity (ie, traffic), it is considered that the exceedance was not due to the Contract 23 construction works.
Actions Taken / To Be Taken	Since the exceedance was not attributable to the Contract 23 construction works, no action is therefore required. However, a number of residential buildings and other noise sensitive receivers are located near the Site, the Contractor is reminded to adhere strictly to the Construction Noise Mitigation Plan and to implement all relevant noise mitigation measures recommended or specified in the EIA, EM&A Manual, EMP, Method Statements, General and Particular Specifications of this Project to avoid exceedance of noise limit levels or causing noise nuisance. The Contractor is also reminded to ensure that the construction plant deployed for the works during restricted hours is in strict compliance with the relevant Construction Noise Permit (CNP) granted.
Remarks	-

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

NOTIFICATION OF EXCEEDANCE and INVESTIGATION REPORT

Log No.	**2007/23/Noise/198**
Date	10 September 2013 (Tuesday) (19:43 – 19:48)
Monitoring Station	NM2 (Rooftop of Hyde Building in Wanchai)
Worksite	Wan Chai East Production and Drop Shafts
Parameter	$L_{Aeq\ (5min)}$
Action Level	Not applicable for construction works during restricted hours
Limit Level	70 dB (A)
Maximum Measured Levels	70.7 dB (A) - exceeded limit level
Possible Reason for Action or Limit Level Non-compliance	According to the works summary provided by the Contractor, no works had been performed outside the noise enclosure. Other activities that took place during the noise monitoring session included cleaning and housekeeping; drilling of primary grout holes; setting of packers; measuring of water inflows; drilling of blast holes manually; operation of tally control room, alimak operation, electrical systems, kibble winder, gantry crane, and lift; and equipment repairing, cleaning and maintenance. These activities were carried out inside the noise enclosure. It was observed no outdoor construction activities at the Wan Chai East Production and Drop Shafts during the noise monitoring session. This is consistent with the works summary provided by the Contractor showing no outdoor construction activities that have taken place during the same period. Other potential noise source was also identified in the vicinity (i.e., traffic) to contribute to the measured noise level. In view of no outdoor construction works was carried out and contribution from other potential noise source in vicinity (ie, traffic), it is considered that the exceedance was not due to the Contract 23 construction works.
Actions Taken / To Be Taken	Since the exceedance was not attributable to the Contract 23 construction works, no action is therefore required. However, a number of residential buildings and other noise sensitive receivers are located near the Site, the Contractor is reminded to adhere strictly to the Construction Noise Mitigation Plan and to implement all relevant noise mitigation measures recommended or specified in the EIA, EM&A Manual, EMP, Method Statements, General and Particular Specifications of this Project to avoid exceedance of noise limit levels or causing noise nuisance. The Contractor is also reminded to ensure that the construction plant deployed for the works during restricted hours is in strict compliance with the relevant Construction Noise Permit (CNP) granted.
Remarks	-

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

NOTIFICATION OF EXCEEDANCE and INVESTIGATION REPORT

Log No.	**2007/23/Noise/199**
Date	15 September 2013 (Sunday) (16:24 – 16:29)
Monitoring Station	NM2 (Rooftop of Hyde Building in Wanchai)
Worksite	Wan Chai East Production and Drop Shafts
Parameter	$L_{Aeq\ (5min)}$
Action Level	Not applicable for construction works during restricted hours
Limit Level	70 dB (A)
Maximum Measured Levels	70.6 dB (A) – (16:24 – 16:29) - exceeded limit level
Possible Reason for Action or Limit Level Non-compliance	According to the works summary provided by the Contractor, no works had been performed outside the noise enclosure. Other activities that took place during the noise monitoring session included cleaning and housekeeping; grouting; drilling, installation of packers and measuring of water inflow; cleaning; preparation for drilling face blast holes; operation of tally control room, alimak operation, electrical systems, kibble winder, gantry crane, and lift; and equipment repairing, cleaning and maintenance. These activities were carried out inside the noise enclosure. It was observed no outdoor construction activities at the Wan Chai East Production and Drop Shafts during the noise monitoring session. This is consistent with the works summary provided by the Contractor showing no outdoor construction activities that have taken place during the same period. Other potential noise source was also identified in the vicinity (i.e., traffic) to contribute to the measured noise level. In view of no outdoor construction works was carried out and contribution from other potential noise source in vicinity (ie, traffic), it is considered that the exceedance was not due to the Contract 23 construction works.
Actions Taken / To Be Taken	Since the exceedance was not attributable to the Contract 23 construction works, no action is therefore required. However, a number of residential buildings and other noise sensitive receivers are located near the Site, the Contractor is reminded to adhere strictly to the Construction Noise Mitigation Plan and to implement all relevant noise mitigation measures recommended or specified in the EIA, EM&A Manual, EMP, Method Statements, General and Particular Specifications of this Project to avoid exceedance of noise limit levels or causing noise nuisance. The Contractor is also reminded to ensure that the construction plant deployed for the works during restricted hours is in strict compliance with the relevant Construction Noise Permit (CNP) granted.
Remarks	-

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

NOTIFICATION OF EXCEEDANCE and INVESTIGATION REPORT

Log No.	**2007/23/Noise/200**
Date	24 September 2013 (Tuesday) (20:36 – 20:41); (20:41 – 20:46) and (20:46 – 20:51)
Monitoring Station	NM2 (Rooftop of Hyde Building in Wanchai)
Worksite	Wan Chai East Production and Drop Shafts
Parameter	$L_{Aeq\ (5min)}$
Action Level	Not applicable for construction works during restricted hours
Limit Level	70 dB (A)
Maximum Measured Levels	70.5 dB (A) – (20:36 – 20:41) - exceeded limit level; 70.7 dB (A) – (20:41 – 20:46) - exceeded limit level; and 70.7 dB (A) – (20:46 – 20:51) - exceeded limit level.
Possible Reason for Action or Limit Level Non-compliance	According to the works summary provided by the Contractor, no works had been performed outside the noise enclosure. Other activities that took place during the noise monitoring session included cleaning and housekeeping; defuming; destroying of spare detonator; grouting of secondary holes; operation of tally control room, alimak operation, electrical systems, kibble winder, gantry crane, and lift; and equipment repairing, cleaning and underground maintenance. These activities were carried out inside the noise enclosure. It was observed no outdoor construction activities at the Wan Chai East Production and Drop Shafts during the noise monitoring session. This is consistent with the works summary provided by the Contractor showing no outdoor construction activities that have taken place during the same period. Other potential noise source was also identified in the vicinity (i.e., traffic) to contribute to the measured noise level. In view of no outdoor construction works was carried out and contribution from other potential noise source in vicinity (ie, traffic), it is considered that the exceedances were not due to the Contract 23 construction works.
Actions Taken / To Be Taken	Since the exceedances were not attributable to the Contract 23 construction works, no action is therefore required. However, a number of residential buildings and other noise sensitive receivers are located near the Site, the Contractor is reminded to adhere strictly to the Construction Noise Mitigation Plan and to implement all relevant noise mitigation measures recommended or specified in the EIA, EM&A Manual, EMP, Method Statements, General and Particular Specifications of this Project to avoid exceedance of noise limit levels or causing noise nuisance. The Contractor is also reminded to ensure that the construction plant deployed for the works during restricted hours is in strict compliance with the relevant Construction Noise Permit (CNP) granted.
Remarks	-

NOTIFICATION OF EXCEEDANCE and INVESTIGATION REPORT

Log No.	**2007/23/Noise/201**
Date	29 September 2013 (Sunday) (14:26 – 14:31); (14:31 – 14:36) and (14:36 – 14:41)
Monitoring Station	NM2 (Rooftop of Hyde Building in Wanchai)
Worksite	Wan Chai East Production and Drop Shafts
Parameter	$L_{Aeq\ (5min)}$
Action Level	Not applicable for construction works during restricted hours
Limit Level	70 dB (A)
Maximum Measured Levels	70.6 dB (A) –(14:26 – 14:31) - exceeded limit level; 70.6 dB (A) –(14:31 – 14:36) - exceeded limit level; and 70.8 dB (A) – (14:36 – 14:41) - exceeded limit level.
Possible Reason for Action or Limit Level Non-compliance	According to the works summary provided by the Contractor, no works had been performed outside the noise enclosure. Other activities that took place during the noise monitoring session included cleaning and housekeeping; grouting of face grout holes; removal and cleaning of packers; cleaning and housekeeping from shaft station to double track and pumping out of impounded water along the tunnel; operation of tally control room, alimak operation, electrical systems, kibble winder, gantry crane, and lift; and equipment repairing, cleaning and maintenance. These activities were carried out inside the noise enclosure. It was observed no outdoor construction activities at the Wan Chai East Production and Drop Shafts during the noise monitoring session. This is consistent with the works summary provided by the Contractor showing no outdoor construction activities that have taken place during the same period. Other potential noise source was also identified in the vicinity (i.e., traffic) to contribute to the measured noise level. In view of no outdoor construction works was carried out and contribution from other potential noise source in vicinity (ie, traffic), it is considered that the exceedances were not due to the Contract 23 construction works.
Actions Taken / To Be Taken	Since the exceedances were not attributable to the Contract 23 construction works, no action is therefore required. However, a number of residential buildings and other noise sensitive receivers are located near the Site, the Contractor is reminded to adhere strictly to the Construction Noise Mitigation Plan and to implement all relevant noise mitigation measures recommended or specified in the EIA, EM&A Manual, EMP, Method Statements, General and Particular Specifications of this Project to avoid exceedance of noise limit levels or causing noise nuisance. The Contractor is also reminded to ensure that the construction plant deployed for the works during restricted hours is in strict compliance with the relevant Construction Noise Permit (CNP) granted.
Remarks	-

Annex D8 Cumulative Complaint and Summons/Prosecutions Log

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

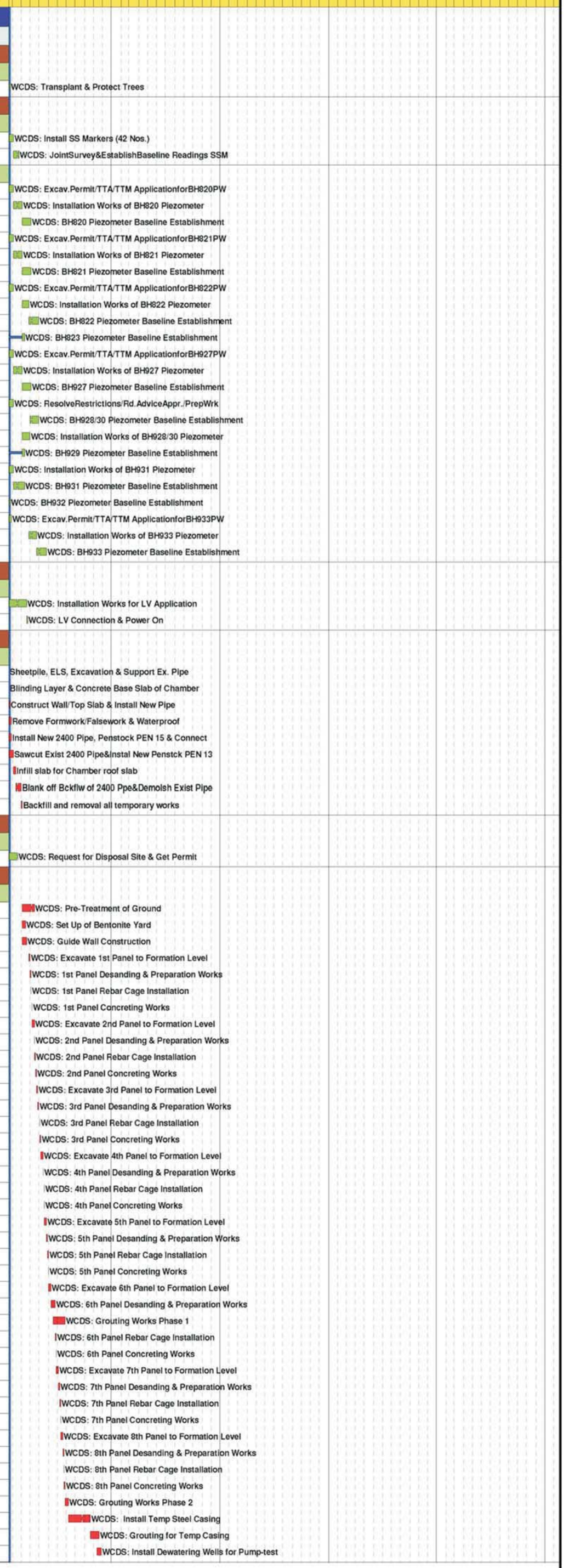
Annex D8 Cumulative Complaint and Summons/Prosecutions Log

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

Annex D8 Cumulative Complaint and Summons/Prosecutions Log

Reporting Month	Number of Complaints in Reporting Month	Number of Summons/Prosecutions in Reporting Month
December 2012	0	0
January 2013	0	0
February 2013	0	0
March 2013	0	0
April 2013	0	0
May 2013	0	0
June 2013	0	0
July 2013	0	0
August 2013	0	0
September 2013	0	0
Overall Total	1	0

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	% Comp
HATS Stage 2A - Contract DC/2007/23					
Wan Chai East PTW Drop Shaft					
Preliminaries Works					
WCDS0150	WCDS: Transplant & Protect Trees	80	25SEP09A	21JAN10	97
EBS, Env. & Geotechnical Instrumentations					
Markers/UMP's/Others(Same note as Piez.)					
WCDS0442	WCDS: Install SS Markers (42 Nos.)	50	24OCT09A	03FEB10	74
WCDS0444	WCDS: JointSurvey&EstablishBaseline Readings SSM	14	04FEB10	23FEB10	0
Piezometers(NearbyPTWorPScovered inthisInstalln)					
WCDS0369	WCDS: Excav.Permit/TTA/TTM ApplicationforBH820PW	25	15SEP09A	03FEB10	50
WCDS0371	WCDS: Installation Works of BH820 Piezometer	21	04FEB10	03MAR10	0
WCDS0373	WCDS: BH820 Piezometer Baseline Establishment	26	04MAR10	02APR10	0
WCDS0377	WCDS: Excav.Permit/TTA/TTM ApplicationforBH821PW	24	15SEP09A	04FEB10	40
WCDS0379	WCDS: Installation Works of BH821 Piezometer	21	05FEB10	04MAR10	0
WCDS0381	WCDS: BH821 Piezometer Baseline Establishment	26	05MAR10	03APR10	0
WCDS0383	WCDS: Excav.Permit/TTA/TTM ApplicationforBH822PW	24	22SEP09A	04FEB10	40
WCDS0385	WCDS: Installation Works of BH822 Piezometer	21	04MAR10	27MAR10	0
WCDS0387	WCDS: BH822 Piezometer Baseline Establishment	26	29MAR10	28APR10	0
WCDS0393	WCDS: BH823 Piezometer Baseline Establishment	26	01JAN10A	10MAR10	80
WCDS0397	WCDS: Excav.Permit/TTA/TTM ApplicationforBH927PW	24	28SEP09A	04FEB10	40
WCDS0399	WCDS: Installation Works of BH927 Piezometer	21	05FEB10	04MAR10	0
WCDS0401	WCDS: BH927 Piezometer Baseline Establishment	26	05MAR10	03APR10	0
WCDS0403A	WCDS: ResolveRestrictions/Rd.AdviceAppr./PrepWrk	33	07NOV09A	04FEB10	58
WCDS0405	WCDS: BH928/30 Piezometer Baseline Establishment	26	30MAR10	29APR10	0
WCDS0407	WCDS: Installation Works of BH928/30 Piezometer	21	05MAR10	29MAR10	0
WCDS0413	WCDS: BH929 Piezometer Baseline Establishment	26	31DEC09A	10MAR10	80
WCDS0417	WCDS: Installation Works of BH931 Piezometer	21	07DEC09A	04FEB10	33
WCDS0419	WCDS: BH931 Piezometer Baseline Establishment	26	05FEB10	10MAR10	0
WCDS0425	WCDS: BH932 Piezometer Baseline Establishment	26	20DEC09A	22JAN10	90
WCDS0427	WCDS: Excav.Permit/TTA/TTM ApplicationforBH933PW	24	09SEP09A	28JAN10	67
WCDS0429	WCDS: Installation Works of BH933 Piezometer	21	29MAR10	22APR10	0
WCDS0431	WCDS: BH933 Piezometer Baseline Establishment	26	23APR10	24MAY10	0
Electrical & Mechanical Installations					
WCDS0805	WCDS: Installation Works for LV Application	60	04JAN10A	19MAR10	20
WCDS0810	WCDS: LV Connection & Power On	4	20MAR10	24MAR10	0
New Chamber and Overflow Pipe					
WCDS0525	Sheetpile, ELS, Excavation & Support Ex. Pipe	18	16OCT09A	20JAN10	95
WCDS0565	Blinding Layer & Concrete Base Slab of Chamber	6	19NOV09A	20JAN10	80
WCDS0605	Construct Wall/Top Slab & Install New Pipe	12	30NOV09A	23JAN10	70
WCDS0625	Remove Formwork/Falsework & Waterproof	9	18DEC09A	25JAN10	40
WCDS0645	Install New 2400 Pipe, Penstock PEN 15 & Connect	18	30DEC09A	25JAN10	70
WCDS0665	Sawcut Exist 2400 Pipe&Instal New Penstck PEN 13	15	18JAN10A	04FEB10	10
WCDS0670	Infill slab for Chamber roof slab	7	05FEB10	12FEB10	0
WCDS0695	Blank off Bckflw of 2400 Ppe&Demolsh Exist Pipe	10	13FEB10	27FEB10	0
WCDS0698	Backfill and removal all temporary works	4	01MAR10	04MAR10	0
Marine Dumping Permit					
WCDS0380	WCDS: Request for Disposal Site & Get Permit	24	05JAN10A	18FEB10	5
Diaphragm Wall					
WCDS0205	WCDS: Pre-Treatment of Ground	36	05MAR10	16APR10	0
WCDS0210	WCDS: Set Up of Bentonite Yard	9	05MAR10	15MAR10	0
WCDS0230	WCDS: Guide Wall Construction	12	05MAR10	18MAR10	0
WCDS0242	WCDS: Excavate 1st Panel to Formation Level	3	29MAR10	31MAR10	0
WCDS0244	WCDS: 1st Panel Desanding & Preparation Works	2	01APR10	02APR10	0
WCDS0246	WCDS: 1st Panel Rebar Cage Installation	1	03APR10	03APR10	0
WCDS0248	WCDS: 1st Panel Concreting Works	1	06APR10	06APR10	0
WCDS0251	WCDS: Excavate 2nd Panel to Formation Level	6	07APR10	13APR10	0
WCDS0253	WCDS: 2nd Panel Desanding & Preparation Works	3	14APR10	16APR10	0
WCDS0255	WCDS: 2nd Panel Rebar Cage Installation	2	17APR10	19APR10	0
WCDS0257	WCDS: 2nd Panel Concreting Works	1	20APR10	20APR10	0
WCDS0259	WCDS: Excavate 3rd Panel to Formation Level	6	21APR10	27APR10	0
WCDS0261	WCDS: 3rd Panel Desanding & Preparation Works	3	28APR10	30APR10	0
WCDS0263	WCDS: 3rd Panel Rebar Cage Installation	2	03MAY10	04MAY10	0
WCDS0265	WCDS: 3rd Panel Concreting Works	1	05MAY10	05MAY10	0
WCDS0267	WCDS: Excavate 4th Panel to Formation Level	6	06MAY10	12MAY10	0
WCDS0269	WCDS: 4th Panel Desanding & Preparation Works	3	13MAY10	15MAY10	0
WCDS0271	WCDS: 4th Panel Rebar Cage Installation	2	17MAY10	18MAY10	0
WCDS0273	WCDS: 4th Panel Concreting Works	1	19MAY10	19MAY10	0
WCDS0275	WCDS: Excavate 5th Panel to Formation Level	6	20MAY10	26MAY10	0
WCDS0277	WCDS: 5th Panel Desanding & Preparation Works	3	27MAY10	29MAY10	0
WCDS0279	WCDS: 5th Panel Rebar Cage Installation	2	31MAY10	01JUN10	0
WCDS0281	WCDS: 5th Panel Concreting Works	1	02JUN10	02JUN10	0
WCDS0283	WCDS: Excavate 6th Panel to Formation Level	6	03JUN10	09JUN10	0
WCDS0285	WCDS: 6th Panel Desanding & Preparation Works	12	10JUN10	24JUN10	0
WCDS0286	WCDS: Grouting Works Phase 1	32	18JUN10	26JUL10	0
WCDS0287	WCDS: 6th Panel Rebar Cage Installation	2	25JUN10	26JUN10	0
WCDS0289	WCDS: 6th Panel Concreting Works	1	28JUN10	28JUN10	0
WCDS0291	WCDS: Excavate 7th Panel to Formation Level	6	29JUN10	06JUL10	0
WCDS0293	WCDS: 7th Panel Desanding & Preparation Works	3	07JUL10	09JUL10	0
WCDS0295	WCDS: 7th Panel Rebar Cage Installation	2	10JUL10	12JUL10	0
WCDS0297	WCDS: 7th Panel Concreting Works	1	13JUL10	13JUL10	0
WCDS0299	WCDS: Excavate 8th Panel to Formation Level	5	14JUL10	19JUL10	0
WCDS0301	WCDS: 8th Panel Desanding & Preparation Works	3	20JUL10	22JUL10	0
WCDS0303	WCDS: 8th Panel Rebar Cage Installation	2	23JUL10	24JUL10	0
WCDS0305	WCDS: 8th Panel Concreting Works	1	26JUL10	26JUL10	0
WCDS0390	WCDS: Grouting Works Phase 2	10	27JUL10	06AUG10	0
WCDS0391	WCDS: Install Temp Steel Casing	60	07AUG10	19OCT10	0
WCDS0392	WCDS: Grouting for Temp Casing	27	20OCT10	19NOV10	0
WCDS0394	WCDS: Install Dewatering Wells for Pump-test	12	13NOV10	26NOV10	0



Start Date	31JUL09
Finish Date	15JAN15
Data Date	20JAN10
Run Date	01FEB10 09:44

Early Bar
Progress Bar
Critical Activity

© Primavera Systems, Inc.

WPU7 Sheet 1 of 2

Habour Area Treatment Scheme Stage 2A
Contract No. DC/2007/23 - Construction of Sewage Conveyance from North Point to Stonecutters Island
Programme

Annex D9 Construction Programme for the Project

Gammon

Date	Revision	Checked	Approved

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	% Comp
WCDS0471	WCDS: Pumping Test	6	27NOV10	03DEC10	0
WCDS0473	WCDS: Sumission of Pumping Test Report	6	04DEC10	10DEC10	0
WCDS0477	WCDS: Demobilization for D'wall	6	04DEC10	10DEC10	0
Shaft Excavation					
WCDS0400	WCDS: Construct Capping Beam & Shaft Collar	12	04DEC10	17DEC10	0
WCDS0410	WCDS: Excavate Soil & Ring Beams (21m)	19	18DEC10	11JAN11	0
WCDS0420	WCDS: Construct Levelling Pad	6	12JAN11	18JAN11	0
WCDS0430	WCDS: Pre-excavation Grout for Raise Bore	90	19JAN11	09MAY11	0
WCDS0440	WCDS: In-fill Concrete for Pilot Hole	12	10MAY11	23MAY11	0
WCDS1650	WCDS: Comple Excav. to Rockhead at WCE DS(KD-B)	0		11JAN11	0
WCDS1660	WCDS: Compl D'wall, Soil Excav&Clear Area(KD-02)	0		11JAN11	0
Raised Boring					
WCDS0700	WCDS: Rig Up Hole 1	5	24MAY11	28MAY11	0
WCDS0710	WCDS: Pilot Drill 116 mtrs	14	30MAY11	15JUN11	0
WCDS0720	WCDS: Attach reamer and Collar	3	16JUN11	18JUN11	0
WCDS0730	WCDS: Ream 116 metres @ 2.8 mtr dia	31	20JUN11	26JUL11	0
WCDS0740	WCDS: Lower Reamer and Remove	3	27JUL11	29JUL11	0
WCDS0750	WCDS: De Rig Raise borer and Re rig Hole 2	5	30JUL11	04AUG11	0
WCDS0760	WCDS: Pilot Drill 116 mtrs	14	05AUG11	20AUG11	0
WCDS0770	WCDS: Attach Reamer and collar same	3	22AUG11	24AUG11	0
WCDS0780	WCDS: Ream 116 metres @ 2.8 mtr dia	31	25AUG11	30SEP11	0
WCDS0790	WCDS: De Rig Raise Borer & Remove Reamr	3	03OCT11	06OCT11	0
Lower Shaft Construction					
WCDS0845	WCDS: Blinding Layer & Concrete Shaft Base	6	07OCT11	13OCT11	0
WCDS0850	WCDS: Back shunt concreting	18	14OCT11	03NOV11	0
WCDS0885	WCDS: Construct Vert Shaft to Tunnel Invert	6	04NOV11	10NOV11	0
WCDS0905	WCDS: Install System Form for Lower Shaft	6	11NOV11	17NOV11	0
WCDS0945	WCDS: Construct Transition & Vert Shaft	9	18NOV11	28NOV11	0
WCDS0965	WCDS: Construct lower-shaft -153.5 to -16mPD	72	29NOV11	25FEB12	0
WCDS0970	WCDS: Remove system formwork and tidy up area	6	27FEB12	03MAR12	0
Upper Shaft Construction					
WCDS1015	WCDS: Blinding Layer & Construct Base Slab	9	05MAR12	14MAR12	0
WCDS1055	WCDS: Temp Platform & Construct Conical Surface	6	15MAR12	21MAR12	0
WCDS1060	WCDS: Assembly of kicker formwork	12	08MAR12	21MAR12	0
WCDS1095	WCDS: Construct Kicker	9	22MAR12	31MAR12	0
WCDS1100	WCDS: Set up system formwork for upper shaft	16	22MAR12	10APR12	0
WCDS1145	WCDS: Construct Upper Shaft	80	11APR12	16JUL12	0
WCDS1265	WCDS: Fabricate & Install S/S Vortex Drop Pipe	12	10JUL12	23JUL12	0
WCDS1275	WCDS: Construct Overflow Weir	6	24JUL12	30JUL12	0
WCDS1300	WCDS: Clear Area & Install Multi-Part Cover	3	31JUL12	02AUG12	0
Scum Removal Chamber					
WCDS1533	WCDS: Sheet Piling, Excavation & ELS Works	24	16JUN12	16JUL12	0
WCDS1535	WCDS: Excavation for Chamber & Channel	9	17JUL12	26JUL12	0
WCDS1575	WCDS: Blinding Layer & Constrct Base Slab of SRC	9	27JUL12	06AUG12	0
WCDS1615	WCDS: Construct Wall of SRC	9	07AUG12	16AUG12	0
WCDS1635	WCDS: Waterproof & Install Multi-Part Cover	6	18AUG12	24AUG12	0
WCDS1640	WCDS: Backfill to SRC	3	25AUG12	28AUG12	0
Connection Channel					
WCDS1445	WCDS: Blinding Layer & Constrct Base Slab for CC	9	27JUL12	06AUG12	0
WCDS1505	WCDS: Construct Wall of CC	12	07AUG12	20AUG12	0
WCDS1525	WCDS: Waterproof & Install Multi-Part Cover	6	23AUG12	29AUG12	0
WCDS1530	WCDS: Backfill	3	30AUG12	01SEP12	0
Miscellaneous Works					
WCDS2010	WCDS: Install E&M Services	18	14FEB13	06MAR13	0
WCDS2020	WCDS: Reinstatement & Clear DS Area	12	07MAR13	20MAR13	0
WCDS2025	WCDS: Complete All Works at WCE DS (KD-07)	0		20MAR13	0
WCDS2030	WCDS: Landscaping & Planting Works	60	10JUL13*	07SEP13	0
WCDS2040	WCDS: Period of Establishment Works	360	08SEP13	02SEP14	0
WCDS2050	WCDS: End of Establishment Period	0		02SEP14	0

Start Date	31JUL09
Finish Date	15JAN15
Data Date	20JAN10
Run Date	01FEB10 09:44

Early Bar
Progress Bar
Critical Activity

© Primavera Systems, Inc.

WPU7 Sheet 2 of 2

Habour Area Treatment Scheme Stage 2A
Contract No. DC/2007/23 - Construction of Sewage Conveyance from North Point to Stonecutters Island Programme

Annex D9 Construction Programme for the Project

Gammon

Date	Revision	Checked	Approved

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	% Comp
HATS Stage 2A - Contract DC/2007/23					
Wan Chai East Production Shaft					
Preliminaries Works					
WCPS10085	WCPS: Construct/Install Blast Protection	2	16AUG10	17AUG10	0
WCPS10090	WCPS: Site Inspection from Mines	1	18AUG10	18AUG10	0
WCPS10095	WCPS: Issue Blasting Permit	1	19AUG10	19AUG10	0
Electrical & Mechanical Installations					
WCPS0605	WCPS: Installation Works for LV Application	60	04JAN10A	04MAR10	42
WCPS0610	WCPS: LV Connection & Power On	4	05MAR10	09MAR10	0
WCPS0620	WCPS: Installation Works for 11KV Application	60	01MAR10*	11MAY10	0
WCPS0625	WCPS: 11 KV Connection & Power On	4	12MAY10	15MAY10	0
Marine Dumping Permit					
WCPS0199	WCPS: Request for Disposal Site & Get Permit	24	26DEC09A	29JAN10	63
Diaphragm Wall					
WCPS0264	WCPS: Grouting Works Phase 1	37	20JAN10	06MAR10	0
WCPS0276	WCPS: Grouting Works Phase 2	48	08MAR10	04MAY10	0
WCPS0283	WCPS: Excavate 6th Panel to Formation Level	15	05JAN10A	26JAN10	60
WCPS0285	WCPS: 6th Panel Desanding & Preparation Works	3	27JAN10	29JAN10	0
WCPS0287	WCPS: 6th Panel Rebar Cage Installation	4	30JAN10	03FEB10	0
WCPS0289	WCPS: 6th Panel Concreting Works	1	04FEB10	04FEB10	0
WCPS0292	WCPS: Install Dewatering Wells for Pump-test	12	27APR10	11MAY10	0
WCPS0294	WCPS: Pumping Test	6	12MAY10	18MAY10	0
WCPS0295	WCPS: Demobilization	6	19MAY10	25MAY10	0
WCPS0296	WCPS: Submission of Pumping Test Report	6	19MAY10	25MAY10	0
Shaft Excavation					
WCPS0300	WCPS: Construct Capping Beam & Collar Shaft	12	19MAY10	01JUN10	0
WCPS0310	WCPS: Initial Excavation of Shaft (7m)	4	02JUN10	05JUN10	0
WCPS0320	WCPS: Set-up Equipment for Shaft Sink	12	07JUN10	21JUN10	0
WCPS0322	WCPS: Erect Noise Enclosure of Shaft Top	12	07JUN10	21JUN10	0
WCPS0330	WCPS: Excavate Soil & Ring Beams (32.5m)	14	22JUN10	08JUL10	0
WCPS0375	WCPS: Probe, Grout, D & B Rock, Muck Out (128m)	124	23AUG10	19JAN11	0
WCPS0440	WCPS: Construct Sump at Shaft Bottom	2	20JAN11	21JAN11	0
WCPS0465	WCPS: Erect Tunnel Hoist & Muck-Out System	10	22JAN11	02FEB11	0
Backfill, Reinstatement & Landscaping					
WCPS0900	WCPS: Backfill Temp Adit - Concrete	5	01AUG13	06AUG13	0
WCPS0910	WCPS: Backfill Shaft (20%)	5	07AUG13	12AUG13	0
WCPS0920	WCPS: Backfill Shaft (40%)	5	13AUG13	17AUG13	0
WCPS0930	WCPS: Backfill Shaft (60%)	5	19AUG13	23AUG13	0
WCPS0940	WCPS: Backfill Shaft (80%)	5	24AUG13	29AUG13	0
WCPS0950	WCPS: Backfill Shaft (100%)	5	30AUG13	04SEP13	0
WCPS0960	WCPS: Reinstatement Around PS Area	10	05SEP13	16SEP13	0
WCPS0970	WCPS: Demobilise Clear Area	6	17SEP13	24SEP13	0
WCPS0975	WCPS: Complete All Works at WCE PS (KD-08)	0		24SEP13	0
WCPS0980	WCPS: Landscaping & Planting Works	60	25SEP13*	23NOV13	0
WCPS0990	WCPS: Period of Establishment Works	360	24NOV13	18NOV14	0
WCPS1000	WCPS: End of Establishment Period	0		18NOV14	0

Start Date	31JUL09
Finish Date	15JAN15
Data Date	20JAN10
Run Date	01FEB10 09:26

© Primavera Systems, Inc.

Early Bar
Progress Bar
Critical Activity

WPU7 Sheet 1 of 1

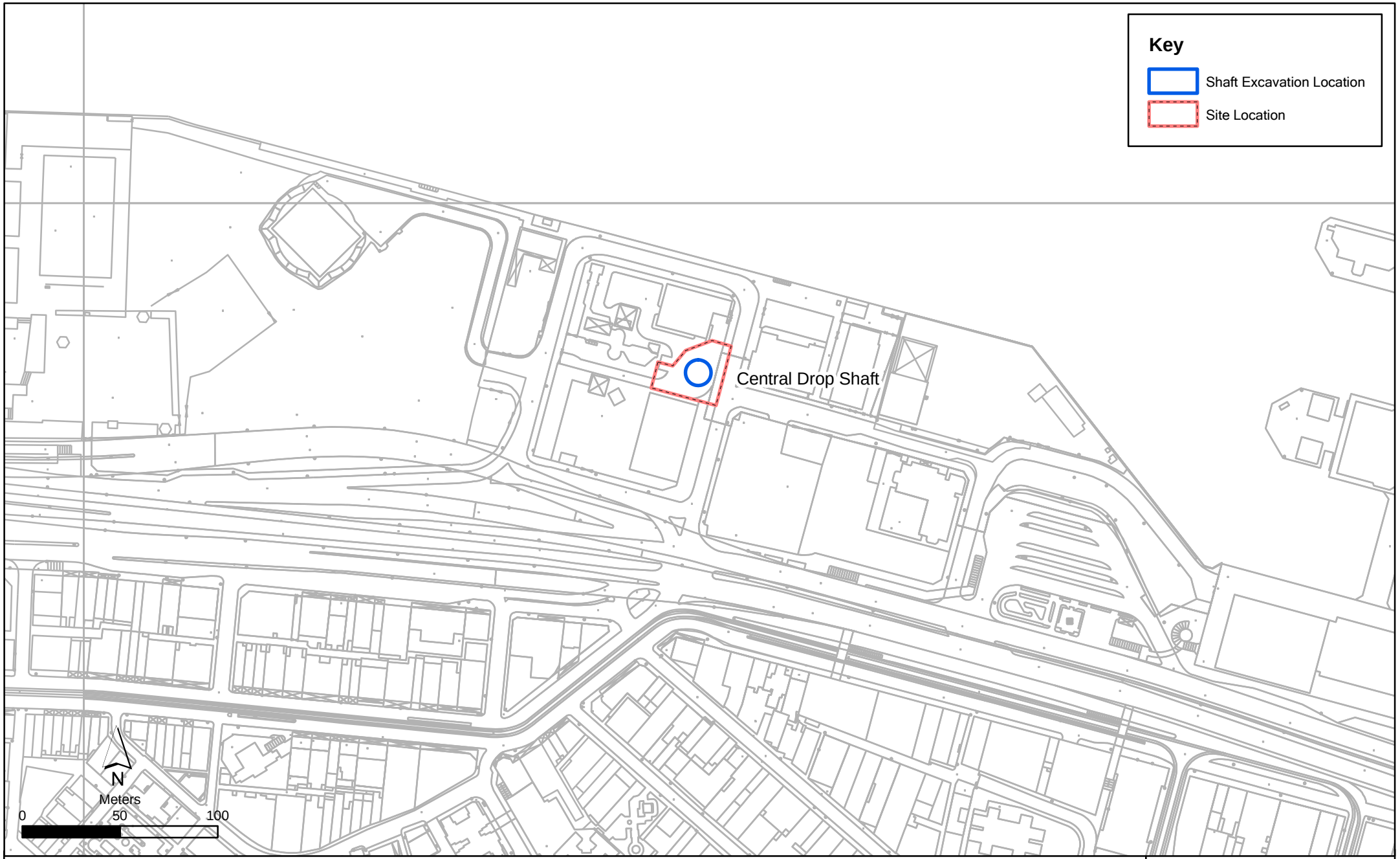
Habour Area Treatment Scheme Stage 2A
Contract No. DC/2007/23 - Construction of Sewage Conveyance from North Point to Stonecutters Island Programme

Annex D9 Construction Programme for the Project

Date	Revision	Checked	Approved

Annex E

Central Drop Shaft



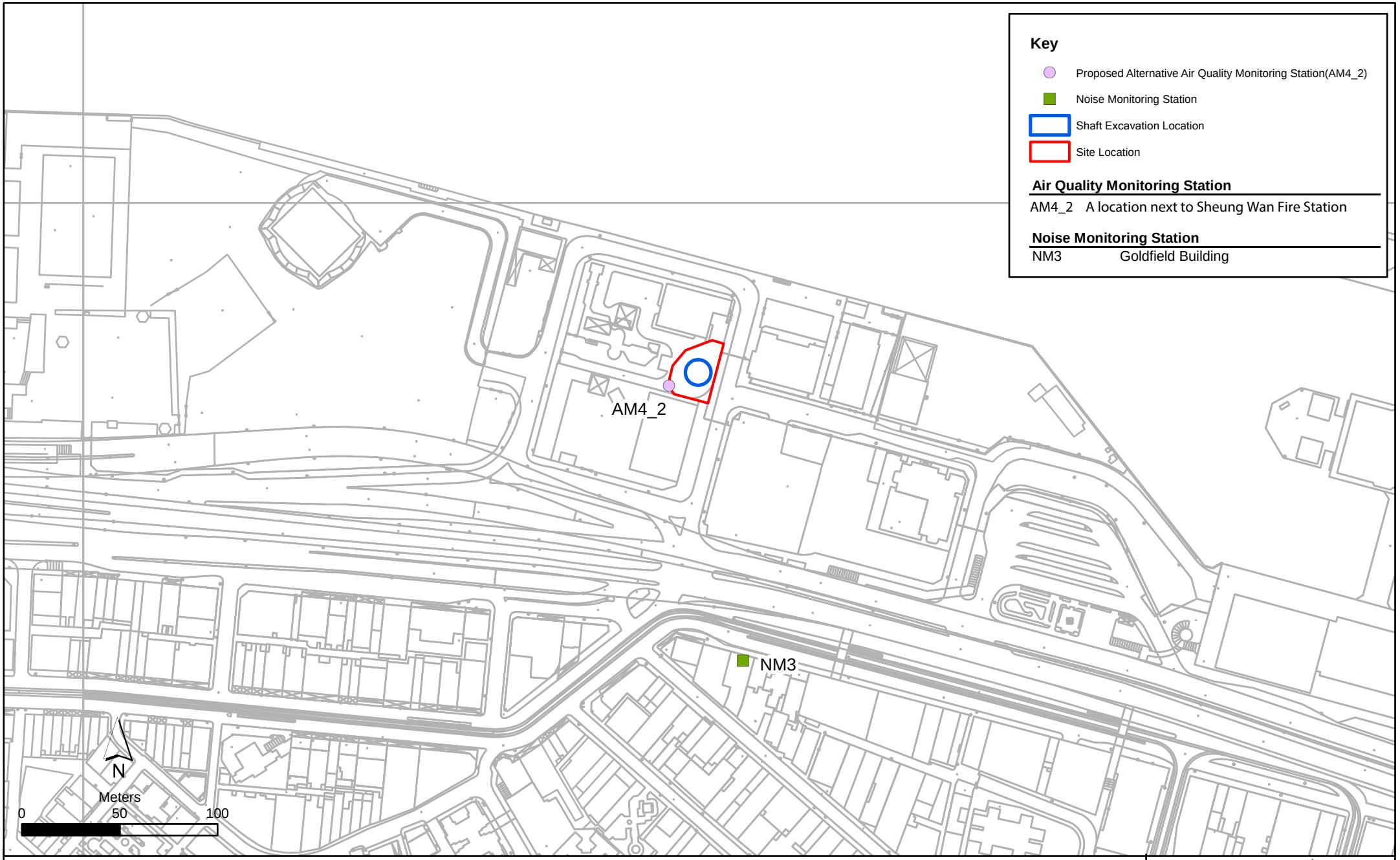
Annex E1

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

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

Environmental Resources Management

ERM



Annex E2

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

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

Environmental Resources Management

ERM

Annex E3 Monitoring Schedule of the Reporting Month and Next Month

DC/2007/23
Harbour Area Treatment Scheme Stage 2A
Construction of Sewage Conveyance System from North Point to Stonecutters Island
Impact Construction Air Quality Monitoring Schedule

AM4_2 - A Location within the DSD Central PTW
Monitoring Month : September 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
01-Sep	02-Sep	03-Sep	04-Sep	05-Sep	06-Sep	07-Sep
			1-hr and 24-hr Monitoring			
08-Sep	09-Sep	10-Sep	11-Sep	12-Sep	13-Sep	14-Sep
		1-hr and 24-hr Monitoring				
15-Sep	16-Sep	17-Sep	18-Sep	19-Sep	20-Sep	21-Sep
	1-hr and 24-hr Monitoring				Public Holiday	1-hr and 24-hr Monitoring
22-Sep	23-Sep	24-Sep	25-Sep	26-Sep	27-Sep	28-Sep
					1-hr and 24-hr Monitoring	
29-Sep	30-Sep					

Monitoring Month : October 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		01-Oct	02-Oct	03-Oct	04-Oct	05-Oct
		Public Holiday		1-hr and 24-hr Monitoring		
06-Oct	07-Oct	08-Oct	09-Oct	10-Oct	11-Oct	12-Oct
			1-hr and 24-hr Monitoring			
13-Oct	14-Oct	15-Oct	16-Oct	17-Oct	18-Oct	19-Oct
	Public Holiday	1-hr and 24-hr Monitoring				
20-Oct	21-Oct	22-Oct	23-Oct	24-Oct	25-Oct	26-Oct
	1-hr and 24-hr Monitoring					1-hr and 24-hr Monitoring
27-Oct	28-Oct	29-Oct	30-Oct	31-Oct		

Annex E3 Monitoring Schedule of the Reporting Month and Next Month

DC/2007/23

Harbour Area Treatment Scheme Stage 2A

Construction of Sewage Conveyance System from North Point to Stonecutters Island

Impact Construction Noise Quality Monitoring Schedule

NM3 - Goldfield Building

Monitoring Month : September 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
01-Sep	02-Sep	03-Sep	04-Sep	05-Sep	06-Sep	07-Sep
			Noise Monitoring			
08-Sep	09-Sep	10-Sep	11-Sep	12-Sep	13-Sep	14-Sep
		Noise Monitoring				
15-Sep	16-Sep	17-Sep	18-Sep	19-Sep	20-Sep	21-Sep
	Noise Monitoring				Public Holiday	
22-Sep	23-Sep	24-Sep	25-Sep	26-Sep	27-Sep	28-Sep
					Noise Monitoring	
29-Sep	30-Sep					

Monitoring Month : October 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		01-Oct	02-Oct	03-Oct	04-Oct	05-Oct
		Public Holiday		Noise Monitoring		
06-Oct	07-Oct	08-Oct	09-Oct	10-Oct	11-Oct	12-Oct
			Noise Monitoring			
13-Oct	14-Oct	15-Oct	16-Oct	17-Oct	18-Oct	19-Oct
	Public Holiday	Noise Monitoring				
20-Oct	21-Oct	22-Oct	23-Oct	24-Oct	25-Oct	26-Oct
	Noise Monitoring					
27-Oct	28-Oct	29-Oct	30-Oct	31-Oct		

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

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

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

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

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

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

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

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

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

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

Remark:

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

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

1-hour TSP Monitoring Results

Station AM4_2

Date	Start Time	Finish Time	Weather	TSP Concentration ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Site Conditions / Observations / Remarks	Temperature (°C)	Wind Speed * (m/s)	Sampler ID	Filter ID
04-Sep-13	14:40	15:40	Rainy	153	393	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 9315)	2115
	15:42	16:42	Rainy	175	393	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 9315)	2117
	16:50	17:50	Rainy	172	393	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 9315)	2118
10-Sep-13	8:00	9:00	Sunny	220	393	500	Construction work in progress	30	<5	GMW GS-2310 (S/N 9315)	2120
	9:02	10:02	Sunny	213	393	500	Construction work in progress	30	<5	GMW GS-2310 (S/N 9315)	2131
	10:04	11:04	Sunny	198	393	500	Construction work in progress	30	<5	GMW GS-2310 (S/N 9315)	2132
16-Sep-13	11:40	12:40	Sunny	186	393	500	Construction work in progress	30	<5	GMW GS-2310 (S/N 9315)	2133
	12:42	17:42	Sunny	217	393	500	Construction work in progress	30	<5	GMW GS-2310 (S/N 9315)	2134
	13:45	14:45	Sunny	224	393	500	Construction work in progress	30	<5	GMW GS-2310 (S/N 9315)	2136
21-Sep-13	11:40	12:40	Fine	149	393	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 9315)	2137
	12:42	13:42	Fine	205	393	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 9315)	2139
	13:44	14:44	Fine	206	393	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 9315)	2140
27-Sep-13	11:40	12:40	Sunny	208	393	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 9315)	2141
	12:42	13:42	Sunny	253	393	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 9315)	2142
	13:42	14:42	Sunny	298	393	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 9315)	2144
			Min.	**149**							
			Max.	**298**							
			Average	**205**							

* Wind Speed data is presented in the Meteorological Data table

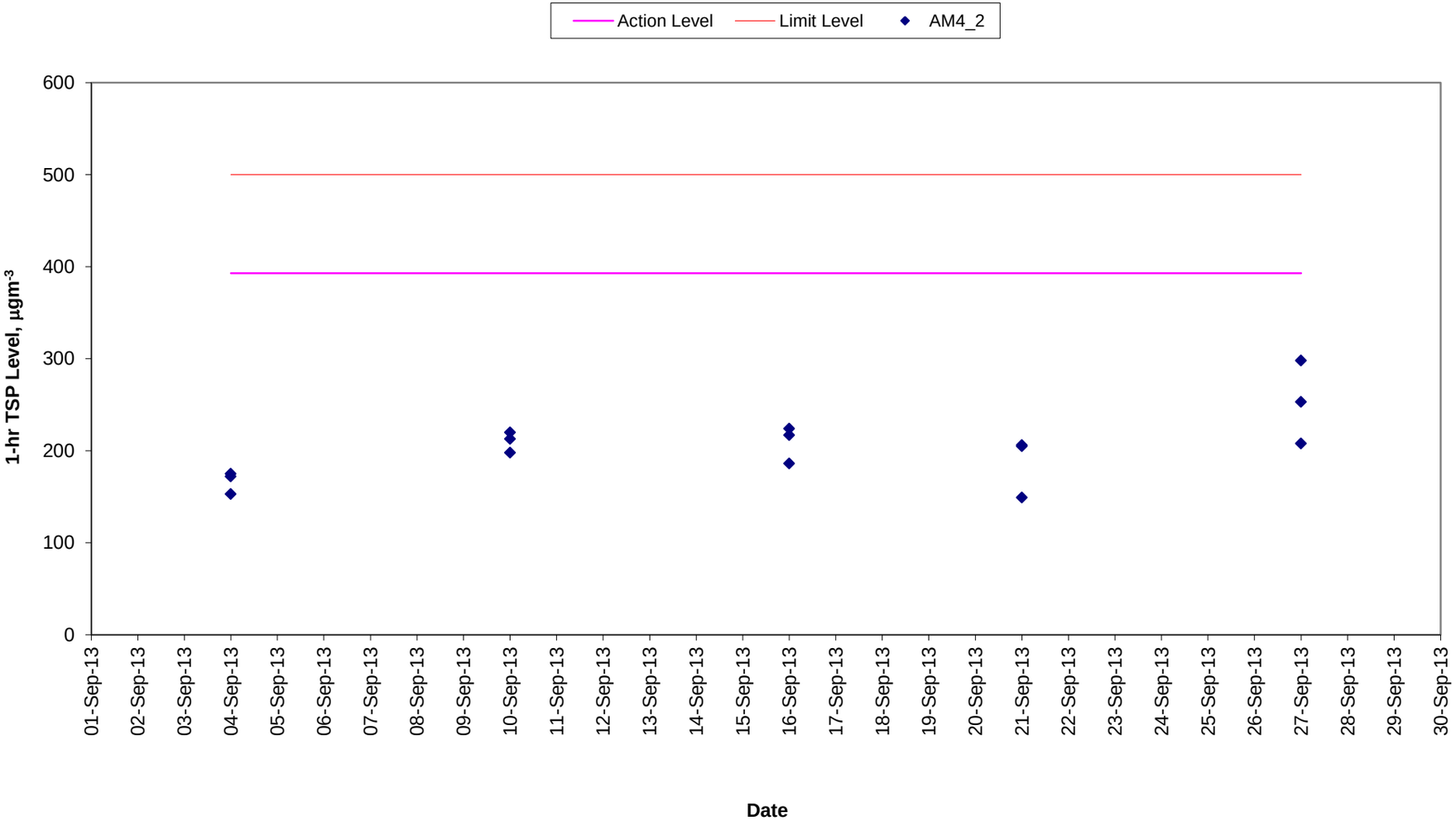
Annex E5 24-hour and 1-hour TSP Monitoring Results

24-hour TSP Monitoring Results

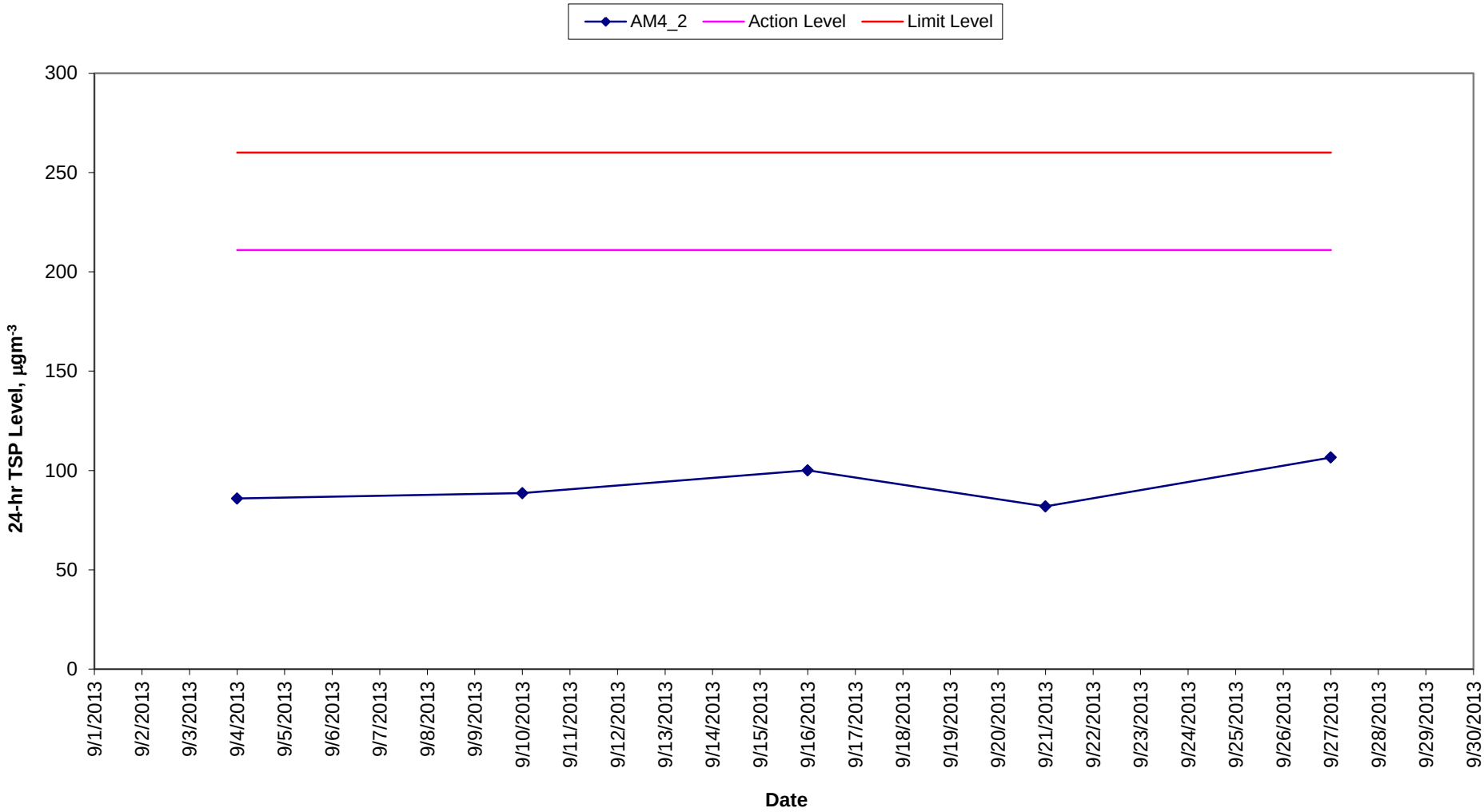
Station AM4_2

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m^3/min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	(μg/m^3)	(μg/m^3)	(μg/m^3)		ID	ID
04-Sep-13	17:55	05-Sep-13	17:55	Rainy	2.8673	3.0182	17715.85	17739.85	24.00	1.22	1.22	1.22	86	211	260	construction work in progress	GMW GS 2310 (S/N 9315)	2116
10-Sep-13	11:10	11-Sep-13	11:10	Sunny	2.8568	3.0124	17742.85	17766.85	24.00	1.22	1.22	1.22	89	211	260	construction work in progress	GMW GS 2310 (S/N 9315)	2119
16-Sep-13	14:55	17-Sep-13	14:55	Sunny	2.8543	3.0300	17769.85	17793.85	24.00	1.22	1.22	1.22	100	211	260	construction work in progress	GMW GS 2310 (S/N 9315)	2135
21-Sep-13	14:46	22-Sep-13	14:46	Fine	2.8472	2.9911	17796.85	17820.85	24.00	1.22	1.22	1.22	82	211	260	construction work in progress	GMW GS 2310 (S/N 9315)	2138
27-Sep-13	14:50	28-Sep-13	14:50	Sunny	2.8418	3.0290	17799.85	17823.85	24.00	1.22	1.22	1.22	107	211	260	construction work in progress	GMW GS 2310 (S/N 9315)	2143
												Min.	**82**					
												Max.	**107**					
												Average	**93**					

1-hr TSP Levels
AM4_2 (A Location within DSD Central PTW)



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



Meteorological Data Extracted from the Hong Kong Observatory

		King's Park Station				
Date	Weather	Average Air Temperature (°C)	Average Relative Humiditiy (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
2013-09-01	Cloudy	28	70-94	1.0	0-15	NW
2013-09-03	-	27	82-98	5.0	0-14	SE
2013-09-04	Sunny	25	90-99	88.9	0-21	SE
2013-09-08	-	28	63-88	0.0	2-17	SE
2013-09-10	Sunny	29	66-88	0.0	2-16	SE
2013-09-15	Sunny	28	66-94	15.2	0-20	SE/NW
2013-09-16	Sunny	25	68-95	0.8	1-24	SE
2013-09-17	-	28	61-82	0.0	7-23	SE
2013-09-19	Cloudy	29	62-86	0.0	0-27	SE
2013-09-20	-	30	58-87	0.0	0-12	SE/W
2013-09-21	Fine	31	51-88	0.0	0-21	N
2013-09-22	Cloudy	28	58-93	30.6	3-40	N/NW
2013-09-23	-	28	79-98	56.9	0-37	SW
2013-09-24	Sunny	29	78-94	1.3	7-20	SE
2013-09-26	Sunny	27	66-84	0.1	1-18	E
2013-09-27	Sunny	26	67-87	0.1	1-18	SE/NE
2013-09-29	Sunny	26	74-97	2.9	2-16	NE/E
2013-09-30	Fine	25	84-97	10.0	3-21	E

		Tsing Yi Station				
Date	Weather	Average Air Temperature (°C)	Average Relative Humiditiy (%) *	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
2013-09-01	Cloudy	27	70-94	1.0	1-18	S/NW
2013-09-03	-	26	82-98	5.0	1-16	S
2013-09-04	Rainy	25	90-99	88.9	1-21	E
2013-09-08	-	29	63-88	0.0	3-19	SE
2013-09-10	Sunny	30	66-88	0.0	1-20	N
2013-09-15	Sunny	28	66-94	15.2	1-14	--
2013-09-16	Sunny	29	68-95	0.8	1-22	--
2013-09-17	-	29	61-82	0.0	4-23	--
2013-09-19	Cloudy	29	62-86	0.0	1-26	--
2013-09-20	-	30	58-87	0.0	1-13	--
2013-09-21	Fine	31	51-88	0.0	1-22	--
2013-09-22	Cloudy	29	58-93	30.6	8-50	--
2013-09-23	-	27	79-98	56.9	8-48	--
2013-09-24	Sunny	29	78-94	1.3	6-22	--
2013-09-26	Sunny	28	66-84	0.1	1-15	--
2013-09-27	Sunny	27	67-87	0.1	1-15	--
2013-09-29	Sunny	26	74-97	2.9	1-10	--
2013-09-30	Fine	26	84-97	10.0	1-14	--

		Kai Tak Station				
Date	Weather	Average Air Temperature (°C) *	Average Relative Humiditiy (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2013-09-01	Cloudy	28	70-94	1.0	0-22	SE/NW
2013-09-03	-	27	82-98	5.0	1-18	SE
2013-09-04	Sunny	25	90-99	88.9	1-25	SE
2013-09-08	-	28	63-88	0.0	1-24	E/SE
2013-09-10	Sunny	29	66-88	0.0	4-22	E/SE
2013-09-15	Sunny	28	66-94	15.2	1-23	SE
2013-09-16	Sunny	25	68-95	0.8	8-31	E
2013-09-17	-	28	61-82	0.0	11-32	E
2013-09-19	Cloudy	29	62-86	0.0	2-31	E
2013-09-20	-	30	58-87	0.0	1-16	SE/SW
2013-09-21	Fine	31	51-88	0.0	3-25	NW
2013-09-22	Cloudy	28	58-93	30.6	3-52	NW
2013-09-23	-	28	79-98	56.9	2-39	S/SE
2013-09-24	Sunny	29	78-94	1.3	12-28	E
2013-09-26	Sunny	27	66-84	0.1	5-22	NE
2013-09-27	Sunny	26	67-87	0.1	3-24	E

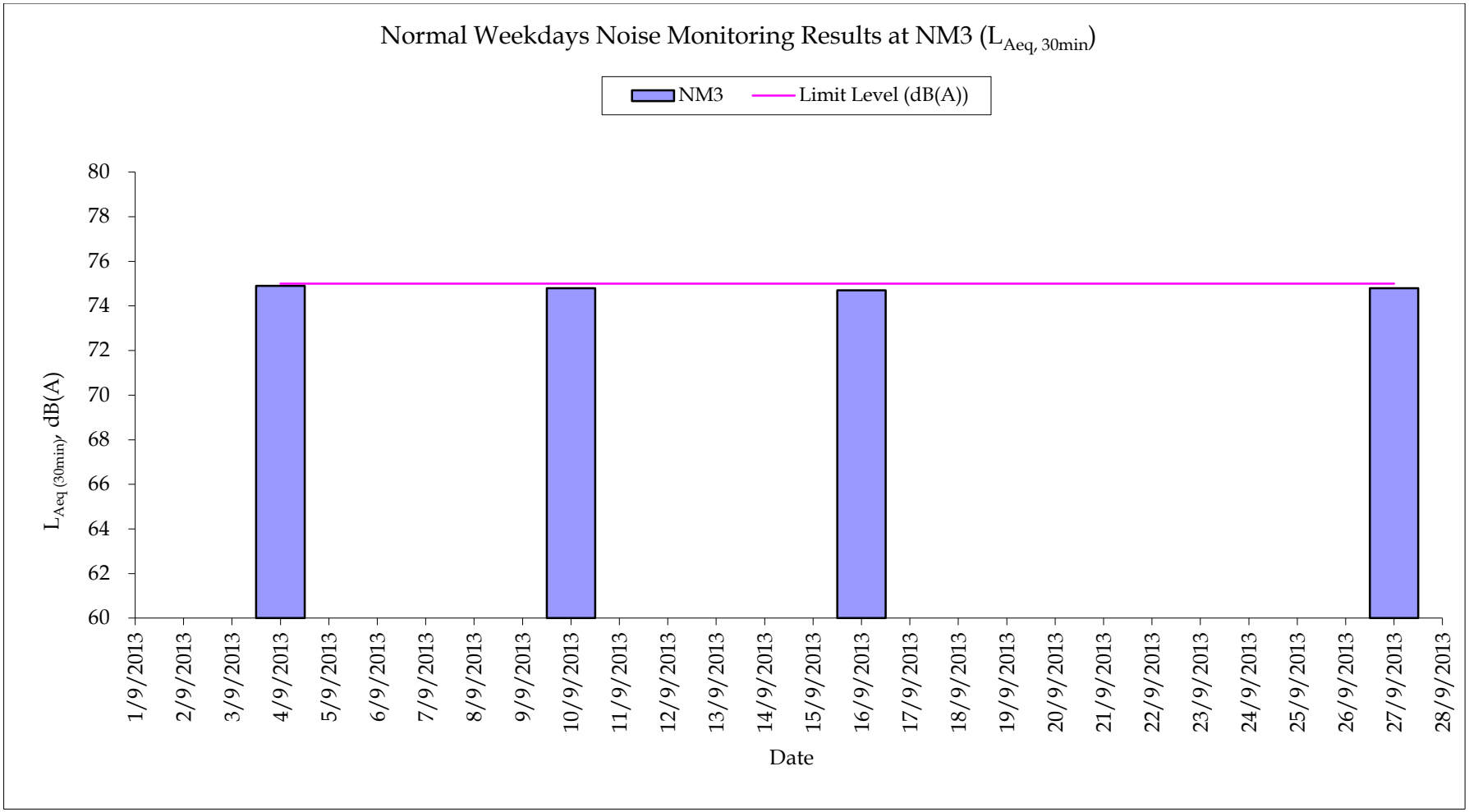
		Green Island Station				
Date	Weather	Average Air Temperature (°C) *	Average Relative Humiditiy (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2013-09-01	Cloudy	28	70-94	1.0	1-39	SW
2013-09-03	-	27	82-98	5.0	1-21	S
2013-09-04	Sunny	25	90-99	88.9	5-45	SW/NE
2013-09-08	-	28	63-88	0.0	9-32	NE
2013-09-10	Sunny	29	66-88	0.0	17-38	NE
2013-09-15	Sunny	28	66-94	15.2	1-36	NW/NE
2013-09-16	Sunny	25	68-95	0.8	12-48	NE
2013-09-17	-	28	61-82	0.0	30-57	NE
2013-09-19	Cloudy	29	62-86	0.0	18-57	NE
2013-09-20	-	30	58-87	0.0	1-31	N/S
2013-09-21	Fine	31	51-88	0.0	8-38	N
2013-09-22	Cloudy	28	58-93	30.6	19-77	N
2013-09-23	-	28	79-98	56.9	19-79	S
2013-09-24	Sunny	29	78-94	1.3	10-40	E/NE
2013-09-26	Sunny	27	66-84	0.1	14-43	NE
2013-09-27	Sunny	26	67-87	0.1	14-35	NE

Annex E6 Noise Monitoring Results

Daytime Noise Monitoring Results

Station NM3

Date	Start Time	End Time	Weather	Noise level (dB(A)), 30 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
04-Sep-13	14:55	15:25	Cloudy	75	76	74	Lifting	Traffic Noise	-	31	0.5	RION-NL31 (S/N 00410224)	RION-NL73 (S/N 10997142)
10-Sep-13	9:15	9:45	Sunny	75	76	74	Lifting	Traffic Noise	-	31	0.4	RION-NL31 (S/N 00410224)	RION-NL73 (S/N 10997142)
16-Sep-13	13:00	13:30	Sunny	75	76	74	Lifting	Traffic Noise	-	29	0.5	RION- NL31 (S/N 00410224)	RION - NC73 (S/N 10997142)
27-Sep-13	14:00	14:30	Sunny	75	76	74	Crane	Traffic Noise	-	29	0.8	RION-NL31 (S/N 00410224)	RION-NL73 (S/N 10997142)
			Min.	**75**									
			Max.	**75**									


Normal Weekdays Noise Monitoring Results at NM3 ($L_{Aeq, 30min}$)
NM3
Limit Level (dB(A))
80
78
76
74
72
70
68
66
64
62
60
$L_{Aeq\ (30min)}$, dB(A)
1/9/2013
2/9/2013
3/9/2013
4/9/2013
5/9/2013
6/9/2013
7/9/2013
8/9/2013
9/9/2013
10/9/2013
11/9/2013
12/9/2013
13/9/2013
14/9/2013
15/9/2013
16/9/2013
17/9/2013
18/9/2013
19/9/2013
20/9/2013
21/9/2013
22/9/2013
23/9/2013
24/9/2013
25/9/2013
26/9/2013
27/9/2013
28/9/2013
Date

Annex E7 Cumulative Complaint and Summons/Prosecutions Log

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

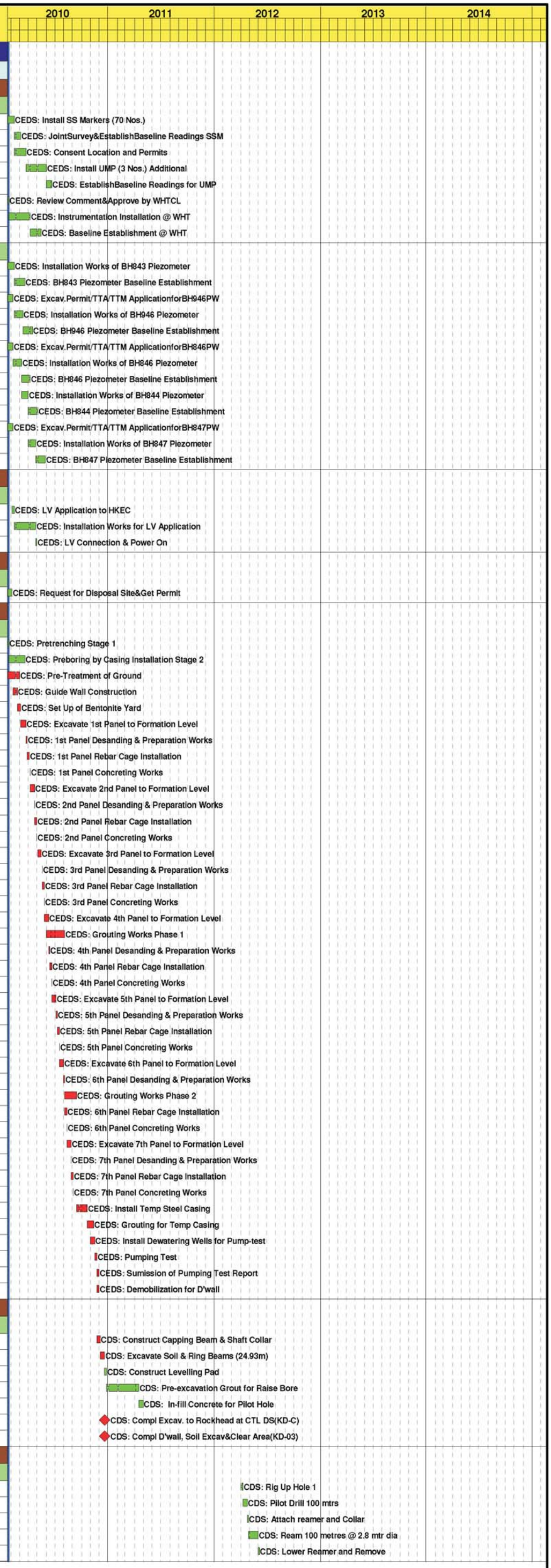
Annex E7 Cumulative Complaint and Summons/Prosecutions Log

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

Annex E7 Cumulative Complaint and Summons/Prosecutions Log

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

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	% Comp
HATS Stage 2A - Contract DC/2007/23					
Central PTW Drop Shaft					
EBS, Env. & Geotechnical Instrumentations					
Markers/UMP's/Others(Same note as Piez.)					
CEDS0439	CEDS: Install SS Markers (70 Nos.)	50	21OCT09A	11FEB10	60
CEDS0441	CEDS: JointSurvey&EstablishBaseline Readings SSM	14	12FEB10	03MAR10	0
CEDS0445	CEDS: Consent Location and Permits	30	12FEB10	22MAR10	0
CEDS0447	CEDS: Install UMP (3 Nos.) Additional	60	23MAR10	02JUN10	0
CEDS0449	CEDS: EstablishBaseline Readings for UMP	14	03JUN10	19JUN10	0
CEDS0454	CEDS: Review Comment&Approve by WHTCL	25	28NOV09A	23JAN10	84
CEDS0456	CEDS: Instrumentation Installation @ WHT	60	25JAN10	08APR10	0
CEDS0458	CEDS: Baseline Establishment @ WHT	28	09APR10	12MAY10	0
Piezometers(NearbyPTWorPScovered inthisInstalln)					
CEDS0397	CEDS: Installation Works of BH843 Piezometer	21	20JAN10	12FEB10	0
CEDS0399	CEDS: BH843 Piezometer Baseline Establishment	26	13FEB10	18MAR10	0
CEDS0401	CEDS: Excav.Permit/TTA/TTM ApplicationforBH946PW	24	25SEP09A	08FEB10	30
CEDS0403	CEDS: Installation Works of BH946 Piezometer	21	13FEB10	12MAR10	0
CEDS0405	CEDS: BH946 Piezometer Baseline Establishment	26	13MAR10	13APR10	0
CEDS0407	CEDS: Excav.Permit/TTA/TTM ApplicationforBH846PW	24	28SEP09A	08FEB10	30
CEDS0409	CEDS: Installation Works of BH846 Piezometer	21	09FEB10	08MAR10	0
CEDS0411	CEDS: BH846 Piezometer Baseline Establishment	26	09MAR10	08APR10	0
CEDS0415	CEDS: Installation Works of BH844 Piezometer	21	09MAR10	01APR10	0
CEDS0417	CEDS: BH844 Piezometer Baseline Establishment	26	02APR10	04MAY10	0
CEDS0419	CEDS: Excav.Permit/TTA/TTM ApplicationforBH847PW	24	28SEP09A	06FEB10	35
CEDS0421	CEDS: Installation Works of BH847 Piezometer	21	02APR10	27APR10	0
CEDS0423	CEDS: BH847 Piezometer Baseline Establishment	26	28APR10	28MAY10	0
Electrical & Mechanical Installations					
CEDS0600	CEDS: LV Application to HKEC	6	04FEB10*	10FEB10	0
CEDS0605	CEDS: Installation Works for LV Application	60	11FEB10	26APR10	0
CEDS0610	CEDS: LV Connection & Power On	4	27APR10	30APR10	0
Marine Dumping Permit					
CEDS0390	CEDS: Request for Disposal Site&Get Permit	24	06JAN10A	02FEB10	50
Diaphragm Wall					
CEDS0205C	CEDS: Pretrenching Stage 1	14	09JAN10A	22JAN10	79
CEDS0205E	CEDS: Preboring by Casing Installation Stage 2	45	23JAN10	19MAR10	0
CEDS0210	CEDS: Pre-Treatment of Ground	31	20JAN10	27FEB10	0
CEDS0215	CEDS: Guide Wall Construction	12	06FEB10	23FEB10	0
CEDS0220	CEDS: Set Up of Bentonite Yard	9	24FEB10	05MAR10	0
CEDS0252	CEDS: Excavate 1st Panel to Formation Level	15	06MAR10	23MAR10	0
CEDS0253	CEDS: 1st Panel Desanding & Preparation Works	4	24MAR10	27MAR10	0
CEDS0254	CEDS: 1st Panel Rebar Cage Installation	6	29MAR10	03APR10	0
CEDS0256	CEDS: 1st Panel Concreting Works	1	06APR10	06APR10	0
CEDS0257	CEDS: Excavate 2nd Panel to Formation Level	12	07APR10	20APR10	0
CEDS0259	CEDS: 2nd Panel Desanding & Preparation Works	3	21APR10	23APR10	0
CEDS0261	CEDS: 2nd Panel Rebar Cage Installation	5	24APR10	29APR10	0
CEDS0263	CEDS: 2nd Panel Concreting Works	1	30APR10	30APR10	0
CEDS0265	CEDS: Excavate 3rd Panel to Formation Level	12	03MAY10	15MAY10	0
CEDS0267	CEDS: 3rd Panel Desanding & Preparation Works	3	17MAY10	19MAY10	0
CEDS0269	CEDS: 3rd Panel Rebar Cage Installation	5	20MAY10	25MAY10	0
CEDS0271	CEDS: 3rd Panel Concreting Works	1	26MAY10	26MAY10	0
CEDS0273	CEDS: Excavate 4th Panel to Formation Level	12	27MAY10	09JUN10	0
CEDS0274	CEDS: Grouting Works Phase 1	51	04JUN10	04AUG10	0
CEDS0275	CEDS: 4th Panel Desanding & Preparation Works	3	10JUN10	12JUN10	0
CEDS0277	CEDS: 4th Panel Rebar Cage Installation	5	14JUN10	19JUN10	0
CEDS0279	CEDS: 4th Panel Concreting Works	1	21JUN10	21JUN10	0
CEDS0281	CEDS: Excavate 5th Panel to Formation Level	12	22JUN10	06JUL10	0
CEDS0283	CEDS: 5th Panel Desanding & Preparation Works	3	07JUL10	09JUL10	0
CEDS0285	CEDS: 5th Panel Rebar Cage Installation	5	10JUL10	15JUL10	0
CEDS0287	CEDS: 5th Panel Concreting Works	1	16JUL10	16JUL10	0
CEDS0289	CEDS: Excavate 6th Panel to Formation Level	12	17JUL10	30JUL10	0
CEDS0291	CEDS: 6th Panel Desanding & Preparation Works	3	31JUL10	03AUG10	0
CEDS0292	CEDS: Grouting Works Phase 2	34	05AUG10	13SEP10	0
CEDS0293	CEDS: 6th Panel Rebar Cage Installation	5	04AUG10	09AUG10	0
CEDS0295	CEDS: 6th Panel Concreting Works	1	10AUG10	10AUG10	0
CEDS0297	CEDS: Excavate 7th Panel to Formation Level	12	11AUG10	24AUG10	0
CEDS0299	CEDS: 7th Panel Desanding & Preparation Works	3	25AUG10	27AUG10	0
CEDS0301	CEDS: 7th Panel Rebar Cage Installation	5	28AUG10	02SEP10	0
CEDS0303	CEDS: 7th Panel Concreting Works	1	03SEP10	03SEP10	0
CEDS0305	CEDS: Install Temp Steel Casing	28	14SEP10	19OCT10	0
CEDS0306	CEDS: Grouting for Temp Casing	19	20OCT10	10NOV10	0
CEDS0307	CEDS: Install Dewatering Wells for Pump-test	12	02NOV10	15NOV10	0
CEDS0310	CEDS: Pumping Test	6	16NOV10	22NOV10	0
CEDS0320	CEDS: Sumission of Pumping Test Report	6	23NOV10	29NOV10	0
CEDS0330	CEDS: Demobilization for D'wall	6	23NOV10	29NOV10	0
Shaft Excavation					
CEDS0400	CDS: Construct Capping Beam & Shaft Collar	12	22NOV10	04DEC10	0
CEDS0410	CDS: Excavate Soil & Ring Beams (24.93m)	11	06DEC10	17DEC10	0
CEDS0420	CDS: Construct Levelling Pad	6	18DEC10	24DEC10	0
CEDS0430	CDS: Pre-excavation Grout for Raise Bore	90	27DEC10	15APR11	0
CEDS0440	CDS: In-fill Concrete for Pilot Hole	12	16APR11	29APR11	0
CEDS1580	CDS: Compl Excav. to Rockhead at CTL DS(KD-C)	0		17DEC10	0
CEDS1590	CDS: Compl D'wall, Soil Excav&Clear Area(KD-03)	0		17DEC10	0
Raised Boring					
CEDS0700	CDS: Rig Up Hole 1	5	03APR12	09APR12	0
CEDS0710	CDS: Pilot Drill 100 mtrs	14	10APR12	25APR12	0
CEDS0720	CDS: Attach reamer and Collar	3	26APR12	28APR12	0
CEDS0730	CDS: Ream 100 metres @ 2.8 mtr dia	27	30APR12	31MAY12	0
CEDS0740	CDS: Lower Reamer and Remove	3	01JUN12	04JUN12	0



Start Date	31JUL09
Finish Date	15JAN15
Data Date	20JAN10
Run Date	01FEB10 09:59

© Primavera Systems, Inc.

Early Bar
Progress Bar
Critical Activity

WPU7 Sheet 1 of 2

Habour Area Treatment Scheme Stage 2A
Contract No. DC/2007/23 - Construction of Sewage Conveyance from North Point to Stonecutters Island Programme

Annex E8 Construction Programme for the Project

Gammon

Date	Revision	Checked	Approved

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	% Comp
CEDS0750	CDS: De Rig Raise borer and Re rig Hole 2	5	05JUN12	09JUN12	0
CEDS0760	CDS: Pilot Drill 100 mtrs	14	11JUN12	27JUN12	0
CEDS0770	CDS: Attach Reamer and collar same	3	28JUN12	30JUN12	0
CEDS0780	CDS: Ream 100 metres @ 2.8 mtr dia	27	03JUL12	02AUG12	0
CEDS0790	CDS: De Rig Raise Borer & Remove Reamr	3	03AUG12	06AUG12	0
Lower Shaft Construction					
CEDS0835	CDS: Blinding Layer & Concrete Base for LS	6	07AUG12	13AUG12	0
CEDS0840	CDS: Back shunt concreting	18	14AUG12	03SEP12	0
CEDS0875	CDS: Construct Vert Shaft to Tunnel Invert	6	04SEP12	10SEP12	0
CEDS0895	CDS: Install System Form for LS	6	11SEP12	17SEP12	0
CEDS0935	CDS: Construct Transition & Vert Shaft	9	18SEP12	27SEP12	0
CEDS0955	CDS: Construct lower-shaft -153.5 to -22mPD	78	28SEP12	02JAN13	0
CEDS0960	CDS: Remove system formwork and tidy up area	6	03JAN13	09JAN13	0
Upper Shaft Construction					
CEDS1015	CDS: Blinding Layer & Base Slab for US	9	10JAN13	19JAN13	0
CEDS1045	CDS: Temp Platform & Construct Conical Surface	6	21JAN13	26JAN13	0
CEDS1050	CDS: Assembly of kicker formwork	12	14JAN13	26JAN13	0
CEDS1085	CDS: Construct Kicker	9	28JAN13	06FEB13	0
CEDS1090	CDS: Set up system formwork for upper shaft	16	28JAN13	18FEB13	0
CEDS1145	CDS: Construct Upper Shaft	72	19FEB13	15MAY13	0
CEDS1265	CDS: Fabricate & Install S/S Vortex Drop Pipe	12	09MAY13	22MAY13	0
CEDS1305	CDS: Construct Overflow Weir	6	23MAY13	29MAY13	0
CEDS1315	CDS: Clear Area & Install Multi-Part Cover	3	30MAY13	01JUN13	0
Scum Removal Chamber					
CEDS1463	CEDS: Sheet Piling, Excavation & ELS Works	24	16APR13	15MAY13	0
CEDS1465	CDS: Excavation for Chamber & Channel	9	16MAY13	25MAY13	0
CEDS1505	CDS: Blinding Layer & Base Slab of SRC	9	27MAY13	05JUN13	0
CEDS1545	CDS: Construct Wall of SRC	9	06JUN13	17JUN13	0
CEDS1565	CDS: Waterproof & Install Multi-Part Cover	6	18JUN13	24JUN13	0
CEDS1570	CDS: Backfill to Scum Removal Chamber	3	25JUN13	27JUN13	0
Connection Channel					
CEDS1375	CDS: Blinding Layer & Base Slab of CC	9	27MAY13	05JUN13	0
CEDS1435	CDS: Construct Wall of CC	12	06JUN13	20JUN13	0
CEDS1455	CDS: Waterproof & Install Multi-Part Cover	6	24JUN13	29JUN13	0
CEDS1460	CDS: Backfill to Connection Channel	3	02JUL13	04JUL13	0
Miscellaneous Works					
CEDS2010	CDS: Install E&M Services	18	05JUL13	25JUL13	0
CEDS2020	CDS: Reinstatement & Clear DS Area	12	26JUL13	08AUG13	0
CEDS2025	CDS: Complete All Works at CTL DS (KD-09)	0		08AUG13	0
CEDS2030	CDS: Landsacping & Planting Works	60	09AUG13*	07OCT13	0
CEDS2040	CDS: Period of Establishment Works	360	08OCT13	02OCT14	0
CEDS2050	CDS: End of Establishment Period	0		02OCT14	0

Start Date	31JUL09
Finish Date	15JAN15
Data Date	20JAN10
Run Date	01FEB10 09:59

© Primavera Systems, Inc.

Early Bar
Progress Bar
Critical Activity

WPU7 Sheet 2 of 2

Habour Area Treatment Scheme Stage 2A
Contract No. DC/2007/23 - Construction of Sewage Conveyance from North Point to Stonecutters Island
Programme

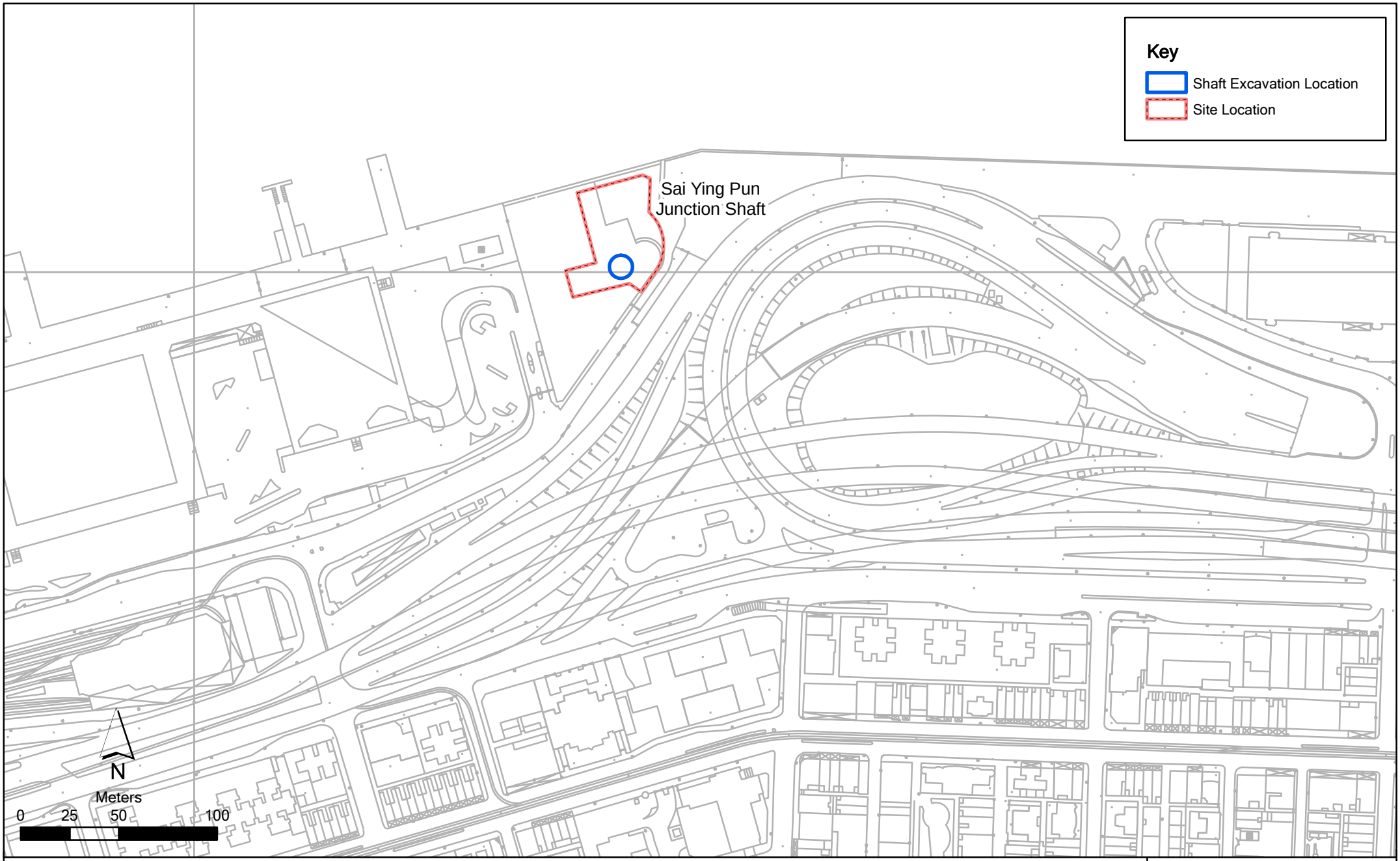
Annex E8 Construction Programme for the Project

Gammon

Date	Revision	Checked	Approved

Annex F

Sai Ying Pun Junction Shaft



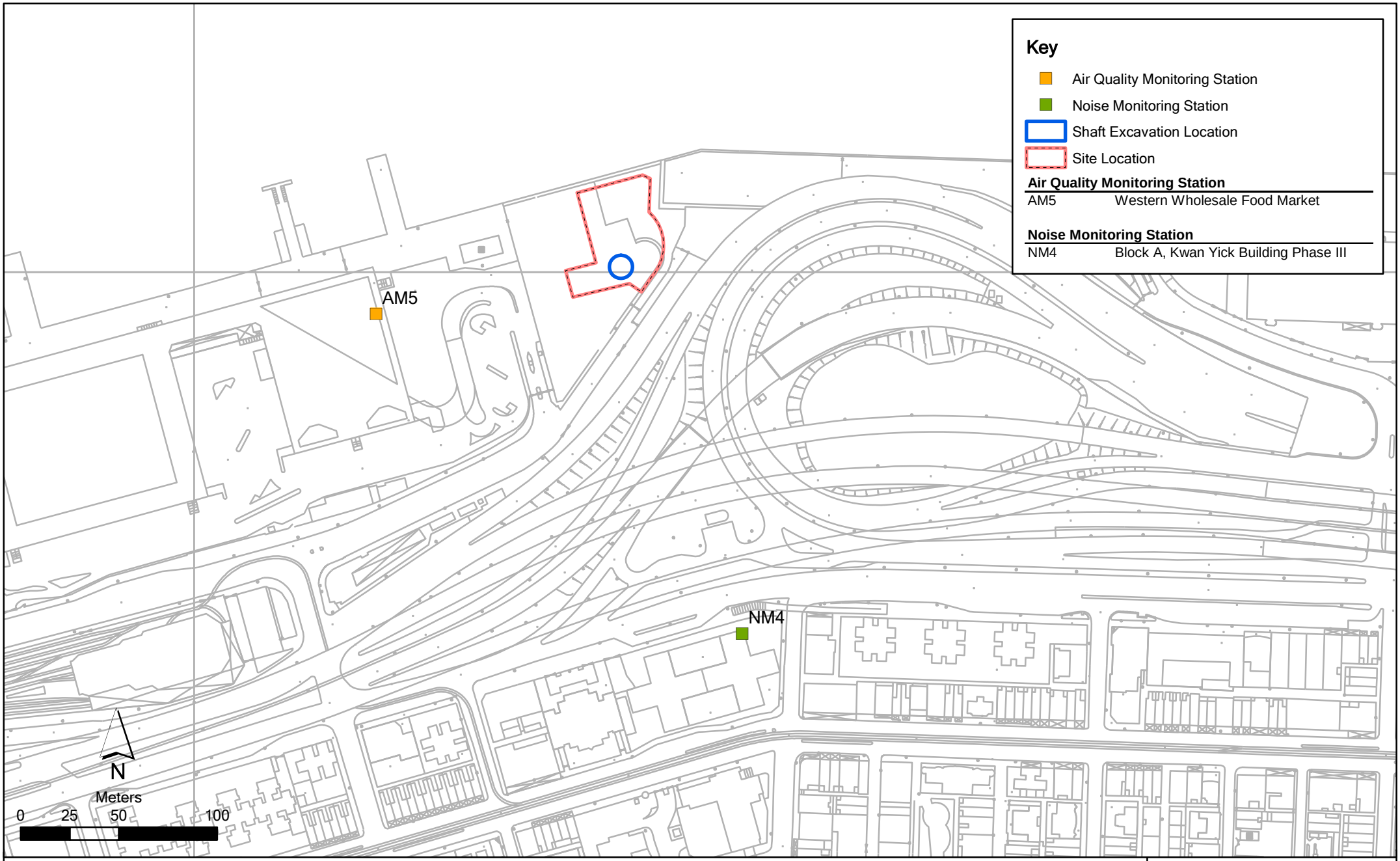
Annex F1

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

Annex F3 Monitoring Schedule of the Reporting Month and Next Month

DC/2007/23
Harbour Area Treatment Scheme Stage 2A
Construction of Sewage Conveyance System from North Point to Stonecutters Island
Impact Construction Air Quality Monitoring Schedule *

AM5 - Western Wholesale Food Market
Monitoring Month : September 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
01-Sep	02-Sep	03-Sep	04-Sep	05-Sep	06-Sep	07-Sep
			1-hr and 24-hr Monitoring			
08-Sep	09-Sep	10-Sep	11-Sep	12-Sep	13-Sep	14-Sep
		1-hr and 24-hr Monitoring				
15-Sep	16-Sep	17-Sep	18-Sep	19-Sep	20-Sep	21-Sep
	1-hr and 24-hr Monitoring			1-hr and 24-hr Monitoring	Public Holiday	
22-Sep	23-Sep	24-Sep	25-Sep	26-Sep	27-Sep	28-Sep
			1-hr and 24-hr Monitoring		1-hr and 24-hr Monitoring	
29-Sep	30-Sep					

Monitoring Month : October 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		01-Oct	02-Oct	03-Oct	04-Oct	05-Oct
		Public Holiday		1-hr and 24-hr Monitoring		
06-Oct	07-Oct	08-Oct	09-Oct	10-Oct	11-Oct	12-Oct
			1-hr and 24-hr Monitoring			
13-Oct	14-Oct	15-Oct	16-Oct	17-Oct	18-Oct	19-Oct
	Public Holiday	1-hr and 24-hr Monitoring				
20-Oct	21-Oct	22-Oct	23-Oct	24-Oct	25-Oct	26-Oct
	1-hr and 24-hr Monitoring			1-hr and 24-hr Monitoring		
27-Oct	28-Oct	29-Oct	30-Oct	31-Oct		
			1-hr and 24-hr Monitoring			

* Prepared by Contract No. DC/2007/24 Harbour Area Treatment Scheme Stage 2A (HATS 2A) Construction of Sewage Conveyance System from Aberdeen to Sai Ying Pun

Annex F3 Monitoring Schedule of the Reporting Month and Next Month

DC/2007/23
Harbour Area Treatment Scheme Stage 2A
Construction of Sewage Conveyance System from North Point to Stonecutters Island
Impact Construction Noise Quality Monitoring Schedule

NM4 - Block A, Kwan Yick Building Phase III
Monitoring Month : September 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
01-Sep	02-Sep	03-Sep	04-Sep	05-Sep	06-Sep	07-Sep
Noise Monitoring			Noise Monitoring			
08-Sep	09-Sep	10-Sep	11-Sep	12-Sep	13-Sep	14-Sep
		Noise Monitoring (Daytime and Evening time)				
15-Sep	16-Sep	17-Sep	18-Sep	19-Sep	20-Sep	21-Sep
Noise Monitoring	Noise Monitoring				Public Holiday	
22-Sep	23-Sep	24-Sep	25-Sep	26-Sep	27-Sep	28-Sep
		Noise Monitoring (Evening time)			Noise Monitoring	
29-Sep	30-Sep					
Noise Monitoring						

Monitoring Month :October 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		01-Oct	02-Oct	03-Oct	04-Oct	05-Oct
		Public Holiday		Noise Monitoring		
06-Oct	07-Oct	08-Oct	09-Oct	10-Oct	11-Oct	12-Oct
		Noise Monitoring (Evening time)	Noise Monitoring			
13-Oct	14-Oct	15-Oct	16-Oct	17-Oct	18-Oct	19-Oct
Noise Monitoring	Public Holiday	Noise Monitoring				
20-Oct	21-Oct	22-Oct	23-Oct	24-Oct	25-Oct	26-Oct
	Noise Monitoring	Noise Monitoring (Evening time)				
27-Oct	28-Oct	29-Oct	30-Oct	31-Oct		
Noise Monitoring						

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 carrying out of the construction works. • Stockpiling of construction materials and dusty materials should be covered and located away from any water courses. • Construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nearby water receivers. • Construction activities, which generate large amount of wastewater, should be carried out in a distance away from the waterfront, where practicable. • Proper shoring may need to be erected in order to prevent soil/mud from slipping into the storm culvert or sea	All work sites / during construction	√

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

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

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

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

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	Filter ID
04-Sep-13	8:00	9:00	Fine	141	332	500	operation of excatavor and loading	25	<5	Western Wholesale Food Market	1604
	9:08	10:08	Fine	34	332	500	operation of excatavor and loading	25	<5	Western Wholesale Food Market	1605
	10:13	11:13	Fine	47	332	500	operation of excatavor and loading	25	<5	Western Wholesale Food Market	1606
10-Sep-13	8:00	9:00	Fine	211	332	500	operation of excatavor and loading	29	<5	Western Wholesale Food Market	1610
	14:06	15:06	Fine	67	332	500	operation of excatavor and loading	29	<5	Western Wholesale Food Market	1612
	15:11	16:11	Fine	64	332	500	operation of excatavor and loading	29	<5	Western Wholesale Food Market	1613
16-Sep-13	14:11	15:11	Fine	121	332	500	operation of excatavor and loading	28	<5	Western Wholesale Food Market	1618
	15:17	16:17	Fine	97	332	500	operation of excatavor and loading	28	<5	Western Wholesale Food Market	1619
	16:23	17:23	Fine	114	332	500	operation of excatavor and loading	28	<5	Western Wholesale Food Market	1620
19-Sep-13	8:50	9:50	Sunny	93	332	500	Tunnel Works	29	<5	Western Wholesale Food Market	1625
	9:56	10:56	Sunny	67	332	500	Tunnel Works	29	<5	Western Wholesale Food Market	1626
	11:00	12:00	Sunny	67	332	500	Tunnel Works	29	<5	Western Wholesale Food Market	1627
25-Sep-13	9:02	10:02	Sunny	56	332	500	Tunnel Works	28	<5	Western Wholesale Food Market	1632
	10:06	11:06	Sunny	57	332	500	Tunnel Works	28	<5	Western Wholesale Food Market	1633
	11:12	12:12	Sunny	71	332	500	Tunnel Works	28	<5	Western Wholesale Food Market	1634
27-Sep-13	13:00	14:00	Sunny	79	332	500	Tunnel Works	27	<5	Western Wholesale Food Market	1639
	14:07	15:07	Sunny	82	332	500	Tunnel Works	26.5	<5	Western Wholesale Food Market	1640
	15:13	16:13	Sunny	91	332	500	Tunnel Works	26.5	<5	Western Wholesale Food Market	1641
			Min.	**34**							
			Max.	**211**							
			Average	**87**							

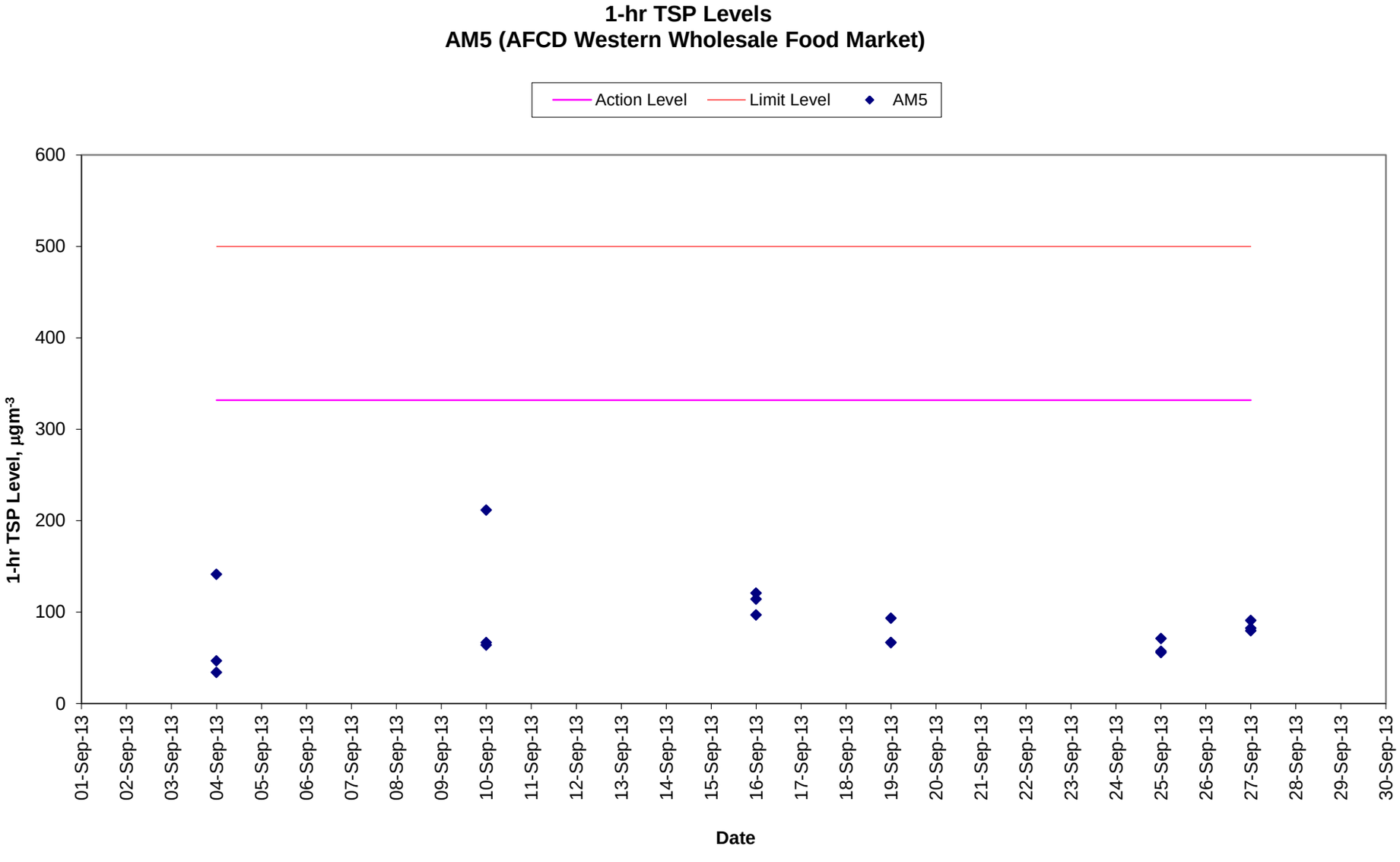
* Wind Speed data is presented in the Meteorological Data table

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

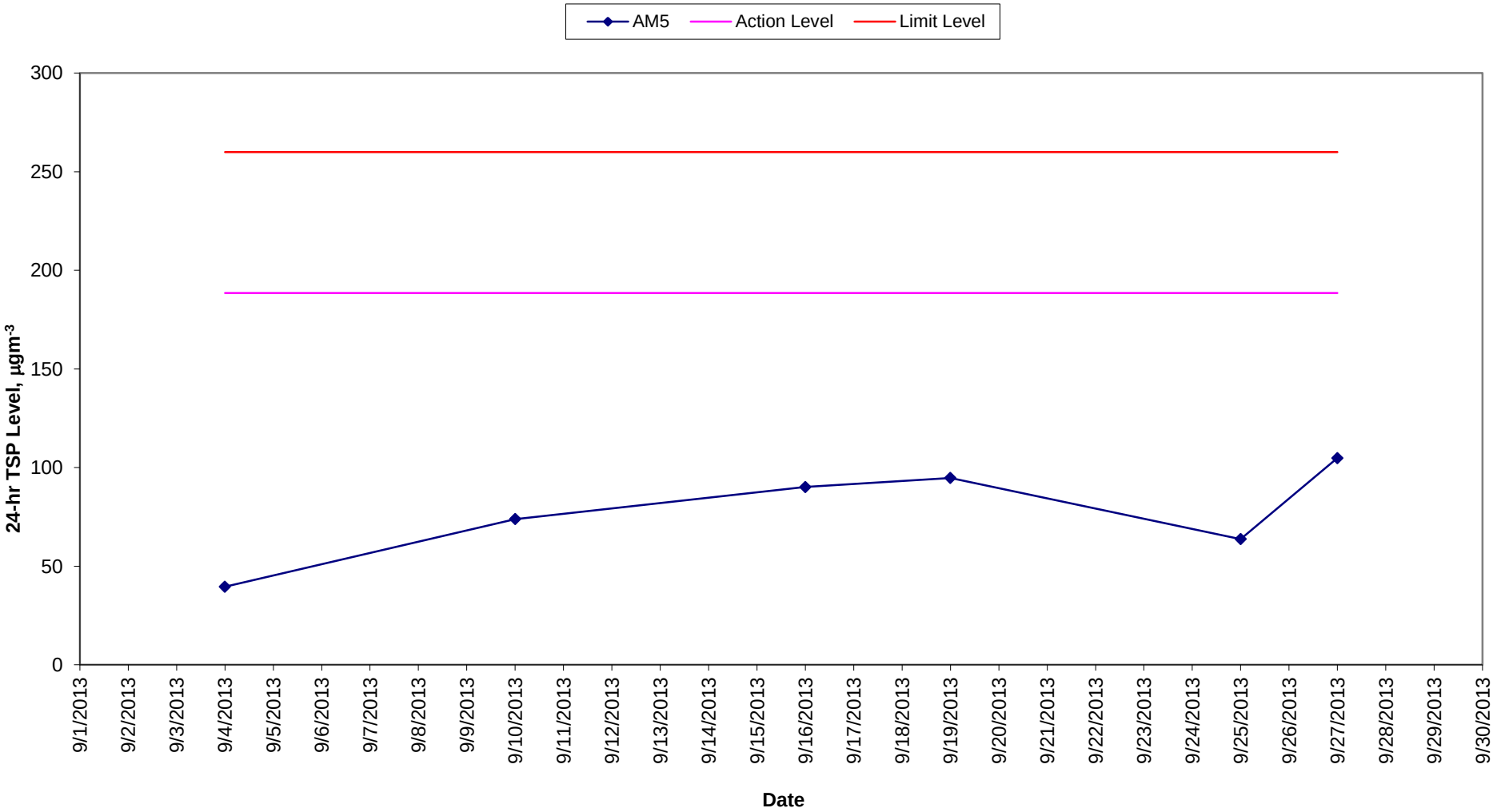
24-hour TSP Monitoring Results

Station AM5

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m^3/min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	(μg/m^3)	(μg/m^3)	(μg/m^3)		ID	ID
04-Sep-13	13:00	05-Sep-13	13:00	Fine	2.8644	2.9348	135.15	159.15	24.00	1.2360	1.2360	1.2360	40	189	260	Rock out	Western Wholesale Food Market	1607
10-Sep-13	16:16	11-Sep-13	16:16	Fine	2.8801	3.0109	162.15	186.15	24.00	1.2300	1.2300	1.2300	74	189	260	Rock out	Western Wholesale Food Market	1614
16-Sep-13	17:26	17-Sep-13	17:26	Fine	2.8711	3.0307	189.15	213.15	24.00	1.2292	1.2292	1.2292	90	189	260	Rock out	Western Wholesale Food Market	1621
19-Sep-13	12:07	20-Sep-13	12:07	Sunny	2.8764	3.0475	216.15	240.15	24.00	1.2541	1.2541	1.2541	95	189	260	Rock out	Western Wholesale Food Market	1628
25-Sep-13	13:00	26-Sep-13	13:00	Sunny	2.8733	2.9885	243.16	267.16	24.00	1.2558	1.2558	1.2558	64	189	260	Rock out	Western Wholesale Food Market	1635
27-Sep-13	13:00	28-Sep-13	13:00	Sunny	2.8572	3.0435	270.16	294.16	24.00	1.2345	1.2345	1.2345	105	188.5	260	Rock out	Western Wholesale Food Market	1642
												Min.	**40**					
												Max.	**95**					
												Average	**72**					


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

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



Meteorological Data Extracted from the Hong Kong Observatory

		King's Park Station				
Date	Weather	Average Air Temperature (°C)	Average Relative Humiditiy (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
2013-09-01	Cloudy	28	70-94	1.0	0-15	NW
2013-09-03	-	27	82-98	5.0	0-14	SE
2013-09-04	Sunny	25	90-99	88.9	0-21	SE
2013-09-08	-	28	63-88	0.0	2-17	SE
2013-09-10	Sunny	29	66-88	0.0	2-16	SE
2013-09-15	Sunny	28	66-94	15.2	0-20	SE/NW
2013-09-16	Sunny	25	68-95	0.8	1-24	SE
2013-09-17	-	28	61-82	0.0	7-23	SE
2013-09-19	Cloudy	29	62-86	0.0	0-27	SE
2013-09-20	-	30	58-87	0.0	0-12	SE/W
2013-09-21	Fine	31	51-88	0.0	0-21	N
2013-09-22	Cloudy	28	58-93	30.6	3-40	N/NW
2013-09-23	-	28	79-98	56.9	0-37	SW
2013-09-24	Sunny	29	78-94	1.3	7-20	SE
2013-09-26	Sunny	27	66-84	0.1	1-18	E
2013-09-27	Sunny	26	67-87	0.1	1-18	SE/NE
2013-09-29	Sunny	26	74-97	2.9	2-16	NE/E
2013-09-30	Fine	25	84-97	10.0	3-21	E

		Tsing Yi Station				
Date	Weather	Average Air Temperature (°C)	Average Relative Humiditiy (%) *	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
2013-09-01	Cloudy	27	70-94	1.0	1-18	S/NW
2013-09-03	-	26	82-98	5.0	1-16	S
2013-09-04	Rainy	25	90-99	88.9	1-21	E
2013-09-08	-	29	63-88	0.0	3-19	SE
2013-09-10	Sunny	30	66-88	0.0	1-20	N
2013-09-15	Sunny	28	66-94	15.2	1-14	--
2013-09-16	Sunny	29	68-95	0.8	1-22	--
2013-09-17	-	29	61-82	0.0	4-23	--
2013-09-19	Cloudy	29	62-86	0.0	1-26	--
2013-09-20	-	30	58-87	0.0	1-13	--
2013-09-21	Fine	31	51-88	0.0	1-22	--
2013-09-22	Cloudy	29	58-93	30.6	8-50	--
2013-09-23	-	27	79-98	56.9	8-48	--
2013-09-24	Sunny	29	78-94	1.3	6-22	--
2013-09-26	Sunny	28	66-84	0.1	1-15	--
2013-09-27	Sunny	27	67-87	0.1	1-15	--
2013-09-29	Sunny	26	74-97	2.9	1-10	--
2013-09-30	Fine	26	84-97	10.0	1-14	--

		Kai Tak Station				
Date	Weather	Average Air Temperature (°C) *	Average Relative Humiditiy (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2013-09-01	Cloudy	28	70-94	1.0	0-22	SE/NW
2013-09-03	-	27	82-98	5.0	1-18	SE
2013-09-04	Sunny	25	90-99	88.9	1-25	SE
2013-09-08	-	28	63-88	0.0	1-24	E/SE
2013-09-10	Sunny	29	66-88	0.0	4-22	E/SE
2013-09-15	Sunny	28	66-94	15.2	1-23	SE
2013-09-16	Sunny	25	68-95	0.8	8-31	E
2013-09-17	-	28	61-82	0.0	11-32	E
2013-09-19	Cloudy	29	62-86	0.0	2-31	E
2013-09-20	-	30	58-87	0.0	1-16	SE/SW
2013-09-21	Fine	31	51-88	0.0	3-25	NW
2013-09-22	Cloudy	28	58-93	30.6	3-52	NW
2013-09-23	-	28	79-98	56.9	2-39	S/SE
2013-09-24	Sunny	29	78-94	1.3	12-28	E
2013-09-26	Sunny	27	66-84	0.1	5-22	NE
2013-09-27	Sunny	26	67-87	0.1	3-24	E

		Green Island Station				
Date	Weather	Average Air Temperature (°C) *	Average Relative Humiditiy (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2013-09-01	Cloudy	28	70-94	1.0	1-39	SW
2013-09-03	-	27	82-98	5.0	1-21	S
2013-09-04	Sunny	25	90-99	88.9	5-45	SW/NE
2013-09-08	-	28	63-88	0.0	9-32	NE
2013-09-10	Sunny	29	66-88	0.0	17-38	NE
2013-09-15	Sunny	28	66-94	15.2	1-36	NW/NE
2013-09-16	Sunny	25	68-95	0.8	12-48	NE
2013-09-17	-	28	61-82	0.0	30-57	NE
2013-09-19	Cloudy	29	62-86	0.0	18-57	NE
2013-09-20	-	30	58-87	0.0	1-31	N/S
2013-09-21	Fine	31	51-88	0.0	8-38	N
2013-09-22	Cloudy	28	58-93	30.6	19-77	N
2013-09-23	-	28	79-98	56.9	19-79	S
2013-09-24	Sunny	29	78-94	1.3	10-40	E/NE
2013-09-26	Sunny	27	66-84	0.1	14-43	NE
2013-09-27	Sunny	26	67-87	0.1	14-35	NE

Annex F6 Noise Monitoring Results

Daytime Noise Monitoring Results

Station NM4

Date	Start Time	End Time	Weather	Noise level (dB(A)), 30 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
04-Sep-13	16:00	16:30	Cloudy	67	69	66	-	Traffic Noise	-	30	0.5	RION-NL31 (S/N 00410224)	RION-NL73 (S/N 10997142)
10-Sep-13	10:22	10:52	Sunny	67	68	66	-	Traffic Noise	-	30	0.3	RION-NL31 (S/N 00410224)	RION - NC73 (S/N 10997142)
16-Sep-13	14:05	14:35	Sunny	67	68	66	-	Traffic Noise	-	29	0.3	RION- NL31 (S/N 00410224)	RION - NC73 (S/N 10997142)
27-Sep-13	13:05	13:35	Sunny	67	69	66	-	Traffic Noise	-	29	0.5	RION- NL31 (S/N 00410224)	RION - NC73 (S/N 10997142)
			Min.	**67**									
			Max.	**67**									

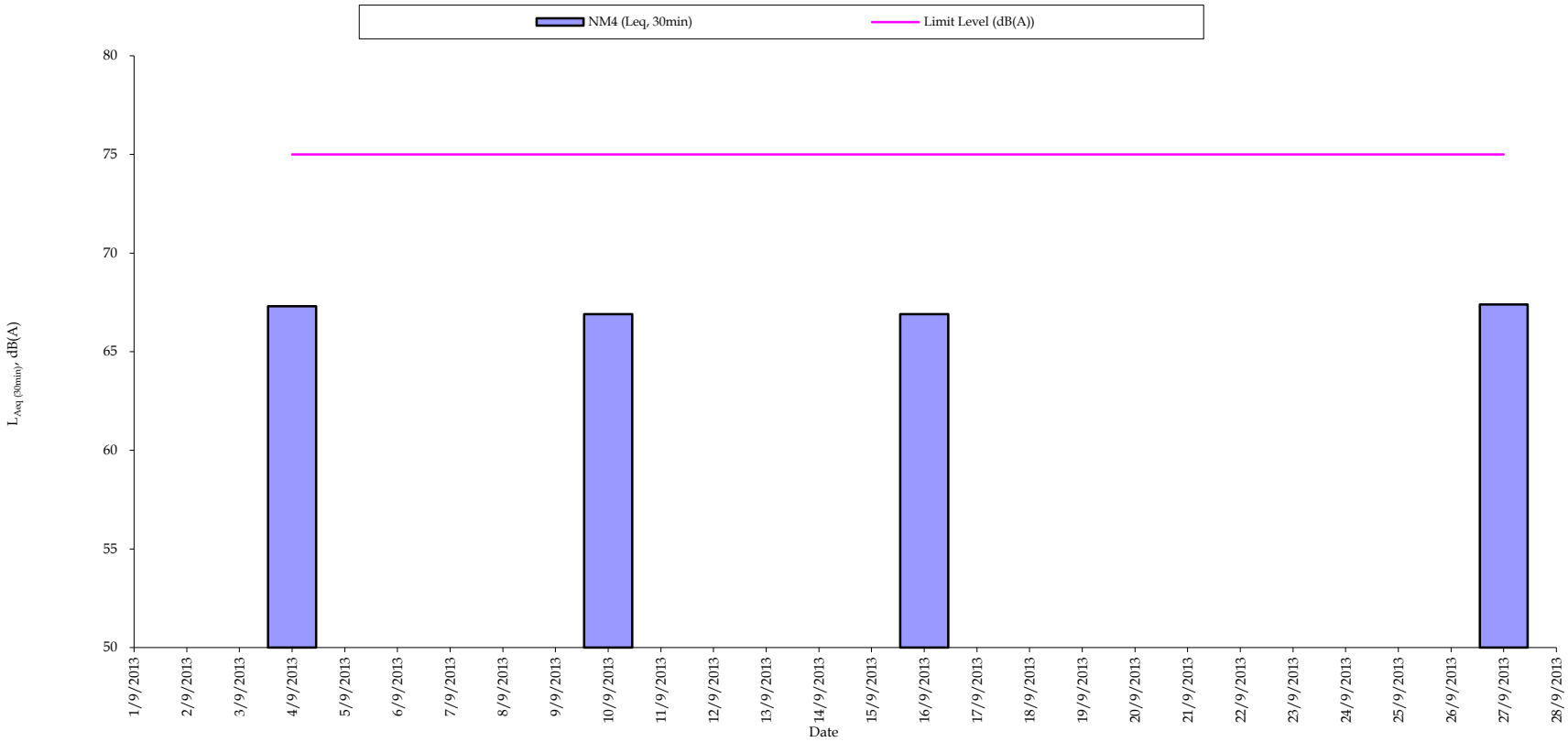
Annex F6 Noise Monitoring Results

Restricted Hours Noise Monitoring Results

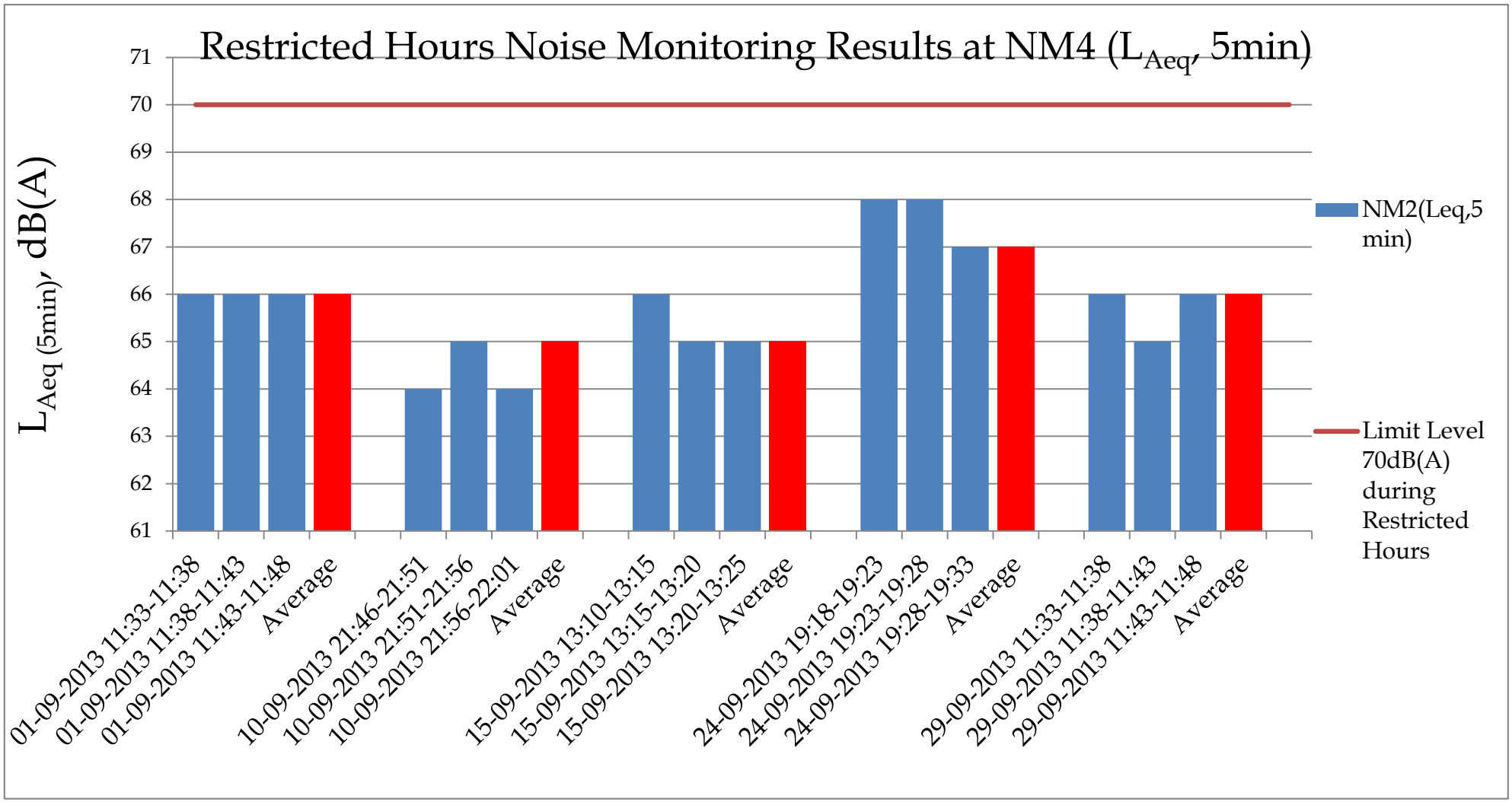
Station NM4

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							
01-Sep-13	11:33	11:38	Cloudy	66	68	65	No outdoor construction noise	traffic noise	-	31	0.5	RION- NL31 (S/N 00410224)	RION - NC73 (S/N 10997142)
	11:38	11:43	Cloudy	66	67	64			-				
	11:43	11:48	Cloudy	66	68	64			-				
	11:33	11:48	Cloudy	66	68	64			-				
10-Sep-13	21:46	21:51	Fine	64	66	62	No outdoor construction noise	Traffic noise	-	29	0.3	RION- NL31 (S/N 00410224)	RION - NC73 (S/N 10997142)
	21:51	21:56	Fine	65	67	63			-				
	21:56	22:01	Fine	64	66	62			-				
	21:46	22:01	Fine	65	66	63			-				
15-Sep-13	13:10	13:15	Sunny	66	67	64	No outdoor construction noise	Traffic noise	-	28	0.4	RION- NL31 (S/N 00410224)	RION - NC73 (S/N 10997142)
	13:15	13:20	Sunny	65	67	63			-				
	13:20	13:25	Sunny	65	66	63			-				
	13:10	13:25	Sunny	65	67	63			-				
24-Sep-13	19:18	19:23	Sunny	68	69	66	No outdoor construction noise	Traffic noise	-	29	0.5	RION- NL31 (S/N 00410224)	RION - NC73 (S/N 10997142)
	19:23	19:28	Sunny	68	68	65			-				
	19:28	19:33	Sunny	67	68	65			-				
	19:18	19:33	Sunny	67	68	66			-				
29-Sep-13	11:33	11:38	Sunny	66	67	63	No outdoor construction noise	Traffic noise	-	29	0.5	RION- NL31 (S/N 00410224)	RION - NC73 (S/N 10997142)
	11:38	11:43	Sunny	65	67	63			-				
	11:43	11:48	Sunny	66	68	63			-				
	11:33	11:48	Sunny	66	67	63			-				
			Min.	**64**									
			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 Hours Noise Monitoring Results at NM4 (L_{Aeq}, 5min)
$L_{Aeq\ (5min)}$, dB(A)
71
70
69
68
67
66
65
64
63
62
61
01-09-2013 11:33-11:38
01-09-2013 11:38-11:43
01-09-2013 11:43-11:48
Average
10-09-2013 21:46-21:51
10-09-2013 21:51-21:56
10-09-2013 21:56-22:01
Average
15-09-2013 13:10-13:15
15-09-2013 13:15-13:20
15-09-2013 13:20-13:25
Average
24-09-2013 19:18-19:23
24-09-2013 19:23-19:28
24-09-2013 19:28-19:33
Average
29-09-2013 11:33-11:38
29-09-2013 11:38-11:43
29-09-2013 11:43-11:48
Average
NM2(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

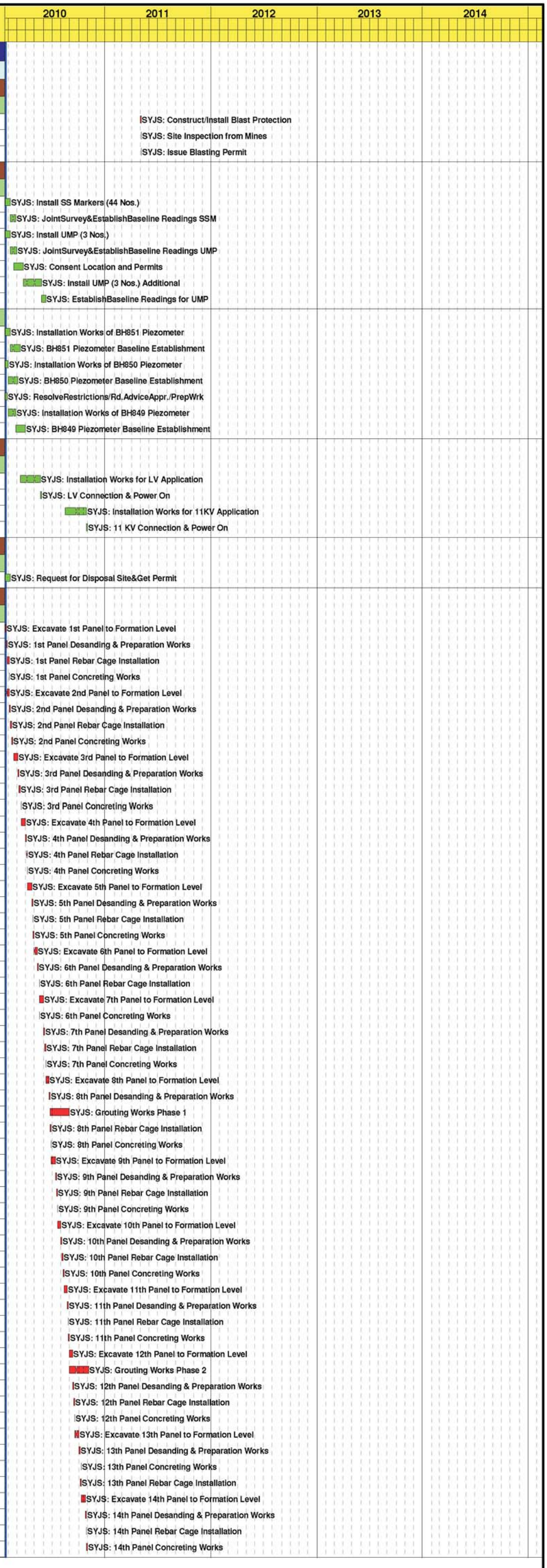
Annex F7 Cumulative Complaint and Summons/Prosecutions Log

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
Overall Total	7	0

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	% Comp
HATS Stage 2A - Contract DC/2007/23					
Sai Ying Pun Junction/Production Shaft					
Preliminaries Works					
SYJS10115	SYJS: Construct/Install Blast Protection	2	30APR11	03MAY11	0
SYJS10120	SYJS: Site Inspection from Mines	1	04MAY11	04MAY11	0
SYJS10125	SYJS: Issue Blasting Permit	1	05MAY11	05MAY11	0
EBS, Env. & Geotechnical Instrumentations					
Markers/UMP's/Others(Same note as Piez.)					
SYJS0617	SYJS: Install SS Markers (44 Nos.)	50	24OCT09A	06FEB10	68
SYJS0619	SYJS: JointSurvey&EstablishBaseline Readings SSM	14	08FEB10	26FEB10	0
SYJS0621	SYJS: Install UMP (3 Nos.)	75	01SEP09A	08FEB10	78
SYJS0623	SYJS: JointSurvey&EstablishBaseline Readings UMP	14	09FEB10	27FEB10	0
SYJS0625	SYJS: Consent Location and Permits	30	18FEB10	24MAR10	0
SYJS0627	SYJS: Install UMP (3 Nos.) Additional	50	25MAR10	24MAY10	0
SYJS0629	SYJS: EstablishBaseline Readings for UMP	14	25MAY10	09JUN10	0
Piezometers(NearbyPTWorPScovered inthisInstalln)					
SYJS0407	SYJS: Installation Works of BH851 Piezometer	21	14JAN10A	08FEB10	20
SYJS0409	SYJS: BH851 Piezometer Baseline Establishment	26	09FEB10	13MAR10	0
SYJS0503	SYJS: Installation Works of BH850 Piezometer	21	07DEC09A	29JAN10	57
SYJS0507	SYJS: BH850 Piezometer Baseline Establishment	26	30JAN10	04MAR10	0
SYJS0601A	SYJS: ResolveRestrictions/Rd.AdviceAppr./PrepWrk	33	07NOV09A	27JAN10	79
SYJS0603	SYJS: Installation Works of BH849 Piezometer	21	30JAN10	26FEB10	0
SYJS0607	SYJS: BH849 Piezometer Baseline Establishment	26	27FEB10	29MAR10	0
Electrical & Mechanical Installations					
SYJS0705	SYJS: Installation Works for LV Application	60	11MAR10*	21MAY10	0
SYJS0710	SYJS: LV Connection & Power On	4	22MAY10	26MAY10	0
SYJS0720	SYJS: Installation Works for 11KV Application	60	16AUG10*	27OCT10	0
SYJS0725	SYJS: 11 KV Connection & Power On	4	28OCT10	01NOV10	0
Marine Dumping Permit					
SYJS0370	SYJS: Request for Disposal Site&Get Permit	24	05JAN10A	05FEB10	38
Diaphragm Wall					
SYJS0263	SYJS: Excavate 1st Panel to Formation Level	12	04JAN10A	21JAN10	80
SYJS0265	SYJS: 1st Panel Desanding & Preparation Works	5	22JAN10	27JAN10	0
SYJS0267	SYJS: 1st Panel Rebar Cage Installation	4	28JAN10	01FEB10	0
SYJS0269	SYJS: 1st Panel Concreting Works	1	02FEB10	02FEB10	0
SYJS0271	SYJS: Excavate 2nd Panel to Formation Level	12	06JAN10A	02FEB10	60
SYJS0273	SYJS: 2nd Panel Desanding & Preparation Works	5	03FEB10	08FEB10	0
SYJS0275	SYJS: 2nd Panel Rebar Cage Installation	4	09FEB10	12FEB10	0
SYJS0277	SYJS: 2nd Panel Concreting Works	1	13FEB10	13FEB10	0
SYJS0279	SYJS: Excavate 3rd Panel to Formation Level	12	18FEB10	03MAR10	0
SYJS0281	SYJS: 3rd Panel Desanding & Preparation Works	5	04MAR10	09MAR10	0
SYJS0283	SYJS: 3rd Panel Rebar Cage Installation	4	10MAR10	13MAR10	0
SYJS0285	SYJS: 3rd Panel Concreting Works	1	15MAR10	15MAR10	0
SYJS0287	SYJS: Excavate 4th Panel to Formation Level	12	16MAR10	29MAR10	0
SYJS0289	SYJS: 4th Panel Desanding & Preparation Works	4	30MAR10	02APR10	0
SYJS0291	SYJS: 4th Panel Rebar Cage Installation	3	03APR10	07APR10	0
SYJS0293	SYJS: 4th Panel Concreting Works	1	08APR10	08APR10	0
SYJS0296	SYJS: Excavate 5th Panel to Formation Level	10	09APR10	20APR10	0
SYJS0298	SYJS: 5th Panel Desanding & Preparation Works	4	21APR10	24APR10	0
SYJS0301	SYJS: 5th Panel Rebar Cage Installation	2	26APR10	27APR10	0
SYJS0302	SYJS: 5th Panel Concreting Works	1	28APR10	28APR10	0
SYJS0304	SYJS: Excavate 6th Panel to Formation Level	10	29APR10	11MAY10	0
SYJS0306	SYJS: 6th Panel Desanding & Preparation Works	4	12MAY10	15MAY10	0
SYJS0308	SYJS: 6th Panel Rebar Cage Installation	2	17MAY10	18MAY10	0
SYJS0312	SYJS: Excavate 7th Panel to Formation Level	10	20MAY10	31MAY10	0
SYJS0313	SYJS: 6th Panel Concreting Works	1	19MAY10	19MAY10	0
SYJS0314	SYJS: 7th Panel Desanding & Preparation Works	4	01JUN10	04JUN10	0
SYJS0316	SYJS: 7th Panel Rebar Cage Installation	2	05JUN10	07JUN10	0
SYJS0318	SYJS: 7th Panel Concreting Works	1	08JUN10	08JUN10	0
SYJS0321	SYJS: Excavate 8th Panel to Formation Level	10	09JUN10	21JUN10	0
SYJS0322	SYJS: 8th Panel Desanding & Preparation Works	4	22JUN10	25JUN10	0
SYJS0323	SYJS: Grouting Works Phase 1	54	26JUN10	28AUG10	0
SYJS0324	SYJS: 8th Panel Rebar Cage Installation	2	26JUN10	28JUN10	0
SYJS0326	SYJS: 8th Panel Concreting Works	1	29JUN10	29JUN10	0
SYJS0327	SYJS: Excavate 9th Panel to Formation Level	10	30JUN10	12JUL10	0
SYJS0329	SYJS: 9th Panel Desanding & Preparation Works	4	13JUL10	16JUL10	0
SYJS0331	SYJS: 9th Panel Rebar Cage Installation	2	17JUL10	19JUL10	0
SYJS0333	SYJS: 9th Panel Concreting Works	1	20JUL10	20JUL10	0
SYJS0335	SYJS: Excavate 10th Panel to Formation Level	10	21JUL10	31JUL10	0
SYJS0337	SYJS: 10th Panel Desanding & Preparation Works	4	02AUG10	05AUG10	0
SYJS0339	SYJS: 10th Panel Rebar Cage Installation	2	06AUG10	07AUG10	0
SYJS0341	SYJS: 10th Panel Concreting Works	1	09AUG10	09AUG10	0
SYJS0343	SYJS: Excavate 11th Panel to Formation Level	10	10AUG10	20AUG10	0
SYJS0345	SYJS: 11th Panel Desanding & Preparation Works	4	21AUG10	25AUG10	0
SYJS0347	SYJS: 11th Panel Rebar Cage Installation	2	26AUG10	27AUG10	0
SYJS0349	SYJS: 11th Panel Concreting Works	1	28AUG10	28AUG10	0
SYJS0351	SYJS: Excavate 12th Panel to Formation Level	10	30AUG10	09SEP10	0
SYJS0352	SYJS: Grouting Works Phase 2	54	30AUG10	03NOV10	0
SYJS0353	SYJS: 12th Panel Desanding & Preparation Works	4	10SEP10	14SEP10	0
SYJS0355	SYJS: 12th Panel Rebar Cage Installation	2	15SEP10	16SEP10	0
SYJS0357	SYJS: 12th Panel Concreting Works	1	17SEP10	17SEP10	0
SYJS0359	SYJS: Excavate 13th Panel to Formation Level	10	18SEP10	30SEP10	0
SYJS0361	SYJS: 13th Panel Desanding & Preparation Works	4	02OCT10	06OCT10	0
SYJS0365	SYJS: 13th Panel Concreting Works	1	09OCT10	09OCT10	0
SYJS0367	SYJS: 13th Panel Rebar Cage Installation	2	07OCT10	08OCT10	0
SYJS0368	SYJS: Excavate 14th Panel to Formation Level	10	11OCT10	22OCT10	0
SYJS0369	SYJS: 14th Panel Desanding & Preparation Works	4	23OCT10	27OCT10	0
SYJS0371	SYJS: 14th Panel Rebar Cage Installation	2	28OCT10	29OCT10	0
SYJS0373	SYJS: 14th Panel Concreting Works	1	30OCT10	30OCT10	0



Start Date	31JUL09
Finish Date	15JAN15
Data Date	20JAN10
Run Date	01FEB10 10:30

Early Bar
Progress Bar
Critical Activity

© Primavera Systems, Inc.

WPU7 Sheet 1 of 2

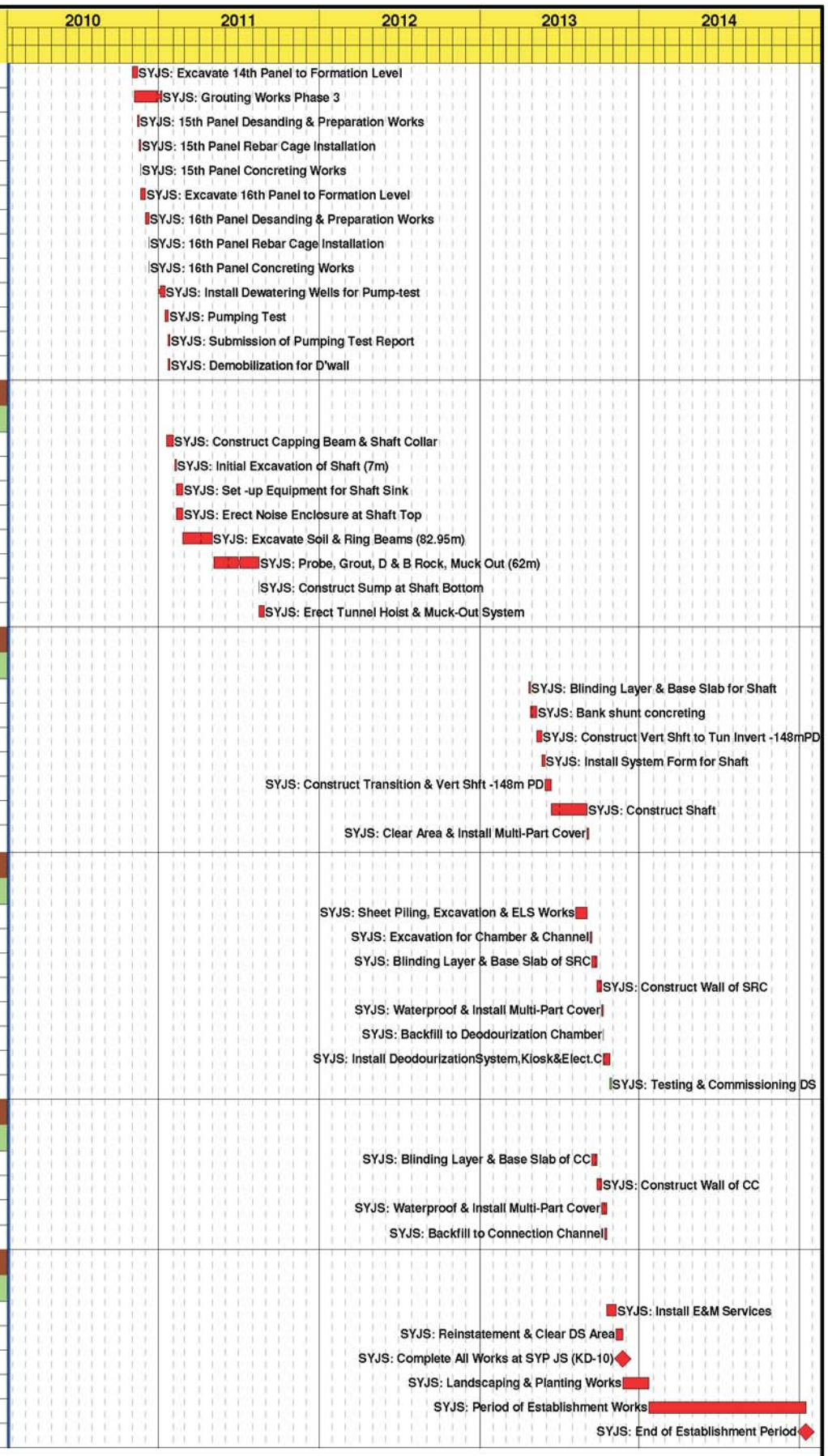
Habour Area Treatment Scheme Stage 2A
Contract No. DC/2007/23 - Construction of Sewage Conveyance from North Point to Stonecutters Island
Programme

Annex F8 Construction Programme for the Project

Gammon

Date	Revision	Checked	Approved

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	% Comp
SYJS0375	SYJS: Excavate 14th Panel to Formation Level	10	01NOV10	11NOV10	0
SYJS0376	SYJS: Grouting Works Phase 3	52	04NOV10	05JAN11	0
SYJS0377	SYJS: 15th Panel Desanding & Preparation Works	4	12NOV10	16NOV10	0
SYJS0379	SYJS: 15th Panel Rebar Cage Installation	2	17NOV10	18NOV10	0
SYJS0381	SYJS: 15th Panel Concreting Works	1	19NOV10	19NOV10	0
SYJS0383	SYJS: Excavate 16th Panel to Formation Level	10	20NOV10	01DEC10	0
SYJS0385	SYJS: 16th Panel Desanding & Preparation Works	4	02DEC10	06DEC10	0
SYJS0387	SYJS: 16th Panel Rebar Cage Installation	2	07DEC10	08DEC10	0
SYJS0389	SYJS: 16th Panel Concreting Works	1	09DEC10	09DEC10	0
SYJS0392	SYJS: Install Dewatering Wells for Pump-test	12	29DEC10	12JAN11	0
SYJS0394	SYJS: Pumping Test	6	13JAN11	19JAN11	0
SYJS0397	SYJS: Submission of Pumping Test Report	6	20JAN11	26JAN11	0
SYJS0411	SYJS: Demobilization for D'wall	6	20JAN11	26JAN11	0
Shaft Excavation					
SYJS0500	SYJS: Construct Capping Beam & Shaft Collar	14	18JAN11	02FEB11	0
SYJS0510	SYJS: Initial Excavation of Shaft (7m)	4	07FEB11	10FEB11	0
SYJS0520	SYJS: Set -up Equipment for Shaft Sink	12	11FEB11	24FEB11	0
SYJS0522	SYJS: Erect Noise Enclosure at Shaft Top	12	11FEB11	24FEB11	0
SYJS0530	SYJS: Excavate Soil & Ring Beams (82.95m)	54	25FEB11	29APR11	0
SYJS0575	SYJS: Probe, Grout, D & B Rock, Muck Out (62m)	85	06MAY11	15AUG11	0
SYJS0635	SYJS: Construct Sump at Shaft Bottom	2	16AUG11	17AUG11	0
SYJS0665	SYJS: Erect Tunnel Hoist & Muck-Out System	10	18AUG11	29AUG11	0
Shaft Construction					
SYJS0835	SYJS: Blinding Layer & Base Slab for Shaft	4	23APR13*	26APR13	0
SYJS0840	SYJS: Bank shunt concreting	12	27APR13	11MAY13	0
SYJS0865	SYJS: Construct Vert Shft to Tun Invert -148mPD	9	13MAY13	22MAY13	0
SYJS0885	SYJS: Install System Form for Shaft	6	23MAY13	29MAY13	0
SYJS0925	SYJS: Construct Transition & Vert Shft -148m PD	12	30MAY13	13JUN13	0
SYJS0930	SYJS: Construct Shaft	70	14JUN13	04SEP13	0
SYJS1055	SYJS: Clear Area & Install Multi-Part Cover	3	05SEP13	07SEP13	0
Deodourization Chamber					
SYJS1463	SYJS: Sheet Piling, Excavation & ELS Works	24	08AUG13	04SEP13	0
SYJS1465	SYJS: Excavation for Chamber & Channel	6	09SEP13	14SEP13	0
SYJS1475	SYJS: Blinding Layer & Base Slab of SRC	8	16SEP13	25SEP13	0
SYJS1485	SYJS: Construct Wall of SRC	8	26SEP13	05OCT13	0
SYJS1495	SYJS: Waterproof & Install Multi-Part Cover	5	07OCT13	11OCT13	0
SYJS1505	SYJS: Backfill to Deodourization Chamber	3	09OCT13	11OCT13	0
SYJS1555	SYJS: Install DeodourizationSystem,Kiosk&Elect.C	14	09OCT13	25OCT13	0
SYJS1565	SYJS: Testing & Commissioning DS	3	26OCT13	29OCT13	0
Connection Channel					
SYJS1515	SYJS: Blinding Layer & Base Slab of CC	6	16SEP13	23SEP13	0
SYJS1525	SYJS: Construct Wall of CC	9	24SEP13	04OCT13	0
SYJS1535	SYJS: Waterproof & Install Multi-Part Cover	6	08OCT13	15OCT13	0
SYJS1545	SYJS: Backfill to Connection Channel	3	15OCT13	17OCT13	0
Miscellaneous Works					
SYJS2010	SYJS: Install E&M Services	18	18OCT13	07NOV13	0
SYJS2020	SYJS: Reinstatement & Clear DS Area	12	08NOV13	21NOV13	0
SYJS2025	SYJS: Complete All Works at SYP JS (KD-10)	0		21NOV13	0
SYJS2030	SYJS: Landscaping & Planting Works	60	22NOV13*	20JAN14	0
SYJS2040	SYJS: Period of Establishment Works	360	21JAN14	15JAN15	0
SYJS2050	SYJS: End of Establishment Period	0		15JAN15	0



Start Date	31JUL09
Finish Date	15JAN15
Data Date	20JAN10
Run Date	01FEB10 10:30

© Primavera Systems, Inc.

Early Bar
Progress Bar
Critical Activity

WPU7 Sheet 2 of 2

Habour Area Treatment Scheme Stage 2A
Contract No. DC/2007/23 - Construction of Sewage Conveyance from North Point to Stonecutters Island
Programme

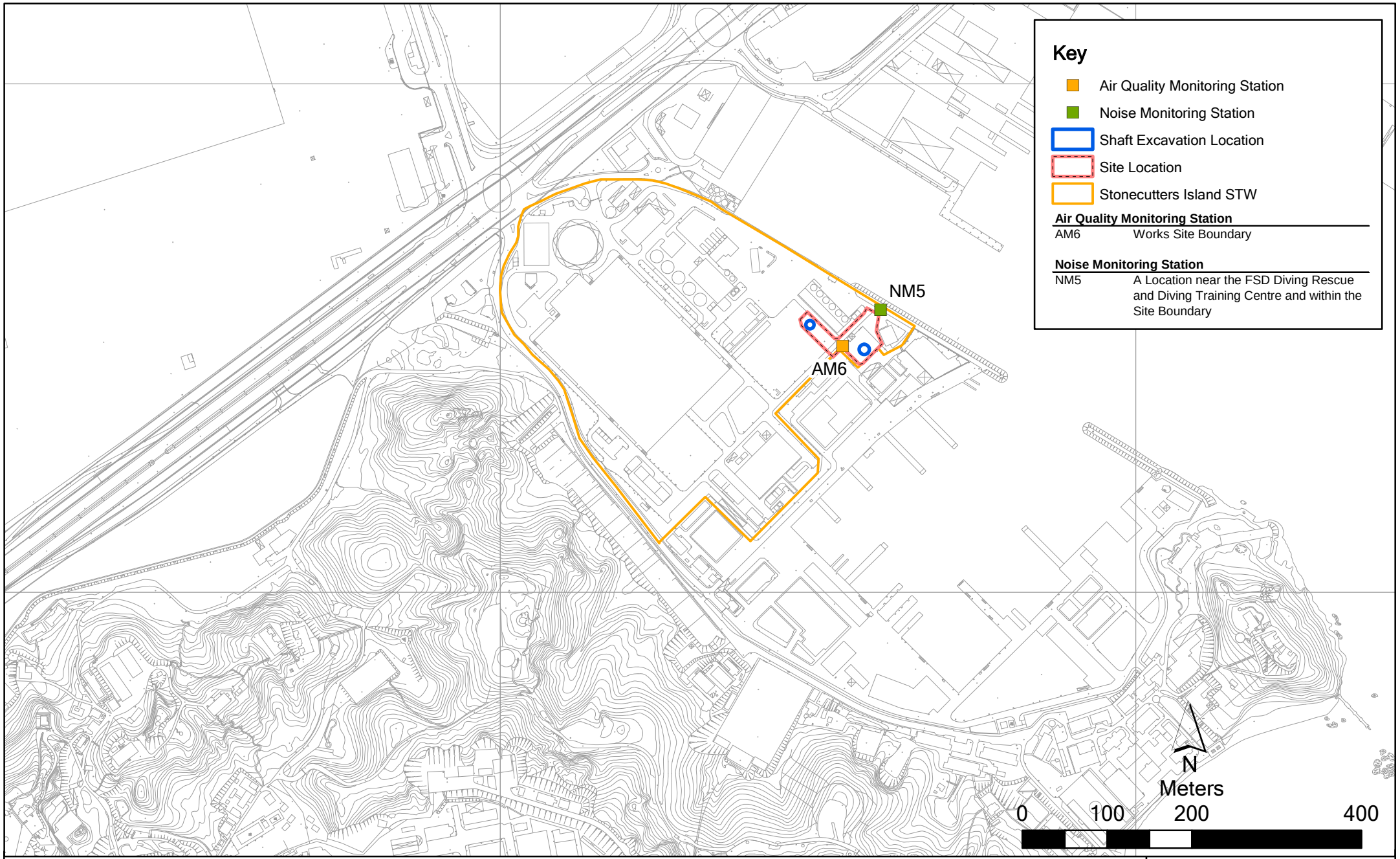
Annex F8 Construction Programme for the Project

Gammon

Date	Revision	Checked	Approved

Annex G

Stonecutters Island Production and Riser Shafts



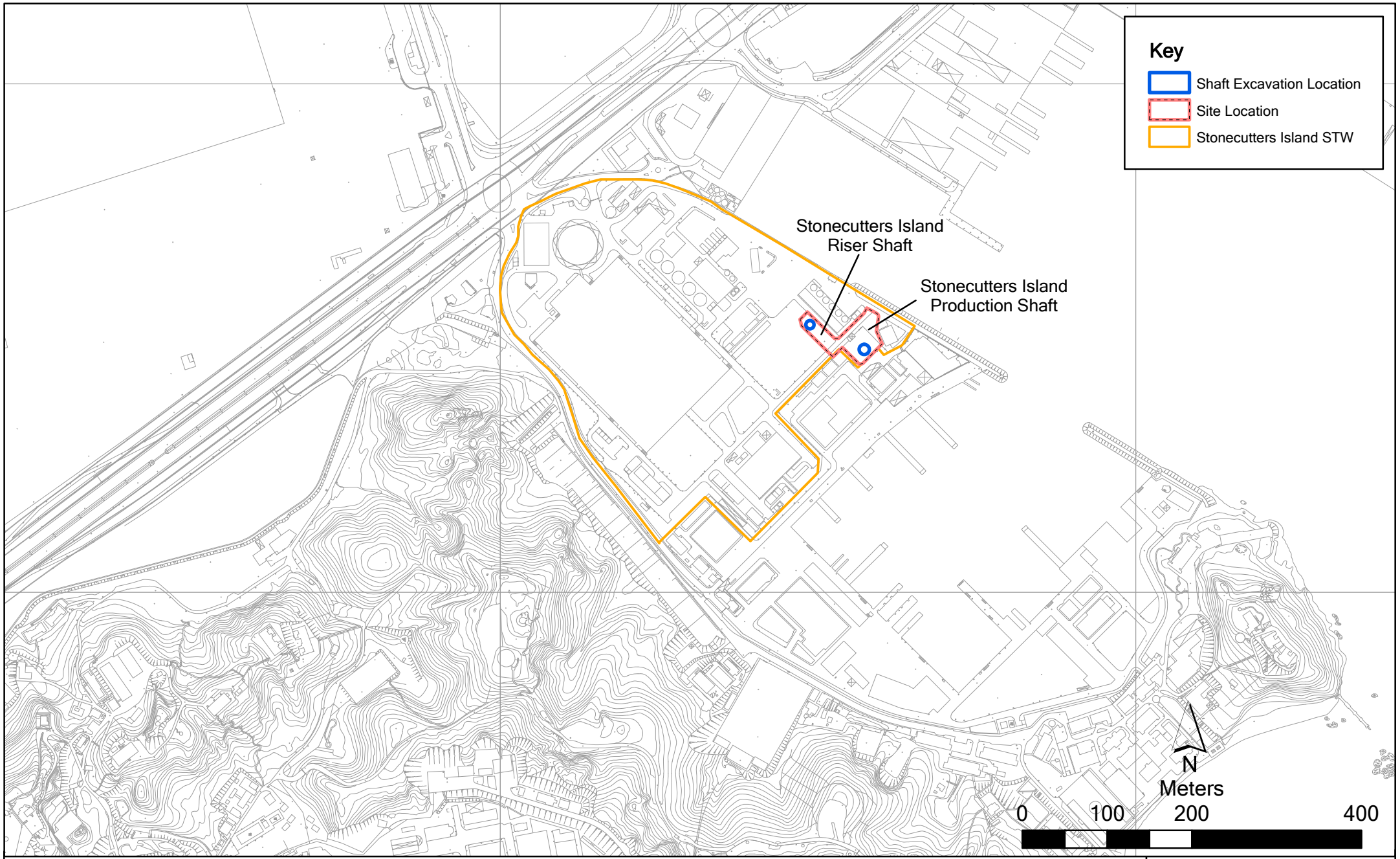
Annex G2

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

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

Environmental Resources Management

ERM



Annex G1

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

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

Environmental Resources Management

ERM

Annex G3 Monitoring Schedule of the Reporting Month and Next Month

DC/2007/23
Harbour Area Treatment Scheme Stage 2A
Construction of Sewage Conveyance System from North Point to Stonecutters Island
Impact Construction Air Quality Monitoring Schedule

AM6 - Works Site Boundary
Monitoring Month : September 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
01-Sep	02-Sep	03-Sep	04-Sep	05-Sep	06-Sep	07-Sep
			1-hr and 24-hr Monitoring			
08-Sep	09-Sep	10-Sep	11-Sep	12-Sep	13-Sep	14-Sep
		1-hr and 24-hr Monitoring				
15-Sep	16-Sep	17-Sep	18-Sep	19-Sep	20-Sep	21-Sep
	1-hr and 24-hr Monitoring				Public Holiday	1-hr and 24-hr Monitoring
22-Sep	23-Sep	24-Sep	25-Sep	26-Sep	27-Sep	28-Sep
				1-hr and 24-hr Monitoring		
29-Sep	30-Sep					

Monitoring Month : October 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		01-Oct	02-Oct	03-Oct	04-Oct	05-Oct
		Public Holiday	1-hr and 24-hr Monitoring			
06-Oct	07-Oct	08-Oct	09-Oct	10-Oct	11-Oct	12-Oct
	1-hr and 24-hr Monitoring					1-hr and 24-hr Monitoring
13-Oct	14-Oct	15-Oct	16-Oct	17-Oct	18-Oct	19-Oct
	Public Holiday				1-hr and 24-hr Monitoring	
20-Oct	21-Oct	22-Oct	23-Oct	24-Oct	25-Oct	26-Oct
				1-hr and 24-hr Monitoring		
27-Oct	28-Oct	29-Oct	30-Oct	31-Oct		
			1-hr and 24-hr Monitoring			

Annex G3 Monitoring Schedule of the Reporting Month and Next Month

DC/2007/23

Harbour Area Treatment Scheme Stage 2A

Construction of Sewage Conveyance System from North Point to Stonecutters Island

Impact Construction Noise Quality Monitoring Schedule

NM5 - A Location near the FSD Diving Rescue and Diving Training Centre near the Site Boundary

Monitoring Month : September 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
01-Sep	02-Sep	03-Sep	04-Sep	05-Sep	06-Sep	07-Sep
		Noise Monitoring (Evening time)	Noise Monitoring			
08-Sep	09-Sep	10-Sep	11-Sep	12-Sep	13-Sep	14-Sep
Noise Monitoring		Noise Monitoring				
15-Sep	16-Sep	17-Sep	18-Sep	19-Sep	20-Sep	21-Sep
	Noise Monitoring	Noise Monitoring (Evening time)			Public Holiday	
22-Sep	23-Sep	24-Sep	25-Sep	26-Sep	27-Sep	28-Sep
Noise Monitoring				Noise Monitoring		
29-Sep	30-Sep					
	Noise Monitoring (Evening time)					

Monitoring Month : October 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		01-Oct	02-Oct	03-Oct	04-Oct	05-Oct
		Public Holiday	Noise Monitoring			
06-Oct	07-Oct	08-Oct	09-Oct	10-Oct	11-Oct	12-Oct
Noise Monitoring	Noise Monitoring					
13-Oct	14-Oct	15-Oct	16-Oct	17-Oct	18-Oct	19-Oct
	Public Holiday	Noise Monitoring (Evening time)			Noise Monitoring	
20-Oct	21-Oct	22-Oct	23-Oct	24-Oct	25-Oct	26-Oct
Noise Monitoring				Noise Monitoring		
27-Oct	28-Oct	29-Oct	30-Oct	31-Oct		
		Noise Monitoring (Evening time)	Noise Monitoring			

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

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

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

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Effluent Discharge There is a need to apply to EPD for a discharge licence for discharge of effluent from the construction site under the WPCO. The discharge quality must meet the requirements specified in the discharge licence. If monitoring of the treated effluent quality from the works areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the WPCO license which is under the ambit of regional office (RO) of EPD. Minimum distances of 100 m should be maintained between the discharge points of construction site effluent and the existing saltwater intakes.	All work sites / during construction	√
Water Quality	Accidental Spillage of Chemicals Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	All work sites / during construction	<>
Water Quality	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	All work sites / during construction	√
Water Quality	Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows: • Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport. • Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents. • Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.	All work sites / during construction	<>

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

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Temporary Sewage Bypass It is recommended that the temporary sewage bypass required for (i) the modification to the existing pumping station at SCISTW and (ii) the interconnection between the existing main pumping station and the new pumping station on Stonecutters Island, if needed, should be scheduled at the same time as far as practicable in order to minimise the temporary discharge duration. It is also recommended that all the modification and interconnection to the existing facilities (including the modification to the existing NWKPS) should be programmed to avoid temporary sewage bypass in wet or bathing season (March to October) to minimise the potential impacts. Relevant government departments including EPD and LCSD should be informed of the planned sewage bypass prior to any discharge. During the sewage bypass period, water quality monitoring should be carried out at the water sensitive receivers to quantify the water quality impacts and to determine when the baseline water quality conditions are restored. Also, a framework of the response procedures has been formulated to minimise the impact of temporary discharges. Details are provided in the standalone EM&A Manual.	SCISTW/ construction period	√
Operational Phase			
Water Quality	Dual power supply, standby facilities for the main treatment units and standby equipment parts / accessories should be provided as far as possible at the SCISTW to minimise the chance of emergency discharge.	SCISTW and all the Stage 2 PTWs / Operation Stage	NA. Measures not required until commencement of operational phase
Water Quality	The response procedure and monitoring requirements for emergency discharge as stated in EM&A Manual should be followed.	SCISTW / Operation Stage	NA. Measures not required until commencement of operational phase
Water Quality	In case of total power outage of the dechlorination plant, the uninterruptible power supply (UPS) system to be provided would switch the power supply of the sodium bisulphite dosing pump to a backup battery almost instantaneously, allowing continuous dosage of sodium bisulphite for at least half an hour so that sufficient time can be provided for shutting down the chlorination plant to avoid the possibility of discharge of chlorinated effluent.	SCISTW / Operation Stage	NA. Measures not required until commencement of operational phase

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	The model predicted that if Stage 2B is not implemented for HATS in 2021 as scheduled, the nutrient contents (both P and N) in the marine water would ultimately increase to exceed the baseline Stage 1 level when the HATS flow is reaching its design capacity of 2.45M m3/day. It is recommended that the future review study for Stage 2B should review the validity of the model predictions provided in this EIA and confirm the need of enhanced nutrient removal for HATS after 2021.	SCISTW / Operation Stage	NA. Measures not required until commencement of operational phase
Water Quality	It should be noted that the mixing zone for TIN predicted for Stage 2B was large with an area of about 30 km2 and the area of exceedance would encroach on the nearby water sensitive receivers (e.g. Ma Wan Fish Culture Zone). This is due to the elevated oxidised nitrogen assumed for the proposed nitrification process at Stage 2B as well as the increased HATS effluent flow assumed for Stage 2B. It is recommended that these water quality issues should be further investigated / assessed under the future EIA for Stage 2B. Further mitigation measures / alternative treatment designs should also be considered under the future EIA for Stage 2B to mitigate / minimise the potential TIN exceedances.	SCISTW / Operation Stage	NA. Measures not required until commencement of operational phase
Construction Phase			
Waste	Reusable steel or concrete panel shutters, fencing and hoarding and signboard should be used as a preferred alternative to items made of wood, to minimise wastage of wood. Attention should be paid to WBTC No. 19/2001 - Metallic Site Hoardings and Signboards to reduce the amount of timber used on construction sites. Metallic alternatives to timber are readily available and should be used rather than new timber. Precast concrete units should be adopted wherever feasible to minimise the use of timber formwork.	All work sites / during the construction period	√
Waste	All waste materials should be segregated into categories covering: • excavated materials suitable for reuse on-site; • excavated materials suitable for public filling facilities; • remaining C&D waste for landfill; • chemical waste; and • general refuse for landfill.	All work sites / during the construction period	√

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

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

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Waste	The sludge tanks should be air-tighten. Rotating brushes or other alternative devises should be installed at the upper frame of the sludge tank washing facilities to provide better cleaning of the surface around the top loading opening of the sludge tanks. Prior to making such provision, the top covers of the sludge transfer tanks should be water cleaned manually after unloading.	SCISTW / Operation Stage	NA. Measures not required until commencement of operational phase
Waste	Since the air tightness of tankers highly relies on the effectiveness of rubber seals at the loading openings and unloading doors, odour leakage from tankers are commonly resulted from the aging rubber seals. It is recommended to develop a preventive maintenance programme for rubber seals of loading openings and unloading doors of sludge transfer tanks to ensure the tightness of covers and doors. Rubber seals should be regularly replaced within its design life as specified by suppliers.	SCISTW / Operation Stage	NA. Measures not required until commencement of operational phase
Construction Phase			
Landscape & Visual	• Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical. • Existing trees to be retained on site should be carefully protected during construction. • Trees unavoidably affected by the works should be transplanted where practical. • Compensatory tree planting should be provided to compensate for felled trees. • Control of night-time lighting. • Erection of decorative screen hoarding compatible with the surrounding setting.	All the works areas, PTWs and SCISTW/ during the construction period	√
Operational Phase	•		
Landscape & Visual	• Aesthetic design of the façade of PTW and associated structures to harmonise with the surrounding settings. • Shrub and Climbing Plants to soften proposed structures / Roof Greening. • Buffer Tree and Shrub Planting to screen proposed associated structures. • Reinstated of disturbed area	All the works areas, PTWs and SCISTW/ during the construction period	NA. Measures not required until commencement of operational phase

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Construction Phase	•		
Cultural Heritage	The construction vibration control limit (ppv of 25mm/s) shall be strictly followed.	Identified historical buildings/structures as mentioned in Tables 15.10 and 15.11. During blasting for tunnel, shafts, effluent conveyance system and disinfection facilities in the vicinity of the buildings/ structures	NA. Vibration monitoring has not been launched during the reporting period.

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

Annex G5 24-hour and 1-hour TSP Monitoring Results

1-hour TSP Monitoring Results

Station AM6

Date	Start Time	Finish Time	Weather	TSP Concentration ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Site Conditions / Observations / Remarks	Temperature (°C)	Wind Speed * (m/s)	Sampler ID	Filter ID
04-Sep-13	15:14	16:14	Cloudy	212	346	500	Construction work in progress	25	<5	GMW GS-2310 (S/N 1254)	7916
	14:12	15:12	Cloudy	222	346	500	Construction work in progress	25	<5	GMW GS-2310 (S/N 1254)	7915
	13:10	14:10	Cloudy	218	346	500	Construction work in progress	25	<5	GMW GS-2310 (S/N 1254)	7914
10-Sep-13	9:20	10:20	Sunny	231	346	500	Construction work in progress	31	<5	GMW GS-2310 (S/N 1254)	7918
	10:22	11:22	Sunny	219	346	500	Construction work in progress	31	<5	GMW GS-2310 (S/N 1254)	7919
	11:24	12:24	Sunny	207	346	500	Construction work in progress	31	<5	GMW GS-2310 (S/N 1254)	7920
16-Sep-13	9:00	10:00	Sunny	190	346	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 1254)	8325
	10:02	11:02	Sunny	204	346	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 1254)	8326
	11:04	12:04	Sunny	196	346	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 1254)	8327
21-Sep-13	13:13	14:13	Sunny	180	346	500	Construction work in progress	31	<5	GMW GS-2310 (S/N 1254)	8328
	14:15	15:15	Sunny	173	346	500	Construction work in progress	31	<5	GMW GS-2310 (S/N 1254)	8329
	15:17	16:17	Sunny	176	346	500	Construction work in progress	31	<5	GMW GS-2310 (S/N 1254)	8330
26-Sep-13	13:07	14:07	Sunny	168	346	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 1254)	8332
	14:09	15:09	Sunny	183	346	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 1254)	8333
	15:11	16:11	Sunny	172	346	500	Construction work in progress	29	<5	GMW GS-2310 (S/N 1254)	8334
			Min.	**168**							
			Max.	**231**							
			Average	**197**							

* Wind Speed data is presented in the Meteorological Data table

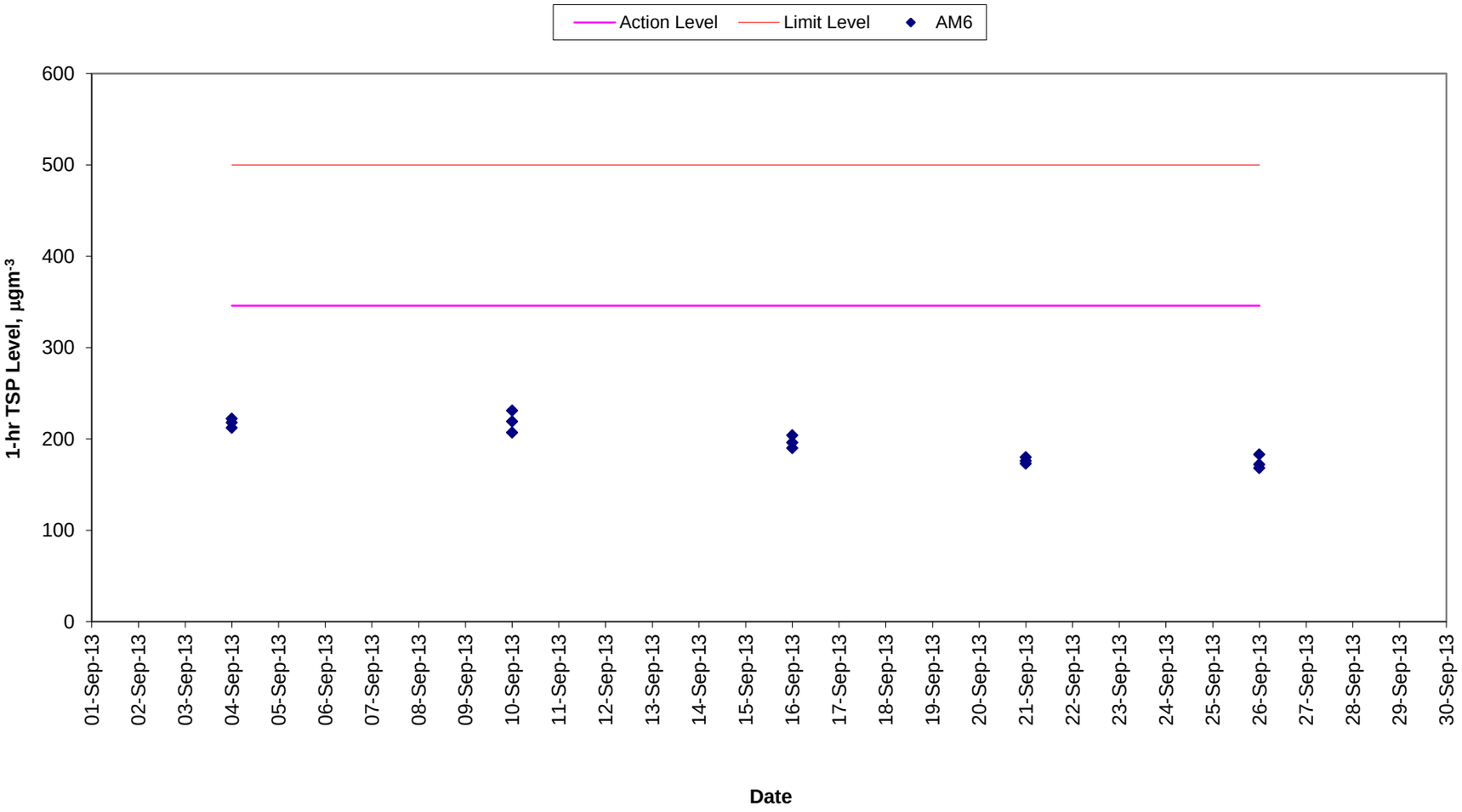
Annex G5 24-hour and 1-hour TSP Monitoring Results

24-hour TSP Monitoring Results

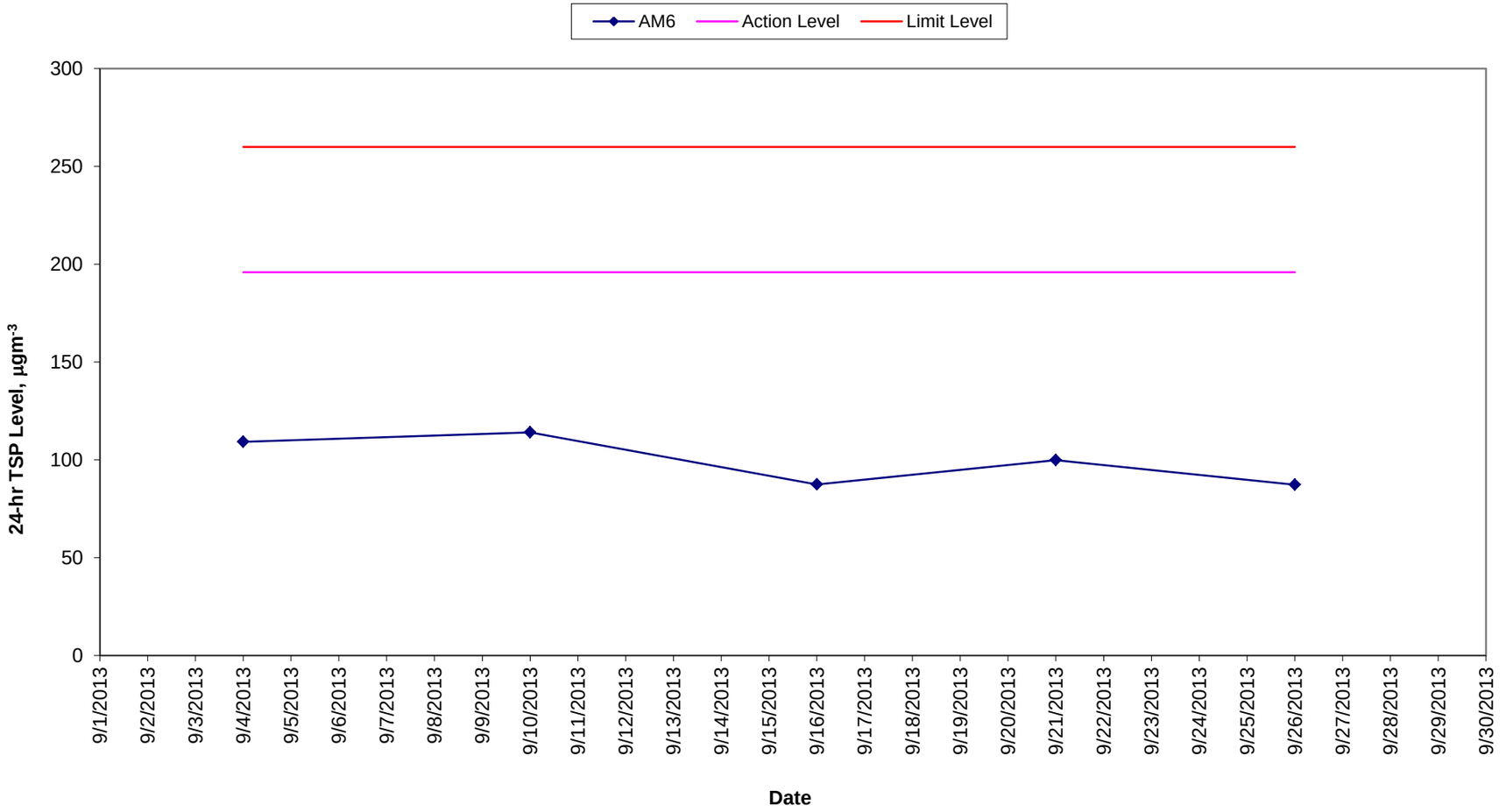
Station AM6

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m^3/min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	(μg/m^3)	(μg/m^3)	(μg/m^3)		ID	ID
04-Sep-13	16:16	05-Sep-13	16:16	Cloudy	2.7648	2.9551	12192.03	12216.03	24.00	1.21	1.21	1.21	109	196	260	Construction work in progress	GMW GS 2310 (S/N 1254)	7917
10-Sep-13	12:26	11-Sep-13	12:26	Sunny	2.7818	2.9797	12219.03	12243.03	24.00	1.21	1.21	1.21	114	196	260	Construction work in progress	GMW GS 2310 (S/N 1254)	7921
16-Sep-13	12:06	17-Sep-13	12:06	Sunny	2.7787	2.9311	12246.03	12270.03	24.00	1.21	1.21	1.21	87	196	260	Construction work in progress	GMW GS 2310 (S/N 1254)	7922
21-Sep-13	16:19	22-Sep-13	16:19	Sunny	2.8129	2.9869	12273.03	12297.03	24.00	1.21	1.21	1.21	100	196	260	Construction work in progress	GMW GS 2310 (S/N 1254)	8331
26-Sep-13	16:13	27-Sep-13	16:13	Sunny	2.7979	2.9513	12300.03	12324.03	24.00	1.22	1.22	1.22	87	196	260	Construction work in progress	GMW GS 2310 (S/N 1254)	8335
												Min.	**87**					
												Max.	**114**					
												Average	**100**					

1-hr TSP Levels
AM6 (Stonecutters Island Sewage Treatment Works)



24-hr TSP Levels
AM6 (Stonecutters Island Sewage Treatment Works)



Meteorological Data Extracted from the Hong Kong Observatory

		King's Park Station				
Date	Weather	Average Air Temperature (°C)	Average Relative Humiditiy (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
2013-09-01	Cloudy	28	70-94	1.0	0-15	NW
2013-09-03	-	27	82-98	5.0	0-14	SE
2013-09-04	Sunny	25	90-99	88.9	0-21	SE
2013-09-08	-	28	63-88	0.0	2-17	SE
2013-09-10	Sunny	29	66-88	0.0	2-16	SE
2013-09-15	Sunny	28	66-94	15.2	0-20	SE/NW
2013-09-16	Sunny	25	68-95	0.8	1-24	SE
2013-09-17	-	28	61-82	0.0	7-23	SE
2013-09-19	Cloudy	29	62-86	0.0	0-27	SE
2013-09-20	-	30	58-87	0.0	0-12	SE/W
2013-09-21	Fine	31	51-88	0.0	0-21	N
2013-09-22	Cloudy	28	58-93	30.6	3-40	N/NW
2013-09-23	-	28	79-98	56.9	0-37	SW
2013-09-24	Sunny	29	78-94	1.3	7-20	SE
2013-09-26	Sunny	27	66-84	0.1	1-18	E
2013-09-27	Sunny	26	67-87	0.1	1-18	SE/NE
2013-09-29	Sunny	26	74-97	2.9	2-16	NE/E
2013-09-30	Fine	25	84-97	10.0	3-21	E

		Tsing Yi Station				
Date	Weather	Average Air Temperature (°C)	Average Relative Humiditiy (%) *	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
2013-09-01	Cloudy	27	70-94	1.0	1-18	S/NW
2013-09-03	-	26	82-98	5.0	1-16	S
2013-09-04	Rainy	25	90-99	88.9	1-21	E
2013-09-08	-	29	63-88	0.0	3-19	SE
2013-09-10	Sunny	30	66-88	0.0	1-20	N
2013-09-15	Sunny	28	66-94	15.2	1-14	--
2013-09-16	Sunny	29	68-95	0.8	1-22	--
2013-09-17	-	29	61-82	0.0	4-23	--
2013-09-19	Cloudy	29	62-86	0.0	1-26	--
2013-09-20	-	30	58-87	0.0	1-13	--
2013-09-21	Fine	31	51-88	0.0	1-22	--
2013-09-22	Cloudy	29	58-93	30.6	8-50	--
2013-09-23	-	27	79-98	56.9	8-48	--
2013-09-24	Sunny	29	78-94	1.3	6-22	--
2013-09-26	Sunny	28	66-84	0.1	1-15	--
2013-09-27	Sunny	27	67-87	0.1	1-15	--
2013-09-29	Sunny	26	74-97	2.9	1-10	--
2013-09-30	Fine	26	84-97	10.0	1-14	--

		Kai Tak Station				
Date	Weather	Average Air Temperature (°C) *	Average Relative Humiditiy (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2013-09-01	Cloudy	28	70-94	1.0	0-22	SE/NW
2013-09-03	-	27	82-98	5.0	1-18	SE
2013-09-04	Sunny	25	90-99	88.9	1-25	SE
2013-09-08	-	28	63-88	0.0	1-24	E/SE
2013-09-10	Sunny	29	66-88	0.0	4-22	E/SE
2013-09-15	Sunny	28	66-94	15.2	1-23	SE
2013-09-16	Sunny	25	68-95	0.8	8-31	E
2013-09-17	-	28	61-82	0.0	11-32	E
2013-09-19	Cloudy	29	62-86	0.0	2-31	E
2013-09-20	-	30	58-87	0.0	1-16	SE/SW
2013-09-21	Fine	31	51-88	0.0	3-25	NW
2013-09-22	Cloudy	28	58-93	30.6	3-52	NW
2013-09-23	-	28	79-98	56.9	2-39	S/SE
2013-09-24	Sunny	29	78-94	1.3	12-28	E
2013-09-26	Sunny	27	66-84	0.1	5-22	NE
2013-09-27	Sunny	26	67-87	0.1	3-24	E

		Green Island Station				
Date	Weather	Average Air Temperature (°C) *	Average Relative Humiditiy (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
2013-09-01	Cloudy	28	70-94	1.0	1-39	SW
2013-09-03	-	27	82-98	5.0	1-21	S
2013-09-04	Sunny	25	90-99	88.9	5-45	SW/NE
2013-09-08	-	28	63-88	0.0	9-32	NE
2013-09-10	Sunny	29	66-88	0.0	17-38	NE
2013-09-15	Sunny	28	66-94	15.2	1-36	NW/NE
2013-09-16	Sunny	25	68-95	0.8	12-48	NE
2013-09-17	-	28	61-82	0.0	30-57	NE
2013-09-19	Cloudy	29	62-86	0.0	18-57	NE
2013-09-20	-	30	58-87	0.0	1-31	N/S
2013-09-21	Fine	31	51-88	0.0	8-38	N
2013-09-22	Cloudy	28	58-93	30.6	19-77	N
2013-09-23	-	28	79-98	56.9	19-79	S
2013-09-24	Sunny	29	78-94	1.3	10-40	E/NE
2013-09-26	Sunny	27	66-84	0.1	14-43	NE
2013-09-27	Sunny	26	67-87	0.1	14-35	NE

Annex G6 Noise Monitoring Results

Daytime Noise Monitoring Results

Station NM5

Date	Start Time	End Time	Weather	Noise level (dB(A)), 30 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
04-Sep-13	15:48	16:18	Cloudy	61	63	58	Drill Rig, Welding Machine and Dump Truck	Traffic noise	-	25	0.7	RION-NL31 (S/N 00410224)	RION-NL73 (S/N 10997142)
10-Sep-13	10:55	11:25	Sunny	60	62	58	Drill Rig and Welding Machine	Traffic noise	-	31	0.5	RION-NL31 (S/N 00410224)	RION-NL73 (S/N 10997142)
16-Sep-13	11:10	11:40	Sunny	63	65	60	Drill rig, Welding machine, Excavator and Dump Truck	Traffic noise	-	29	0.6	RION-NL31 (S/N 00410224)	RION-NL73 (S/N 10997142)
26-Sep-13	13:15	13:45	Sunny	60	62	58	Drill rig, Welding machine, Excavator and Dump Truck	Traffic noise	-	29	0.7	RION-NL31 (S/N 00410224)	RION-NL73 (S/N 10997142)
			Min.	**60**									
			Max.	**63**									

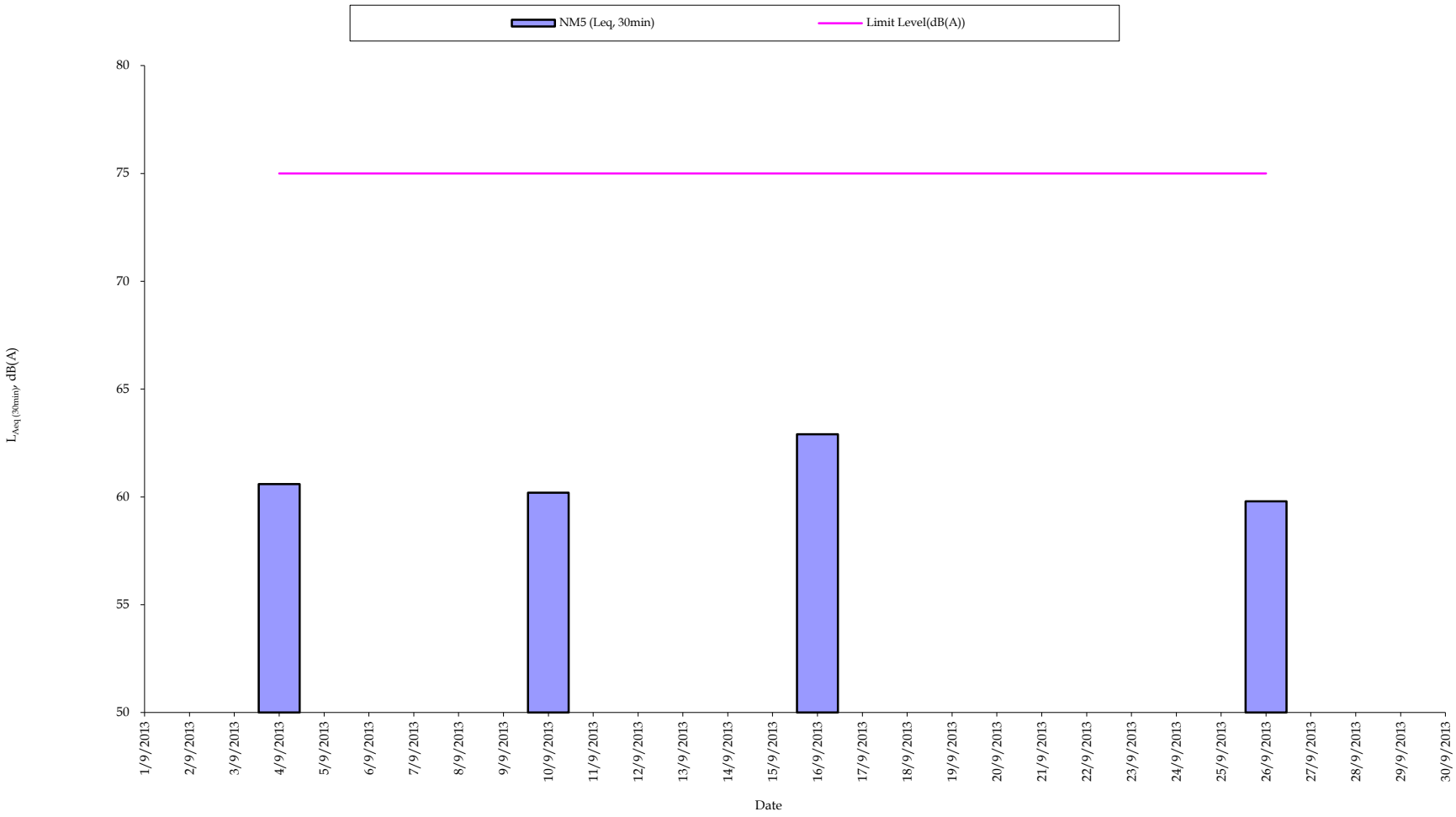
Annex G6 Noise Monitoring Results

Restricted Hours Noise Monitoring Results

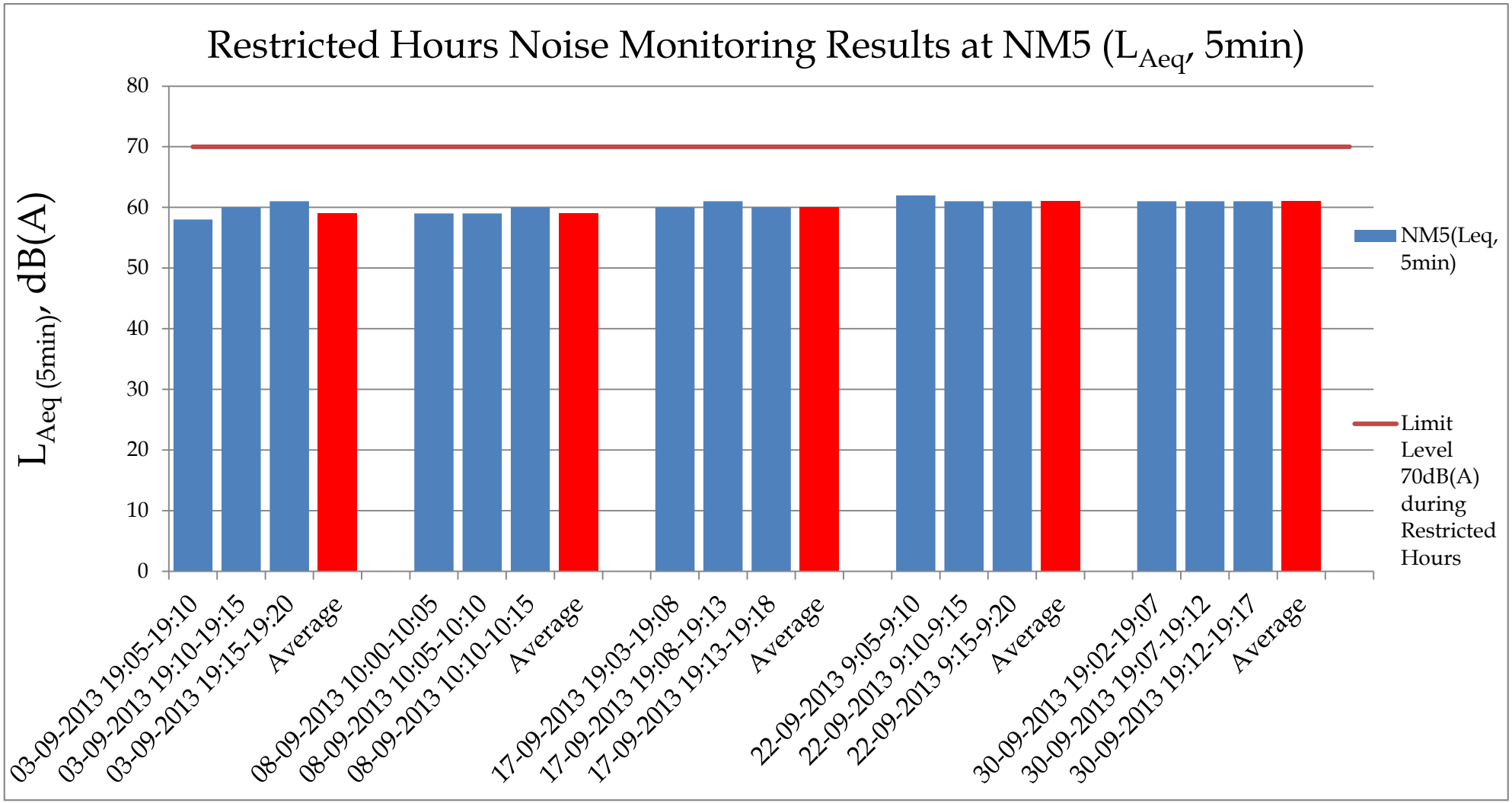
Station NM5

Date	Start Time	End Time	Weather	Noise level (dB(A)), 5 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
03-Sep-13	19:05	19:10	Cloudy	58	62	60	Drill Rig	Traffic noise	-	27	0.5	RION- NL31 (S/N 00410224)	RION - NC73 (S/N 10997142)
	19:10	19:15	Cloudy	60	61	57			-				
	19:15	19:20	Cloudy	61	62	57			-				
	19:05	19:20	Fine	59	62	58			-				
08-Sep-13	10:00	10:05	Sunny	59	61	57	Drill Rig	Traffic noise	-	30	0.5	RION- NL31 (S/N 00410224)	RION - NC73 (S/N 10997142)
	10:05	10:10	Sunny	59	60	57			-				
	10:10	10:15	Sunny	60	61	57			-				
	10:00	10:15	Sunny	59	60	57							
17-Sep-13	19:03	19:08	Fine	60	62	58	Drill Rig	Traffic noise	-	29	0.5	RION- NL31 (S/N 00410224)	RION - NC73 (S/N 10997142)
	19:08	19:13	Fine	61	62	58			-				
	19:13	19:18	Fine	60	62	58			-				
	19:03	19:18	Fine	60	62	58			-				
22-Sep-13	9:05	9:10	Cloudy	62	63	60	Drill Rig	Traffic noise	-	27	1.3	RION- NL31 (S/N 00410224)	RION - NC73 (S/N 10997142)
	9:10	9:15	Cloudy	61	63	59			-				
	9:15	9:20	Cloudy	61	63	59			-				
	9:05	9:20	Cloudy	61	63	59			-				
30-Sep-13	19:02	19:07	Fine	61	63	59	Drill rig	Traffic noise	-	27	0.8	RION- NL31 (S/N 00410224)	RION - NC73 (S/N 10997142)
	19:07	19:12	Fine	61	62	59			-				
	19:12	19:17	Fine	61	62	58			-				
	19:02	19:17	Fine	61	62	59			-				
			Min.	**58**									
			Max.	**62**									

Normal Weekdays Noise Monitoring Results at NM5 ($L_{Aeq, 30min}$)



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


Restricted Hours Noise Monitoring Results at NM5 (L_{Aeq}, 5min)
$L_{Aeq\ (5min)}$, dB(A)
80
70
60
50
40
30
20
10
0
03-09-2013 19:05-19:10
03-09-2013 19:10-19:15
03-09-2013 19:15-19:20
Average
08-09-2013 10:00-10:05
08-09-2013 10:05-10:10
08-09-2013 10:10-10:15
Average
17-09-2013 19:03-19:08
17-09-2013 19:08-19:13
17-09-2013 19:13-19:18
Average
22-09-2013 9:05-9:10
22-09-2013 9:10-9:15
22-09-2013 9:15-9:20
Average
30-09-2013 19:02-19:07
30-09-2013 19:07-19:12
30-09-2013 19:12-19:17
Average
NM5(Leq, 5min)
Limit Level 70dB(A) during Restricted Hours

Annex G7 Cumulative Complaint and Summons/Prosecutions Log

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

Annex G7 Cumulative Complaint and Summons/Prosecutions Log

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

Annex G7 Cumulative Complaint and Summons/Prosecutions Log

Reporting Month	Number of Complaints in Reporting Month	Number of Summons/Prosecutions in Reporting Month
December 2012	0	0
January 2013	0	0
February 2013	0	0
March 2013	0	0
April 2013	0	0
May 2013	0	0
June 2013	0	0
July 2013	1	0
August 2013	0	0
September 2013	0	0
Overall Total	1	0

Annex G8

Complaint Investigation Report

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

COMPLAINT INVESTIGATION FORM

Basic Information of Complaint

Log Number:	**2007/23/008**
Date of Complaint Received	22 July 2013
Location of Complaint	Hoi Lai Estate, Shum Shui Po
Nature of Complaint	Noise generated from Stonecutters Island Sewage Treatment Works Area.
Complaint Received by	Drainage Services Department
Complainant	A local resident living in Hoi Lai Estate, Shum Shui Po

Details of Complaint

On 19 July, a complaint regarding the noise generated from Stonecutters Island Sewage Treatment Works area was received by Drainage Services Department (DSD). The Contractor received the complaint notification on 22 July 2013. According to the complainant, noise was generated from Stonecutters Island work sites at about 3:00 a.m. of 19 July 2013.

Investigation Report

According to the works summary provided by the Contractor, construction activities that took place during the concerned period of time (3:00a.m. on 19 July 2013) included dewatering at shaft and tunnel; operating man cage; charging and blasting works; and equipment repairing, servicing, maintenance and fabrication. These activities were carried out inside the noise enclosure. Before blasting works, the Contractor beat the gong outside the noise enclosure prior to the initiation of the blasting works for safety purpose.

Based on the works summary, activities conducted in this Contract's work strictly follow the conditions stated in the approve Construction Noise Permit (CNP). Also the blasting works at night-time were carried out as stated in the approved Harbour Area Treatment Scheme Stage 2A Environmental Impact Assessment Report. In addition, the distance between the Project work site and the location of the complainant is about 800 m as shown in *Figure 1*, the noise from Project work site would be insignificant after distance attenuation in normal situation. However, some individuals are more noise sensitive than others in some cases. If that is the case, the concerned noise was suspected to be generated by the beating of warning gongs before initiation of blasting which was carried out outside of the noise enclosure. Due to safety purposes, beating of gong before blasting could not be avoided.

Based on the above, the compliant is likely due to the noise generated from beating gong before blasting. In order to further control night-time noise, the Contractor has deactivated the warning siren and beat the gong softly prior to the initiation of the blasting work immediately.

Mitigation Measures and Follow-Up Actions Recommended to Contractor

The following mitigation measures were implemented immediately to further control night-time noise:

- No warning siren prior to the initiation of the blasting work; and
- Beat the gong softly prior to the initiation of the blasting work.

The Contractor was also reminded to adhere strictly to the Construction Noise Mitigation Plan and to implement all relevant noise mitigation measures recommended or specified in the EIA, EM&A Manual, EMP, Method Statements, General and Particular Specifications of this Project to avoid causing noise nuisance.

The Contractor is also reminded to ensure that the construction plant deployed for the works during restricted hours is in strict compliance with the relevant CNP granted.

Date of File Closed : 6 September 2013

Approved and Filed by:

(Winnie Ko, ET Leader)
Date: 6 September 2013

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	% Comp
HATS Stage 2A - Contract DC/2007/23					
Stonecutters Island STW Production Shaft					
Preliminaries Works					
SCPS10070	SCPS: Construct/Install Blast Protection	2	22SEP10	24SEP10	0
SCPS10075	SCPS: Site Inspection from Mines	1	25SEP10	25SEP10	0
SCPS10080	SCPS: Issue Blasting Permit	1	27SEP10	27SEP10	0
EBS, Env. & Geotechnical Instrumentations					
Markers/UMP's/Others(Same note as Piez.)					
SCPS0391	SCPS: Install GS Markers (17 Nos.)	74	01SEP09A	01FEB10	85
SCPS0393	SCPS: JointSurvey&EstablishBaseline Readings GSM	14	02FEB10	20FEB10	0
Piezometers(NearbyPTWorPScovered inthisInstalln)					
SCPS0375	SCPS: BH907 Piezometer Baseline Establishment	26	10NOV09A	23JAN10	85
SCPS0381	SCPS: BH908 Piezometer Baseline Establishment	26	10NOV09A	27JAN10	73
SCPS0387	SCPS: BH906 Piezometer Baseline Establishment	26	15JAN10A	06FEB10	40
Electrical & Mechanical Installations					
SCPS0620	SCPS: Installation Works for 11KV Application	60	08APR10	18JUN10	0
SCPS0625	SCPS: 11 KV Connection & Power On	4	19JUN10	23JUN10	0
Marine Dumping Permit					
SCPS0370	SCPS: Request for Disposal Site&Get Permit	24	02JAN10A	05FEB10	38
Diaphragm Wall					
SCPS0279	SCPS: Excavate 3rd Panel to Formation Level	12	16JAN10A	20JAN10	92
SCPS0281	SCPS: 3rd Panel Desanding & Preparation Works	4	21JAN10	25JAN10	0
SCPS0282	SCPS: Grouting Works Phase 1	45	21JAN10	17MAR10	0
SCPS0283	SCPS: 3rd Panel Rebar Cage Installation	3	26JAN10	28JAN10	0
SCPS0285	SCPS: 3rd Panel Concreting Works	1	29JAN10	29JAN10	0
SCPS0287	SCPS: Excavate 4th Panel to Formation Level	23	30JAN10	01MAR10	0
SCPS0289	SCPS: 4th Panel Desanding & Preparation Works	9	02MAR10	11MAR10	0
SCPS0291	SCPS: 4th Panel Rebar Cage Installation	6	12MAR10	18MAR10	0
SCPS0292	SCPS: Grouting Works Phase 2	45	18MAR10	11MAY10	0
SCPS0293	SCPS: 4th Panel Concreting Works	1	19MAR10	19MAR10	0
SCPS0297	SCPS: Excavate 5th Panel to Formation Level	8	20MAR10	29MAR10	0
SCPS0299	SCPS: 5th Panel Desanding & Preparation Works	3	30MAR10	01APR10	0
SCPS0301	SCPS: 5th Panel Rebar Cage Installation	2	02APR10	03APR10	0
SCPS0303	SCPS: 5th Panel Concreting Works	1	06APR10	06APR10	0
SCPS0307	SCPS: Excavate 6th Panel to Formation Level	23	07APR10	04MAY10	0
SCPS0309	SCPS: 6th Panel Desanding & Preparation Works	9	05MAY10	14MAY10	0
SCPS0310	SCPS: Grouting Works Phase 3	50	12MAY10	10JUL10	0
SCPS0311	SCPS: 6th Panel Rebar Cage Installation	6	15MAY10	21MAY10	0
SCPS0313	SCPS: 6th Panel Concreting Works	1	22MAY10	22MAY10	0
SCPS0317	SCPS: Excavate 7th Panel to Formation Level	8	24MAY10	01JUN10	0
SCPS0319	SCPS: 7th Panel Desanding & Preparation Works	3	02JUN10	04JUN10	0
SCPS0321	SCPS: 7th Panel Rebar Cage Installation	2	05JUN10	07JUN10	0
SCPS0323	SCPS: 7th Panel Concreting Works	1	08JUN10	08JUN10	0
SCPS0327	SCPS: Excavate 8th Panel to Formation Level	8	09JUN10	18JUN10	0
SCPS0329	SCPS: 8th Panel Desanding & Preparation Works	3	19JUN10	22JUN10	0
SCPS0331	SCPS: 8th Panel Rebar Cage Installation	2	23JUN10	24JUN10	0
SCPS0333	SCPS: 8th Panel Concreting Works	1	25JUN10	25JUN10	0
SCPS0335	SCPS: Install Dewatering Wells for Pump-test	12	05JUL10	17JUL10	0
SCPS0337	SCPS: Pumping Test	6	19JUL10	24JUL10	0
SCPS0338	SCPS: Submission of Pumping Test Report	6	26JUL10	31JUL10	0
SCPS0341	SCPS: Demobilization	6	26JUL10	31JUL10	0
Shaft Excavation					
SCPS0500	SCPS: Construct Capping Beam & Shaft Collar	12	26JUL10	07AUG10	0
SCPS0510	SCPS: Initial Excavation of Shaft (7m)	4	09AUG10	12AUG10	0
SCPS0520	SCPS: Set-Up Equipment for Shaft Sink	12	13AUG10	26AUG10	0
SCPS0525	SCPS: Erect Noise Enclosure at Shaft Top	12	13AUG10	26AUG10	0
SCPS0530	SCPS: Excavate Soil & Ring Beams (50m)	22	27AUG10	21SEP10	0
SCPS0575	SCPS: Probe, Grout, D&B Rock, Muck Out (87m)	100	28SEP10	26JAN11	0
SCPS0640	SCPS: Construct Sump at Shaft Bottom	2	27JAN11	28JAN11	0
SCPS0665	SCPS: Erect Tunnel Hoist & Muck Out System	10	29JAN11	12FEB11	0
Backfill, Reinstatement & Landscaping					
SCPS0910	SCPS: Backfill Shaft (20%)	8	12SEP13	21SEP13	0
SCPS0920	SCPS: Backfill Shaft (40%)	8	23SEP13	02OCT13	0
SCPS0930	SCPS: Backfill Shaft (60%)	8	03OCT13	11OCT13	0
SCPS0940	SCPS: Backfill Shaft (80%)	8	12OCT13	22OCT13	0
SCPS0950	SCPS: Backfill Shaft (100%)	8	23OCT13	31OCT13	0
SCPS0960	SCPS: Reinstatement Around PS Area	12	01NOV13	14NOV13	0
SCPS0970	SCPS: Demobilise Clear Area	6	15NOV13	21NOV13	0
SCPS0975	SCPS: Complete All Works at SCI PS (KD-11)	0		21NOV13	0
SCPS0980	SCPS: Landscaping & Planting Works	60	22NOV13*	20JAN14	0
SCPS0990	SCPS: Period of Establishment Works	360	21JAN14	15JAN15	0
SCPS1000	SCPS: End of Establishment Period	0		15JAN15	0

Start Date	31JUL09
Finish Date	15JAN15
Data Date	20JAN10
Run Date	01FEB10 10:42

© Primavera Systems, Inc.

Early Bar
Progress Bar
Critical Activity

WPU7 Sheet 1 of 1

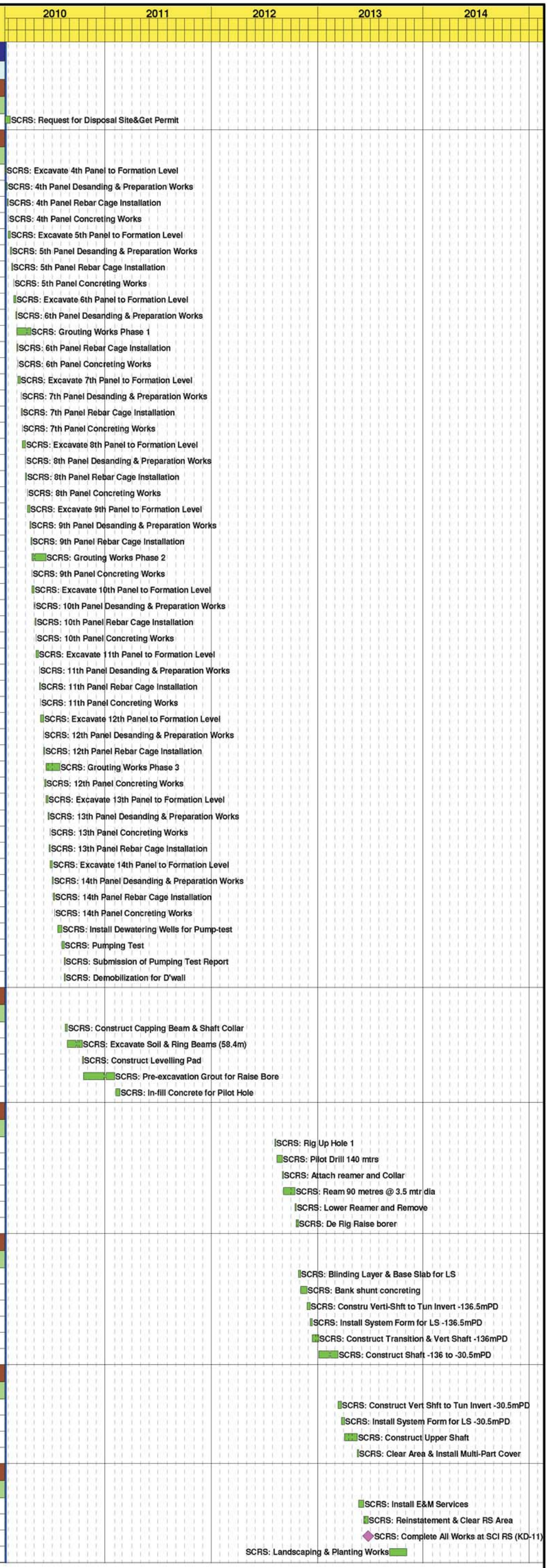
Habour Area Treatment Scheme Stage 2A
Contract No. DC/2007/23 - Construction of Sewage Conveyance from North Point to Stonecutters Island
Programme

Annex G8 Construction Programme for the Project

Gammon

Date	Revision	Checked	Approved

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	% Comp
HATS Stage 2A - Contract DC/2007/23					
Stonecutters Island STW Riser Shaft					
Marine Dumping Permit					
SCRS0370	SCRS: Request for Disposal Site&Get Permit	24	05JAN10A	06FEB10	33
Diaphragm Wall					
SCRS0287	SCRS: Excavate 4th Panel to Formation Level	7	09JAN10A	23JAN10	50
SCRS0289	SCRS: 4th Panel Desanding & Preparation Works	3	25JAN10	27JAN10	0
SCRS0291	SCRS: 4th Panel Rebar Cage Installation	2	28JAN10	29JAN10	0
SCRS0293	SCRS: 4th Panel Concreting Works	1	30JAN10	30JAN10	0
SCRS0295	SCRS: Excavate 5th Panel to Formation Level	7	01FEB10	08FEB10	0
SCRS0297	SCRS: 5th Panel Desanding & Preparation Works	3	09FEB10	11FEB10	0
SCRS0299	SCRS: 5th Panel Rebar Cage Installation	2	12FEB10	13FEB10	0
SCRS0301	SCRS: 5th Panel Concreting Works	1	18FEB10	18FEB10	0
SCRS0303	SCRS: Excavate 6th Panel to Formation Level	7	19FEB10	26FEB10	0
SCRS0305	SCRS: 6th Panel Desanding & Preparation Works	3	27FEB10	02MAR10	0
SCRS0306	SCRS: Grouting Works Phase 1	40	03MAR10	19APR10	0
SCRS0307	SCRS: 6th Panel Rebar Cage Installation	2	03MAR10	04MAR10	0
SCRS0309	SCRS: 6th Panel Concreting Works	1	05MAR10	05MAR10	0
SCRS0311	SCRS: Excavate 7th Panel to Formation Level	7	06MAR10	13MAR10	0
SCRS0313	SCRS: 7th Panel Desanding & Preparation Works	3	15MAR10	17MAR10	0
SCRS0315	SCRS: 7th Panel Rebar Cage Installation	2	18MAR10	19MAR10	0
SCRS0317	SCRS: 7th Panel Concreting Works	1	20MAR10	20MAR10	0
SCRS0319	SCRS: Excavate 8th Panel to Formation Level	7	22MAR10	29MAR10	0
SCRS0321	SCRS: 8th Panel Desanding & Preparation Works	3	30MAR10	01APR10	0
SCRS0323	SCRS: 8th Panel Rebar Cage Installation	2	02APR10	03APR10	0
SCRS0325	SCRS: 8th Panel Concreting Works	1	06APR10	06APR10	0
SCRS0327	SCRS: Excavate 9th Panel to Formation Level	7	07APR10	14APR10	0
SCRS0329	SCRS: 9th Panel Desanding & Preparation Works	3	15APR10	17APR10	0
SCRS0331	SCRS: 9th Panel Rebar Cage Installation	2	19APR10	20APR10	0
SCRS0332	SCRS: Grouting Works Phase 2	40	21APR10	07JUN10	0
SCRS0333	SCRS: 9th Panel Concreting Works	1	21APR10	21APR10	0
SCRS0335	SCRS: Excavate 10th Panel to Formation Level	7	22APR10	29APR10	0
SCRS0337	SCRS: 10th Panel Desanding & Preparation Works	3	30APR10	04MAY10	0
SCRS0339	SCRS: 10th Panel Rebar Cage Installation	2	05MAY10	06MAY10	0
SCRS0341	SCRS: 10th Panel Concreting Works	1	07MAY10	07MAY10	0
SCRS0343	SCRS: Excavate 11th Panel to Formation Level	7	08MAY10	15MAY10	0
SCRS0345	SCRS: 11th Panel Desanding & Preparation Works	3	17MAY10	19MAY10	0
SCRS0347	SCRS: 11th Panel Rebar Cage Installation	2	20MAY10	21MAY10	0
SCRS0349	SCRS: 11th Panel Concreting Works	1	22MAY10	22MAY10	0
SCRS0351	SCRS: Excavate 12th Panel to Formation Level	7	24MAY10	31MAY10	0
SCRS0353	SCRS: 12th Panel Desanding & Preparation Works	3	01JUN10	03JUN10	0
SCRS0355	SCRS: 12th Panel Rebar Cage Installation	2	04JUN10	05JUN10	0
SCRS0356	SCRS: Grouting Works Phase 3	40	08JUN10	26JUL10	0
SCRS0357	SCRS: 12th Panel Concreting Works	1	07JUN10	07JUN10	0
SCRS0359	SCRS: Excavate 13th Panel to Formation Level	7	08JUN10	15JUN10	0
SCRS0361	SCRS: 13th Panel Desanding & Preparation Works	3	17JUN10	19JUN10	0
SCRS0365	SCRS: 13th Panel Concreting Works	1	23JUN10	23JUN10	0
SCRS0366	SCRS: 13th Panel Rebar Cage Installation	2	21JUN10	22JUN10	0
SCRS0367	SCRS: Excavate 14th Panel to Formation Level	7	24JUN10	02JUL10	0
SCRS0369	SCRS: 14th Panel Desanding & Preparation Works	3	03JUL10	06JUL10	0
SCRS0371	SCRS: 14th Panel Rebar Cage Installation	2	07JUL10	08JUL10	0
SCRS0373	SCRS: 14th Panel Concreting Works	1	09JUL10	09JUL10	0
SCRS0380	SCRS: Install Dewatering Wells for Pump-test	12	20JUL10	02AUG10	0
SCRS0390	SCRS: Pumping Test	6	03AUG10	09AUG10	0
SCRS0392	SCRS: Submission of Pumping Test Report	6	10AUG10	16AUG10	0
SCRS0394	SCRS: Demobilization for D'wall	6	10AUG10	16AUG10	0
Shaft Excavation					
SCRS0400	SCRS: Construct Capping Beam & Shaft Collar	6	17AUG10	23AUG10	0
SCRS0410	SCRS: Excavate Soil & Ring Beams (58.4m)	42	24AUG10	13OCT10	0
SCRS0420	SCRS: Construct Levelling Pad	3	14OCT10	18OCT10	0
SCRS0430	SCRS: Pre-excavation Grout for Raise Bore	90	19OCT10	02FEB11	0
SCRS0440	SCRS: In-fill Concrete for Pilot Hole	12	07FEB11	19FEB11	0
Raised Boring					
SCRS0700	SCRS: Rig Up Hole 1	5	07AUG12	11AUG12	0
SCRS0710	SCRS: Pilot Drill 140 mtrs	16	13AUG12	30AUG12	0
SCRS0720	SCRS: Attach reamer and Collar	3	31AUG12	03SEP12	0
SCRS0730	SCRS: Ream 90 metres @ 3.5 mtr dia	35	04SEP12	16OCT12	0
SCRS0740	SCRS: Lower Reamer and Remove	3	17OCT12	19OCT12	0
SCRS0750	SCRS: De Rig Raise borer	5	20OCT12	26OCT12	0
Lower Shaft Construction					
SCRS0835	SCRS: Blinding Layer & Base Slab for LS	6	27OCT12	02NOV12	0
SCRS0840	SCRS: Bank shunt concreting	18	03NOV12	23NOV12	0
SCRS0875	SCRS: Constru Verti-Shft to Tun Invert -136.5mPD	9	24NOV12	04DEC12	0
SCRS0885	SCRS: Install System Form for LS -136.5mPD	9	05DEC12	14DEC12	0
SCRS0935	SCRS: Construct Transition & Vert Shaft -136mPD	15	15DEC12	03JAN13	0
SCRS0940	SCRS: Construct Shaft -136 to -30.5mPD	55	04JAN13	12MAR13	0
Upper Shaft Construction					
SCRS0975	SCRS: Construct Vert Shft to Tun Invert -30.5mPD	9	13MAR13	22MAR13	0
SCRS0995	SCRS: Install System Form for LS -30.5mPD	9	23MAR13	02APR13	0
SCRS1045	SCRS: Construct Upper Shaft	36	03APR13	16MAY13	0
SCRS1065	SCRS: Clear Area & Install Multi-Part Cover	3	17MAY13	20MAY13	0
Miscellaneous Works					
SCRS2010	SCRS: Install E&M Services	18	21MAY13	10JUN13	0
SCRS2020	SCRS: Reinstatement & Clear RS Area	12	11JUN13	25JUN13	0
SCRS2025	SCRS: Complete All Works at SCI RS (KD-11)	0		25JUN13	0
SCRS2030	SCRS: Landscaping & Planting Works	60	08SEP13*	06NOV13	0



Start Date	31JUL09
Finish Date	15JAN15
Data Date	20JAN10
Run Date	01FEB10 10:50

Early Bar
Progress Bar
Critical Activity

© Primavera Systems, Inc.

WPU7 Sheet 1 of 2

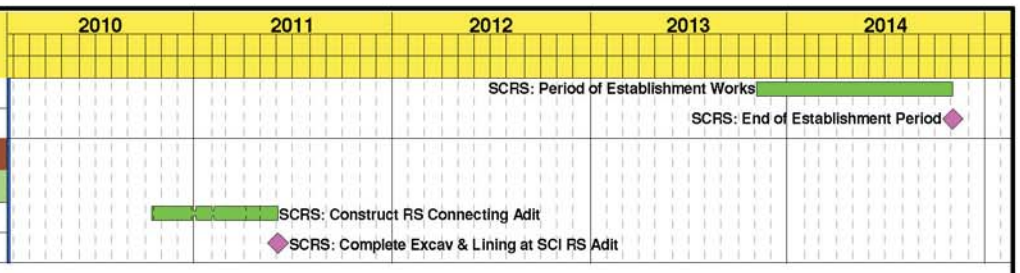
Habour Area Treatment Scheme Stage 2A
Contract No. DC/2007/23 - Construction of Sewage Conveyance from North Point to Stonecutters Island Programme

Annex G8 Construction Programme for the Project

Gammon

Date	Revision	Checked	Approved

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	% Comp
SCRS2060	SCRS: Period of Establishment Works	360	07NOV13	01NOV14	0
SCRS2070	SCRS: End of Establishment Period	0		01NOV14	0
Connecting Adit					
SCRS2040	SCRS: Construct RS Connecting Adit	192	14OCT10	03JUN11	0
SCRS2050	SCRS: Complete Excav & Lining at SCI RS Adit	0		03JUN11	0



Start Date	31JUL09
Finish Date	15JAN15
Data Date	20JAN10
Run Date	01FEB10 10:50

© Primavera Systems, Inc.

Early Bar
Progress Bar
Critical Activity

WPU7 Sheet 2 of 2

Habour Area Treatment Scheme Stage 2A
Contract No. DC/2007/23 - Construction of Sewage Conveyance from North Point to Stonecutters Island Programme

Annex G8 Construction Programme for the Project

Gammon

Date	Revision	Checked	Approved

Annex H

Calibration Reports for HVSs and Sound Level Meters for All Sites

TSP Monitoring Equipment

Monitoring Station ID	Location	Monitoring Equipment		Last Calibration Date	Next Calibration Date
24-hr and 1-hr TSP		**HVS**	**Calibrator**		
AM1	Chan's Creative School (formerly known as Madam Chan Wai Chow Memorial School)	GMW GS-2310 (S/N 1808)	CM-AIR-43 (S/N 0438320)	18 July 2013	18 September 2013
AM1	Chan's Creative School (formerly known as Madam Chan Wai Chow Memorial School)	GMW GS-2310 (S/N 1808)	CM-AIR-43 (S/N 0438320)	18 September 2013	18 November 2013
AM2	Rooftop of Hong Kong & Islands Regional Office, WSD	GMW GS-2310 (S/N 0145)	CM-AIR-43 (S/N 0438320)	18 July 2013	18 September 2013
AM2	Rooftop of Hong Kong & Islands Regional Office, WSD	GMW GS-2310 (S/N 0145)	CM-AIR-43 (S/N 0438320)	18 September 2013	18 November 2013
AM3	Rooftop of Wan Chai East PTW	GMW GS-2310 (S/N 0481)	CM-AIR-43 (S/N 0438320)	18 July 2013	18 September 2013
AM3	Rooftop of Wan Chai East PTW	GMW GS-2310 (S/N 0481)	CM-AIR-43 (S/N 0438320)	18 September 2013	18 November 2013
AM4_2	A location next to Sheung Wan Fire Station	GMW GS-2310 (S/N 9315)	CM-AIR-43 (S/N 0438320)	18 July 2013	18 September 2013
AM4_2	A location next to Sheung Wan Fire Station	GMW GS-2310 (S/N 9315)	CM-AIR-43 (S/N 0438320)	18 September 2013	18 November 2013
AM5	Western Wholesale Food Market	GMW GS-2310 (S/N 2146)	CM-AIR-43 (S/N 0438320)	9 August 2013	9 October 2013
AM6	Works Site Boundary	GMW GS-2310 (S/N 1254)	CM-AIR-43 (S/N 0438320)	18 July 2013	18 September 2013

Monitoring Station ID	Location	Monitoring Equipment		Last Calibration Date	Next Calibration Date
AM6	Works Site Boundary	GMW GS-2310 (S/N 1254)	CM-AIR-43 (S/N 0438320)	18 September 2013	18 November 2013

Monitoring Equipment

Monitoring Station ID	Monitoring Equipment	Model & Serial No.	Last Calibration Date	Next Calibration Date
NM1 – NM5 [(a)]	Calibrator	Rion NC-73 (S/N 10997142)	12 July 2013	12 July 2014
	Sound Level Meter	Rion NL–31 (S/N 00410224)	14 June 2013	14 June 2014

Remarks

Monitoring Station ID	Location
NM1	Rooftop of Chan's Creative School (formerly known as Madam Chan Wai Chow Memorial School)
NM2	Rooftop of Hyde Building
NM3	Rooftop of Goldfield Building
NM4	Rooftop of Block A, Kwan Yick Building Phase III
NM5	A Location near the FSD Diving Rescue and Diving Training Centre near the Site Boundary

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AM1
Calibrated by	:	K.T.Ho
Date	:	18/07/2013

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 1808

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2323
Service Date	:	26 Dec 2012
Slope (m)	:	2.09107
Intercept (b)	:	-0.02838
Correlation Coefficient(r)	:	0.99996

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1008
Ta(K)	:	301

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	11.0	3.292	1.588	63	62.5
2	13 holes	8.4	2.877	1.389	54	53.6
3	10 holes	6.0	2.431	1.176	45	44.7
4	7 holes	4.2	2.034	0.986	36	35.7
5	5 holes	2.5	1.569	0.764	25	24.8

Sampler Calibration Relationship

Slope(m):45.511 Intercept(b): -9.470 Correlation Coefficient(r): 0.9995

Checked by: Magnum Fan Date: 23/07/2013

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AM1
Calibrated by	:	K.T.Ho
Date	:	18/09/2013

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 1808

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2323
Service Date	:	26 Dec 2012
Slope (m)	:	2.09107
Intercept (b)	:	-0.02838
Correlation Coefficient(r)	:	0.99996

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1010
Ta(K)	:	303

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	11.2	3.314	1.598	63	62.4
2	13 holes	9.0	2.971	1.434	55	54.5
3	10 holes	6.5	2.525	1.221	45	44.6
4	7 holes	4.7	2.147	1.040	38	37.6
5	5 holes	2.7	1.627	0.792	25	24.8

Sampler Calibration Relationship

Slope(m): 45.943 Intercept(b): -11.158 Correlation Coefficient(r): 0.9991

Checked by: Magnum Fan Date: 22/09/2013

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AM2
Calibrated by	:	K.T.Ho
Date	:	18/07/2013

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 0145

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2323
Service Date	:	26 Dec 2012
Slope (m)	:	2.09107
Intercept (b)	:	-0.02838
Correlation Coefficient(r)	:	0.99996

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1008
Ta(K)	:	301

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	11.3	3.336	1.609	62	61.5
2	13 holes	9.0	2.978	1.438	54	53.6
3	10 holes	7.0	2.626	1.269	47	46.6
4	7 holes	4.4	2.082	1.009	36	35.7
5	5 holes	2.7	1.631	0.794	26	25.8

Sampler Calibration Relationship

Slope(m):43.357 Intercept(b): -8.345 Correlation Coefficient(r): 0.9998

Checked by: Magnum Fan Date: 23/07/2013

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AM2
Calibrated by	:	K.T.Ho
Date	:	18/09/2013

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 0145

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2323
Service Date	:	26 Dec 2012
Slope (m)	:	2.09107
Intercept (b)	:	-0.02838
Correlation Coefficient(r)	:	0.99996

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1010
Ta(K)	:	303

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	11.4	3.343	1.612	62	61.4
2	13 holes	9.0	2.971	1.434	55	54.5
3	10 holes	7.1	2.639	1.275	48	47.5
4	7 holes	4.5	2.101	1.018	38	37.6
5	5 holes	2.8	1.657	0.806	28	27.7

Sampler Calibration Relationship

Slope(m):41.489 Intercept(b): -5.251 Correlation Coefficient(r): 0.9995

Checked by: Magnum Fan Date: 22/09/2013

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AM3
Calibrated by	:	K.T.Ho
Date	:	18/07/2013

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 0481

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2323
Service Date	:	26 Dec 2012
Slope (m)	:	2.09107
Intercept (b)	:	-0.02838
Correlation Coefficient(r)	:	0.99996

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1008
Ta(K)	:	301

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	11.5	3.366	1.623	63	62.5
2	13 holes	8.5	2.894	1.397	54	53.6
3	10 holes	6.7	2.569	1.242	46	45.7
4	7 holes	4.5	2.106	1.020	36	35.7
5	5 holes	2.6	1.600	0.779	25	24.8

Sampler Calibration Relationship

Slope(m):45.124 Intercept(b): -10.245 Correlation Coefficient(r): 0.9995

Checked by: Magnum Fan Date: 23/07/2013

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AM3
Calibrated by	:	K.T.Ho
Date	:	18/09/2013

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 0481

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2323
Service Date	:	26 Dec 2012
Slope (m)	:	2.09107
Intercept (b)	:	-0.02838
Correlation Coefficient(r)	:	0.99996

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1010
Ta(K)	:	303

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	11.4	3.343	1.612	62	61.4
2	13 holes	9.0	2.971	1.434	55	54.5
3	10 holes	7.1	2.639	1.275	48	47.5
4	7 holes	4.5	2.101	1.018	38	37.6
5	5 holes	2.8	1.657	0.806	28	27.7

Sampler Calibration Relationship

Slope(m):49.416 Intercept(b): -12.549 Correlation Coefficient(r): 0.9992

Checked by: Magnum Fan Date: 22/09/2013

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AM4_2
Calibrated by	:	K.T.Ho
Date	:	18/07/2013

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 9315

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2323
Service Date	:	26 Dec 2012
Slope (m)	:	2.09107
Intercept (b)	:	-0.02838
Correlation Coefficient(r)	:	0.99996

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1008
Ta(K)	:	301

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	10.2	3.170	1.530	62	61.5
2	13 holes	8.2	2.842	1.373	56	55.6
3	10 holes	6.5	2.531	1.224	50	49.6
4	7 holes	4.2	2.034	0.986	42	41.7
5	5 holes	2.5	1.569	0.764	33	32.8

Sampler Calibration Relationship

Slope(m):37.226 Intercept(b): 4.487 Correlation Coefficient(r): 0.9996

Checked by: Magnum Fan Date: 23/07/2013

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AM4_2
Calibrated by	:	K.T.Ho
Date	:	18/09/2013

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 9315

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2323
Service Date	:	26 Dec 2012
Slope (m)	:	2.09107
Intercept (b)	:	-0.02838
Correlation Coefficient(r)	:	0.99996

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1010
Ta(K)	:	303

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	10.2	3.163	1.526	62	61.4
2	13 holes	8.1	2.818	1.361	55	54.5
3	10 holes	6.2	2.466	1.193	47	46.5
4	7 holes	4.2	2.029	0.984	38	37.6
5	5 holes	2.4	1.534	0.747	26	25.7

Sampler Calibration Relationship

Slope(m):45.635 Intercept(b): -7.885 Correlation Coefficient(r): 0.9995

Checked by: Magnum Fan Date: 22/09/2013

High-Volume TSP Sampler
5-Point Calibration Record

Location	**:**	**Sai Ying Pun**
Calibrated by	**:**	**K.T.Ho**
Date	**:**	**09/08/2013**

Sampler

Model	**:**	**TE-5170**
Serial Number	**:**	**S/N 2146**

Calibration Orfice and Standard Calibration Relationship

Serial Number	**:**	**2323**
Service Date	**:**	**26 Dec 2012**
Slope (m)	**:**	**2.09107**
Intercept (b)	**:**	**-0.02838**
Correlation Coefficient(r)	**:**	**0.99996**

Standard Condition

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

Calibration Condition

Pa (hpa)	**:**	**1009**
Ta(K)	**:**	**304**

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	10.9	3.262	1.574	61	60.3
2	13 holes	9.5	3.046	1.470	56	55.3
3	10 holes	7.7	2.742	1.325	50	49.4
4	7 holes	4.9	2.187	1.060	40	39.5
5	5 holes	3.0	1.711	0.832	30	29.6

Sampler Calibration Relationship

Slope(m):40.546 Intercept(b): -3.928 Correlation Coefficient(r): 0.9994

Checked by: Magnum Fan Date: 11/08/2013

High-Volume TSP Sampler
5-Point Calibration Record9

Location	:	AM6
Calibrated by	:	P.F.Yeung
Date	:	18/07/2013

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 1254

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2323
Service Date	:	26 Dec 2012
Slope (m)	:	2.09107
Intercept (b)	:	-0.02838
Correlation Coefficient(r)	:	0.99996

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1008
Ta(K)	:	301

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	10.2	3.170	1.530	63	62.5
2	13 holes	8.2	2.842	1.373	56	55.6
3	10 holes	6.3	2.4913	1.205	50	49.6
4	7 holes	4.2	2.034	0.986	42	41.7
5	5 holes	2.5	1.569	0.764	33	32.8

Sampler Calibration Relationship

Slope(m):38.270 Intercept(b): 3.602 Correlation Coefficient(r): 0.9994

Checked by: Magnum Fan Date: 23/07/2013

High-Volume TSP Sampler
5-Point Calibration Record9

Location	:	AM6
Calibrated by	:	P.F.Yeung
Date	:	18/09/2013

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 1254

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2323
Service Date	:	26 Dec 2012
Slope (m)	:	2.09107
Intercept (b)	:	-0.02838
Correlation Coefficient(r)	:	0.99996

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1010
Ta(K)	:	303

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	10.2	3.163	1.526	55	54.5
2	13 holes	8.4	2.870	1.386	50	49.5
3	10 holes	6.7	2.563	1.239	45	44.6
4	7 holes	4.5	2.101	1.018	38	37.6
5	5 holes	2.8	1.657	0.806	30	29.7

Sampler Calibration Relationship

Slope(m):33.960 Intercept(b): 2.589 Correlation Coefficient(r): 0.9996

Checked by: Magnum Fan Date: 22/09/2013

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

AIR POLLUTION MONITORING EQUIPMENT

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Dec 26, 2012 Rootsmeter S/N 0438320 Ta (K) - 295
Operator Tisch Orifice I.D. - 2323 Pa (mm) - 753.11

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	1.4440	3.2	2.00
2	NA	NA	1.00	1.0240	6.4	4.00
3	NA	NA	1.00	0.9120	8.0	5.00
4	NA	NA	1.00	0.8720	8.8	5.50
5	NA	NA	1.00	0.7200	12.8	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)
0.9967	0.6902	1.4149
0.9925	0.9693	2.0010
0.9903	1.0858	2.2372
0.9893	1.1345	2.3464
0.9840	1.3666	2.8299

Qstd slope (m) = 2.09107
intercept (b) = -0.02838
coefficient (r) = 0.99996

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

Va	(x axis) Qa	(y axis)
0.9957	0.6896	0.8851
0.9915	0.9683	1.2517
0.9893	1.0847	1.3995
0.9883	1.1334	1.4678
0.9830	1.3652	1.7702

Qa slope (m) = 1.30939
intercept (b) = -0.01775
coefficient (r) = 0.99996

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. : C133573
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC13-1422)

Description / 儀器名稱	:	Sound Level Meter
Manufacturer / 製造商	:	Rion
Model No. / 型號	:	NL-31
Serial No. / 編號	:	00410224
Supplied By / 委託者	:	Envirotech Services Co. Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road, Hong Kong

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C
Relative Humidity / 相對濕度 : (55 ± 20)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 14 June 2013

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

Tested By 測試 : K C Lee

Certified By 核證 : K K Wong

Date of Issue 簽發日期 : 17 June 2013

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Certificate of Calibration
校正證書

Certificate No. : C133573
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.

2. Self-calibration was performed before the test.

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

4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C130019
CL281	Multifunction Acoustic Calibrator	DC110233

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 120	L_A	A	Fast	94.00	1	93.6	± 1.1

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 120	L_A	A	Fast	94.00	1	93.6 (Ref.)
				104.00		103.6
				114.00		113.6

IEC 61672 Class 1 Spec. : ± 0.6 dB per 10 dB step and ± 1.1 dB for overall different.

6.2 Time Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 120	L_A	A	Fast	94.00	1	93.6	Ref.
			Slow			93.5	± 0.3

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里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. : C133573
證書編號

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 120	L_A	A	Fast	94.00	63 Hz	67.3	-26.2 ± 1.5
					125 Hz	77.3	-16.1 ± 1.5
					250 Hz	84.9	-8.6 ± 1.4
					500 Hz	90.3	-3.2 ± 1.4
					1 kHz	93.6	Ref.
					2 kHz	94.9	+1.2 ± 1.6
					4 kHz	94.8	+1.0 ± 1.6
					8 kHz	92.6	-1.1 (+2.1 ; -3.1)
					12.5 kHz	89.7	-4.3 (+3.0 ; -6.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 120	L_C	C	Fast	94.00	63 Hz	92.7	-0.8 ± 1.5
					125 Hz	93.4	-0.2 ± 1.5
					250 Hz	93.6	0.0 ± 1.4
					500 Hz	93.7	0.0 ± 1.4
					1 kHz	93.7	Ref.
					2 kHz	93.5	-0.2 ± 1.6
					4 kHz	93.0	-0.8 ± 1.6
					8 kHz	90.7	-3.0 (+2.1 ; -3.1)
					12.5 kHz	87.9	-6.2 (+3.0 ; -6.0)

Remarks : - UUT Microphone Model No. : UC-53A & S/N : 307154

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value : 94 dB : 63 Hz - 125 Hz : ± 0.35 dB
250 Hz - 500 Hz : ± 0.30 dB
1 kHz : ± 0.20 dB
2 kHz - 4 kHz : ± 0.35 dB
8 kHz : ± 0.45 dB
12.5 kHz : ± 0.70 dB
104 dB : 1 kHz : ± 0.10 dB (Ref. 94 dB)
114 dB : 1 kHz : ± 0.10 dB (Ref. 94 dB)

- The uncertainties are for a confidence probability of not less than 95 %.

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

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel 電話: 2927 2606 Fax 傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website 網址: www.suncreation.com

輝創工程有限公司
Sun Creation Engineering Limited
Calibration and Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C134307
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC13-1709)

Description / 儀器名稱 : Sound Level Calibrator
Manufacturer / 製造商 : Rion
Model No. / 型號 : NC-73
Serial No. / 編號 : 10997142
Supplied By / 委託者 : Envirotech Services Co.
Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road,
Hong Kong

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C
Relative Humidity / 相對濕度 : (55 ± 20)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 12 July 2013

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

Tested By 測試 : K C Lee

Certified By 核證 : K M Wu

Date of Issue 簽發日期 : 15 July 2013

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c o 4 F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c o 香港新界屯門興安里一號青山灣機樓四樓
Tel 電話: 2927 2606 Fax 傳真: 2744 8986 E-mail 電郵: callab@suncreation.com Website 網址: www.suncreation.com

Certificate of Calibration
校正證書

Certificate No. : C134307
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	C133632
CL281	Multifunction Acoustic Calibrator	DC130171
TST150A	Measuring Amplifier	C120886

4. Test procedure : MA100N.

5. Results :

5.1 Sound Level Accuracy

UUT Nominal Value	Measured Value (dB)	Mfr's Spec. (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	93.7	± 0.5	± 0.2

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	0.988	1 kHz ± 2 %	± 1

Remark : The uncertainties are for a confidence probability of not less than 95 %.

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

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel 電話: 2927 2606 Fax 傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Annex I

Event /Action Plans for Air Quality, Noise and Landscape and Visual Monitoring for All Sites

Table I1 Event Action Plan for Air Quality Monitoring

Action Level/Limit Level	Environmental Team Leader (ETL)	Independent Environmental Checker (IEC)	Engineer's Representative (ER)	Contractor
Action Level				
Exceedance for one sample	• Identify source, investigate the causes of exceedance and propose remedial measures; • Inform IEC and ER; • Repeat measurement to confirm finding; and, • Increase monitoring frequency to daily.	• Check monitoring data submitted by ET; and, • Check Contractor's working method.	• Notify Contractor	• Rectify any unacceptable practice; and, • Amend working methods if appropriate.
Exceedance for two or more consecutive samples	• Identify source; • Inform IEC and ER; • Advise the ER on the effectiveness of the proposed remedial measures; • Repeat measurements to confirm findings; • Increase monitoring frequency to daily; and, • Discuss with IEC and Contractor on remedial actions required;	• Check monitoring data submitted by ET; • Check Contractor's working method; • Discuss with ET and Contractor on possible remedial measures; • Advise the ET on the effectiveness of the proposed remedial measures; and, • Supervise Implementation of remedial measures.	• Confirm receipt of notification of failure in writing; • Notify Contractor, and, • Ensure remedial measures properly implemented.	• Submit proposals for remedial to ER within 3 working days of notification; • Implement the agreed proposals; • Amend proposal if appropriate.

Action Level/Limit Level	Environmental Team Leader (ETL)	Independent Environmental Checker (IEC)	Engineer's Representative (ER)	Contractor
Limit Level				
Exceedance for one sample	• Identify source, investigate the causes of exceedance and propose remedial measures; • Inform ER, Contractor and EPD; • Repeat measurement to confirm finding; • Increase monitoring frequency to daily; and, • Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	• Check monitoring data submitted by ET; • Check Contractor's working method; • Discuss with ET and Contractor on possible remedial measures; • Advise the ER on the effectiveness of the proposed remedial measures; and, • Supervise implementation of remedial measures.	• Confirm receipt of notification of failure in writing; • Notify Contractor; and, • Ensure remedial measures properly implemented.	• Take immediate action to avoid further exceedance; • Submit proposals for remedial actions to IEC within 3 working days of notification; • Implement the agreed proposals; and, • Amend proposal if appropriate.
Exceedance for two or more consecutive samples	• Notify IEC, ER, Contractor and EPD; • Identify source; • Repeat measurement to confirm findings; • Increase monitoring frequency to daily; • Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; • Arrange meeting with IEC and ER to discuss the remedial actions to be taken; • Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; and, • If exceedance stops, cease additional monitoring.	• Check monitoring data submitted by ET; • Check Contractor's working method; • Discuss amongst ER, ET, and Contractor on the potential remedial actions; • Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; and, • Supervise the implementation of remedial measures.	• Confirm receipt of notification of failure in writing; • Notify Contractor; • In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; • Ensure remedial measures properly implemented; and, • If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	• Take immediate action to avoid further exceedance; • Submit proposals for remedial actions to IEC within 3 working days of notification; • Implement the agreed proposals; • Resubmit proposals if problem still not under control; and, • Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Table I2 Event Action Plan for Noise Monitoring

Action Level/Limit Level	Environmental Team Leader (ETL)	Independent Environmental Checker (IEC)	Engineer's Representative (ER)	Contractor
Action Level being exceeded	• Notify ER, IEC and Contractor; • Carry out investigation; • Report the results of investigation to the IEC, ER and Contractor; • Discuss with the IEC and Contractor on remedial measures required; and, • Increase monitoring frequency to check mitigation effectiveness.	• Review the investigation results submitted by the ET; • Review the proposed remedial measures by the Contractor and advise the ER accordingly; and, • Advise the ER on the effectiveness of the proposed remedial measures.	• Confirm receipt of notification of failure in writing; • Notify Contractor; • In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; and, • Supervise the implementation of remedial measures.	• Submit noise mitigation proposals to IEC and ER; and, • Implement noise mitigation proposals.

Action Level/Limit Level	Environmental Team Leader (ETL)	Independent Environmental Checker (IEC)	Engineer's Representative (ER)	Contractor
Limit Level being exceeded	• Inform IEC, ER, Contractor and EPD; • Repeat measurements to confirm findings; • Increase monitoring frequency; • Identify source and investigate the cause of exceedance; • Carry out analysis of Contractor's working procedures; • Discuss with the IEC, Contractor and ER on remedial measures required; • Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; and, • If exceedance stops, cease additional monitoring.	• Discuss amongst ER, ET, and Contractor on the potential remedial actions; and, • Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly.	• Confirm receipt of notification of failure in writing; • Notify Contractor; • In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; • Supervise the implementation of remedial measures; and, • If exceedance continues, consider stopping the Contractor to continue working on that portion of work which causes the exceedance until the exceedance is abated.	• Take immediate action to avoid further exceedance; • Submit proposals for remedial actions to IEC and ER within 3 working days of notification; • Implement the agreed proposals; • Submit further proposal if problem still not under control; and, • Stop the relevant portion of works as instructed by the ER until the exceedance is abated.

Table I3 Event and Action Plan for Landscape and Visual Impact - Construction Phase

Action Level	Environmental Team Leader (ETL)	Independent Environmental Checker (IEC)	Engineer's Representative (ER)	Contractor
Non-conformity on one occasion	Identify source Inform the IEC and the ER Discuss remedial actions with the IEC, the ER and the Contractor Monitor remedial action until rectification has been completed	Check report Check the Contractor's working method Discuss with the ER and the Contractor on possible remedial measures Advise the ER on effectiveness of proposed remedial measures	Notify the Contractor Ensure remedial measures are properly implemented	Amend working methods Rectify damage and undertake remedial measures or any necessary replacement
Repeated Non-conformity	Identify source Inform the IEC and the ER Increase monitoring (site audit) frequency Discuss remedial actions with the IEC, the ER and the Contractor Monitor remedial actions until rectification has been completed If exceedance stops, cease additional monitoring (site audit)	Check report Check the Contractor's working method Discuss with the ER and the Contractor on possible remedial measures Advise the ER on effectiveness of proposed remedial measures Supervise implementation of remedial measures	Notify the Contractor Ensure remedial measures are properly implemented	Amend working methods Rectify damage and undertake remedial measures or any necessary replacement

Annex J

Waste Flow Table

Harbour Area Treatment Scheme Stage 2A – Construction of Sewage Conveyance System from North Point to Stonecutters Island

Contract No. : DC/2007/23

Monthly Summary Waste Flow Table for 2009 (year)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete (see Note 4)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill		Metals (see Note 2)	Paper/ cardboard packaging (see Note 2)	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)		(in '000kg)	(in '000kg)	(in '000kg)	(in'000kg / '000L)	(in '000m³)
Jan											
Feb											
Mar											
Apr											
May											
June											
Sub-total											
July	0	0	0	0	0		0	0	0	0	0
Aug	0	0	0	0	0		0	0	0	0	0
Sept	0.016	0	0	0	Dry	Wet	0	0	0	0	0.068
					0.016	0					
Oct	0.523	0	0	0	0.523	0	0	0	0	0	0.086
Nov	2.331	0	0	0	2.275	0.056	99.2	0.036	0	0	0.129
Dec	3.803	0	0	0	3.004	0.799	1	0	0	0	0.120
Total	6.673	0	0	0	5.818	0.855	100.2	0.036	0	0	0.403

Notes:
(1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
(2) Metal and paper/cardboard packaging will be collected by recycler for recycling.
(3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material and the wastes are collected by recycler for recycling.
(4) Broken concrete for recycling into aggregates
(5) If necessary, use the conversion factor: 1 full load of dumping truck being equivalent to 6.5 m^3 by volume.
(6) For chemical waste, the actual quantities of empty paint cans will be in kilogram (kg) and spent lubrication oil will be in litre (L).

Harbour Area Treatment Scheme Stage 2A – Construction of Sewage Conveyance System from North Point to Stonecutters Island

Contract No. : DC/2007/23

Monthly Summary Waste Flow Table for 2010 (year)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete (see Note 4)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill		Metals (see Note 2)	Paper/ cardboard packaging (see Note 2)	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)		(in '000kg)	(in '000kg)	(in '000kg)	(in'000kg / '000L)	(in '000m³)
Jan	5.341	0	0	0	Dry	Wet	0	0.144	0	0.8	0.178
					3.066	2.275					
Feb	3.328	0	0	0	1.541	1.787	0	0	0	0	0.167
Mar	4.486	0	0	0	2.019	2.467	0	0.09	0	0	0.148
Apr	4.864	0	0	0	1.756	3.108	0	0.054	0	0	0.160
May	7.092	0	0	0	3.383	3.709	0	0.144	0	0.3	0.157
June	6.190	0	0	0	1.083	5.107	0	0.09	0	0.4	0.455
Sub-total	31.301	0	0	0	12.848	18.453	0	0.522	0	1.5	1.265
July	5.031	0	0	0	1.006	4.025	0	0.162	0	0	0.212
Aug	5.140	0	0	0.23	1.970	2.940	0	0.09	0	0.4	0.312
Sept	3.593	0.15	0	0.35	1.771	1.322	0	0.09	0	1	0.146
Oct	2.324	0	0	0	1.429	0.895	0	0.144	0	0	0.078
Nov	5.927	0	0	0	4.383	1.544	0	0	0	0.8	0.078
Dec	4.963	0	0	0	4.840	0.123	0	0.072	0	0	0.078
Total	58.279	0.15	0	0.58	28.247	29.302	0	1.080	0	3.7	2.169

Notes:
(1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
(2) Metal and paper/cardboard packaging will be collected by recycler for recycling.
(3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material and the wastes are collected by recycler for recycling.
(4) Broken concrete for recycling into aggregates
(5) If necessary, use the conversion factor: 1 full load of dumping truck being equivalent to 6.5 m^3 by volume.
(6) For chemical waste, the actual quantities of empty paint cans will be in kilogram (kg) and spent lubrication oil will be in litre (L).

Harbour Area Treatment Scheme Stage 2A – Construction of Sewage Conveyance System from North Point to Stonecutters Island

Contract No. : DC/2007/23

Monthly Summary Waste Flow Table for 2011 (year)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete (see Note 4)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill		Metals (see Note 2)	Paper/ cardboard packaging (see Note 2)	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)		(in '000kg)	(in '000kg)	(in '000kg)	(in'000kg / '000L)	(in '000m³)
Jan	8.423	0	0	0	Dry	Wet	0	0.09	0	1.2	0.124
					8.236	0.187					
Feb	7.794	0	0	0.799	6.814	0.181	0	0.09	0	0	0.138
Mar	9.641	0	0	0.576	9.007	0.058	0	0.19	0	0	0.059
Apr	8.841	0	0	2.014	6.730	0.097	0	0.09	0	0.2	0.069
May	5.416	0	0	0.887	4.280	0.249	0	0.09	0	0	0.077
June	7.507	0	0	0.665	6.245	0.597	0	0.337	0.028	1.0	0.072
Sub-total	47.622	0	0	4.941	41.312	1.369	0	0.887	0.028	2.4	0.539
July	5.31	0	0	2.372	2.795	0.143	0	0.162	0	0	0.109
Aug	5.381	0	0	2.553	2.530	0.298	0	0.248	0.035	0.4	0.097
Sept	6.963	0	0	2.814	3.974	0.175	0	0.289	0.032	0	0.155
Oct	5.330	0	0	0.794	4.385	0.151	0	0.254	0.015	0	0.128
Nov	5.009	0	0	0.995	3.760	0.254	0	0.270	0	0.6	0.116
Dec	5.429	0	0.159	1.430	3.522	0.318	0	0.216	0	0	0.117
Total	81.044	0	0.159	15.899	62.278	2.708	0	2.326	0.11	3.4	1.261

Notes:
(1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
(2) Metal and paper/cardboard packaging will be collected by recycler for recycling.
(3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material and the wastes are collected by recycler for recycling.
(4) Broken concrete for recycling into aggregates
(5) If necessary, use the conversion factor: 1 full load of dumping truck being equivalent to 6.5 m^3 by volume.
(6) For chemical waste, the actual quantities of empty paint cans will be in kilogram (kg) and spent lubrication oil will be in litre (L).

Harbour Area Treatment Scheme Stage 2A – Construction of Sewage Conveyance System from North Point to Stonecutters Island

Contract No. : DC/2007/23

Monthly Summary Waste Flow Table for 2012 (year)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete (see Note 4)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill		Metals (see Note 2)	Paper/ cardboard packaging (see Note 2)	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)		(in '000kg)	(in '000kg)	(in '000kg)	(in'000kg / "000L)	(in '000m³)
Jan	6.208	0	0	1.615	Dry	Wet	0	0.108	0	0.4	0.117
					4.277	0.316					
Feb	6.006	0	0	0.443	5.148	0.415	0	0.108	0	0	0.063
Mar	8.370	0	0	1.226	6.871	0.273	0	0.108	0	0	0.181
Apr	8.899	0	0	1.101	7.581	0.217	0	0.036	0	0	0.685
May	6.789	0	0	0.716	5.931	0.142	0	0.108	0	0.4	0.103
June	7.585	0	0.021	5.565	1.786	0.213	0.014	0.256	0	0.0	0.197
Sub-total	43.857	0	0.021	10.666	31.594	1.576	0.014	0.724	0	0.8	1.346
July	9.128	0	0	5.240	3.730	0.158	8.356	0.055	0	0.8	0.171
Aug	5.756	0	0	3.836	1.640	0.280	0.008	0.062	0	0.2	0.126
Sept	7.809	0	0.172	2.103	5.062	0.472	0.007	0.172	0	0.4	0.105
Oct	12.073	0	0	7.279	4.427	0.367	0.007	0.028	0	0	0.123
Nov	16.713	0	0	15.626	0.853	0.234	0.005	0.303	0	1.6	0.088
Dec	16.760	0	0	16.362	0.192	0.206	0.005	0.102	0	0.8	0.111
Total	112.096	0	0.193	61.112	47.498	3.293	8.402	1.446	0	4.6	2.070

Notes:
(1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
(2) Metal and paper/cardboard packaging will be collected by recycler for recycling.
(3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material and the wastes are collected by recycler for recycling.
(4) Broken concrete for recycling into aggregates
(5) If necessary, use the conversion factor: 1 full load of dumping truck being equivalent to 6.5 m^3 by volume.
(6) For chemical waste, the actual quantities of empty paint cans will be in kilogram (kg) and spent lubrication oil will be in litre (L) and will be collected by licensed collector.
(7) Inert C&D Materials shall be dumped at Chai Wan Barging Point, TKO Area 137 and Tuen Mun Area 38 and General refuses shall be dumped at SENT.

Harbour Area Treatment Scheme Stage 2A – Construction of Sewage Conveyance System from North Point to Stonecutters Island

Contract No. : DC/2007/23

Monthly Summary Waste Flow Table for 2013 (year)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete (see Note 4)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill		Metals (see Note 2)	Paper/ cardboard packaging (see Note 2)	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)		(in '000kg)	(in '000kg)	(in '000kg)	(in'000kg / "000L)	(in '000m³)
Jan	13.689	0	0	12.331	Dry	Wet	0.005	0.030	0	0.4	0.129
					1.141	0.217					
Feb	15.098	0	0	5.320	9.521	0.257	0.005	0.181	0	0.4	0.078
Mar	17.449	0	0	9.229	8.005	0.215	0	0.111	0	0	0.110
Apr	17.440	0	0	9.884	7.097	0.459	0.003	0.155	0	0	0.142
May	15.293	0	0	7.911	7.006	0.376	0.001	0.101	0	1.8	0.120
June	19.809	0	0	9.620	9.872	0.317	0.001	0.100	0	0.4	0.198
Sub-total	98.778	0	0	54.295	42.642	1.841	0.015	0.678	0	3	0.777
July	19.977	0	0	14.009	5.613	0.355	0.004	0.145	0	0.4	0.178
Aug	18.468	0	0	12.644	5.365	0.459	0.002	0.074	0	0	0.206
Sept	21.668	0	0	14.693	6.690	0.285	0.005	0.155	0	0.2	0.224
Oct											
Nov											
Dec											
Total	158.891	0	0	95.641	60.310	2.94	0.026	1.052	0	3.6	1.385

Notes:
(1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
(2) Metal and paper/cardboard packaging will be collected by recycler for recycling.
(3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material and the wastes are collected by recycler for recycling.
(4) Broken concrete for recycling into aggregates
(5) If necessary, use the conversion factor: 1 full load of dumping truck being equivalent to 6.5 m^3 by volume.
(6) For chemical waste, the actual quantities of empty paint cans will be in kilogram (kg) and spent lubrication oil will be in litre (L) and will be collected by licensed collector.
(7) Inert C&D Materials shall be dumped at Chai Wan Barging Point, TKO Area 137 and Tuen Mun Area 38 and General refuses shall be dumped at SENT.

Annex K

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

Annex K Summary of Site Inspections Observations and Follow-ups

Inspection date: 5 September 2013

Follow-up Actions Taken after Previous Site Audit

North Point Production Shaft

- Clarifloc was not observed during the site inspection.

Wan Chai East Production Shaft

- Water and chemical mixture observed accumulating within the chemical storage area has been removed.

Sai Ying Pun Production Shaft

- Cardboards and newspaper were not observed inside the waste skip.

Stonecutters Island Production Shaft

- Label was still observed missing for the chemical waste storage area. The Contractor was reminded to provide a proper label for the chemical waste storage.

Observations and Recommendations

Wan Chai East Production Shaft

- Construction materials were observed being stored in front of the chemical waste store. The Contractor was reminded to remove the materials and to keep the access to the chemical waste store clear at all times.

K1

- Oil spills were observed under the concrete mixer. The Contractor was reminded to clean up the oil spills to avoid it causing contamination to the nearby soil.

Stonecutters Island Production Shaft

- Chemical drums without drip trays were observed at the chemical waste storage area. The Contractor was reminded to provide drip trays for the chemical drums.

Inspection date: 12 September 2013

Follow-up Actions Taken after Previous Site Audit

Wan Chai East Production Shaft

- Construction materials blocking the access to the chemical waste store have been removed.

K1

- Oil spills under the concrete mixer had been removed.

Stonecutters Island Production Shaft

- Label was still observed missing for the chemical waste storage area. The Contractor was further reminded to provide a proper label for the chemical waste storage.
- Chemical drums at the chemical waste storage area had been provided with drip trays.

Observations and Recommendations

Wan Chai East Production Shaft

- Oil stains were observed in the stormwater drainage channel along the site entrance. The Contractor was reminded to remove the oil stains and dispose of as chemical waste.

Inspection date: 19 September 2013

Follow-up Actions Taken after Previous Site Audit

Wan Chai East Production Shaft

- Oil stains observed in the storm water drainage channel along the site entrance have been removed.

Observations and Recommendations

- Nil

Inspection date: 26 September 2013

Follow-up Actions Taken after Previous Site Audit

- Nil

Observations and Recommendations

North Point Production Shaft

- Chemical drums at the opposite of wastewater treatment facility were observed without drip tray. The Contractor was reminded to provide drip trays for the chemical drums to prevent leakage.
- Oil stain was observed at the opposite of the chemical storage. The Contractor was reminded to remove the oil stain.

Sai Ying Pun Production Shaft

- Paper was observed stored inside the waste skip. The Contractor was reminded to sort the waste on-site in order to enhance reuse or recycling of these materials.

Stonecutters Island Production Shaft

- Stagnant water was observed in the drip tray at the back of the noise enclosure. The Contractor was reminded to remove the stagnant water to maintain the drip tray with sufficient capacity.