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: *Second Monthly EM&A Report*

February 2010

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Reference 0104887

For and on behalf of
ERM-Hong Kong, Limited

Approved by: Dr Robin Kennish

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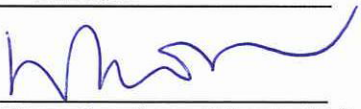
Position: Director

Certified by: 
(Environmental Team Leader - Winnie Ko)

Date: 10 February 2010

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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 second monthly Environmental Monitoring and Audit (EM&A) report presenting the EM&A works carried out during the period from 1 to 31 January 2010 in accordance with the EM&A Manual.

North Point Production and Drop Shaft

Summary of Construction Works undertaken during the reporting Month

The major construction works undertaken during the reporting month include:

- Construction of diaphragm wall at North Point Production Shaft
- Erection of site offices at North Point Production Shaft
- Construction of pipe pile wall at North Point PTW Drop Shaft
- Site mobilization at North Point Production Shaft and North Point PTW Drop Shaft
- Installation of Monitoring Instrumentation

Environmental Monitoring and Audit Progress

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

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

Air Quality

Five sets of 24-hour TSP and fifteen sets of 1-hr TSP measurements were carried out at each of the designated monitoring stations during the reporting period. No exceedance was recorded during the reporting period.

Noise

Four sets of 30-minute construction noise measurements were carried out at the monitoring station NM1 during normal weekdays of the reporting period. No exceedance was recorded during the reporting period.

Landscape & Visual

Landscape and visual monitoring has commenced since December 2009 on a monthly basis. Details of the audit findings and implementation status are presented in *Section 3.5.3*.

Cultural Heritage

No vibration monitoring was required to be conducted for this reporting month as the blasting of tunnel / shaft works has not started.

Waste Management

Wastes generated from this Project include inert construction and demolition (C&D) materials and non-inert C&D materials. A total of 7,986.1 tonnes of inert C&D materials and 44.644 tonnes of non-inert C&D materials were generated during the reporting period. Non-inert C&D materials are made up of general refuse, steel materials and paper/cardboard packaging materials. The inert C&D materials and general refuse generated from the Project were disposed of at Tuen Mun Area 38/Tseung Kwan O Area 137 Fill Bank/Chai Wan Barging Point and SENT Landfill respectively.
Paper/cardboard packaging generated was sent to recyclers for recycling.

Environmental Site Inspection

Four weekly joint environmental site inspections were carried out by the representatives of the Contractor, the Engineer and the Environmental Team (ET). Details of the audit findings and implementation status are presented in *Section 3.6*.

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

No exceedance was recorded during the reporting period.

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

No environmental complaint and summons/prosecutions was received in this reporting period.

Future Key Issues

Works to be undertaken in the next month include:

- Erection of site offices
- Construction of pipe piles wall
- Construction of diaphragm wall
- Installation of Monitoring Instrumentation
- Marine Dumping of excavated marine sediment
- Construction of underground drainage system

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

Wan Chai East Production and Drop Shaft

Summary of Construction Works undertaken during Reporting Month

The major construction works undertaken during the reporting month include:

- Construction of diaphragm wall at Wan Chai East Production Shaft
- 2400mm Sewer Drainage diversion at Wan Chai East PTW Drop Shaft
- Tree transplanting at WCE Drop shaft
- Installation of Monitoring Instrumentation

Environmental Monitoring and Audit Progress

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

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

Air Quality

Five sets of 24-hour TSP and fifteen sets of 1-hr TSP measurements were carried out at the designated monitoring station during the reporting period. No exceedance was recorded during the reporting period.

Noise

Four sets of 30-minute construction noise measurements were carried out at the monitoring station NM2 during normal weekdays of the reporting period. Four sets of 3 x 5-minute construction noise measurements were carried out during restricted hours (between 0700 and 2300 hours on Sundays and public holidays) of the reporting period. Exceedances of limit level were recorded on on 10, 17, 24 and 31 January 2010.

Landscape & Visual

Landscape and visual monitoring has commenced since December 2009 on a monthly basis. Details of the audit findings and implementation status are presented in *Section 4.5.3*.

Cultural Heritage

No vibration monitoring was required to be conducted for this reporting month as the blasting of tunnel / shaft works has not started.

Waste Management

Wastes generated from this Project include inert construction and demolition (C&D) materials and non-inert C&D materials. A total of 7,986.1 tonnes of inert C&D materials and 44.644 tonnes of non-inert C&D materials were generated during the reporting period. Non-inert C&D materials are made up of general refuse, steel materials and paper/cardboard packaging materials. The inert C&D materials and general refuse generated from the Project were disposed of at Tuen Mun Area 38/Tseung Kwan O Area 137 Fill Bank/Chai Wan Barging Point and SENT Landfill respectively.
Paper/cardboard packaging generated was sent to recyclers for recycling.

Environmental Site Inspection

Four weekly joint environmental site inspections were carried out by the representatives of the Contractor, the Engineer and the Environmental Team (ET). Details of the audit findings and implementation status are presented in *Section 4.6*.

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

Four exceedances of noise limit level during restricted hours were reported at NM2 on 10, 17 24 and 31 January 2010. Investigations into the incidents were made and concluded that the traffic noise in the vicinity of the Project was the major cause of the noise levels recorded. However, the Contractor of this Project was 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.

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

No environmental complaint and summons/prosecutions was received in this reporting period.

Future Key Issues

Works to be undertaken in the next month include:
- 2400mm sewer diversion at Wan Chai East
- Construction of diaphragm wall
- Marine Dumping of excavated marine sediment
- Installation of Monitoring Instrumentation
- Toe grouting and fissure grouting below diaphragm wall at Wan Chai East Production Shaft

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

Central Drop Shaft

Summary of Construction Works undertaken during Reporting Month

The major construction works undertaken during the reporting month include:

- Exposing existing H pile
- Installation of Monitoring Instrumentation

Environmental Monitoring and Audit Progress

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

• 24-hour TSP Monitoring at AM4	5 sets
• 1-hour TSP Monitoring at AM4	15 sets
• Construction Noise Monitoring during Normal Weekdays at NM3	4 times
• Joint Environmental Site Inspection	4 times
• Landscape & Visual Monitoring	1 time

Air Quality

Five sets of 24-hour TSP and fifteen sets of 1-hr TSP measurements were carried out at the designated monitoring station during the reporting period. No exceedance was recorded during the reporting period.

Noise

Four sets of 30-minute construction noise measurements were carried out at the monitoring station NM3 during normal weekdays of the reporting period. No exceedance was recorded during the reporting period.

Landscape & Visual

Landscape and visual monitoring has commenced since December 2009 on a monthly basis. Details of the audit findings and implementation status are presented in *Section 5.5.3*.

Cultural Heritage

No vibration monitoring was required to be conducted for this reporting month as the blasting of tunnel / shaft works has not started.

Waste Management

Wastes generated from this Project include inert construction and demolition (C&D) materials and non-inert C&D materials. A total of 7,986.1 tonnes of inert C&D materials and 44.644 tonnes of non-inert C&D materials were generated during the reporting period. Non-inert C&D materials are made up of general refuse, steel materials and paper/cardboard packaging materials. The inert C&D materials and general refuse generated from the

Project were disposed of at Tuen Mun Area 38/Tseung Kwan O Area 137 Fill Bank/Chai Wan Barging Point and SENT Landfill respectively.
Paper/cardboard packaging generated was sent to recyclers for recycling.

Environmental Site Inspection

Four weekly joint environmental site inspections were carried out by the representatives of the Contractor, the Engineer and the Environmental Team (ET). Details of the audit findings and implementation status are presented in *Section 5.6*.

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

No exceedance was recorded during the reporting period.

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

No environmental complaint and summons/prosecutions was received in this reporting period.

Future Key Issues

Works to be undertaken in the next month include:

- Construction of exposing existing H pile
- Site mobilization
- Installation of Monitoring Instrumentation
- Construction of underground drainage system

Potential environmental impacts arising from the above construction activities are mainly associated with dust, construction noise, site runoff 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:

- Construction of diaphragm wall
- Site mobilization
- Erection of site offices
- Installation of Monitoring Instrumentation

Environmental Monitoring and Audit Progress

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

• 24-hour TSP Monitoring at AM5	5 sets
• 1-hour TSP Monitoring at AM5	15 sets
• Construction Noise Monitoring during Normal Weekdays at NM4	4 times
• Joint Environmental Site Inspection	4 times
• Landscape & Visual Monitoring	1 time

Air Quality

Five sets of 24-hour TSP and fifteen sets of 1-hr TSP measurements were carried out at the designated monitoring station during the reporting period. No exceedance was recorded during the reporting period.

Noise

Four sets of 30-minute construction noise measurements were carried out at the monitoring station NM4 during normal weekdays of the reporting period. No exceedance was recorded during the reporting period.

Landscape & Visual

Landscape and visual monitoring has commenced since December 2009 on a monthly basis. Details of the audit findings and implementation status are presented in *Section 6.5.3*.

Cultural Heritage

No vibration monitoring was required to be conducted for this reporting month as the blasting of tunnel / shaft works has not started.

Waste Management

Wastes generated from this Project include inert construction and demolition (C&D) materials and non-inert C&D materials. A total of 7,986.1 tonnes of inert C&D materials and 44.644 tonnes of non-inert C&D materials were

generated during the reporting period. Non-inert C&D materials are made up of general refuse, steel materials and paper/cardboard packaging materials. The inert C&D materials and general refuse generated from the Project were disposed of at Tuen Mun Area 38/Tseung Kwan O Area 137 Fill Bank/Chai Wan Barging Point and SENT Landfill respectively. Paper/cardboard packaging generated was sent to recyclers for recycling.

Environmental Site Inspection

Four weekly joint environmental site inspections were carried out by the representatives of the Contractor, the Engineer and the Environmental Team (ET). Details of the audit findings and implementation status are presented in *Section 6.6*.

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

No exceedance was recorded during the reporting period.

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

No environmental complaint and summons/prosecutions was received in this reporting period.

Future Key Issues

Works to be undertaken in the next month include:

- Erection of site offices
- Construction of diaphragm wall
- Installation of Monitoring Instrumentation
- Marine Dumping of excavated marine sediment

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

Stonecutters Island Production and Riser Shafts

Summary of Construction Works undertaken during Reporting Month

The major construction works undertaken during the reporting month include:

- Construction of diaphragm wall at Stonecutters Island Production Shaft and Riser Shaft
- Installation of Monitoring Instrumentation

Environmental Monitoring and Audit Progress

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

• 24-hour TSP Monitoring at AM6	5 sets
• 1-hour 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

Air Quality

Five sets of 24-hour TSP and fifteen sets of 1-hr TSP measurements were carried out at the designated monitoring station during the reporting period. No exceedance was recorded during the reporting period.

Noise

Four sets of 30-minute construction noise measurements were carried out at the monitoring station NM5 during normal weekdays of the reporting period. Five sets of 3 x 5-minute construction noise measurements were carried out during restricted hours (between 0700 and 2300 hours on Sundays and public holidays) of the reporting period. An exceedance of limit level was reported on 10 January 2010.

Landscape & Visual

Landscape and visual monitoring has commenced since December 2009 on a monthly basis. Details of the audit findings and implementation status are presented in *Section 7.5.3*.

Cultural Heritage

No vibration monitoring was required to be conducted for this reporting month as the blasting of tunnel / shaft works has not started.

Waste Management

Wastes generated from this Project include inert construction and demolition (C&D) materials and non-inert C&D materials. A total of 7,986.1 tonnes of inert C&D materials and 44.644 tonnes of non-inert C&D materials were generated during the reporting period. Non-inert C&D materials are made up of general refuse, steel materials and paper/cardboard packaging materials. The inert C&D materials and general refuse generated from the Project were disposed of at Tuen Mun Area 38/Tseung Kwan O Area 137 Fill Bank/Chai Wan Barging Point and SENT Landfill respectively.
Paper/cardboard packaging generated was sent to recyclers for recycling.

Environmental Site Inspection

Four weekly joint environmental site inspections were carried out by the representatives of the Contractor, the Engineer and the Environmental Team (ET). Details of the audit findings and implementation status are presented in *Section 7.6*.

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

An exceedance of noise limit level during restricted hours was recorded at NM5 on 10 January 2010. Investigation into the incidents was made and concluded that the marginal exceedance were not solely attributable to the works from the Project as some other noise sources, such as aircrafts passing by or occasional traffic were also noticed during the monitoring period, which may have also contributed to the measured noise level.. However, 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 and public complaints. The Contractor is also reminded to ensure that the construction plant deployed for the works during restricted hours is in strict accordance with the approval granted in the relevant Construction Noise Permit (CNP).

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

No environmental complaint and summons/prosecutions was received in this reporting period.

Future Key Issues

Works to be undertaken in the next month include:
- Construction of diaphragm wall
- Installation of Monitoring Instrumentation
- Marine Dumping of excavated marine sediment

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

1 INRODUCTION

ERM-Hong Kong, Limited (ERM) was appointed by Gammon Construction Limited (the Contractor) as an Environmental Team (ET) to undertake 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 second EM&A report which summarizes the impact monitoring results and audit findings for the EM&A programme during the reporting period from **1** to **31 January 2010**.

1.2 STRUCTURE OF THE REPORT

The structure of the report is as follows:

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

Section 2 : **Project Information**
summarizes background and scope of the project, site description, project organization and contact details

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

- **Construction Activities**
  summarizes the construction activities conducted during the reporting month.
- **Status of Environmental Approval Documents**
  summarizes the environmental documents submissions under the EP condition during the reporting month.
- **Environmental Monitoring Requirement**
  summarizes the environmental monitoring including monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring 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**
  summarizes the implementation of environmental protection measures during the reporting period.
- **Monitoring Results**
  summarizes the monitoring results obtained in the reporting period.

- **Environmental Site Inspection**
  summarizes the audit findings of the weekly site inspections undertaken within the reporting period.
- **Environmental Non-conformance**
  summarizes any monitoring exceedance, environmental complaints and environmental summons within the reporting period.
- **Future Key Issues**
  summarizes the impact forecast and monitoring schedule for the next three months.

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

- **Construction Activities**
  summarizes the construction activities conducted during the reporting month.
- **Status of Environmental Approval Documents**
  summarizes the environmental documents submissions under the EP condition during the reporting month.
- **Environmental Monitoring Requirement**
  summarizes the environmental monitoring including monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring 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**
  summarizes the implementation of environmental protection measures during the reporting period.
- **Monitoring Results**
  summarizes the monitoring results obtained in the reporting period.
- **Environmental Site Inspection**
  summarizes the audit findings of the weekly site inspections undertaken within the reporting period.
- **Environmental Non-conformance**
  summarizes any monitoring exceedance, environmental complaints and environmental summons within the reporting period.
- **Future Key Issues**
  summarizes the impact forecast and monitoring schedule for the next three months.

Section 5 : **Central Drop Shaft**

- **Construction Activities**
  summarizes the construction activities conducted during the reporting month.
- **Status of Environmental Approval Documents**
  summarizes the environmental documents submissions under the EP condition during the reporting month.

- **Environmental Monitoring Requirement**
  summarizes the environmental monitoring including monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring 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**
  summarizes the implementation of environmental protection measures during the reporting period.
- **Monitoring Results**
  summarizes the monitoring results obtained in the reporting period.
- **Environmental Site Inspection**
  summarizes the audit findings of the weekly site inspections undertaken within the reporting period.
- **Environmental Non-conformance**
  summarizes any monitoring exceedance, environmental complaints and environmental summons within the reporting period.
- **Future Key Issues**
  summarizes the impact forecast and monitoring schedule for the next three months.

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

- **Construction Activities**
  summarizes the construction activities conducted during the reporting month.
- **Status of Environmental Approval Documents**
  summarizes the environmental documents submissions under the EP condition during the reporting month.
- **Environmental Monitoring Requirement**
  summarizes the environmental monitoring including monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring 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**
  summarizes the implementation of environmental protection measures during the reporting period.
- **Monitoring Results**
  summarizes the monitoring results obtained in the reporting period.
- **Environmental Site Inspection**
  summarizes the audit findings of the weekly site inspections undertaken within the reporting period.

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

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

- **Construction Activities**
  summarizes the construction activities conducted during the reporting month.
- **Status of Environmental Approval Documents**
  summarizes the environmental documents submissions under the EP condition during the reporting month.
- **Environmental Monitoring Requirement**
  summarizes the environmental monitoring including monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring 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**
  summarizes the implementation of environmental protection measures during the reporting period.

- **Monitoring Results**
  summarizes the monitoring results obtained in the reporting period.
- **Environmental Site Inspection**
  summarizes the audit findings of the weekly site inspections undertaken within the reporting period.
- **Environmental Non-conformance**
  summarizes any monitoring exceedance, environmental complaints and environmental summons within the reporting period.
- **Future Key Issues**
  summarizes 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 riser shaft and approximately 12km of tunnel excavation from North Point via Sai Ying Pun to Stonecutters Island. Shafts vary in depth from 140m and 170m below ground with 10 - 12m diameter. Tunnel face area ranges from 16 m^2 to 23 m^2. Embedded drainage pipelines will be installed upon the completion of tunnel excavation.

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

- construction of sewage conveyance system (SCS) from North Point Preliminary Treatment Works (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 shaft at SCI STW;
- construction of junction shaft at SYP;
- construction of temporary production shafts at NP, WCE and SCI to provide access for the construction of SCS;
- construction of connection channels, pipes, chambers and tunnel connecting the proposed drop shafts / riser shaft to the facilities of the preliminary treatment works / sewage treatment works;
- carrying out survey of existing buildings, taking over of existing and installation of new piezometers and ground settlement markers and subsequent monitoring thereof and 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/B) for the works was granted on 2 November 2009. Under the requirements of Condition 4.1 of Environmental Permit EP-322/2008/B,

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 REQUIRED SUBMISSIONS

Status of required submissions under the EP during the reporting period is presented in *Table 2.10*.

Table 2.1 Status of Required Submission for all Sites

EP Condition	Submission	Submission Date
Condition 1.11	Notification on Commencement of Construction of the Project	17 November 2009
Condition 2.3	Notification on Management Organization of the Main Construction Company	18 September 2009
Condition 4.3	Submission of Baseline Monitoring Report (final version incorporating comments from EPD)	18 December 2009
Condition 4.4	Submission of First Monthly EM&A Report	14 January 2009

2.3 PROJECT ORGANISATION

The project organization 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 31 January 2010 at North Point Production and Drop Shafts

Worksite	Construction Activities Undertaken
Production Shaft	• Construction of diaphragm wall • Erection of site offices • Site mobilization • Installation of Monitoring Instrumentation
Drop Shaft at North Point PTW	• Construction of pipe pile wall • Site mobilization • Installation of Monitoring Instrumentation

3.2 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS

A summary of the relevant permits, licences, and/or notifications on environmental protection for this Project since December 2009 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
Environmental Permit	EP-322/2008	Expired on 10 July 2009	• Permit granted on 19 November 2008. • Superceded on 10 July 2009.
	EP-322/2008/A	Expired on 2 November 2009	• Permit granted on 10 July 2009. • Superceded on 2 November 2009.
	EP-322/2008/B	Throughout the Contract	• Permit granted on 2 November 2009
Notification of Construction Works under Air Pollution Control (Construction Dust) Regulation	--	--	• Reference number for Notification Pursuant to APC (Construction Dust) Regulation: 308136
Water Discharge License	North Point PTW Drop Shaft WT00005153-2009	12 October 2009 - 31 October 2014	--
	North Point Production Shaft WT00005154-2009	12 October 2009 - 31 October 2014	--

Permit/ Licences/ Notification	Reference	Validity Period	Remarks
Chemical Waste Producer Registration	North Point Production Shaft 5213-153-G2484-01	--	--
	North Point PTW Drop Shaft 5213-153-G2483-01	--	--
Construction Noise Permit	North Point Production Shaft GW-RW0728-09	30 September 2009 - 29 March 2010	--
	North Point PTW Drop Shaft GW-RS0697-09	16 September 2009 - 15 March 2010	Superseded
	North Point PTW Drop Shaft GW-RS0057-10	1 February 2010 - 31 July 2010	--

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 Total Suspended Particulates (TSP) levels should be conducted at designated monitoring stations. Since access to some of the proposed monitoring locations stated in the EM&A Manual were rejected or not available, alternative locations, therefore, were proposed and agreed by the ER and the IEC. 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	Proposed Construction Air Quality Monitoring Station			
	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	Rooftop of Hong Kong & Islands Regional Office, WSD	

Monitoring Parameters, Frequency and Programme

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

Table 3.4 TSP Monitoring Parameter and Frequency

Parameter	Frequency
24-hour TSP	Once per day for 6 days
1-hour TSP	3 times per day for 6 days

Monitoring Equipment

Continuous 24-hour and 3 x 1-hour TSP monitoring were performed using High Volume Samplers (HVS) with appropriate sampling inlets installed, located at the designated monitoring station. The performance specification of HVS complied with the standard method "*Determination of Suspended Particulate Matter in the Atmosphere (High Volume Method)*" as stipulated in *US EPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50 Appendix B)*. ***Table 3.5*** summarizes the equipment that were deployed for the 24-hour and 1-hour TSP monitoring respectively.

Table 3.5 TSP Monitoring Equipment for North Point Production and Drop Shafts Sites

Monitoring Station	Monitoring Equipment (HVS and Calibrator)
24-hr and 1-hr TSP	
AM1	GMW GS-2310 (S/N 1808), CM-AIR-43 (S/N 9833620)
AM2	GMW GS-2310 (S/N 0145), CM-AIR-43 (S/N 9833620)

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 2m separation from walls, parapets and penthouses was required for rooftop samplers;
- no furnace or incinerator flues were nearby;
- airflow around the sampler was unrestricted; and
- permission was obtained to set up the samplers and to gain access to the monitoring stations.

Preparation of Filter Papers

- glass fibre filters were labelled and sufficient filters that were clean and without pinholes were selected;
- all filters were equilibrated in the conditioning environment for 24 hours before weighing. The conditioning environment temperature was

around 25 °C and not variable by more than ± 3 °C; the relative humidity (RH) was 40%; and

- SGS Hong Kong Ltd, a HOKLAS accredited laboratory, implements comprehensive quality assurance and quality control programmes.

Field Monitoring

- the power supply was checked to ensure that the HVSs were working properly;
- the filter holder and the area surrounding the filter were cleaned;
- the filter holder was removed by loosening the foul bolts and a new filter, with stamped number upward, on a supporting screen was aligned carefully;
- the filter was properly aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter;
- the swing bolts were fastened to hold the filter holder down to the frame. The pressure applied should be sufficient to avoid air leakage at the edges;
- then the shelter lid was closed and secured with the aluminium strip;
- the HVSs were warmed-up for about 5 minutes to establish run-temperature conditions;
- a new flowrate 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 folder in half length so that only surfaces with collected particulate matter were in contact;
- it was then placed in a clean plastic envelope and sealed;
- all monitoring information was recorded on a standard data sheet; and
- filters were sent to SGS Hong Kong Ltd for analysis.

Maintenance and Calibration

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

- the flow rate of each HVS with mass flow controller were calibrated using an orifice calibrator. Initial calibrations of the dust monitoring equipments 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 C4*.

Wind Data Monitoring

Average wind data (wind speed and wind direction) during the monitoring period were obtained from the meteorological stations of the Hong Kong Observatory (HKO) and are presented in *Annex C6*.

Action and Limit Levels

The Action and Limit levels have been established and presented in *Table 3.6*.

Table 3.6 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 TSP	AM1	185	260
	AM2	182	260
1-hour TSP	AM1	340	500
	AM2	352	500

Event and Action Plan

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

3.3.2 Noise Monitoring

Monitoring Location

In accordance with the EM&A Manual, monitoring of construction noise impact should be conducted at the designated monitoring stations. Since access to some of the proposed monitoring locations stated in the EM&A Manual were rejected or not available; alternative locations, therefore, were proposed and agreed by the ER and the IEC. The construction noise monitoring location for this Contract is listed in ***Table 3.7*** and is shown in *Annex C2*.

Table 3.7 ***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	-

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 C3*.

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

Monitoring Equipment and Methodology

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

The sound level meters and calibrator used for the noise measurement, as listed in *Table 3.8*, complies with IEC 651: 1979 and 804:1985 (Type 1) specification. The calibration certificates of the sound level meters are included in *Annex H*.

Table 3.8 ***Noise Monitoring Equipment at North Point Production and Drop Shafts***

Monitoring Station	Monitoring Equipment (Sound Level Metre and Calibrator)
NM1	Calibrator: Rion NC-73 (S/N 10786708) Sound Level Metre: Rion NL-18 (S/N 00360030) or Rion NL-31 (S/N 00320533) or Rion NL-31 (S/N 00410224) or Rion NA-27 (S/N 00201194)

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

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

Action and Limit Levels

The action and limit levels for noise monitoring during different monitoring periods are summarized in *Table 3.9*.

Table 3.9 Action and Limit Levels for Noise Monitoring at North Point Production and Drop Shafts

Noise Monitoring Location	Noise Criteria, Leq(30mins), dB(A)	Remark
NM1	70	During normal teaching period
	69	During the school examination period
	75	During school holidays

Event and Action Plan

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

3.3.3 Cultural Heritage

No vibration monitoring is required for this reporting month as no blasting of tunnel / shaft works was carried out.

3.3.4 Landscape and Visual Monitoring

In accordance with the EM&A Manual, monthly landscape and visual monitoring is required to ensure that the design, implementation and maintenance of landscape and visual mitigation measures are fully achieved. The landscape and visual monitoring should be carry out on site with authorize registered landscape architect (RLA) for supervision. The monitoring procedures and criteria as described in the EM&A Manual were adopted.

Event and Action Plan

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

3.4 IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS

The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Report, the Environmental Permit and EM&A Manual. The implementation status during the reporting period is summarized in *Annex C5*.

3.5 MONITORING RESULTS

3.5.1 Air Quality

A total of five sets of 24-hour and fifteen sets of 1-hour TSP measurements were carried out at AM1 and AM2 during the reporting period. The monitoring data for 24-hour TSP and 1-hour TSP together with wind data and graphical presentations are presented in *Annex C6*.

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

3.5.2 Noise

A total of four sets of 30-minute construction noise measurements were carried out at the monitoring station NM1 during normal weekdays of the reporting period. The monitoring results together with graphical presentations are presented in *Annex C7*. The local impacts observed near the monitoring stations of NM1 included traffic noise from King's Road, Java Road and nearby roads; school bell rings; student noise and the construction works by other parties undertaken in the vicinity. The noise monitoring on 11 January 2010 was re-scheduled to 15 January 2010 due to the bad weather.

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

3.5.3 Landscape and Visual

In accordance with the EM&A Manual, monthly landscape and visual monitoring is required to ensure that the design, implementation and maintenance of landscape and visual mitigation measures are fully achieved. The monitoring has commenced since December 2009 during weekly site inspections. No major findings were observed 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 have not started.

3.5.5 Waste Management

Waste generated from this Project includes inert construction and demolition (C&D) materials and non-inert C&D materials. Non-inert C&D materials is 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. Reference has been made on the Monthly Summary Waste Flow Table prepared by the Contractor (*Annex J*). The waste statistics provided in this section represent the cumulative quantity of wastes generated from all

sites in this Project. With reference to relevant handling records and trip tickets of this Project, the quantities of different types of waste generated in the reporting month are summarised in *Table 3.10*. The inert C&D materials and general refuse generated from the Project were disposed of at Tuen Mun Area 38/Tseung Kwan O Area 137 Fill Bank/Chai Wan Barging Point and SENT Landfill respectively. 0.144 tonnes of paper/cardboard packaging were sent to recyclers for recycling during the reporting period.

Table 3.10 Quantities of Waste Generated from the Project for all Sites

Month / Year	Quantity		
	C&D Materials (inert) [a]	C&D Materials (non-inert) [b]	Chemical Waste
January 2010	7,986.1 tonnes	44.644 tonnes	800 L

Notes:

(a) Inert C&D materials include bricks, concrete, building debris, rubble and excavated soil. No inert C&D material was reused in this Project during the reporting period. Non-reused inert C&D materials were disposed of at the Tuen Mun Area 38/Tseung Kwan O Area 137 Fill Bank/ Chai Wan Barging Point.

(b) Non-inert C&D materials include steel, paper / cardboard packaging waste, plastics and other wastes such as general refuse. Steel materials generated from the project are grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials. The non-inert C&D materials other than steel and paper/cardboard packaging were disposed of at SENT Landfill. No steel material and 0.144 tonnes of paper/cardboard packaging were sent to recyclers for recycling during the reporting period.

3.6 ENVIRONMENTAL SITE INSPECTION

Weekly site inspections were carried out by the representatives of the Contractor, Engineer and the ET. Four site inspections were conducted on 7, 14, 21 and 28 January 2010. There was no non-compliance recorded during the site inspections.

Major findings and recommendations are summarized as follows:

North Point Production Shaft

- On 7 January, oil sheens were observed near the bentonite slurry tank. The Contractor was recommended to clean the oil sheens as soon as possible and dispose of the collected materials as chemical wastes via licensed chemical waste collector.
- On 14 January, the labels on the marine sediment containers were observed to be missing. The Contractor immediately provided the labelling for all containers.

North Point Drop Shaft

- On 14 January, general waste was observed in the wheel washing pit near the site entrance. The Contractor was recommended to clear the waste regularly as part of good housekeeping practices.
- On 21 January, inert materials were observed to be stockpiled near the site entrance. The Contractor was recommended to assign the area as the temporary inert material storage area and provide labels for easy identification by workers.

Follow-up actions were undertaken as reported by the Contractor and observed in the weekly site inspection conducted in the reporting period.

3.7 ENVIRONMENTAL NON-CONFORMANCE

3.7.1 Summary of Monitoring Exceedance

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

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

3.7.2 Summary of Environmental Non-Compliance

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

3.7.3 Summary of Environmental Complaint

No complaint was received during the reporting period.

3.7.4 Summary of Environmental Summon and Successful Prosecution

No summons was received during the reporting period.

3.8 FUTURE KEY ISSUES

3.8.1 Key Issues for the Coming Month

Works to be undertaken for the coming two monitoring periods are summarized in *Table 3.11.*

Table 3.11 Construction Works to be Undertaken in the Coming Two Months at North Point Production and Drop Shaft

Work to be taken
• Erection of site offices
• Construction of pipe piles wall
• Construction of diaphragm wall
• Installation of Monitoring Instrumentation
• Marine Dumping of excavated marine sediment
• Construct of underground drainage system

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

3.8.2 Monitoring Schedule for the Next Month

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

3.8.3 Construction Programme for the Next Month

The most updated construction programme for the Project is presented in *Annex C8*.

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 31 January 2010 at Wan Chai East Production and Drop Shafts

Worksite	Construction Activities Undertaken
Production Shaft	• Construction of diaphragm wall • Installation of Monitoring Instrumentation
Drop Shaft at North Point PTW	• 2400mm Sewer Drainage diversion at Wan Chai East PTW Drop Shaft • Tree transplanting at WCE Drop shaft; • Installation of Monitoring Instrumentation

4.2 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS

A summary of the relevant permits, licences, and/or notifications on environmental protection for this Project since December 2009 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
Environmental Permit	EP-322/2008	Expired on 10 July 2009	• Permit granted on 19 November 2008. • Superceded on 10 July 2009.
	EP-322/2008/A	Expired on 2 November 2009	• Permit granted on 10 July 2009. • Superceded on 2 November 2009.
	EP-322/2008/B	Throughout the Contract	• Permit granted on 2 November 2009
Notification of Construction Works under Air Pollution Control (Construction Dust) Regulation	--	--	• Reference number for Notification Pursuant to APC (Construction Dust) Regulation: 308136
Water Discharge License	Wan Chai East Production Shaft and Drop Shaft WT00005060-2009	06 October 2009 - 31 October 2014	--

Permit/ Licences/ Notification	Reference	Validity Period	Remarks
Chemical Waste Producer Registration	Wan Chai East Production Shaft and Drop Shaft 5213-135-G2308-03	--	--
Construction Noise Permit	Wan Chai East Drop Shaft GW-RS0899-09	26 November 2009 - 21 May 2010	Superseded
	Wan Chai East Drop Shaft GW-RS0041-10	20 January 2010 - 19 July 2010	--

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 Total Suspended Particulates (TSP) levels should be conducted at designated monitoring stations. Since access to some of the proposed monitoring locations stated in the EM&A Manual were rejected or not available, alternative locations, therefore, were proposed and agreed by the 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	Proposed Construction Air Quality Monitoring Station			
	ID in EM&A Manual	ID	Location	Remark
Wan Chai East	-	AM3	Rooftop of Wan Chai East PTW	• The rooftop of Society for the Prevention of Cruelty to Animals building (CM_WC1) was crowded with existing facilities (eg water tanks) that setup of HVSs for baseline monitoring is 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 TSP	Once per day for 6 days
1-hour TSP	3 times per day for 6 days

Monitoring Equipment

Continuous 24-hour and 1-hour TSP monitoring were performed using High Volume Samplers (HVS) with appropriate sampling inlets installed, located at the designated monitoring station. The performance specification of HVS complied with the standard method "*Determination of Suspended Particulate Matter in the Atmosphere (High Volume Method)*" as stipulated in *US EPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50 Appendix B)*. ***Table 4.5*** summarizes the equipment that was deployed for the 24-hour and 1-hour TSP monitoring.

Table 4.5 TSP Monitoring Equipment at Wan Chai East Production and Drop Shafts

Monitoring Station	Monitoring Equipment (HVS and Calibrator)
24-hr and 1-hr TSP	
AM3	GMW GS-2310 (S/N 0481), CM-AIR-43 (S/N 9833620)

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 2m separation from walls, parapets and penthouses was required for rooftop samplers;
- no furnace or incinerator flues were nearby;
- airflow around the sampler was unrestricted; and
- permission was obtained to set up the samplers and to gain access to the monitoring stations.

Preparation of Filter Papers

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

Field Monitoring

- the power supply was checked to ensure that the HVSs were working properly;
- the filter holder and the area surrounding the filter were cleaned;
- the filter holder was removed by loosening the foul bolts and a new filter, with stamped number upward, on a supporting screen was aligned carefully;
- the filter was properly aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter;
- the swing bolts were fastened to hold the filter holder down to the frame. The pressure applied should be sufficient to avoid air leakage at the edges;
- then the shelter lid was closed and secured with the aluminium strip;
- the HVSs were warmed-up for about 5 minutes to establish run-temperature conditions;
- a new flowrate 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 folder in half length so that only surfaces with collected particulate matter were in contact;
- it was then placed in a clean plastic envelope and sealed;
- all monitoring information was recorded on a standard data sheet; and
- filters were sent to SGS Hong Kong Ltd for analysis.

Maintenance and Calibration

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

equipments 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 D4*.

Wind Data Monitoring

Average wind data (wind speed and wind direction) during the monitoring period were obtained from the meteorological stations of the Hong Kong Observatory (HKO) and are presented in *Annex D6*.

Action and Limit Levels

The Action and Limit levels have been established and presented in *Table 4.6*.

Table 4.6 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 TSP	AM3	181	260
1-hour TSP	AM3	355	500

Event and Action Plan

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

4.3.2 Noise Monitoring

Monitoring Location

In accordance with the EM&A Manual, monitoring of construction noise impact should be conducted at the designated monitoring stations. Since access to some of the proposed monitoring locations stated in the EM&A Manual were rejected or not available; alternative locations, therefore, were proposed and agreed by the ER and the IEC. The construction noise monitoring location for this Contract is listed in ***Table 4.7*** and is shown in *Annex D2*.

Table 4.7 ***Construction Phase Noise Monitoring Station at Wan Chai East Production and Drop Shafts***

Worksite	Proposed Construction Noise Monitoring Station				
	ID in EM&A Manual	ID	Location	Type of Measurement	Remark
Wan Chai East	-	NM2	Rooftop of Hyde Building	Façade	• No guaranteed access for equipment set-up due to no caretaker of Kei Wah Building (M2) • Alternative location, NM2, is located next to Kei Wah Building and is also the background noise monitoring station in the HATS2A EIA study.

Monitoring Parameters, Frequency and Programme

Weekly construction noise monitoring was conducted in accordance with the requirements stipulated in the EM&A Manual. Additional noise monitoring 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 D3*.

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

Monitoring Equipment and Methodology

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

The sound level meters and calibrator used for the noise measurement, as listed in *Table 4.8*, complies with IEC 651: 1979 and 804:1985 (Type 1) specification. The calibration certificates of the sound level meters are included in *Annex H*.

Table 4.8 Noise Monitoring Equipment at Wan Chai East Production and Drop Shafts

Monitoring Station	Monitoring Equipment (Sound Level Metre and Calibrator)
NM2	Calibrator: Rion NC-73 (S/N 10786708)
	Sound Level Metre: Rion NL-18 (S/N 00360030) or Rion NL-31 (S/N 00320533) or Rion NL-31 (S/N 00410224) or Rion NA-27 (S/N 00201194)

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

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

Action and Limit Levels

The action and limit levels for noise monitoring during different monitoring periods are summarized in *Table 4.9*.

Table 4.9 Action and Limit Levels for Noise Monitoring at Wan Chai East Production and Drop Shafts

Noise Monitoring Location	Noise Criteria, Leq(30mins), dB(A)	Remark
NM2	75	Daytime during normal working hours
	70	Sundays and public holidays

Event and Action Plan

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

4.3.3 Cultural Heritage

No vibration monitoring is required for this reporting month as no blasting of tunnel / shaft works was carried out.

4.3.4 Landscape and Visual Monitoring

In accordance with the EM&A Manual, monthly landscape and visual monitoring is required to ensure that the design, implementation and maintenance of landscape and visual mitigation measures are fully achieved. The landscape and visual monitoring should be carry out on site with authorize registered landscape architect (RLA) for supervision. The monitoring procedures and criteria as described in the EM&A Manual were adopted.

Event and Action Plan

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

4.4 IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS

The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Report, the Environmental Permit and EM&A Manual. The implementation status during the reporting period is summarized in *Annex D5*.

4.5 MONITORING RESULTS

4.5.1 Air Quality

A total of five sets of 24-hour and fifteen sets of 1-hour TSP measurements were carried out at AM3 during the reporting period. The monitoring data for 24-hour TSP and 1-hour TSP together with wind data and graphical presentations are presented in *Annex D6*.

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

4.5.2 Noise

A total of four sets of 30-minute construction noise measurements were carried out at the monitoring station NM2 during normal weekdays of the reporting period. Construction works were also conducted on public holidays and Sundays at Wan Chai East Drop Shaft starting on 10 January 2010 respectively. Hence, four sets of 3 x 5-minute construction noise measurements were carried out at the monitoring station NM2 during restricted hours (between 0700 and 2300 hours on Sundays and public holidays) of the reporting period. The monitoring results together with graphical presentations are presented in *Annex D7*. The local impacts observed near the monitoring stations of NM2 were traffic noise from Gloucester Road and Hung Hing Road.

Exceedances of the limit level were recorded on 10, 17, 24 and 31 January at NM2. Investigations have been conducted to review the potential causes for the noise level recorded. A summary of the investigation results is presented in *Section 4.7.1*.

4.5.3 Landscape and Visual

In accordance with the EM&A Manual, monthly landscape and visual monitoring is required to ensure that the design, implementation and maintenance of landscape and visual mitigation measures are fully achieved. The monitoring has commenced since December 2009 during weekly site inspections. Major findings and recommendations in the reporting period are summarized as follows:

Wan Chan East Production Shaft

- construction materials were placed adjacent to trees along the northern boundary of the Wan Chai East Production Shaft. The Contractor was recommended to keep foreign materials and equipment clear from trees on-site. Retained trees on-site should be fenced off properly to avoid damages by construction activities.

Wan Chai East Drop Shaft

- construction materials were observed to be placed adjacent to trees. The Contractor was recommended to keep materials and equipment clear from trees on-site. Retained trees on-site should be fenced off properly to avoid damages by construction activities.

4.5.4 Cultural Heritage

No vibration monitoring was conducted for this reporting month as the blasting of tunnel / shaft works have not started.

4.5.5 Waste Management

Waste generated from this Project includes inert construction and demolition (C&D) materials and non-inert C&D materials. Non-inert C&D materials is 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. Reference has been made on the Monthly Summary Waste Flow Table prepared by the Contractor (*Annex J*). The waste statistics provided in this section represent the cumulative quantity of wastes generated from all sites in this Project. With reference to relevant handling records and trip tickets of this Project, the quantities of different types of waste generated in the reporting month are summarised in *Table 4.10*. The inert C&D materials and general refuse generated from the Project were disposed of at Tuen Mun Area 38/Tseung Kwan O Area 137 Fill Bank/Chai Wan Barging Point and SENT Landfill respectively. 0.144 tonnes of paper/cardboard packaging were sent to recyclers for recycling during the reporting period.

Table 4.10 Quantities of Waste Generated from the Project for all Sites

Month / Year	Quantity		
	C&D Materials (inert) [a]	C&D Materials (non-inert) [b]	Chemical Waste
January 2010	7,986.1 tonnes	44.644 tonnes	800 L

Notes:

(a) Inert C&D materials include bricks, concrete, building debris, rubble and excavated soil. No inert C&D material was reused in this Project during the reporting period. Non-reused inert C&D materials were disposed of at the Tuen Mun Area 38/Tseung Kwan O Area 137 Fill Bank/ Chai Wan Barging Point.

(b) Non-inert C&D materials include steel, paper / cardboard packaging waste, plastics and other wastes such as general refuse. Steel materials generated from the project are grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials. The non-inert C&D materials other than steel and paper/cardboard packaging were disposed of at SENT Landfill. No steel material and 0.144 tonnes of paper/cardboard packaging were sent to recyclers for recycling during the reporting period.

4.6 ENVIRONMENTAL SITE INSPECTION

Weekly site inspections were carried out by the representatives of the Contractor, Engineer and the ET. Four site inspections were conducted on 7, 14, 21 and 28 January 2010. There was no non-compliance recorded during the site inspections.

Major findings and recommendations are summarized as follows:

Wan Chan East Production Shaft

- On 7 January, a tin of chemical without label was observed near the office area. The Contractor was recommended to provide proper labelling for chemicals on-site.
- On 7 January, the labels on the marine sediment containers were observed to be damaged. The Contractor was recommended to replace the labelling for all containers properly.
- On 14 and 21 January, tyre tracks with soil and grit were observed on the ground outside the site vehicular entrance. The Contractor was recommended to clear the tyre tracks immediately. The Contractor was also recommended to ensure that vehicles are washed properly before leaving the construction site to avoid soil and grit from being carried into public areas outside the site boundary.
- On 14 January, the project site was observed to be dusty and dry. The Contractor was recommended to implement suitable dust suppression measures at an appropriate frequency according to weather conditions to minimise dust from wind erosion and vehicle movements.

Wan Chai East Drop Shaft

- On 21 January, leaves were observed in the drainage channel near the vehicular entrance of the project site. The Contractor was recommended to clear the channels regularly to avoid flushing of materials into drainage system as part of a good housekeeping practice.

Follow-up actions were undertaken as reported by the Contractor and observed in the weekly site inspection conducted in the reporting period.

4.7 ENVIRONMENTAL NON-CONFORMANCE

4.7.1 Summary of Monitoring Exceedance

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

Exceedances of limit level were reported at NM2 on 10, 17, 24 and 31 January 2010. Details of the incidents and investigations are presented as follows.

With reference to the investigation results at NM2, it was concluded that works from the Project were not major causes of the noise exceedances recorded. However, the Contractor of this Project was 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.

Table 4.11 Summary of Record of Exceedance at Wan Chai East Production and Drop Shafts

Station	Record of Exceedance	Result of Investigation
NM2	Exceedance of Limit Level on 10 Jan 2010 (17:13-17:28)	Construction works being undertaken within the Site during the monitoring period were filling of trenches for diaphragm wall by gravity feed of bentonite slurry and no powered mechanical equipment (PME) was involved in such operations. Meanwhile, noise from the traffic on Gloucester Road was observed during the noise monitoring The average baseline noise level ($L_{eq, 5 min}$) at NM2, which comprises predominantly contributions from road traffic noise, during the period of 0700 to 2300 hrs of general holidays (including Sundays) is 71.2 dB (A) (with the range being 69.1 to 76.0 dB(A)). It is therefore concluded that the dominant noise sources were identified as the traffic noise and the exceedance was due to such noise in the vicinity of the Site.

Station	Record of Exceedance	Result of Investigation
NM2	Exceedance of Limit Level on 17 Jan 2010 (17:17-17:32)	Construction works being undertaken within the Site during the monitoring period were filling of trenches for diaphragm wall by gravity feed of bentonite slurry and no powered mechanical equipment (PME) was involved in such operations. Meanwhile, noise from the traffic on Gloucester Road and helicopter landing on the helipad in the vicinity of the Site was observed during the noise monitoring The average baseline noise level ($L_{eq, 5\ min}$) at NM2, which comprises predominantly contributions from road traffic noise, during the period of 0700 to 2300 hrs of general holidays (including Sundays) is 71.2 dB (A) (with the range being 69.1 to 76.0 dB(A)). It is therefore concluded that the dominant noise sources were identified as the traffic noise and the exceedance was due to such noise in the vicinity of the Site.
NM2	Exceedance of Limit Level on 24 Jan 2010 (11:19-11:34)	Construction works being undertaken within the Site during the monitoring period were erection of formwork and falsework and no powered mechanical equipment (PME) was involved in such operations. Meanwhile, noise from the traffic on Gloucester Road was observed during the noise monitoring The average baseline noise level ($L_{eq, 5\ min}$) at NM2, which comprises predominantly contributions from road traffic noise, during the period of 0700 to 2300 hrs of general holidays (including Sundays) is 71.2 dB (A) (with the range being 69.1 to 76.0 dB(A)). It is therefore concluded that the dominant noise sources were identified as the traffic noise and the exceedance was due to such noise in the vicinity of the Site.
NM2	Exceedance of Limit Level on 31 Jan 2010	Construction works being undertaken within the Site during the monitoring period was rebar fixing performed by workers manually and no powered mechanical equipment (PME) was involved in such operations. Meanwhile, noise from the traffic on Gloucester Road and the landing noise of a helicopter at the helipad near the Wan Chai East work sites was observed during the noise monitoring The average baseline noise level ($L_{eq, 5\ min}$) at NM2, which comprises predominantly contributions from road traffic noise, during the period of 0700 to 2300 hrs of general holidays (including Sundays) is 71.2 dB (A) (with the range being 69.1 to 76.0 dB(A)). It is therefore concluded that the dominant noise sources were identified as the traffic noise and the exceedance was due to such noise in the vicinity of the Site.

4.7.2 Summary of Environmental Non-Compliance

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

4.7.3 Summary of Environmental Complaint

No complaint was received during the reporting period.

4.7.4 Summary of Environmental Summon and Successful Prosecution

No summons was received during the reporting period.

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 summarized in *Table 4.12.*

Table 4.12 Construction Works to be Undertaken in the Coming Two Months at Wan Chai East Production and Drop Shafts

Work to be taken
• 2400mm sewer diversion at Wan Chai East • Construction of diaphragm wall • Marine Dumping of excavated marine sediment • Installation of Monitoring Instrumentation • Toe grouting and fissure grouting below diaphragm wall at Wan Chai East Production Shaft

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

4.8.2 Monitoring Schedule for the Next Month

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

4.8.3 Construction Programme for the Next Month

The most updated construction programme for the Project is presented in *Annex D8***.**

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 31 January 2010 at Central Drop Shaft

Construction Activities Undertaken
• Exposing existing H pile
• Installation of Monitoring Instrumentation

5.2 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS

A summary of the relevant permits, licences, and/or notifications on environmental protection for this Project since December 2009 is presented in ***Table 5.2***.

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

Permit/ Licences/ Notification	Reference	Validity Period	Remarks
Environmental Permit	EP-322/2008	Expired on 10 July 2009	• Permit granted on 19 November 2008. Superceded on 10 July 2009.
	EP-322/2008/A	Expired on 2 November 2009	• Permit granted on 10 July 2009. Superceded on 2 November 2009.
	EP-322/2008/B	Throughout the Contract	• Permit granted on 2 November 2009
Notification of Construction Works under Air Pollution Control (Construction Dust) Regulation	--	--	• Reference number for Notification Pursuant to APC (Construction Dust) Regulation: 308136
Water Discharge License	Central PTW Drop Shaft WT0005131-2009	09 October 2009 - 31 October 2014	--
Chemical Waste Producer Registration	Central PTW Drop Shaft 5213-115-G2347-06	--	--

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 Total Suspended Particulates (TSP) levels should be conducted at designated monitoring stations. Since access to some of the proposed monitoring locations stated in the EM&A Manual were rejected or not available, alternative locations, therefore, were proposed and agreed by the ER and the IEC. The construction air quality monitoring station for this Contract is listed in ***Table 5.3*** and shown in *Annex E2*.

Table 5.3 Construction Phase Air Monitoring Location at Central Drop Shaft

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

Monitoring Parameters, Frequency and Programme

Air quality monitoring was 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 TSP	Once per day for 6 days
1-hour TSP	3 times per day for 6 days

Monitoring Equipment

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

Table 5.5 summarizes the equipment that was deployed for the 24-hour and 1-hour TSP monitoring.

Table 5.5 ***TSP Monitoring Equipment at Central Drop Shaft***

Monitoring Station	Monitoring Equipment (HVS and Calibrator)
24-hr and 1-hr TSP	
AM4	GMW GS-2310 (S/N 9315), CM-AIR-43 (S/N 9833620)

Monitoring Methodology

Installation

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

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

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

Preparation of Filter Papers

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

Field Monitoring

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

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

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

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

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

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

- a new flowrate 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 folder in half length so that only surfaces with collected particulate matter were in contact;

- it was then placed in a clean plastic envelope and sealed;

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

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

Maintenance and Calibration

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

- the flow rate of each HVS with mass flow controller were calibrated using an orifice calibrator. Initial calibrations of the dust monitoring equipments 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 E4*.

Wind Data Monitoring

Average wind data (wind speed and wind direction) during the monitoring period were obtained from the meteorological stations of the Hong Kong Observatory (HKO) and are presented in *Annex E6*.

Action and Limit Levels

The Action and Limit levels have been established and presented in *Table 5.6*.

Table 5.6 Action and Limit Levels for Air Quality at Central Drop Shaft

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

Event and Action Plan

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

5.3.2 Noise Monitoring

Monitoring Location

In accordance with the EM&A Manual, monitoring of construction noise impact should be conducted at the designated monitoring stations. Since access to some of the proposed monitoring locations stated in the EM&A Manual were rejected or not available; alternative locations, therefore, were proposed and agreed by the ER and the IEC. The construction noise monitoring locations for this Contract are listed in ***Table 5.7*** and are shown in *Annex E2*.

Table 5.7 Construction Phase Noise Monitoring Station at Central Drop Shaft

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

Monitoring Parameters, Frequency and Programme

Weekly construction noise monitoring was conducted in accordance with the requirements stipulated in the EM&A Manual. Additional noise monitoring were also conducted as per required in the EM&A Manual when works were carried out during restricted periods. The 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_{eq}) in decibels dB(A). $L_{eq\ (30min)}$

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

Monitoring Equipment and Methodology

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

The sound level meters and calibrator used for the noise measurement, as listed in *Table 5.8*, complies with IEC 651: 1979 and 804:1985 (Type 1) specification. The calibration certificates of the sound level meters are included in *Annex H*.

Table 5.8 Noise Monitoring Equipment at Central Drop Shaft

Monitoring Station	Monitoring Equipment (Sound Level Metre and Calibrator)
NM3	Calibrator: Rion NC-73 (S/N 10786708) Sound Level Metre: Rion NL-18 (S/N 00360030) or Rion NL-31 (S/N 00320533) or Rion NL-31 (S/N 00410224) or Rion NA-27 (S/N 00201194)

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

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

Action and Limit Levels

The action and limit levels for the noise monitoring during different monitoring periods are summarized in Table 5.9

Table 5.9 Action and Limit Levels for Noise Monitoring at Central Drop Shaft

Noise Monitoring Location	Noise Criteria, Leq(30mins), dB(A)	Remark
NM3	75	-

Noise Monitoring Location	Noise Criteria, Leq(5mins), dB(A)	Remark
NM3	70	Applicable on Sundays and public holidays.

Event and Action Plan

The Event and Action Plan (EAP) for noise monitoring is 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.

5.3.4 Landscape and Visual Monitoring

In accordance with the EM&A Manual, monthly landscape and visual monitoring is required to ensure that the design, implementation and maintenance of landscape and visual mitigation measures are fully achieved. The landscape and visual monitoring should be carry out on site with authorize registered landscape architect (RLA) for supervision. The monitoring procedures and criteria as described in the EM&A Manual were adopted.

Event and Action Plan

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

5.4 IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS

The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Report, the Environmental Permit and EM&A Manual. The implementation status during the reporting period is summarized in *Annex E5*.

5.5 MONITORING RESULTS

5.5.1 Air Quality

A total of five sets of 24-hour and fifteen sets of 1-hour TSP measurements were carried out at AM4 during the reporting period. The monitoring data for 24-hour TSP and 1-hour TSP together with wind data and graphical presentations are presented in *Annex E6*.

The weather condition during the monitoring period varied from sunny to fine. The local impacts near the monitoring stations of AM4 were mainly associated with vehicle emissions. No exceedance of Action and Limit Levels of 1-hr and 24-hr TSP were recorded during the reporting period.

5.5.2 Noise

A total of four sets of 30-minute construction noise measurements were carried out at the monitoring station NM3 during normal weekdays of the reporting period. The monitoring results together with graphical

presentations are presented in *Annex E7*. The local impacts observed near the monitoring stations of NM3 were traffic noise from Connaught Road Central.

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

5.5.3 Landscape and Visual

In accordance with the EM&A Manual, monthly landscape and visual monitoring is required to ensure that the design, implementation and maintenance of landscape and visual mitigation measures are fully achieved. The monitoring has commenced since December 2009 during weekly site inspections. Then major finding and recommendation is summarized as follows:

- construction materials were laid onto an existing tree as well as scattered near the tree roots in the south-eastern corner of the Central Drop Shaft. The Contractor was recommended to keep foreign materials and equipment clear from trees on-site. Retained trees on-site should be fenced off properly to avoid damage by construction activities.

5.5.4 Cultural Heritage

No vibration monitoring was conducted for this reporting month as the blasting of tunnel / shaft works have not started.

5.5.5 Waste Management

Waste generated from this Project includes inert construction and demolition (C&D) materials and non-inert C&D materials. Non-inert C&D materials is 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. Reference has been made on the Monthly Summary Waste Flow Table prepared by the Contractor (*Annex J*). The waste statistics provided in this section represent the cumulative quantity of wastes generated from all sites in this Project. With reference to relevant handling records and trip tickets of this Project, the quantities of different types of waste generated in the reporting month are summarised in *Table 5.10*. The inert C&D materials and general refuse generated from the Project were disposed of at Tuen Mun Area 38/Tseung Kwan O Area 137 Fill Bank/Chai Wan Barging Point and SENT Landfill respectively. 0.144 tonnes of paper/cardboard packaging were sent to recyclers for recycling during the reporting period.

Table 5.10 Quantities of Waste Generated from the Project for all Sites

Month / Year	Quantity		
	C&D Materials (inert) [a]	C&D Materials (non-inert) [b]	Chemical Waste
January 2010	7,986.1 tonnes	44.644 tonnes	800 L

Notes:

(a) Inert C&D materials include bricks, concrete, building debris, rubble and excavated soil. No inert C&D material was reused in this Project during the reporting period. Non-reused inert C&D materials were disposed of at the Tuen Mun Area 38/Tseung Kwan O Area 137 Fill Bank/ Chai Wan Barging Point.

(b) Non-inert C&D materials include steel, paper / cardboard packaging waste, plastics and other wastes such as general refuse. Steel materials generated from the project are grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials. The non-inert C&D materials other than steel and paper/cardboard packaging were disposed of at SENT Landfill. No steel material and 0.144 tonnes of paper/cardboard packaging were sent to recyclers for recycling during the reporting period.

5.6 ENVIRONMENTAL SITE INSPECTION

Weekly site inspections were carried out by the representatives of the Contractor, Engineer and the ET. Four site inspections were conducted on 7, 14, 21 and 28 January 2010. There was no non-compliance recorded during the site inspections.

Major findings and recommendations are summarized as follows:

- On 21 January, the drip tray underneath a drum of chemical was only partially covered. The Contractor was recommended to fully cover the chemical drum and the drip tray with tarpaulin sheets to avoid accumulation of water in the drip tray during rainy weather.
- On 21 January, site discharge containment measures were not properly implemented around a gully near the material storage area at the site entrance. The Contractor was recommended to provide sand bags around gullies to prevent muddy discharge from accidentally entering the drainage system or during rainy weather.
- On 21 January, oil sheen was observed on the ground near the chemical toilet at the material storage area next to the site entrance. The Contractor was recommended to clean up the oil sheen immediately and to dispose of the collected wastes as chemical wastes via licensed collectors.

Follow-up actions were undertaken as reported by the Contractor and observed in the weekly site inspection conducted in the reporting period.

5.7 ENVIRONMENTAL NON-CONFORMANCE

5.7.1 Summary of Monitoring Exceedance

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

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

5.7.2 Summary of Environmental Non-Compliance

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

5.7.3 Summary of Environmental Complaint

No complaint was received during the reporting period.

5.7.4 Summary of Environmental Summon and Successful Prosecution

No summons was received during the reporting period.

5.8 FUTURE KEY ISSUES

5.8.1 Key Issues for the Coming Month

Works to be undertaken for the coming two monitoring periods are summarized in *Table 5.11.*

Table 5.11 Construction Works to be Undertaken in the Coming Two Months at Central Drop Shaft

Work to be taken
• Construction of exposing existing H pile
• Construction of guide wall and diaphragm wall
• Site mobilization
• Installation of Monitoring Instrumentation
• Construction of underground drainage system

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

5.8.2 Monitoring Schedule for the Next Month

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

5.8.3 Construction Programme for the Next Month

The most updated 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 31 January 2010 at Sai Ying Pun Junction Shaft

Construction Activities Undertaken
• Construction of diaphragm wall • Site mobilization • Erection of site offices • Installation of Monitoring Instrumentation

6.2 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS

A summary of the relevant permits, licences, and/or notifications on environmental protection for this Project since December 2009 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
Environmental Permit	EP-322/2008	Expired on 10 July 2009	• Permit granted on 19 November 2008. Superceded on 10 July 2009.
	EP-322/2008/A	Expired on 2 November 2009	• Permit granted on 10 July 2009. Superceded on 2 November 2009.
	EP-322/2008/B	Throughout the Contract	• Permit granted on 2 November 2009
Notification of Construction Works under Air Pollution Control (Construction Dust) Regulation	--	--	• Reference number for Notification Pursuant to APC (Construction Dust) Regulation: 308136
Water Discharge License	Sai Ying Pun Junction Shaft WT00005133-2009	09 October 2009 - 31 October 2014	--
Chemical Waste Producer Registration	Sai Ying Pun Junction Shaft 5213-112-G2347-05	--	--
Construction Noise Permit	Sai Ying Pun Junction Shaft GW-RS0656-09	28 August 2009 - 28 February 2010	Superseded

Permit/ Licences/ Notification	Reference	Validity Period	Remarks
	Sai Ying Pun Junction Shaft GW-RS0028-10	14 January 2010 - 13 July 2010	--

6.3 ENVIRONMENTAL MONITORING REQUIREMENTS

6.3.1 Air Quality Monitoring

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

Monitoring Location

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

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

Worksite	Proposed 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 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 TSP	Once per day for 6 days
1-hour TSP	3 times per day for 6 days

Monitoring Equipment

Continuous 24-hour and 1-hour TSP monitoring were performed using High Volume Samplers (HVS) with appropriate sampling inlets installed, located at the designated monitoring station. The performance specification of HVS complied with the standard method "*Determination of Suspended Particulate*

Matter in the Atmosphere (High Volume Method)" as stipulated in *US EPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50 Appendix B)*. ***Table 6.5*** summarizes the equipment that was deployed for the 24-hour and 1-hour TSP monitoring.

Table 6.5 TSP Monitoring Equipment at Sai Ying Pun Junction Shaft

Monitoring Station	Monitoring Equipment (HVS and Calibrator)
24-hr and 1-hr TSP	
AM5	GMW GS-2310 (S/N 8162), CM-AIR-43 (S/N 9833620)

Monitoring Methodology

Installation

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

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

- appropriate support to secure the samplers against gusty wind were provided at AM5;
- a minimum of 2m separation from walls, parapets and penthouses was required for rooftop samplers;
- no furnace or incinerator flues were nearby;
- airflow around the sampler was unrestricted; and
- permission was obtained to set up the samplers and to gain access to the monitoring stations.

Preparation of Filter Papers

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

Field Monitoring

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

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

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

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

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

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

- a new flowrate 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 folder in half length so that only surfaces with collected particulate matter were in contact;

- it was then placed in a clean plastic envelope and sealed;

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

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

Maintenance and Calibration

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

- the flow rate of each HVS with mass flow controller were calibrated using an orifice calibrator. Initial calibrations of the dust monitoring equipments 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 F4*.

Wind Data Monitoring

Average wind data (wind speed and wind direction) during the monitoring period were obtained from the meteorological stations of the Hong Kong Observatory (HKO) and are presented in *Annex F6*.

Action and Limit Levels

The Action and Limit levels have been established and presented in *Table 6.6*.

Table 6.6 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 TSP	AM5	188	260
1-hour TSP	AM5	332	500

Event and Action Plan

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

6.3.2 Noise Monitoring

Monitoring Location

In accordance with the EM&A Manual, monitoring of construction noise impact should be conducted at the designated monitoring stations. Since access to some of the proposed monitoring locations stated in the EM&A Manual were rejected or not available; alternative locations, therefore, were proposed and agreed by the ER and the IEC. The construction noise monitoring location for this Contract is listed in ***Table 6.7*** and is shown in *Annex F2*.

Table 6.7 Construction Phase Noise Monitoring Station at Sai Ying Pun Junction Shaft

Worksite	Proposed 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_{eq}) in decibels dB(A). $L_{eq\ (30min)}$

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

Monitoring Equipment and Methodology

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

The sound level meters and calibrator used for the noise measurement, as listed in *Table 6.8*, complies with IEC 651: 1979 and 804:1985 (Type 1) specification. The calibration certificates of the sound level meters are included in *Annex H*.

Table 6.8 Noise Monitoring Equipment at Sai Ying Pun Junction Shaft

Monitoring Station	Monitoring Equipment (Sound Level Metre and Calibrator)
NM4	Calibrator: Rion NC-73 (S/N 10786708) Sound Level Metre: Rion NL-18 (S/N 00360030) or Rion NL-31 (S/N 00320533) or Rion NL-31 (S/N 00410224) or Rion NA-27 (S/N 00201194)

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

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

Action and Limit Levels

The action and limit levels for the noise monitoring during different monitoring periods are summarized in Table 6.9

Table 6.9 Action and Limit Levels for Noise Monitoring at Sai Ying Pun Junction Shaft

Noise Monitoring Location	Noise Criteria, Leq(30mins), dB(A)	Remark
NM4	75	-

Noise Monitoring Location	Noise Criteria, Leq(5mins), dB(A)	Remark
NM4	70	Applicable on Sundays and public holidays.

Event and Action Plan

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

6.3.3 Cultural Heritage

No vibration monitoring is required for this reporting month as no blasting of tunnel / shaft works was carried out.

6.3.4 Landscape and Visual Monitoring

In accordance with the EM&A Manual, monthly landscape and visual monitoring is required to ensure that the design, implementation and maintenance of landscape and visual mitigation measures are fully achieved. The landscape and visual monitoring should be carry out on site with authorize registered landscape architect (RLA) for supervision. The monitoring procedures and criteria as described in the EM&A Manual were adopted.

Event and Action Plan

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

6.4 IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS

The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Report, the Environmental Permit and EM&A Manual. The implementation status during the reporting period is summarized in *Annex F5*.

6.5 MONITORING RESULTS

6.5.1 Air Quality

A total of five sets of 24-hour and fifteen sets of 1-hour TSP measurements were carried out at AM5 during the reporting period. The monitoring data for 24-hour TSP and 1-hour TSP together with wind data and graphical presentations are presented in *Annex F6*.

The weather condition during the monitoring period varied from sunny to fine. The local impacts near the monitoring stations of AM5 were mainly associated with vehicle emissions. No exceedance of Action and Limit Levels of 1-hr and 24-hr TSP were recorded during the reporting period.

6.5.2 Noise

A total of four sets of 30-minute construction noise measurements were carried out at the monitoring station NM4 during normal weekdays of the reporting period. The monitoring results together with graphical

presentations are presented in *Annex F7*. The local impacts observed near the monitoring stations of NM4 were traffic noise from Connaught Road West.

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

6.5.3 Landscape and Visual

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

6.5.4 Cultural Heritage

No vibration monitoring was conducted for this reporting month as the blasting of tunnel / shaft works have not started.

6.5.5 Waste Management

Waste generated from this Project includes inert construction and demolition (C&D) materials and non-inert C&D materials. Non-inert C&D materials is 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. Reference has been made on the Monthly Summary Waste Flow Table prepared by the Contractor (*Annex J*). The waste statistics provided in this section represent the cumulative quantity of wastes generated from all sites in this Project. With reference to relevant handling records and trip tickets of this Project, the quantities of different types of waste generated in the reporting month are summarised in *Table 6.10*. The inert C&D materials and general refuse generated from the Project were disposed of at Tuen Mun Area 38/Tseung Kwan O Area 137 Fill Bank/Chai Wan Barging Point and SENT Landfill respectively. 0.144 tonnes of paper/cardboard packaging were sent to recyclers for recycling during the reporting period.

Table 6.10 Quantities of Waste Generated from the Project for all Sites

Month / Year	Quantity		
	C&D Materials (inert) [a]	C&D Materials (non-inert) [b]	Chemical Waste
January 2010	7,986.1 tonnes	44.644 tonnes	800 L

Notes:

(a) Inert C&D materials include bricks, concrete, building debris, rubble and excavated soil. No inert C&D material was reused in this Project during the reporting period. Non-reused inert C&D materials were disposed of at the Tuen Mun Area 38/Tseung Kwan O Area 137 Fill Bank/ Chai Wan Barging Point.

(b) Non-inert C&D materials include steel, paper / cardboard packaging waste, plastics and other wastes such as general refuse. Steel materials generated from the project are grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials. The non-inert C&D materials other than steel and paper/cardboard packaging were disposed of at SENT Landfill. No steel material and 0.144 tonnes of paper/cardboard packaging were sent to recyclers for recycling during the reporting period.

6.6 ENVIRONMENTAL SITE INSPECTION

Weekly site inspections were carried out by the representatives of the Contractor, Engineer and the ET. Four site inspections were conducted on 7, 14, 21 and 28 January 2010. There was no non-compliance recorded during the site inspections.

Major findings and recommendations are summarized as follows:

- On 14 January, rusty water was observed to have accumulated near the silo tanks. The Contractor was recommended to clear the water as soon as possible as part of good housekeeping practices.

Follow-up actions were undertaken as reported by the Contractor and observed in the weekly site inspection conducted in the reporting period.

6.7 ENVIRONMENTAL NON-CONFORMANCE

6.7.1 *Summary of Monitoring Exceedance*

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

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

6.7.2 *Summary of Environmental Non-Compliance*

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

6.7.3 *Summary of Environmental Complaint*

No complaint was received during the reporting period.

6.7.4 *Summary of Environmental Summon and Successful Prosecution*

No summons was received during the reporting period.

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 summarized in *Table 6.11.*

Table 6.11 Construction Works to be Undertaken in the Coming Two Months at Sai Ying Pun Junction Shaft

Work to be taken
• Erection of site offices
• Construction of diaphragm wall
• Installation of Monitoring Instrumentation
• Marine Dumping of excavated marine sediment

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

6.8.2 *Monitoring Schedule for the Next Month*

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

6.8.3 *Construction Programme for the Next Month*

The most updated construction programme for the Project is presented in *Annex F8***.**

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 31 January 2010 at Stonecutters Island Production and Riser Shafts

Construction Activities Undertaken
• Construction of diaphragm wall at Stonecutters Island Production Shaft and Riser Shaft
• Installation of Monitoring Instrumentation

7.2 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS

A summary of the relevant permits, licences, and/or notifications on environmental protection for this Project since December 2009 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
Environmental Permit	EP-322/2008	Expired on 10 July 2009	• Permit granted on 19 November 2008. • Superceded on 10 July 2009.
	EP-322/2008/A	Expired on 2 November 2009	• Permit granted on 10 July 2009. • Superceded on 2 November 2009.
	EP-322/2008/B	Throughout the Contract	• Permit granted on 2 November 2009
Notification of Construction Works under Air Pollution Control (Construction Dust) Regulation	--	--	• Reference number for Notification Pursuant to APC (Construction Dust) Regulation: 308136
Water Discharge License	Stonecutters Island Production Shaft and Riser Shaft WT00005069-2009	06 October 2009 - 31 October 2014	--
Chemical Waste Producer Registration	Stonecutters Island Production Shaft and Riser Shaft 5213-269-G2449-07	--	--
Construction Noise Permit	Stonecutters Island Production Shaft and Riser Shaft	17 September 2009 - 15 March 2010	--

Permit/ Licences/ Notification	Reference	Validity Period	Remarks
	GW-RW0397-09		

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

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

Worksite	Proposed Construction Air Quality Monitoring Station			
	ID in EM&A Manual	ID	Location	Remark
SCISTW	-	AM6	Works Site Boundary	• Power Access supply for operation of HVS was not feasible to the rooftop of Government Dockyard Offices (CM_SCI1). • For COSCO HIT Terminal (CM_SCI2), access application was verbally rejected. • Club House (CM_SCI3) is blocked by a high building which will deteriorate 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 Shaft

Parameter	Frequency
24-hour TSP	Once per day for 6 days
1-hour TSP	3 times per day for 6 days

Monitoring Equipment

Continuous 24-hour and 1-hour TSP monitoring were performed using High Volume Samplers (HVS) with appropriate sampling inlets installed, located at the designated monitoring station. The performance specification of HVS complied with the standard method "*Determination of Suspended Particulate Matter in the Atmosphere (High Volume Method)*" as stipulated in *US EPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50 Appendix B)*. *Table 7.5* summarizes the equipment that was deployed for the 24-hour and 1-hour TSP monitoring.

Table 7.5 TSP Monitoring Equipment at Stonecutters Island Production and Riser Shaft

Monitoring Station	Monitoring Equipment (HVS and Calibrator)
24-hr and 1-hr TSP	
AM6	GMW GS-2310 (S/N 1254), CM-AIR-43 (S/N 9833620)

Monitoring Methodology

Installation

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

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

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

Preparation of Filter Papers

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

Field Monitoring

- the power supply was checked to ensure that the HVSs were working properly;
- the filter holder and the area surrounding the filter were cleaned;
- the filter holder was removed by loosening the foul bolts and a new filter, with stamped number upward, on a supporting screen was aligned carefully;
- the filter was properly aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter;
- the swing bolts were fastened to hold the filter holder down to the frame. The pressure applied should be sufficient to avoid air leakage at the edges;
- then the shelter lid was closed and secured with the aluminium strip;
- the HVSs were warmed-up for about 5 minutes to establish run-temperature conditions;
- a new flowrate 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 folder in half length so that only surfaces with collected particulate matter were in contact;
- it was then placed in a clean plastic envelope and sealed;

- all monitoring information was recorded on a standard data sheet; and
- filters were sent to SGS Hong Kong Ltd for analysis.

Maintenance and Calibration

- the HVSs and their accessories were maintained in good working condition, such as replacing motor brushes routinely and checking electrical wiring to ensure a continuous power supply; and
- the flow rate of each HVS with mass flow controller were calibrated using an orifice calibrator. Initial calibrations of the dust monitoring equipments 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 G4*.

Wind Data Monitoring

Average wind data (wind speed and wind direction) during the monitoring period were obtained from the meteorological stations of the Hong Kong Observatory (HKO) and are presented in *Annex G6*.

Action and Limit Levels

The Action and Limit levels have been established and presented in *Table 7.6*. The baseline air monitoring data (24-hr and 1-hr TSP average) measured under *HATS2A – Provision of Disinfection Facilities at SCISTW* (DF) is also included to establish the Action Level at AM6.

Table 7.6 Action and Limit Levels for Air Quality at Stonecutters Island Production and Riser Shaft

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

Event and Action Plan

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

7.3.2 Noise Monitoring

Monitoring Location

In accordance with the EM&A Manual, monitoring of construction noise impact should be conducted at the designated monitoring stations. Since access to some of the proposed monitoring locations stated in the EM&A Manual were rejected or not available; alternative locations, therefore, were proposed and agreed by the ER and the IEC. The construction noise

monitoring location for this Contract is listed in ***Table 7.7*** and is shown in *Annex G2*.

Table 7.7 ***Construction Phase Noise Monitoring Station at Stonecutters Island Production and Riser Shafts***

Worksite	Proposed 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 rejected. • NM5 is located next to the original proposed location.

Monitoring Parameters, Frequency and Programme

Weekly construction noise monitoring was conducted in accordance with the requirements stipulated in the EM&A Manual. Additional noise monitoring were also conducted as per required in the EM&A Manual when works were carried out during restricted periods. The 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_{eq}) in decibels dB(A). $L_{eq\ (30min)}$ were used as the monitoring parameter for the time period in between 0700 – 1900 hours on normal weekdays, and $L_{eq\ (5min)}$ were used as the monitoring parameter for all restricted periods. Supplementary information for data auditing, two statistical sound levels L_{10} and L_{90}; the levels exceeded for 10 and 90 percent of the time respectively, were also recorded during the monitoring for reference. The measured noise levels were logged in every 5 minutes throughout the impact monitoring period.

Monitoring Equipment and Methodology

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

The sound level meters and calibrator used for the noise measurement, as listed in *Table 7.8*, complies with IEC 651: 1979 and 804:1985 (Type 1) specification. The calibration certificates of the sound level meters are included in *Annex H*.

Table 7.8 ***Noise Monitoring Equipment at Stonecutters Island Production and Riser Shafts***

Monitoring Station	Monitoring Equipment (Sound Level Metre and Calibrator)
NM5	Calibrator: Rion NC-73 (S/N 10786708)
	Sound Level Metre: Rion NL-18 (S/N 00360030) or Rion NL-31 (S/N 00320533) or Rion NL-31 (S/N 00410224) or Rion NA-27 (S/N 00201194)

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

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

Action and Limit Levels

The action and limit levels for the noise monitoring during different monitoring periods are summarized in *Table 7.9*.

Table 7.9 ***Action and Limit Levels for Noise Monitoring at Stonecutters Island Production and Riser Shaft***

Noise Monitoring Location	Noise Criteria, Leq(30mins), dB(A)	Remark
NM5	75	During weekday normal working hours
	70	Applicable on Sundays and public holidays.

Event and Action Plan

The Event and Action Plan (EAP) for noise monitoring is 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.

7.3.4 Landscape and Visual Monitoring

In accordance with the EM&A Manual, monthly landscape and visual monitoring is required to ensure that the design, implementation and maintenance of landscape and visual mitigation measures are fully achieved. The landscape and visual monitoring should be carry out on site with authorize registered landscape architect (RLA) for supervision. The monitoring procedures and criteria as described in the EM&A Manual were adopted.

Event and Action Plan

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

7.4 IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS

The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Report, the Environmental Permit and EM&A Manual. The implementation status during the reporting period is summarized in *Annex G5*.

7.5 MONITORING RESULTS

7.5.1 Air Quality

A total of five sets of 24-hour and fifteen sets of 1-hour TSP measurements were carried out at AM6 during the reporting period. The monitoring data for 24-hour TSP and 1-hour TSP together with wind data and graphical presentations are presented in *Annex G6*.

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

7.5.2 Noise

A total of four sets of 30-minute construction noise measurements were carried out at the monitoring station NM5 during normal weekdays of the reporting period. Construction work was also conducted on public holidays and Sundays starting on 20 December 2009. Hence, five sets of 3 x 5-minute construction noise measurements were carried out during restricted hours (between 0700 and 2300 hours on Sundays and public holidays) of the reporting period. The monitoring results together with graphical presentations are presented in *Annex C7*. The local impacts observed near the monitoring stations of NM5 included operations at the Government Dockyard, other construction sites activities and traffic within the SCI STW in the vicinity.

Exceedance of the limit level was recorded on 10 January at NM5. Investigation has been conducted to review the potential causes for the noise level recorded. A summary of the investigation result is presented in *Section 7.7.1*.

7.5.3 Landscape and Visual

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

The monitoring has commenced since December 2009 during weekly site inspections. Major findings and recommendations in the reporting period are summarized as follows:

- bentonite slurry was observed to be leaking into the soil nearby and may damage tree roots. The Contractor was recommended to clean the contaminated soil as soon as possible and provide spillage bunds to prevent bentonite slurry spillage.

7.5.4 Cultural Heritage

No vibration monitoring was conducted for this reporting month as the blasting of tunnel / shaft works have not started.

7.5.5 Waste Management

Waste generated from this Project includes inert construction and demolition (C&D) materials and non-inert C&D materials. Non-inert C&D materials is 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. Reference has been made on the Monthly Summary Waste Flow Table prepared by the Contractor (*Annex J*). The waste statistics provided in this section represent the cumulative quantity of wastes generated from all sites in this Project. With reference to relevant handling records and trip tickets of this Project, the quantities of different types of waste generated in the reporting month are summarised in *Table 7.10*. The inert C&D materials and general refuse generated from the Project were disposed of at Tuen Mun Area 38/Tseung Kwan O Area 137 Fill Bank/Chai Wan Barging Point and SENT Landfill respectively. 0.144 tonnes of paper/cardboard packaging were sent to recyclers for recycling during the reporting period.

Table 7.10 Quantities of Waste Generated from the Project for all Sites

Month / Year	Quantity		
	C&D Materials (inert) [a]	**C&D Materials (non-inert) [b]**	**Chemical Waste**
January 2010	7,986.1 tonnes	44.644 tonnes	800 L

Notes:

(a) Inert C&D materials include bricks, concrete, building debris, rubble and excavated soil. No inert C&D material was reused in this Project during the reporting period. Non-reused inert C&D materials were disposed of at the Tuen Mun Area 38/Tseung Kwan O Area 137 Fill Bank/ Chai Wan Barging Point.

(b) Non-inert C&D materials include steel, paper / cardboard packaging waste, plastics and other wastes such as general refuse. Steel materials generated from the project are grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials. The non-inert C&D materials other than steel and paper/cardboard packaging were disposed of at SENT Landfill. No steel material and 0.144 tonnes of paper/cardboard packaging were sent to recyclers for recycling during the reporting period.

7.6 ENVIRONMENTAL SITE INSPECTION

Weekly site inspections were carried out by the representatives of the Contractor, Engineer and the ET. Four site inspections were conducted on 7,

14, 21 and 28 January 2010. There was no non-compliance recorded during the site inspections.

Major findings and recommendations are summarized as follows:

- On 7 January, the labels on the marine sediment tanks at the Stonecutters Island Production Shaft were observed to be missing. The Contractor was recommended to replace the labelling for all containers properly.

- On 7 January, stagnant water was observed adjacent to a generator on the ground near the production shaft of Stonecutters Island. The Contractor was recommended to inspect and clear stagnant water inside containers, trays and depressed areas on-site regularly as part of good housekeeping practices, especially after rainy weather, to avoid mosquito breeding on-site.

- On 28 January, stagnant water was observed to have accumulated in the tank near the bentonite filtering plant. The Contractor was recommended to clear the water as soon as possible as part of good housekeeping practices.

Follow-up actions were undertaken as reported by the Contractor and observed in the weekly site inspection conducted in the reporting period.

7.7 ENVIRONMENTAL NON-CONFORMANCE

7.7.1 Summary of Monitoring Exceedance

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

Marginal exceedance of limit level was reported at NM5 on 10 January 2010. With reference to the investigation results at NM5, it was concluded that the marginal exceedance were not solely attributable to the works from the Project. However, 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 and public complaints. The Contractor is also reminded to ensure that the construction plant deployed for the works during restricted hours is in strict accordance with the approval granted in the relevant Construction Noise Permit (CNP).

Table 7.11 ***Summary of Record of Exceedance at Stonecutters Island Production and Riser Shafts***

Station	Record of Exceedance	Result of Investigation
NM5	Marginal exceedance of Limit Level on 10 Jan 2010	Construction activities for the Project, including operations of hydro mills, bentonite filtering plants, a mobile crane, generators, welding machines and water pumps (petrol) were being conducted within the Site. PME was deployed on site in accordance with the CNP requirements with respect to types and numbers. Some other noise sources, such as aircrafts passing by or occasional traffic were also noticed during the monitoring period, which may have also contributed to the measured noise level. It is therefore concluded that the marginal noise exceedance is considered not solely caused by the Contractor's construction activities.

7.7.2 Summary of Environmental Non-Compliance

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

7.7.3 Summary of Environmental Complaint

No complaint was received during the reporting period.

7.7.4 Summary of Environmental Summon and Successful Prosecution

No summons was received during the reporting period.

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 summarized in *Table 7.12.*

Table 7.12 ***Construction Works to be Undertaken in the Coming Two Months at Stonecutters Island Production and Riser Shafts***

Work to be taken
• Construction of diaphragm wall
• Installation of Monitoring Instrumentation
• Marine Dumping of excavated marine sediment

Potential environmental impacts arising from the above construction activities are mainly associated with dust, construction noise, site runoff 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 G8*.

8 CONCLUSIONS

The Environmental Monitoring and Audit (EM&A) Report presents the EM&A works undertaken during the period from 1 to 31 January 2010 in accordance with EM&A Manual and the requirement under EP-322/2008/B. The conclusions for different sites were summarised as below.

8.1 NORTH POINT PRODUCTION AND DROP SHAFT

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

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

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

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

8.2 WAN CHAI EAST PRODUCTION AND DROP SHAFTS

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

Four exceedances of noise limit level during restricted hours were reported at NM2 on 10, 17 24 and 31 January 2010. Investigations into the incidents were made and concluded that the traffic noise in the vicinity of the Project was the major cause of the noise levels recorded. However, the Contractor of this Project was reminded to adhere strictly to the Construction Noise Mitigation Plan and to implement all relevant noise mitigation measures to avoid exceedance of noise limit levels or causing noise nuisance.

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

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

8.3 CENTRAL DROP SHAFT

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

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

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

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

8.4 SAI YING PUN JUNCTION SHAFT

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

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

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

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

8.5 STONECUTTERS ISLAND PRODUCTION AND RISER SHAFT

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

One exceedance of noise limit level during restricted hours was recorded at NM5 on 10 January 2010. Investigation into the incidents was made and concluded that the marginal exceedance were not solely attributable to the works from the Project as some other noise sources, such as aircrafts passing by or occasional traffic were also noticed during the monitoring period, which may have also contributed to the measured noise level.. The Contractor is reminded to adhere strictly to the Construction Noise Mitigation Plan and to implement all relevant noise mitigation measures to avoid exceedance of noise limit levels and public complaints.

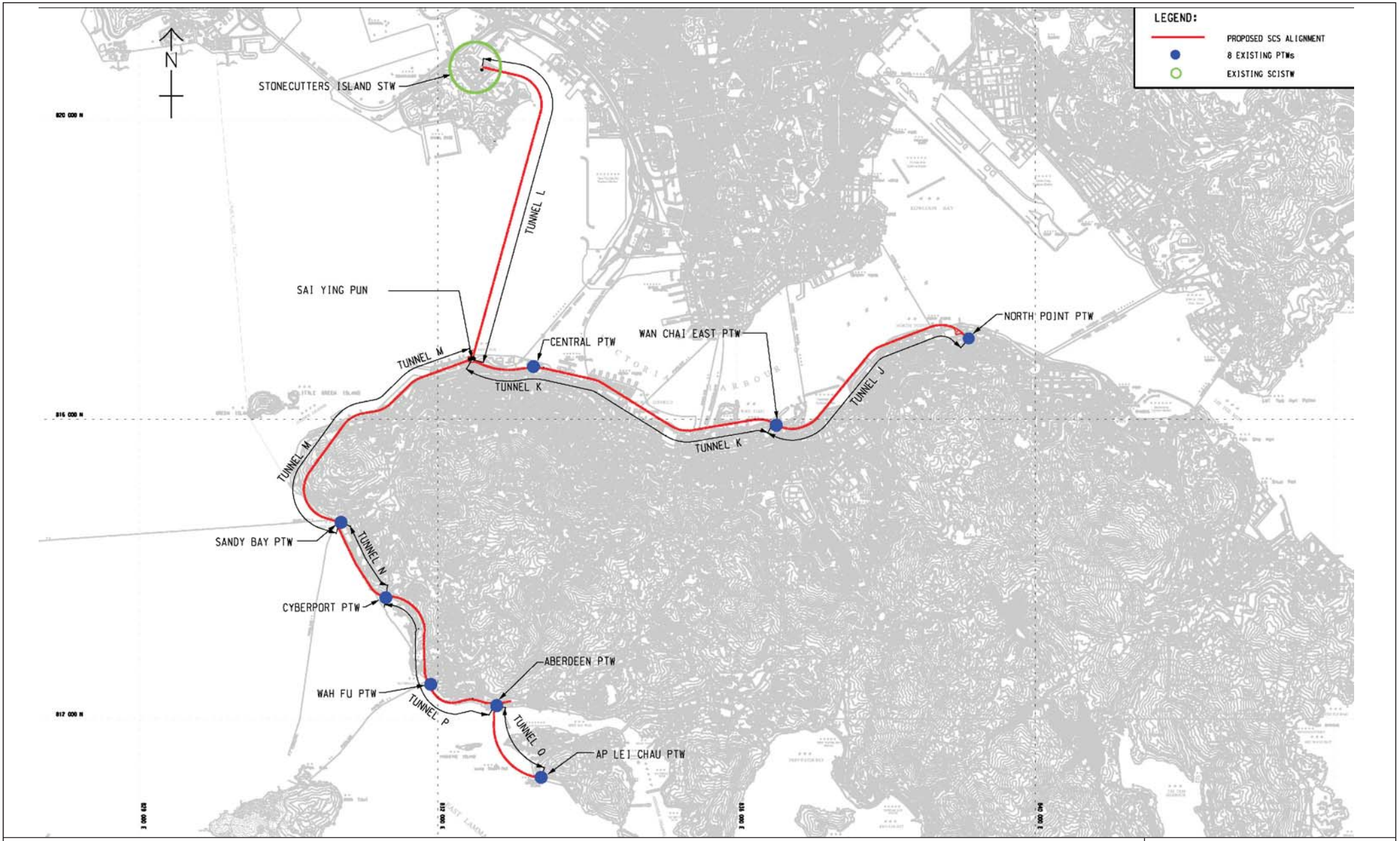
No non-compliance event was recorded during the reporting period.

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

The ET will keep track on the EM&A programme to ensure compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

Annex A

Locations of Works Areas



Annex A

General Layout Plan of HATS Stage 2A

FILE: 0104887a
DATE: 07/01/2010

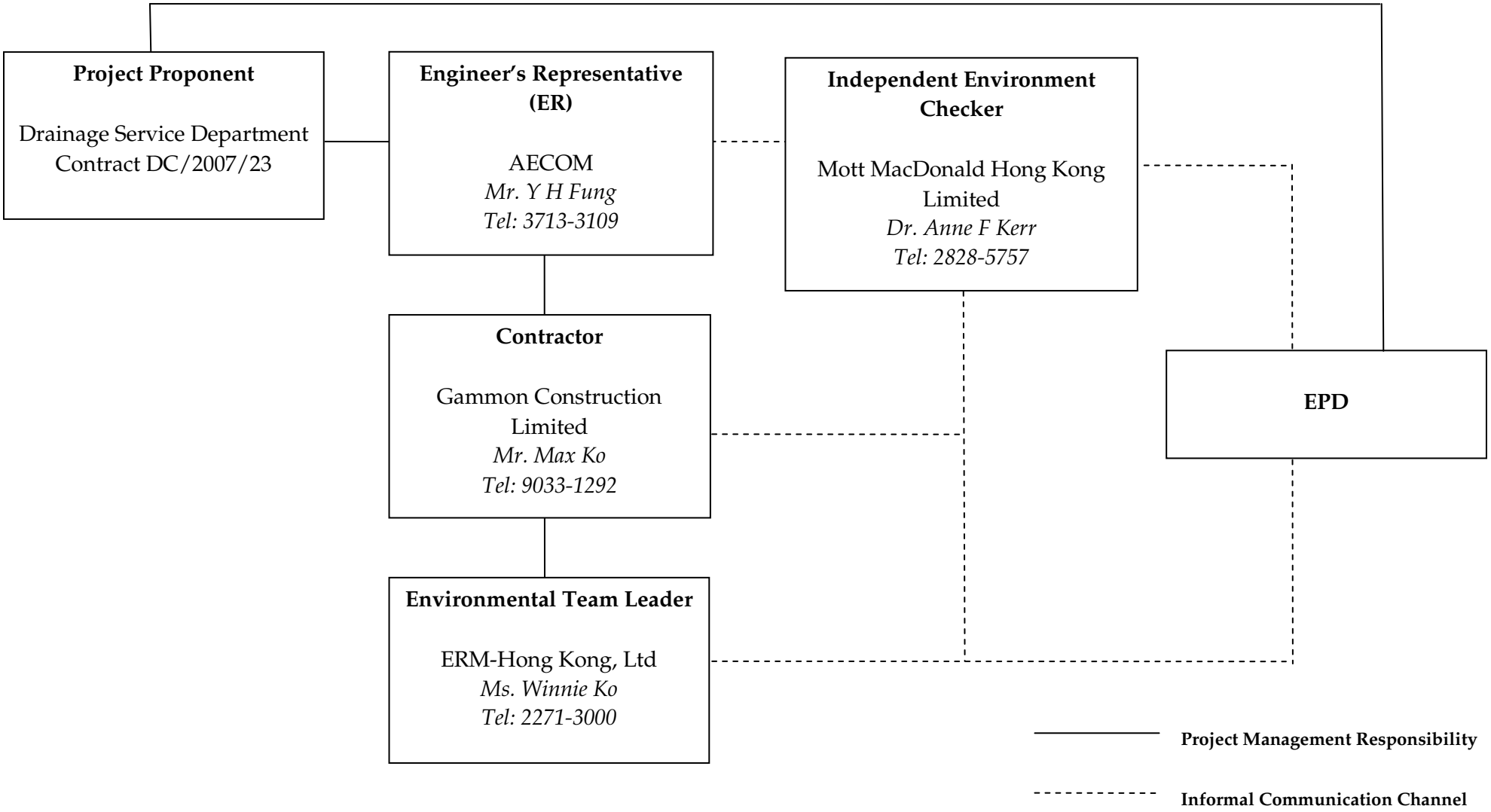
Environmental Resources Management

ERM

Annex B

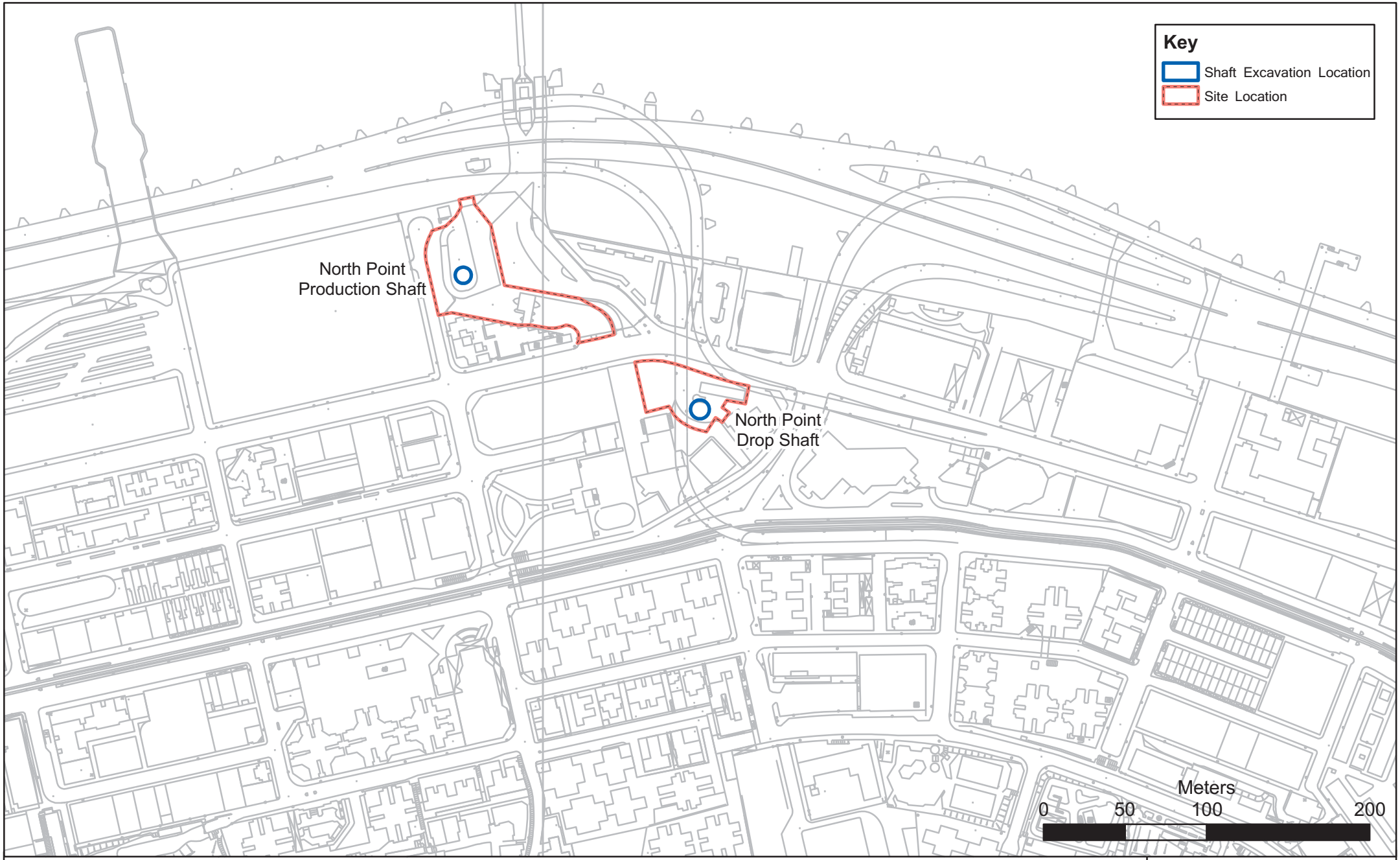
Project Organization Chart and Contact Detail

Project Organization



Annex C

North Point Production and Drop Shafts



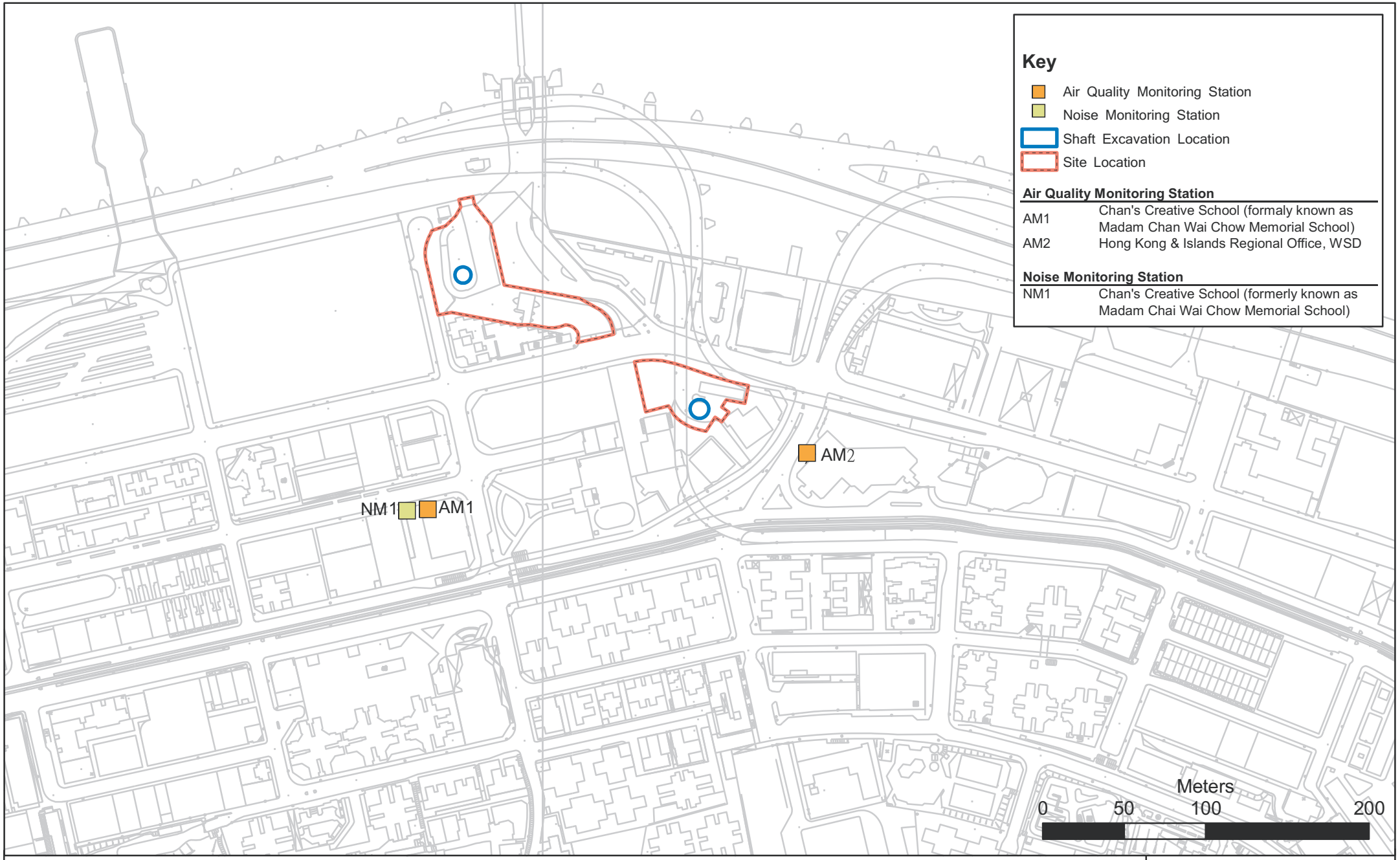
Annex C1

Contract No. DC/2007/23
Harbour Area Treatment Scheme Stage 2A
Construction of Sewage Conveyance System from North Point to Stonecutters Island
Construction 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.mxd
Date: 29/10/2009

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 : January 2010

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1-Jan	2-Jan
					new year holiday	
3-Jan	4-Jan	5-Jan	6-Jan	7-Jan	8-Jan	9-Jan
		1-hr and 24-hr Monitoring				
10-Jan	11-Jan	12-Jan	13-Jan	14-Jan	15-Jan	16-Jan
	1-hr and 24-hr Monitoring					1-hr and 24-hr Monitoring
17-Jan	18-Jan	19-Jan	20-Jan	21-Jan	22-Jan	23-Jan
					1-hr and 24-hr Monitoring	
24-Jan	25-Jan	26-Jan	27-Jan	28-Jan	29-Jan	30-Jan
				1-hr and 24-hr Monitoring		
31-Jan						

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 : January 2010

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1-Jan	2-Jan
					new year holiday	
3-Jan	4-Jan	5-Jan	6-Jan	7-Jan	8-Jan	9-Jan
		1-hr and 24-hr Monitoring				
10-Jan	11-Jan	12-Jan	13-Jan	14-Jan	15-Jan	16-Jan
	1-hr and 24-hr Monitoring					1-hr and 24-hr Monitoring
17-Jan	18-Jan	19-Jan	20-Jan	21-Jan	22-Jan	23-Jan
					1-hr and 24-hr Monitoring	
24-Jan	25-Jan	26-Jan	27-Jan	28-Jan	29-Jan	30-Jan
				1-hr and 24-hr Monitoring		
31-Jan						

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 : February 2009

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1-Feb	2-Feb	3-Feb	4-Feb	5-Feb	6-Feb
			1-hr and 24-hr Monitoring			
7-Feb	8-Feb	9-Feb	10-Feb	11-Feb	12-Feb	13-Feb
		1-hr and 24-hr Monitoring				The day preceding Lunar New Year's Day
14-Feb	15-Feb	16-Feb	17-Feb	18-Feb	19-Feb	20-Feb
The first day of the Lunar New Year	The second day of the Lunar New Year	The third day of the Lunar New Year	1-hr and 24-hr Monitoring			
21-Feb	22-Feb	23-Feb	24-Feb	25-Feb	26-Feb	27-Feb
		1-hr and 24-hr Monitoring				
28-Feb						

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 : February 2009

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1-Feb	2-Feb	3-Feb	4-Feb	5-Feb	6-Feb
			1-hr and 24-hr Monitoring			
7-Feb	8-Feb	9-Feb	10-Feb	11-Feb	12-Feb	13-Feb
		1-hr and 24-hr Monitoring				The day preceding Lunar New Year's Day
14-Feb	15-Feb	16-Feb	17-Feb	18-Feb	19-Feb	20-Feb
The first day of the Lunar New Year	The second day of the Lunar New Year	The third day of the Lunar New Year	1-hr and 24-hr Monitoring			
21-Feb	22-Feb	23-Feb	24-Feb	25-Feb	26-Feb	27-Feb
		1-hr and 24-hr Monitoring				
28-Feb						

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 Monitoring Schedule

NM1 - Chan's Creative School

Monitoring Month : January 2010

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1-Jan	2-Jan
					New Year Day	
3-Jan	4-Jan	5-Jan	6-Jan	7-Jan	8-Jan	9-Jan
		Noise Monitoring				
10-Jan	11-Jan	12-Jan	13-Jan	14-Jan	15-Jan	16-Jan
	Noise Monitoring (rescheduled due to bad weather)				Noise Monitoring (repeat of noise monitoring on 11 Jan)	
17-Jan	18-Jan	19-Jan	20-Jan	21-Jan	22-Jan	23-Jan
					Noise Monitoring	
24-Jan	25-Jan	26-Jan	27-Jan	28-Jan	29-Jan	30-Jan
				Noise Monitoring		
31-Jan						

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 Monitoring Schedule

NM1 - Chan's Creative School
Monitoring Month : February 2009

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1-Feb	2-Feb	3-Feb	4-Feb	5-Feb	6-Feb
			Noise Monitoring			
7-Feb	8-Feb	9-Feb	10-Feb	11-Feb	12-Feb	13-Feb
		Noise Monitoring				The day preceding Lunar New Year's Day
14-Feb	15-Feb	16-Feb	17-Feb	18-Feb	19-Feb	20-Feb
The first day of the Lunar New Year	The second day of the Lunar New Year	The third day of the Lunar New Year	Noise Monitoring			
21-Feb	22-Feb	23-Feb	24-Feb	25-Feb	26-Feb	27-Feb
		Noise Monitoring				
28-Feb						

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 9833620)	25 January 2010	25 March 2010
AM2	Rooftop of Hong Kong & Islands Regional Office, WSD	GMW GS-2310 (S/N 0145)	CM-AIR-43 (S/N 9833620)	25 January 2010	25 March 2010

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AM1
Calibrated by	:	K.T.Ho
Date	:	22/01/2010

Sampler

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

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	9833620
Service Date	:	18 May 2009
Slope (m)	:	1.97702
Intercept (b)	:	-0.00070
Correlation Coefficient(r)	:	0.99992

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1018
Ta(K)	:	290

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	13.1	3.678	1.861	66	67.1
2	13 holes	10.3	3.261	1.650	58	58.9
3	10 holes	8.0	2.874	1.454	50	50.8
4	7 holes	5.6	2.405	1.217	40	40.6
5	5 holes	3.1	1.789	0.905	28	28.5

Sampler Calibration Relationship

Slope(m):40.735 Intercept(b): -8.553 Correlation Coefficient(r): 0.9998

Checked by: Magnum Fan Date: 25/01/2010

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AM2
Calibrated by	:	K.T.Ho
Date	:	22/01/2010

Sampler

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

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	9833620
Service Date	:	18 May 2009
Slope (m)	:	1.97702
Intercept (b)	:	-0.00070
Correlation Coefficient(r)	:	0.99992

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1018
Ta(K)	:	290

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	12.4	3.578	1.810	64	65.0
2	13 holes	9.8	3.181	1.609	56	56.9
3	10 holes	7.8	2.838	1.436	49	49.8
4	7 holes	4.9	2.249	1.138	38	38.6
5	5 holes	2.6	1.639	0.829	26	26.4

Sampler Calibration Relationship

Slope(m):39.193 Intercept(b): -6.127 Correlation Coefficient(r): 0.9999

Checked by: Magnum Fan Date: 25/01/2010

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 minimize 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	Δ

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, • 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 North Point.	All work sites / during construction	Δ
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 minimize 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 deodorization system should be included in the Design and Construction Contract Document.	All PTW and SCISTW/ during 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 utilized 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	Δ
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	Δ

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Construction Works in Close Proximity of Storm Drains or Seafront To minimize 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	Δ

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 minimize 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 minimize 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	Δ
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	√

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, oxidizing, 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	Δ
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	Δ
Operational Phase	•		
Landscape & Visual	• Aesthetic design of the façade of PTW and associated structures to harmonize 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 C6 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 (hrs)	Flow Rate (m^3/min)			TSP Conc. ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Observations / Remarks	Sampler ID	Filter ID
Date	Time	Date	Time		Initial	Final	Initial	Final		Initial	Final	Average						
5-Jan-10	13:00	6-Jan-10	13:00	Cloudy	2.8128	2.9714	10156.03	10180.03	24.00	1.18	1.18	1.1800	93	185	260	Construction work in progress.	1808	5237
11-Jan-10	11:20	12-Jan-10	11:20	Rainy	2.8400	2.9871	10183.03	10207.03	24.00	1.1800	1.1800	1.1800	87	185	260	Construction work in progress.	1808	5230
16-Jan-10	11:45	17-Jan-10	11:45	Sunny	2.8319	3.0079	10210.03	10234.03	24.00	1.1800	1.1800	1.1800	104	185	260	Construction work in progress.	1808	5370
22-Jan-10	14:05	23-Jan-10	14:05	Fine	2.8629	3.0106	10237.03	10261.03	24.00	1.1900	1.1900	1.1900	86	185	260	Construction work in progress.	1808	5365
28-Jan-10	15:00	28-Jan-10	15:00	Fine	2.8558	3.0014	10264.03	10288.03	24.00	1.1900	1.1900	1.1900	85	185	260	Construction work in progress.	1808	5570
												Min.	85					
												Max.	104					
												Average	91					

24-hour TSP Monitoring Results

Station AM2

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time (hrs)	Flow Rate (m^3/min)			TSP Conc. ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Observations / Remarks	Sampler ID	Filter ID
Date	Time	Date	Time		Initial	Final	Initial	Final		Initial	Final	Average						
5-Jan-10	12:45	6-Jan-10	12:45	Cloudy	2.8381	2.9956	10930.93	10954.93	24.00	1.24	1.24	1.2400	88	182	260	Construction work in progress.	0145	5238
11-Jan-10	11:35	12-Jan-10	11:35	Rainy	2.8638	2.9987	10957.93	10981.93	24.00	1.2400	1.2400	1.2400	76	182	260	Construction work in progress.	0145	5328
16-Jan-10	12:00	17-Jan-10	12:00	Sunny	2.8720	3.0185	10984.93	11008.93	24.00	1.2400	1.2400	1.2400	82	182	260	Construction work in progress.	0145	5371
22-Jan-10	13:10	23-Jan-10	13:10	Fine	2.8250	2.9918	11011.93	11035.93	24.00	1.1800	1.1800	1.1800	98	182	260	Construction work in progress.	0145	5364
28-Jan-10	12:00	28-Jan-10	12:00	Fine	2.8769	3.0324	11038.93	11062.93	24.00	1.1800	1.1800	1.1800	92	182	260	Construction work in progress.	0145	5359
												Min.	76					
												Max.	98					
												Average	87					

Annex C6 24-hour and 1-hour TSP Monitoring Results

1-hour TSP Monitoring Results

Station AM1

Date	Start Time	Finish Time	Weather	TSP Concentration ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Site Conditions / Observations / Remarks	Temperature (℃)	Wind Speed * (m/s)	Sampler ID	Filter ID
5-Jan-10	8:40	9:40	Cloudy	158	340	500	Construction work in progress.	16		1808	5243
5-Jan-10	10:20	11:20	Cloudy	223	340	500	Construction work in progress.	16		1808	5242
5-Jan-10	11:25	11:35	Cloudy	223	340	500	Construction work in progress.	16		1808	5240
11-Jan-10	8:05	9:05	Rainy	120	340	500	Construction work in progress.	18		1808	5236
11-Jan-10	9:10	10:10	Rainy	134	340	500	Construction work in progress.	18		1808	5233
11-Jan-10	10:15	11:15	Rainy	152	340	500	Construction work in progress.	18		1808	5232
16-Jan-10	8:30	9:30	Sunny	116	340	500	Construction work in progress.	18		1808	5376
16-Jan-10	9:35	10:35	Sunny	136	340	500	Construction work in progress.	18		1808	5375
16-Jan-10	10:40	11:40	Sunny	157	340	500	Construction work in progress.	18		1808	5372
22-Jan-10	8:45	9:45	Fine	126	340	500	Construction work in progress.	20		1808	5436
22-Jan-10	9:50	10:50	Fine	143	340	500	Construction work in progress.	20		1808	5369
22-Jan-10	10:55	11:55	Fine	148	340	500	Construction work in progress.	20		1808	5366
28-Jan-10	8:30	9:30	Fine	105	340	500	Construction work in progress.	20		1808	5362
28-Jan-10	9:36	10:36	Fine	144	340	500	Construction work in progress.	20		1808	5568
28-Jan-10	10:40	11:40	Fine	167	340	500	Construction work in progress.	20		1808	5569
			Min.	**105**							
			Max.	**223**							
			Average	**150**							

Annex C6 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 (℃)	Wind Speed * (m/s)	Sampler ID	Filter ID
5-Jan-10	8:55	9:55	Cloudy	199	352	500	Construction work in progress.	16		0145	5244
5-Jan-10	10:35	11:35	Cloudy	192	352	500	Construction work in progress.	16		0145	5241
5-Jan-10	11:40	12:40	Cloudy	216	352	500	Construction work in progress.	16		0145	5239
11-Jan-10	8:20	9:20	Rainy	112	352	500	Construction work in progress.	18		0145	5235
11-Jan-10	9:25	10:25	Rainy	98	352	500	Construction work in progress.	18		0145	5234
11-Jan-10	10:30	11:30	Rainy	125	352	500	Construction work in progress.	18		0145	5231
16-Jan-10	8:45	9:45	Sunny	137	352	500	Construction work in progress.	18		0145	5377
16-Jan-10	9:50	10:50	Sunny	157	352	500	Construction work in progress.	18		0145	5374
16-Jan-10	10:55	11:55	Sunny	167	352	500	Construction work in progress.	18		0145	5373
22-Jan-10	9:00	10:00	Fine	150	352	500	Construction work in progress.	20		0145	5437
22-Jan-10	10:05	11:05	Fine	137	352	500	Construction work in progress.	20		0145	5368
22-Jan-10	11:10	12:10	Fine	144	352	500	Construction work in progress.	20		0145	5367
28-Jan-10	8:45	9:45	Fine	141	352	500	Construction work in progress.	20		0145	5363
28-Jan-10	9:48	10:48	Fine	168	352	500	Construction work in progress.	20		0145	5361
28-Jan-10	10:52	11:52	Fine	162	352	500	Construction work in progress.	20		0145	5360
			Min.	**98**							
			Max.	**216**							
			Average	**154**							

* Wind Speed data is presented in the following table

Meteorological Data Extracted from the Hong Kong Observatory

Date	Weather	King's Park Station				
		Average Air Temperature (°C)	Average Relative Humiditiy (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
02/01/2010	Rainy	17.4	88	5.2	0-18	SE
04/01/2010	Sunny	17.9	81	-	1-17	SE
05/01/2010	Rainy	17.3	84	0.8	0-30	SE
08/01/2010	Rainy	13.7	80	0.9	0-10	NE
09/01/2010	Sunny	15.1	78	-	0-20	E
14/01/2010	Sunny	14.4	65	-	0-26	E
15/01/2010	Sunny	16.6	65	-	1-26	SE
16/01/2010	Sunny	18.1	67	-	0-18	SE
20/01/2010	Sunny	21.4	83	-	0-15	SE
21/01/2010	Sunny	22.9	87	-	0-12	SE
22/01/2010	Sunny	18.4	86	-	1-23	SE
26/01/2010	Sunny	16.0	78	-	0-20	E
27/01/2010	Sunny	17.0	85	-	7-18	SE
28/01/2010	Sunny	19.3	90	-	0-14	E, W

Date	Weather	Kai Tak Station				
		Average Air Temperature (°C) *	Average Relative Humiditiy (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
02/01/2010	Rainy	17.4	88	5.2	1-20	E
04/01/2010	Sunny	17.9	81	-	7-20	SE
05/01/2010	Rainy	17.3	84	0.8	0-30	E
08/01/2010	Rainy	13.7	80	0.9	0-18	NW, NE
09/01/2010	Sunny	15.1	78	-	3-27	E
14/01/2010	Sunny	14.4	65	-	0-32	E
15/01/2010	Sunny	16.6	65	-	2-29	E
16/01/2010	Sunny	18.1	67	-	0-27	SE
20/01/2010	Sunny	21.4	83	-	1-22	E
21/01/2010	Sunny	22.9	87	-	2-28	SE
22/01/2010	Sunny	18.4	86	-	9-31	E
26/01/2010	Sunny	16.0	78	-	3-24	NE, E
27/01/2010	Sunny	17.0	85	-	6-26	E
28/01/2010	Sunny	19.3	90	-	0-21	SE

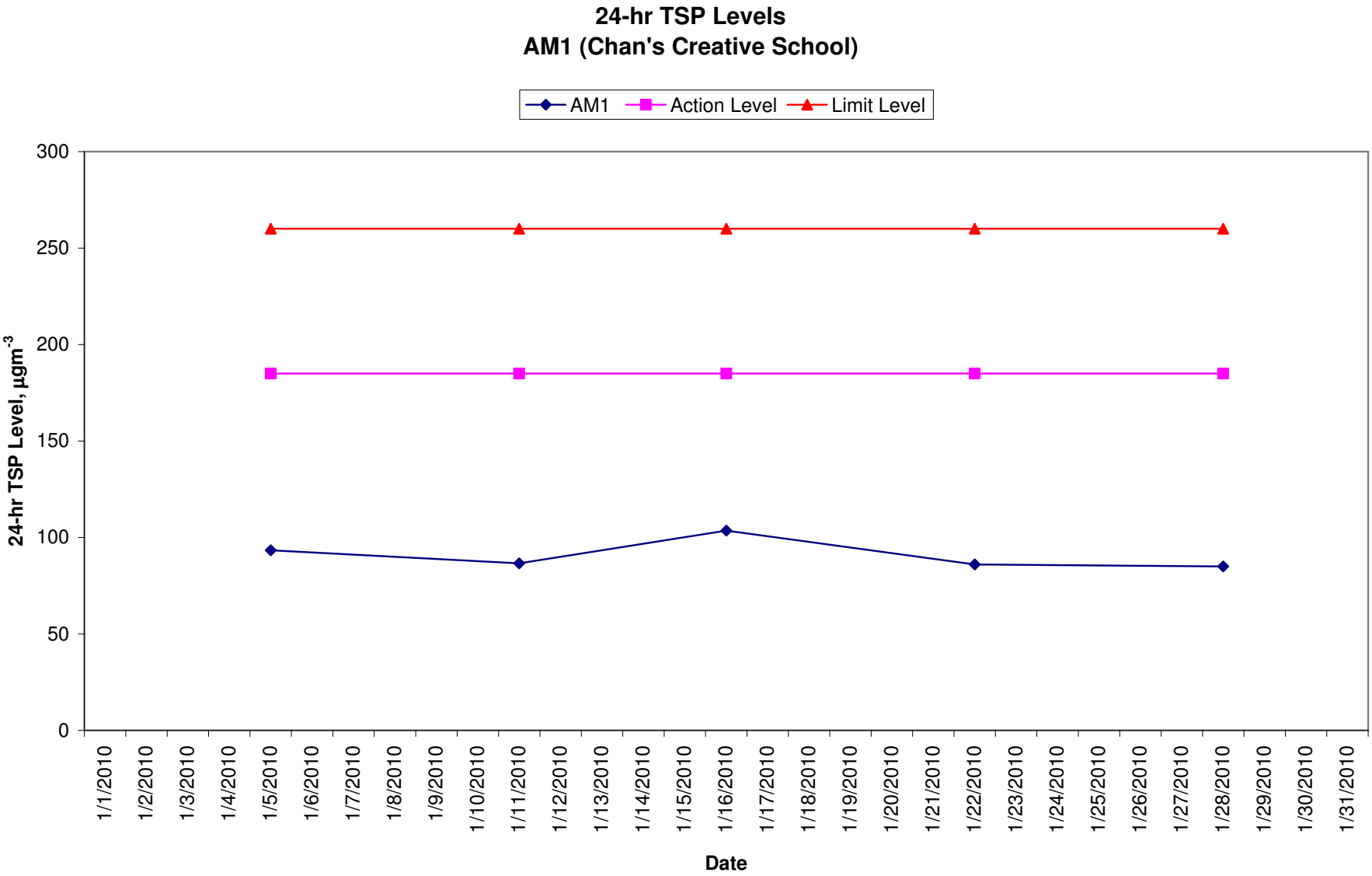
* king's park data
\- data were not available
\# less than 24 hourly observations per day

Meteorological Data Extracted from the Hong Kong Observatory

Date	Weather	Tsing Yi Station				
		Average Air Temperature (°C)	Average Relative Humiditiy (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
02/01/2010	Rainy	17.4	88	5.2	2-15	SE, NW
04/01/2010	Sunny	17.9	81	-	1-16	SE
05/01/2010	Rainy	17.3	84	0.8	1-19	E, NW
08/01/2010	Rainy	13.7	80	0.9	0-15	NW
09/01/2010	Sunny	15.1	78	-	0.5-18	SE
14/01/2010	Sunny	14.4	65	-	2-22	E
15/01/2010	Sunny	16.6	65	-	2-22	E
16/01/2010	Sunny	18.1	67	-	0-21	E
20/01/2010	Sunny	21.4	83	-	0-16	E
21/01/2010	Sunny	22.9	87	-	0-16	E
22/01/2010	Sunny	18.4	86	-	6-24	SE
26/01/2010	Sunny	16.0	78	-	0-16	E
27/01/2010	Sunny	17.0	85	-	3-19	SE
28/01/2010	Sunny	19.3	90	-	2-10	NW

Date	Weather	Green Island Station				
		Average Air Temperature (°C) *	Average Relative Humiditiy (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
02/01/2010	Rainy	17.4	88	5.2	5-43	NE
04/01/2010	Sunny	17.9	81	-	3-39	NE
05/01/2010	Rainy	17.3	84	0.8	2-58	NE
08/01/2010	Rainy	13.7	80	0.9	10-40	NW
09/01/2010	Sunny	15.1	78	-	10-51	NE
14/01/2010	Sunny	14.4	65	-	20-36	NE
15/01/2010	Sunny	16.6	65	-	40-55	NE
16/01/2010	Sunny	18.1	67	-	7-50	NE
20/01/2010	Sunny	21.4	83	-	14-33	NE
21/01/2010	Sunny	22.9	87	-	0-30	NE
22/01/2010	Sunny	18.4	86	-	15-55	NE
26/01/2010	Sunny	16.0	78	-	14-52	NE
27/01/2010	Sunny	17.0	85	-	31-49	NE
28/01/2010	Sunny	19.3	90	-	4-27	NE

* king's park data
\- data were not available
\# less than 24 hourly observations per day


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
1/1/2010
1/2/2010
1/3/2010
1/4/2010
1/5/2010
1/6/2010
1/7/2010
1/8/2010
1/9/2010
1/10/2010
1/11/2010
1/12/2010
1/13/2010
1/14/2010
1/15/2010
1/16/2010
1/17/2010
1/18/2010
1/19/2010
1/20/2010
1/21/2010
1/22/2010
1/23/2010
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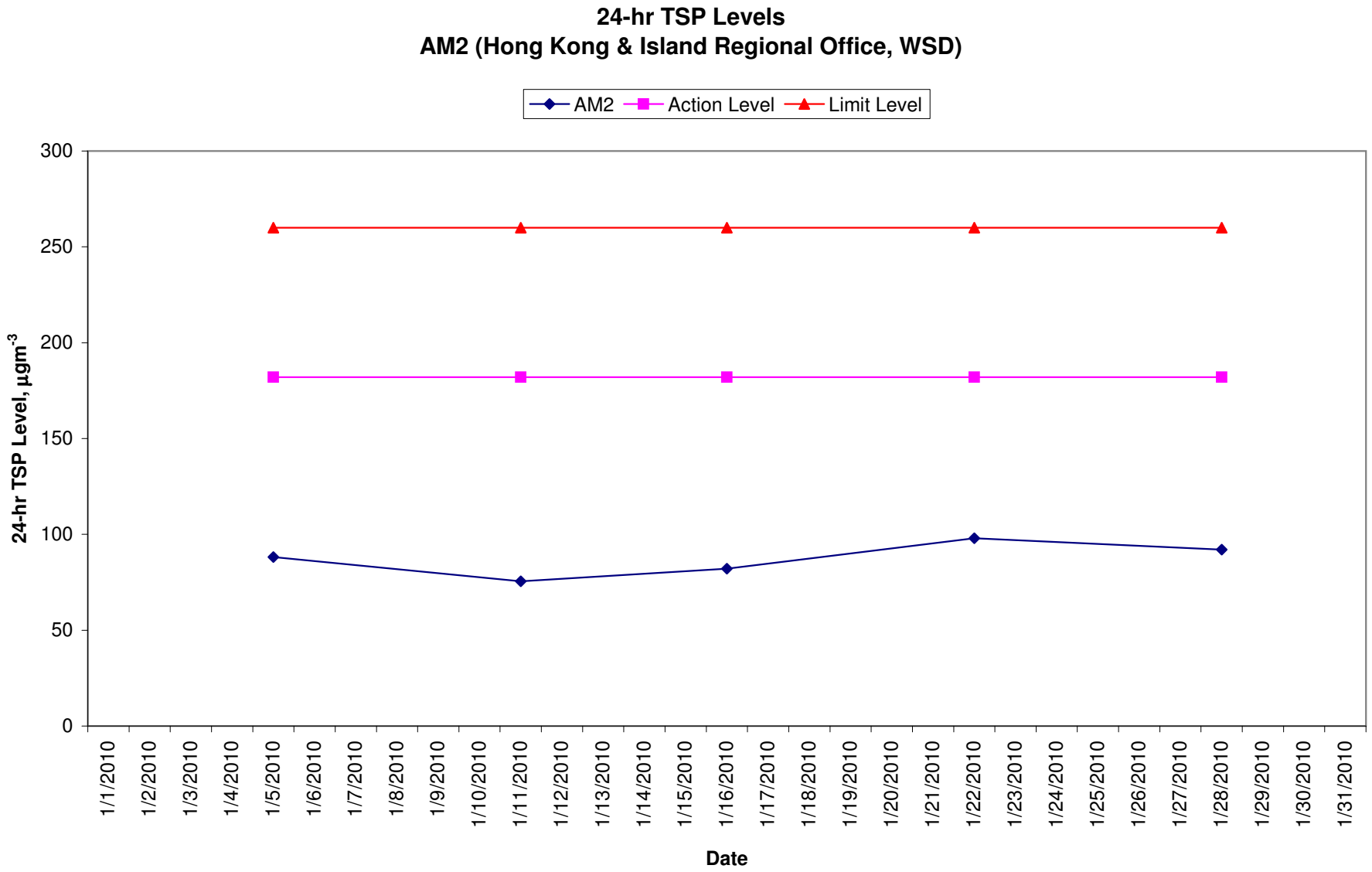
1/28/2010
1/29/2010
1/30/2010
1/31/2010
Date


24-hr TSP Levels
AM2 (Hong Kong & Island Regional Office, WSD)
AM2
Action Level
Limit Level
24-hr TSP Level, µgm-3
300
250
200
150
100
50
0
1/1/2010
1/2/2010
1/3/2010
1/4/2010
1/5/2010
1/6/2010
1/7/2010
1/8/2010
1/9/2010
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1/23/2010
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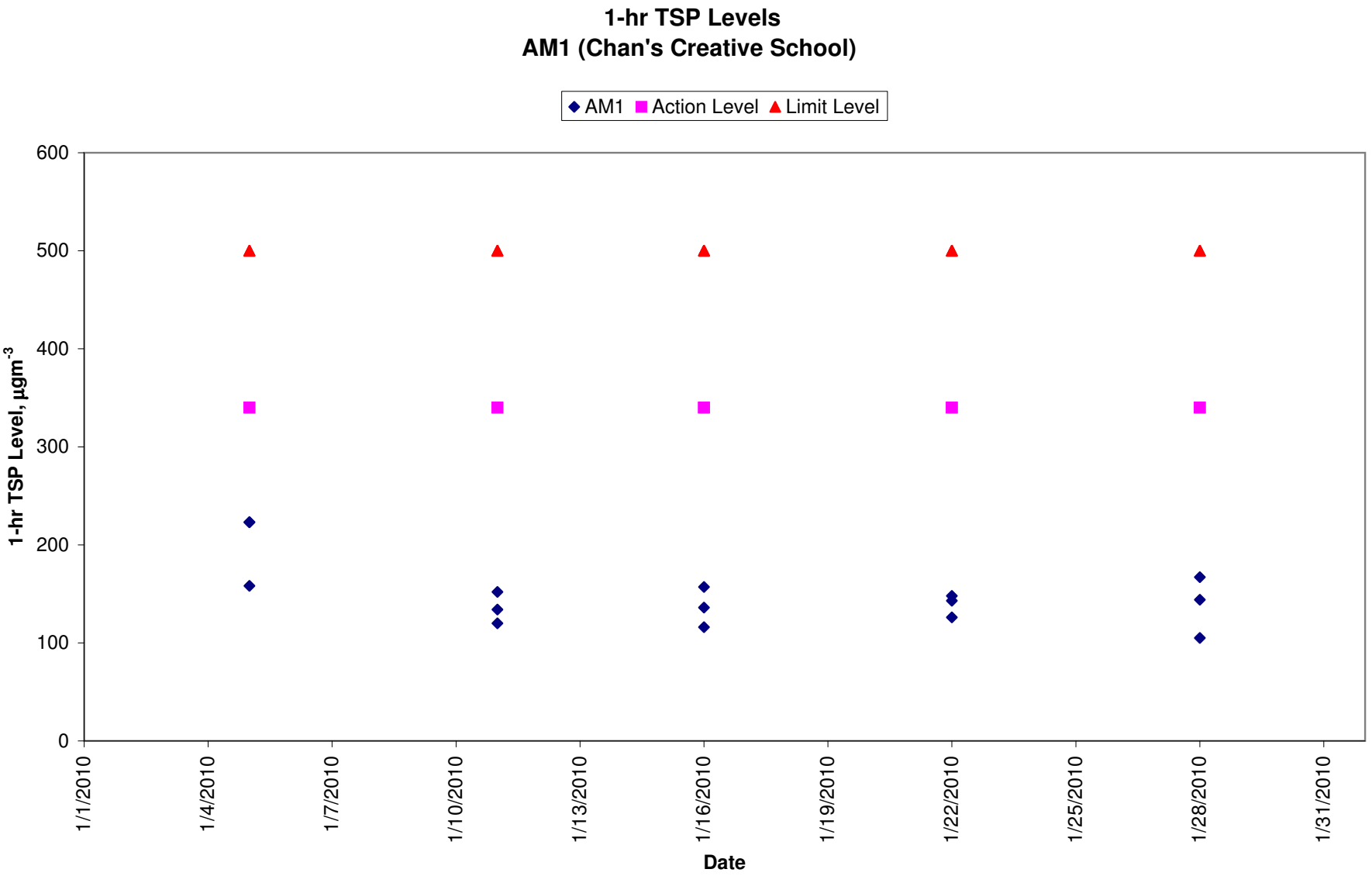
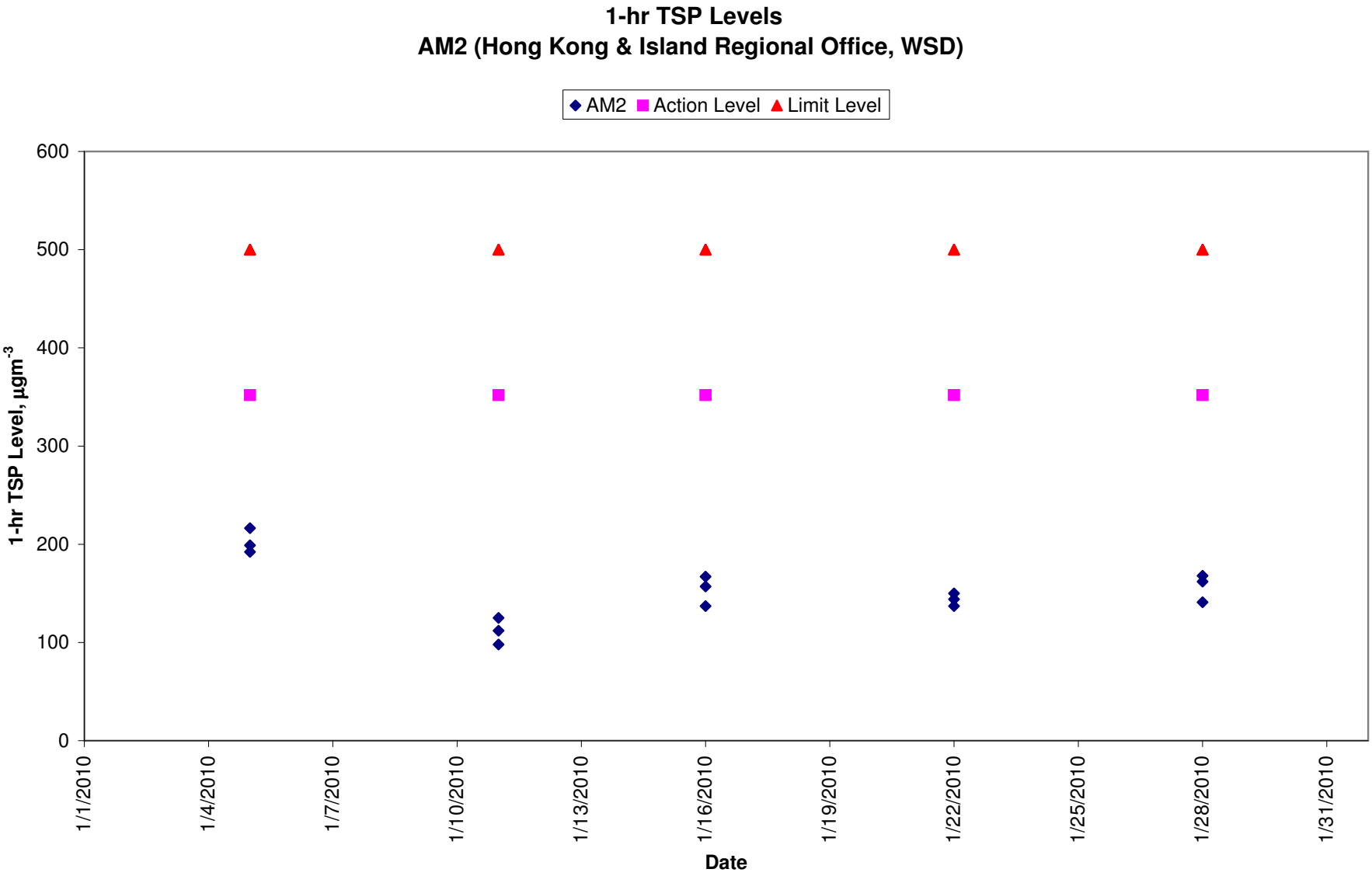
1/31/2010
Date


1-hr TSP Levels
AM1 (Chan's Creative School)
AM1
Action Level
Limit Level
600
500
400
300
200
100
0
1-hr TSP Level, µgm-3
1/1/2010
1/4/2010
1/7/2010
1/10/2010
1/13/2010
1/16/2010
1/19/2010
1/22/2010
1/25/2010
1/28/2010
1/31/2010
Date


1-hr TSP Levels
AM2 (Hong Kong & Island Regional Office, WSD)
AM2
Action Level
Limit Level
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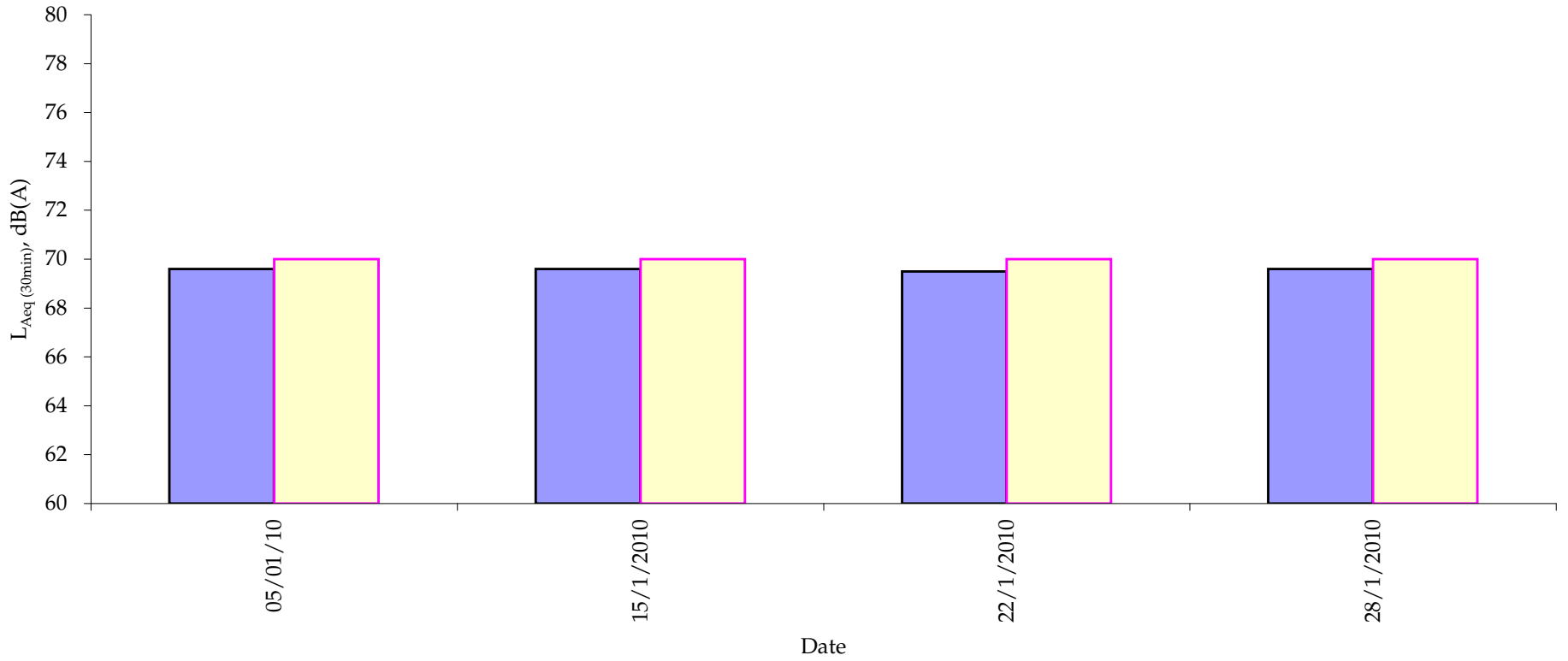
500
400
300
200
100
0
1-hr TSP Level, µgm-3
1/1/2010
1/4/2010
1/7/2010
1/10/2010
1/13/2010
1/16/2010
1/19/2010
1/22/2010
1/25/2010
1/28/2010
1/31/2010
Date

Annex C7 Noise Monitoring Results

Daytime Noise Monitoring Results

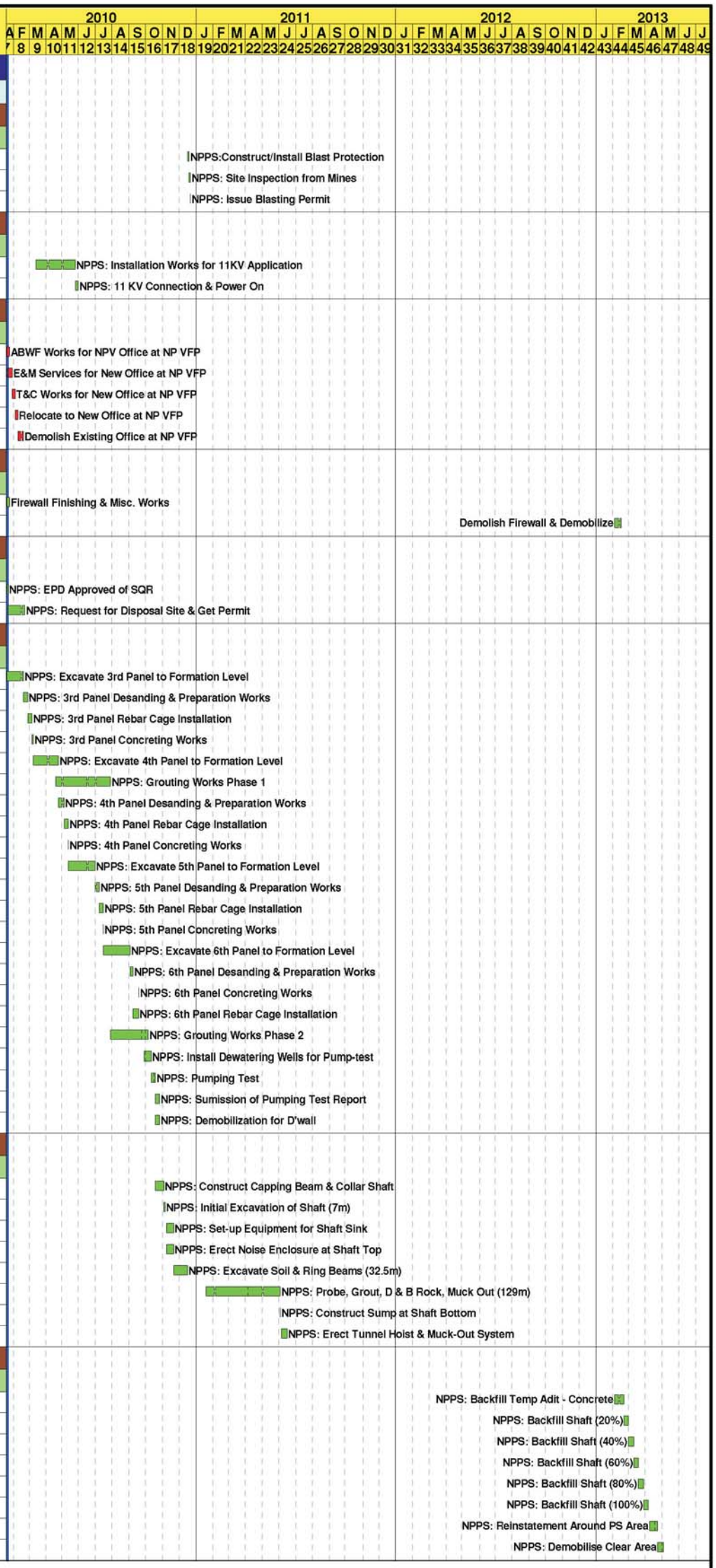
Station NM1

Date	Start Time	End Time	Weather	Noise level (dB(A)), 30 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (℃)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
5-Jan-10	9:45	10:15	Cloudy	69.6	72.4	67.3	Major noise from ASD site (cutting,breaker and drilling noise). Noise from nearby recyling company. No apparent noise came from the Site (mobile cranes were working)	Traffic noise	-	16	0.5	RION- NA27 (S/N 00201194)	RION - NC73 (S/N 10786708)
15-Jan-10	10:20	10:50	Sunny	69.6	72.0	67.2	Major noise from ASD site (cutting,breaker and drilling noise). Noise from another DSD site at Marble Road. Mobile cranes were working.	Traffic noise	Make up monitoring for 11 Jan 2010 due to bad weather on that day.	15	0.5	RION- NA27 (S/N 00201194)	RION - NC73 (S/N 10786708)
22-Jan-10	13:30	14:00	Fine	69.5	71.7	67.1	Major noise from ASD site (cutting,breaker and drilling noise). Mobile cranes were working.	Traffic noise	-	18	0.3	RION- NA27 (S/N 00201194)	RION - NC73 (S/N 10786708)
28-Jan-10	13:50	14:20	Sunny	69.6	71.3	67.7	Major noise from ASD site (cutting, breaker and drilling noise). Mobile cranes were working.	Traffic noise	-	20	0.5	RION- NA27 (S/N 00201194)	RION - NC73 (S/N 10786708)
			Min.	**69.5**									
			Max.	**69.6**									



Remark:
- 70dB(A) was adopted as the Limit Level during school normal teaching period in January 2010

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

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Early Bar
Progress Bar
Critical Activity

WPU7 Sheet 1 of 1

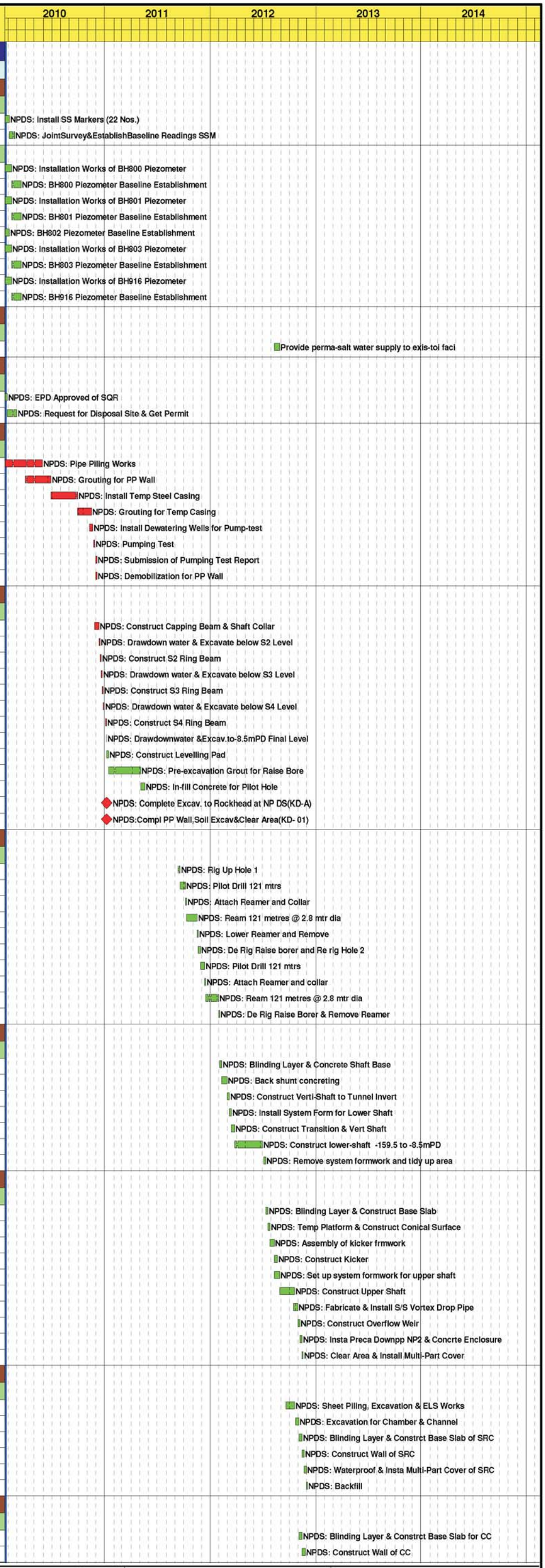
Habour Area Treatment Scheme Stage 2A
Contract No. DC/2007/23 - Construction of Sewage Conveyance from North Point to Stonecutters Island Programme

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

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WPU7 Sheet 1 of 2

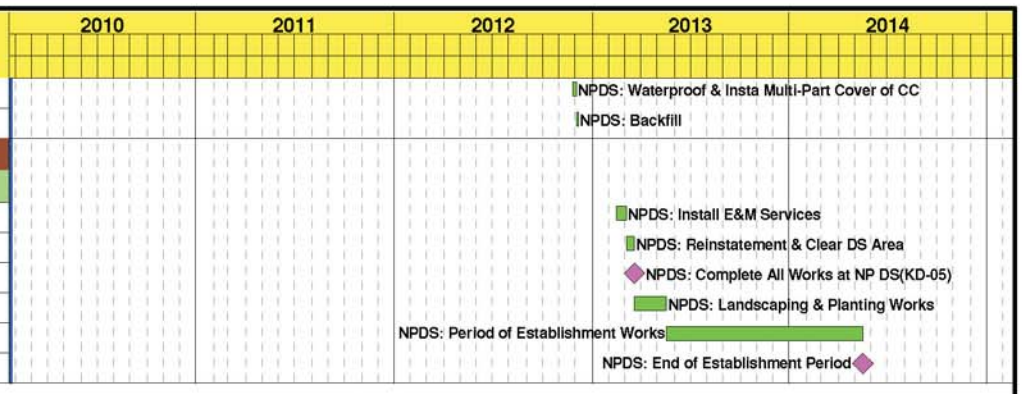
Habour Area Treatment Scheme Stage 2A
Contract No. DC/2007/23 - Construction of Sewage Conveyance from North Point to Stonecutters Island Programme

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

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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

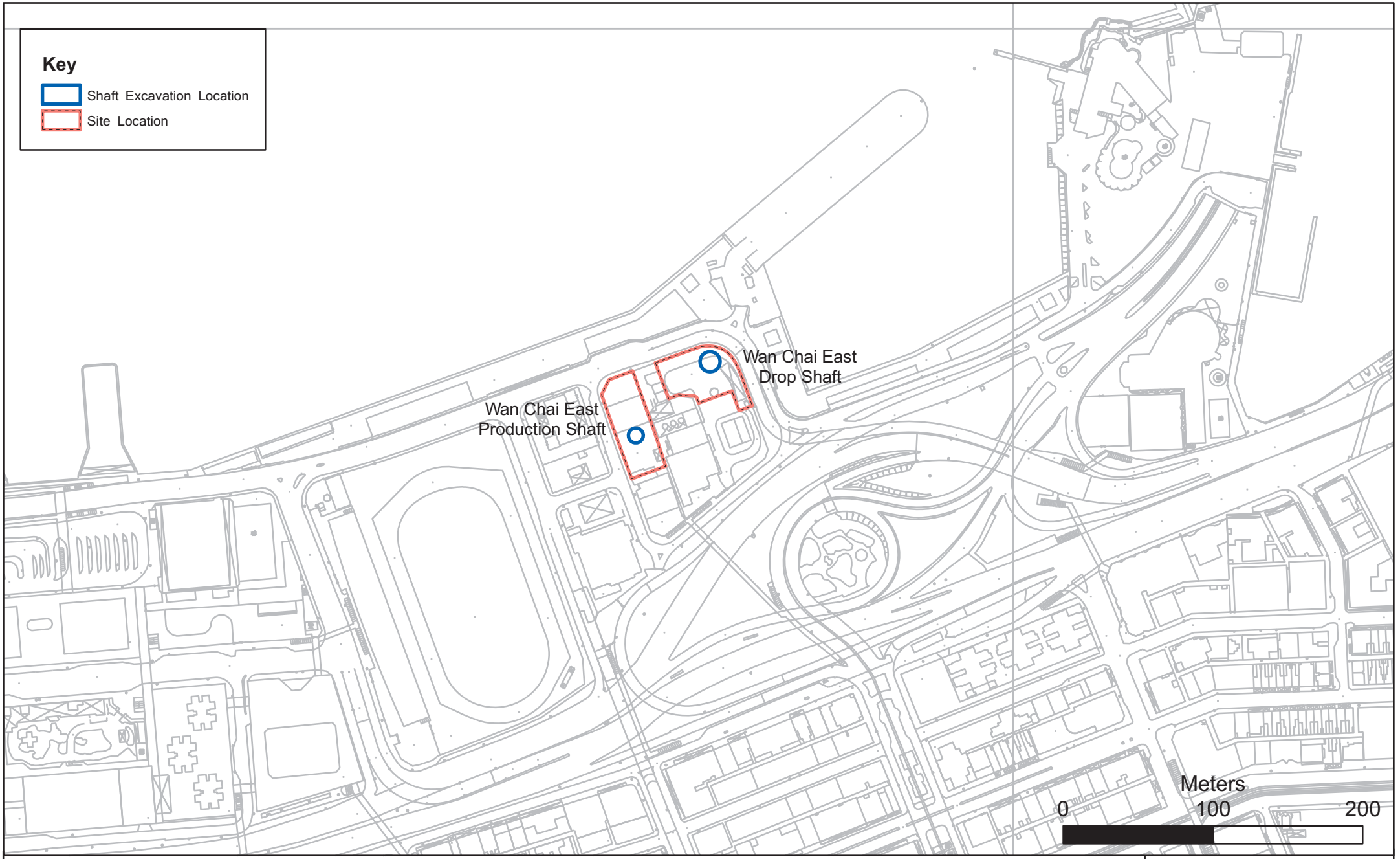
Annex C8 Construction Programme for the Project

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 Locations at Wai Chai East

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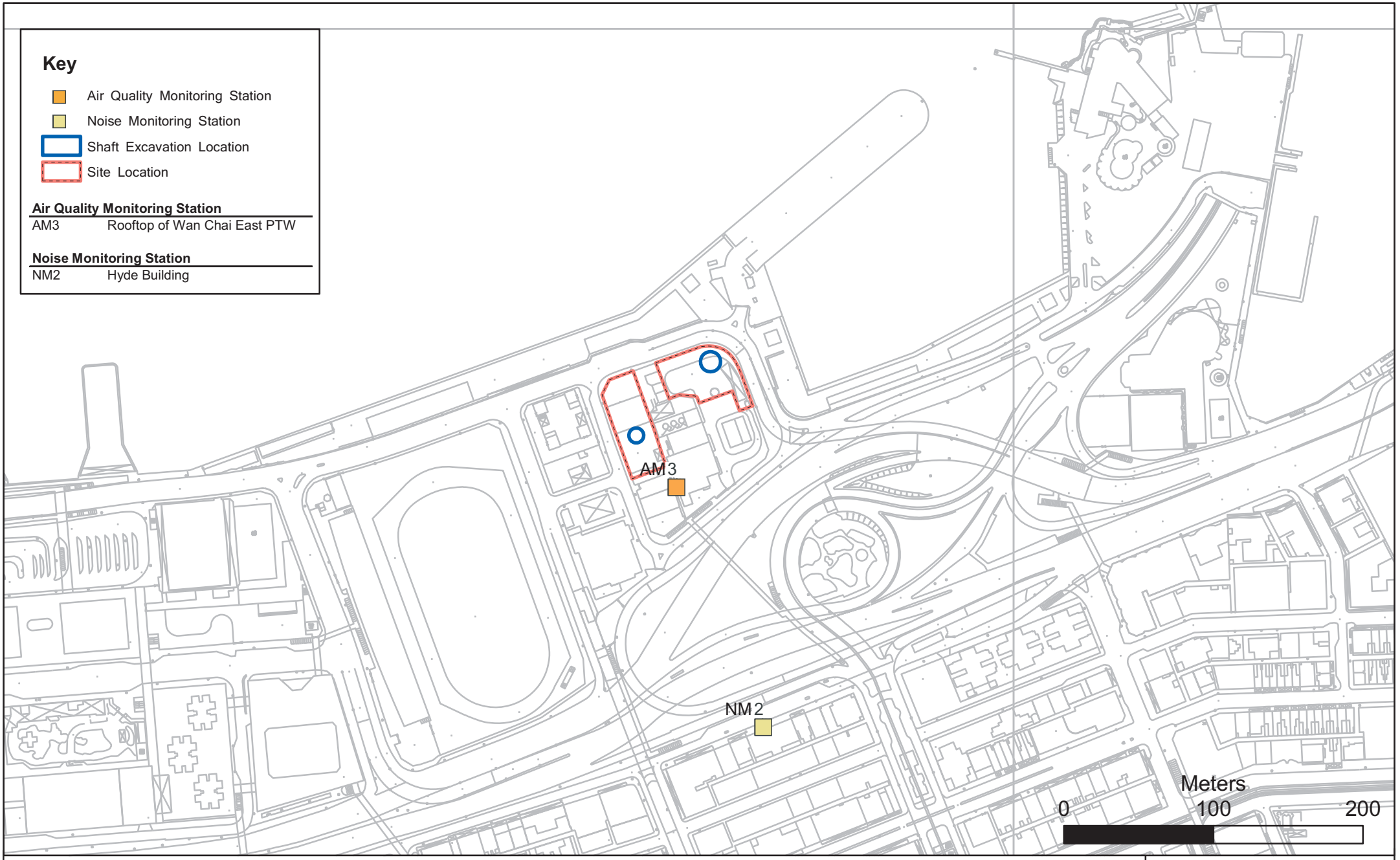
Date: 29/10/2009

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.mxd
Date: 29/10/2009

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 : January 2010

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1-Jan	2-Jan
					new year holiday	
3-Jan	4-Jan	5-Jan	6-Jan	7-Jan	8-Jan	9-Jan
	1-hr and 24-hr Monitoring					1-hr and 24-hr Monitoring
10-Jan	11-Jan	12-Jan	13-Jan	14-Jan	15-Jan	16-Jan
					1-hr and 24-hr Monitoring	
17-Jan	18-Jan	19-Jan	20-Jan	21-Jan	22-Jan	23-Jan
				1-hr and 24-hr Monitoring		
24-Jan	25-Jan	26-Jan	27-Jan	28-Jan	29-Jan	30-Jan
			1-hr and 24-hr Monitoring			
31-Jan						

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 : February 2009

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1-Feb	2-Feb	3-Feb	4-Feb	5-Feb	6-Feb
		1-hr and 24-hr Monitoring				
7-Feb	8-Feb	9-Feb	10-Feb	11-Feb	12-Feb	13-Feb
	1-hr and 24-hr Monitoring			1-hr and 24-hr Monitoring		The day preceding Lunar New Year's Day
14-Feb	15-Feb	16-Feb	17-Feb	18-Feb	19-Feb	20-Feb
The first day of the Lunar New Year	The second day of the Lunar New Year	The third day of the Lunar New Year		1-hr and 24-hr Monitoring		
21-Feb	22-Feb	23-Feb	24-Feb	25-Feb	26-Feb	27-Feb
			1-hr and 24-hr Monitoring			
28-Feb						

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 Monitoring Schedule

NM2 - Hyde Building
Monitoring Month : January 2010

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1-Jan	2-Jan
					New Year Day	
3-Jan	4-Jan	5-Jan	6-Jan	7-Jan	8-Jan	9-Jan
	Noise Monitoring					
10-Jan	11-Jan	12-Jan	13-Jan	14-Jan	15-Jan	16-Jan
Noise Monitoring (during daytime of sundays/ public holidays)					Noise Monitoring	
17-Jan	18-Jan	19-Jan	20-Jan	21-Jan	22-Jan	23-Jan
Noise Monitoring (during daytime of sundays/ public holidays)				Noise Monitoring		
24-Jan	25-Jan	26-Jan	27-Jan	28-Jan	29-Jan	30-Jan
Noise Monitoring (during daytime of sundays/ public holidays)			Noise Monitoring			
31-Jan						
Noise Monitoring (during daytime of sundays/ public holidays)						

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 Monitoring Schedule

NM2 - Hyde Building
Monitoring Month : February 2009

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1-Feb	2-Feb	3-Feb	4-Feb	5-Feb	6-Feb
		Noise Monitoring				
7-Feb	8-Feb	9-Feb	10-Feb	11-Feb	12-Feb	13-Feb
Noise Monitoring (during daytime of sundays/ public holidays)	Noise Monitoring					The day preceding Lunar New Year's Day
14-Feb	15-Feb	16-Feb	17-Feb	18-Feb	19-Feb	20-Feb
The first day of the Lunar New Year	The second day of the Lunar New Year	The third day of the Lunar New Year		Noise Monitoring		
21-Feb	22-Feb	23-Feb	24-Feb	25-Feb	26-Feb	27-Feb
			Noise Monitoring			
28-Feb						

TSP Monitoring Equipment

Monitoring Station ID	Location	Monitoring Equipment		Last Calibration Date	Next Calibration Date
24-hr and 1-hr TSP		**HVS**	**Calibrator**		
AM3	Rooftop of Wan Chai East PTW	GMW GS-2310 (S/N 0481)	CM-AIR-43 (S/N 9833620)	25 January 2010	25 March 2010

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AM3
Calibrated by	:	K.T.Ho
Date	:	22/01/2010

Sampler

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

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	9833620
Service Date	:	18 May 2009
Slope (m)	:	1.97702
Intercept (b)	:	-0.00070
Correlation Coefficient(r)	:	0.99992

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1018
Ta(K)	:	290

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	12.3	3.564	1.803	65	66.1
2	13 holes	9.6	3.149	1.593	56	56.9
3	10 holes	7.5	2.783	1.408	49	49.8
4	7 holes	4.6	2.180	1.103	35	35.6
5	5 holes	2..8	1.700	0.860	24	24.4

Sampler Calibration Relationship

Slope(m):44.170 Intercept(b): -13.240 Correlation Coefficient(r): 0.9995

Checked by: Magnum Fan Date: 25/01/2010

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 minimize 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	Δ

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	Δ
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 minimize 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 deodorization system should be included in the Design and Construction Contract Document.	All PTW and SCISTW/ during 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 utilized 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	Δ
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	Δ

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Construction Works in Close Proximity of Storm Drains or Seafront To minimize 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	Δ

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 minimize 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 minimize 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	Δ
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	√

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, oxidizing, 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	Δ
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	Δ
Operational Phase	•		
Landscape & Visual	• Aesthetic design of the façade of PTW and associated structures to harmonize 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 D6 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 (hrs)	Flow Rate (m^3/min)			TSP Conc. ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Observations / Remarks	Sampler ID	Filter ID
Date	Time	Date	Time		Initial	Final	Initial	Final		Initial	Final	Average						
4-Jan-10	14:20	5-Jan-10	14:20	Sunny	2.7695	3.0077	2522.32	2546.32	24.00	1.12	1.12	1.1200	148	181	260	Construction work in progress.	0481	0261
9-Jan-10	12:50	10-Jan-10	12:50	Fine	2.8248	2.9490	2549.32	2573.32	24.00	1.1200	1.1200	1.1200	77	181	260	Construction work in progress.	0481	0288
15-Jan-10	11:45	16-Jan-10	11:45	Sunny	2.7904	2.9888	2576.32	2600.32	24.00	1.1200	1.1200	1.1200	123	181	260	Construction work in progress.	0481	0296
21-Jan-10	11:28	21-Jan-10	11:28	Fine	2.7793	2.9409	2603.32	2627.32	24.00	1.1200	1.1200	1.1200	100	181	260	Construction work in progress.	0481	0299
27-Jan-10	11:43	28-Jan-10	11:43	Fine	2.8594	3.0150	2630.32	2654.32	24.00	1.2000	1.2000	1.2000	90	181	260	Construction work in progress.	0481	0324
												Min.	**77**					
												Max.	**148**					
												Average	**108**					

Annex D6 24-hour and 1-hour TSP Monitoring Results

1-hour TSP Monitoring Results

Station AM3

Date	Start Time	Finish Time	Weather	TSP Concentration ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Site Conditions / Observations / Remarks	Temperature (℃)	Wind Speed * (m/s)	Sampler ID	Filter ID
4-Jan-10	11:05	12:05	Sunny	217	355	500	Construction work in progress.	20		0481	0258
4-Jan-10	12:08	13:08	Sunny	180	355	500	Construction work in progress.	20		0481	0312
4-Jan-10	13:12	14:12	Sunny	210	355	500	Construction work in progress.	20		0481	0311
9-Jan-10	8:30	9:30	Fine	234	355	500	Construction work in progress.	17		0481	0281
9-Jan-10	9:35	10:35	Fine	179	355	500	Construction work in progress.	17		0481	0286
9-Jan-10	11:48	12:48	Fine	198	355	500	Construction work in progress.	17		0481	0287
15-Jan-10	8:30	9:30	Sunny	159	355	500	Construction work in progress.	18		0481	0292
15-Jan-10	9:35	10:35	Sunny	226	355	500	Construction work in progress.	18		0481	0293
15-Jan-10	10:40	11:40	Sunny	138	355	500	Construction work in progress.	18		0481	0295
21-Jan-10	8:15	9:15	Fine	113	355	500	Construction work in progress.	20		0481	0317
21-Jan-10	9:18	10:18	Fine	134	355	500	Construction work in progress.	20		0481	0318
21-Jan-10	10:23	11:23	Fine	94	355	500	Construction work in progress.	20		0481	0321
27-Jan-10	8:30	9:30	Fine	153	355	500	Construction work in progress.	18		0481	0322
27-Jan-10	9:35	10:35	Fine	124	355	500	Construction work in progress.	18		0481	0323
27-Jan-10	10:40	11:40	Fine	203	355	500	Construction work in progress.	18		0481	0326
			Min.	**94**							
			Max.	**234**							
			Average	**171**							

* Wind Speed data is presented in the following table

Meteorological Data Extracted from the Hong Kong Observatory

Date	Weather	King's Park Station				
		Average Air Temperature (°C)	Average Relative Humiditiy (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
02/01/2010	Rainy	17.4	88	5.2	0-18	SE
04/01/2010	Sunny	17.9	81	-	1-17	SE
05/01/2010	Rainy	17.3	84	0.8	0-30	SE
08/01/2010	Rainy	13.7	80	0.9	0-10	NE
09/01/2010	Sunny	15.1	78	-	0-20	E
14/01/2010	Sunny	14.4	65	-	0-26	E
15/01/2010	Sunny	16.6	65	-	1-26	SE
16/01/2010	Sunny	18.1	67	-	0-18	SE
20/01/2010	Sunny	21.4	83	-	0-15	SE
21/01/2010	Sunny	22.9	87	-	0-12	SE
22/01/2010	Sunny	18.4	86	-	1-23	SE
26/01/2010	Sunny	16.0	78	-	0-20	E
27/01/2010	Sunny	17.0	85	-	7-18	SE
28/01/2010	Sunny	19.3	90	-	0-14	E, W

Date	Weather	Kai Tak Station				
		Average Air Temperature (°C) *	Average Relative Humiditiy (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
02/01/2010	Rainy	17.4	88	5.2	1-20	E
04/01/2010	Sunny	17.9	81	-	7-20	SE
05/01/2010	Rainy	17.3	84	0.8	0-30	E
08/01/2010	Rainy	13.7	80	0.9	0-18	NW, NE
09/01/2010	Sunny	15.1	78	-	3-27	E
14/01/2010	Sunny	14.4	65	-	0-32	E
15/01/2010	Sunny	16.6	65	-	2-29	E
16/01/2010	Sunny	18.1	67	-	0-27	SE
20/01/2010	Sunny	21.4	83	-	1-22	E
21/01/2010	Sunny	22.9	87	-	2-28	SE
22/01/2010	Sunny	18.4	86	-	9-31	E
26/01/2010	Sunny	16.0	78	-	3-24	NE, E
27/01/2010	Sunny	17.0	85	-	6-26	E
28/01/2010	Sunny	19.3	90	-	0-21	SE

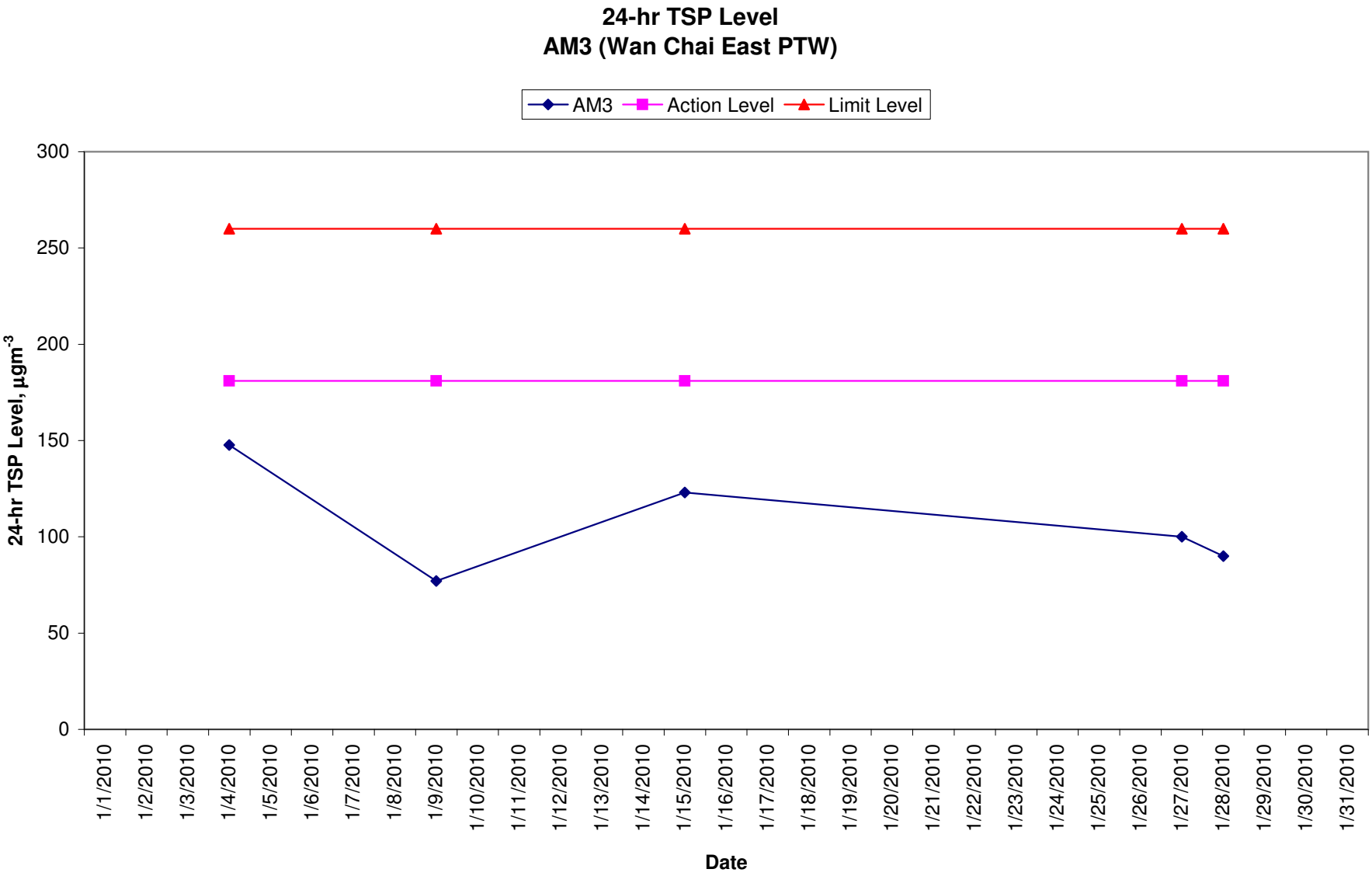
* king's park data
\- data were not available
\# less than 24 hourly observations per day

Meteorological Data Extracted from the Hong Kong Observatory

Date	Weather	Tsing Yi Station				
		Average Air Temperature (°C)	Average Relative Humiditiy (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
02/01/2010	Rainy	17.4	88	5.2	2-15	SE, NW
04/01/2010	Sunny	17.9	81	-	1-16	SE
05/01/2010	Rainy	17.3	84	0.8	1-19	E, NW
08/01/2010	Rainy	13.7	80	0.9	0-15	NW
09/01/2010	Sunny	15.1	78	-	0.5-18	SE
14/01/2010	Sunny	14.4	65	-	2-22	E
15/01/2010	Sunny	16.6	65	-	2-22	E
16/01/2010	Sunny	18.1	67	-	0-21	E
20/01/2010	Sunny	21.4	83	-	0-16	E
21/01/2010	Sunny	22.9	87	-	0-16	E
22/01/2010	Sunny	18.4	86	-	6-24	SE
26/01/2010	Sunny	16.0	78	-	0-16	E
27/01/2010	Sunny	17.0	85	-	3-19	SE
28/01/2010	Sunny	19.3	90	-	2-10	NW

Date	Weather	Green Island Station				
		Average Air Temperature (°C) *	Average Relative Humiditiy (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
02/01/2010	Rainy	17.4	88	5.2	5-43	NE
04/01/2010	Sunny	17.9	81	-	3-39	NE
05/01/2010	Rainy	17.3	84	0.8	2-58	NE
08/01/2010	Rainy	13.7	80	0.9	10-40	NW
09/01/2010	Sunny	15.1	78	-	10-51	NE
14/01/2010	Sunny	14.4	65	-	20-36	NE
15/01/2010	Sunny	16.6	65	-	40-55	NE
16/01/2010	Sunny	18.1	67	-	7-50	NE
20/01/2010	Sunny	21.4	83	-	14-33	NE
21/01/2010	Sunny	22.9	87	-	0-30	NE
22/01/2010	Sunny	18.4	86	-	15-55	NE
26/01/2010	Sunny	16.0	78	-	14-52	NE
27/01/2010	Sunny	17.0	85	-	31-49	NE
28/01/2010	Sunny	19.3	90	-	4-27	NE

* king's park data
\- data were not available
\# less than 24 hourly observations per day


24-hr TSP Level
AM3 (Wan Chai East PTW)
AM3
Action Level
Limit Level
24-hr TSP Level, µgm-3
300
250
200
150
100
50
0
1/1/2010
1/2/2010
1/3/2010
1/4/2010
1/5/2010
1/6/2010
1/7/2010
1/8/2010
1/9/2010
1/10/2010
1/11/2010
1/12/2010
1/13/2010
1/14/2010
1/15/2010
1/16/2010
1/17/2010
1/18/2010
1/19/2010
1/20/2010
1/21/2010
1/22/2010
1/23/2010
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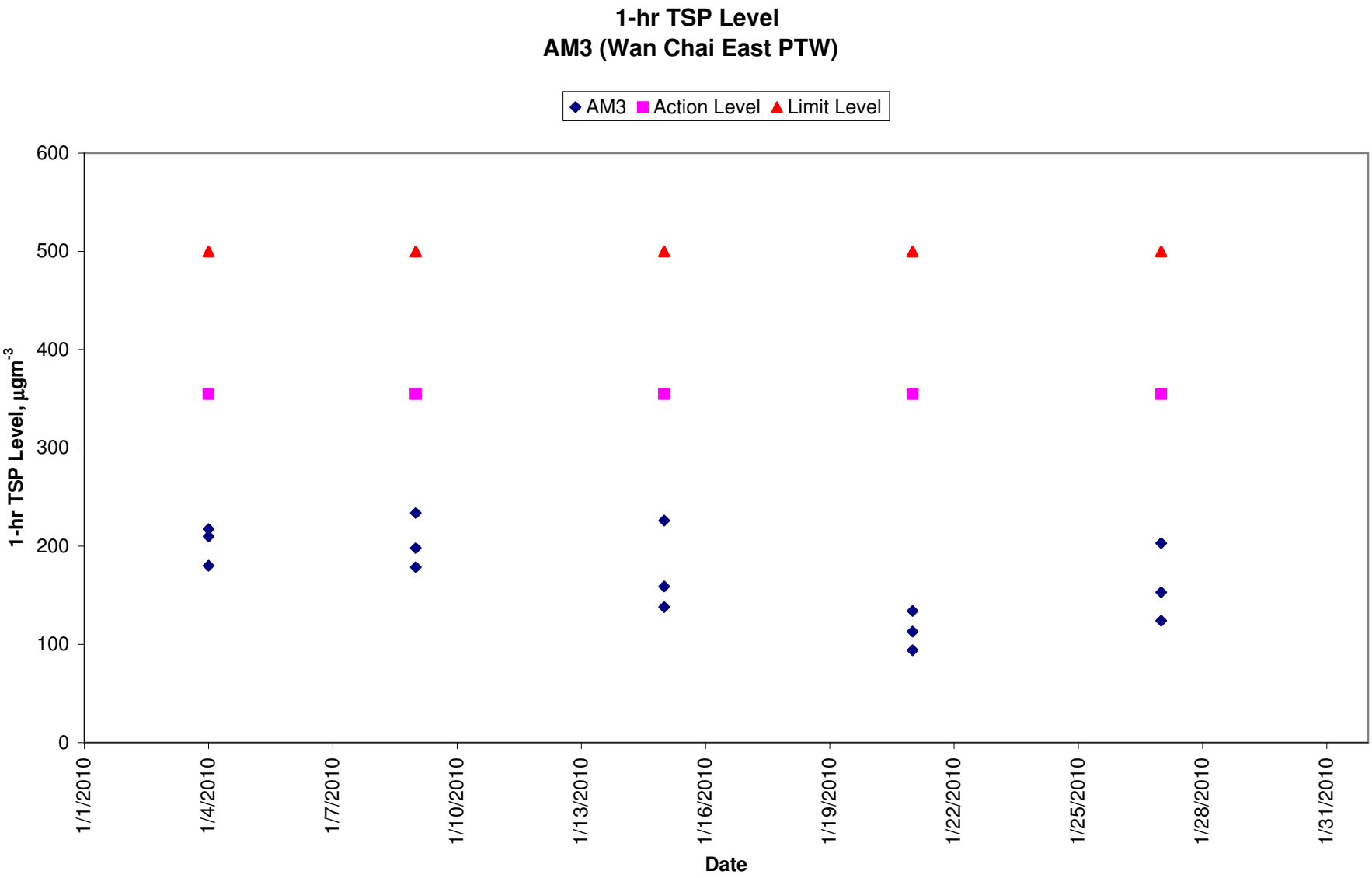
1/27/2010
1/28/2010
1/29/2010
1/30/2010
1/31/2010
Date


1-hr TSP Level
AM3 (Wan Chai East PTW)
AM3
Action Level
Limit Level
600
500
400
300
200
100
0
1-hr TSP Level, µgm-3
1/1/2010
1/4/2010
1/7/2010
1/10/2010
1/13/2010
1/16/2010
1/19/2010
1/22/2010
1/25/2010
1/28/2010
1/31/2010
Date

Annex D7 Noise Monitoring Results

Daytime Noise Monitoring Results

Station NM2

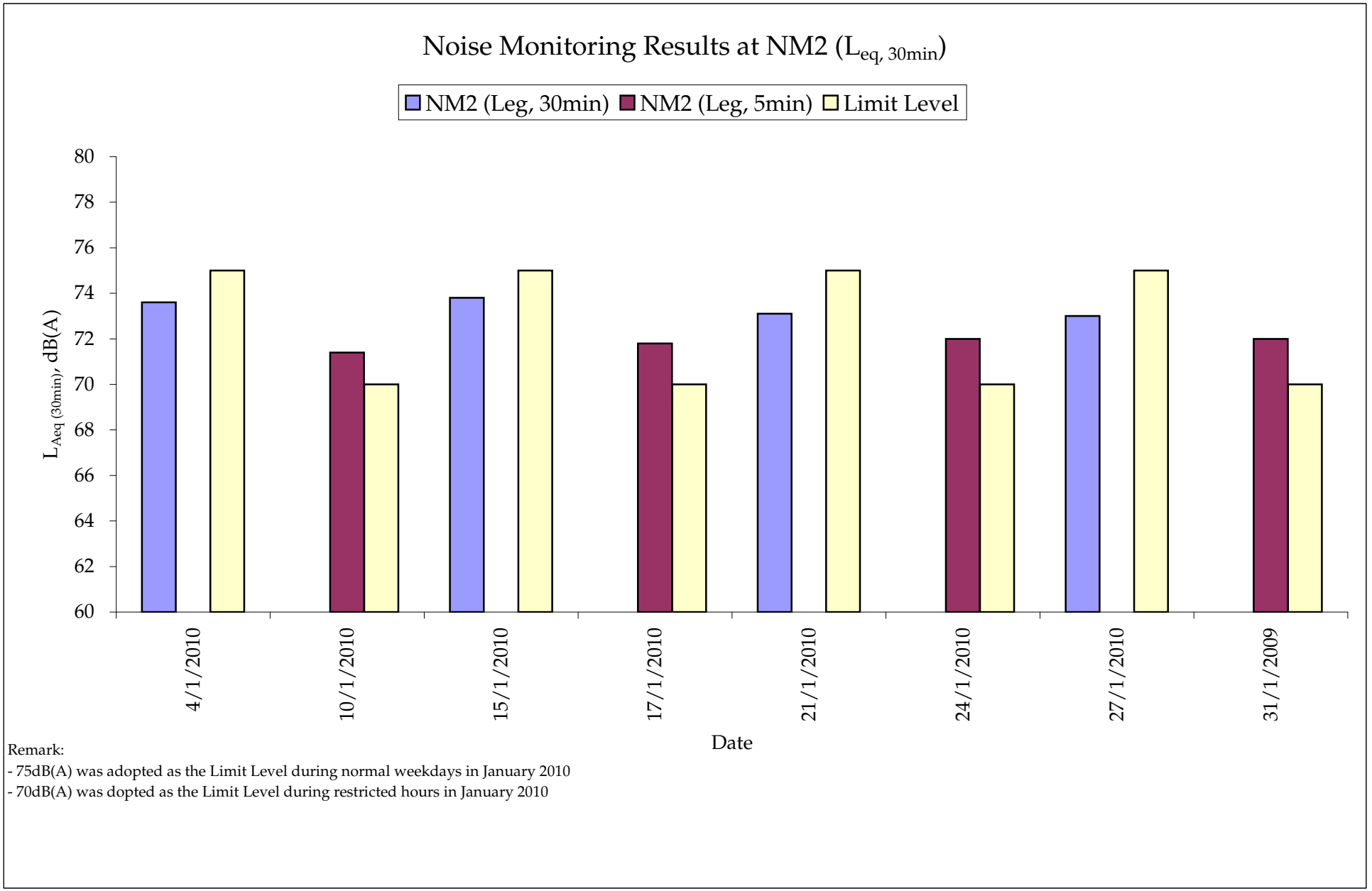
Date	Start Time	End Time	Weather	Noise level (dB(A)), 30 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (℃)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
4-Jan-10	11:20	11:50		73.6	74.5	72.3	Mobile cranes	Traffic noise	-	20	0.8	RION- NA27 (S/N 00201194)	RION - NC73 (S/N 10786708)
15-Jan-10	10:55	11:25	Sunny	73.8	75.0	71.9	Mobile cranes, excavation works	Traffic noise	-	15	1.2	RION- NA27 (S/N 00201194)	RION - NC73 (S/N 10786708)
21-Jan-10	9:33	10:03	Sunny	73.1	73.9	72.3	Mobile crane were working	Traffic noise	-	17	1.0	RION- NA27 (S/N 00201194)	RION - NC73 (S/N 10786708)
27-Jan-10	9:50	10:20	Fine	73.0	73.8	72.1	Excavation work, crane operation	Traffic noise	-	17	0.8	RION- NA27 (S/N 00201194)	RION - NC73 (S/N 10786708)
			Min.	**73.0**									
			Max.	**73.8**									

Annex D7 Noise Monitoring Results

Restricted Hours Noise Monitoring Results

Station NM2

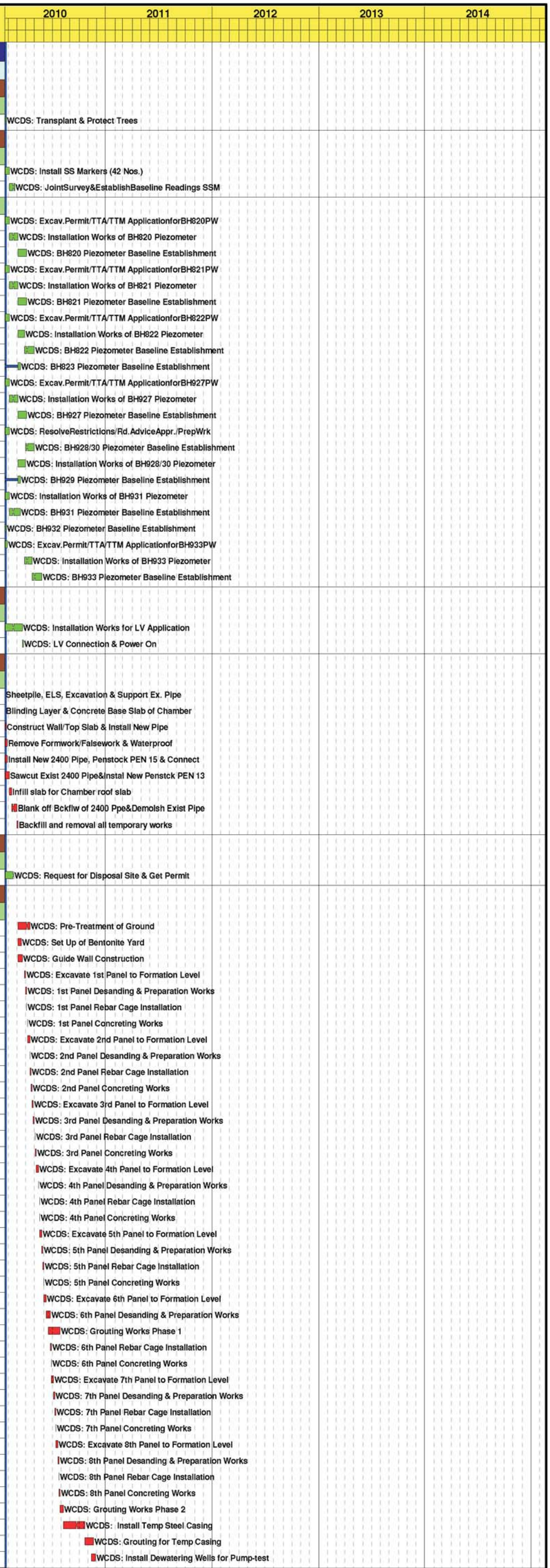
Date	Start Time	End Time	Weather	Noise level (dB(A)), 5 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
10-Jan-10	17:13	17:18	Sunny	71.6	72.7	70.3	-	Traffic noise.	-	17	1.2	RION- NA27 (S/N 00201194)	RION - NC73 (S/N 10786708)
	17:18	17:23	Sunny	71.1	71.9	70.0			-				
	17:23	17:28	Sunny	71.5	72.7	70.2			-				
	17:13	17:28	Sunny	71.4	72.4	70.2			Average results during 15 min minitoring				
17-Jan-10	17:17	17:22	Sunny	71.4	72.4	70.3	No construction activities.	Helicoptor noise upon landing on the helipad (lefe upper corner) during 17:30 and 17:32. Traffic noise.	-	17	1.2	RION- NA27 (S/N 00201194)	RION - NC73 (S/N 10786708)
	17:22	17:27	Sunny	71.4	72.5	70.2			-				
	17:27	17:32	Sunny	72.4	73.8	70.4			-				
	17:17	17:32	Sunny	71.8	72.6	70.3			Average results during 15 min minitoring				
24-Jan-10	11:19	11:24	Fine	71.9	72.9	70.8	No construction activities.	Traffic noise.	-	15	0.8	RION- NA27 (S/N 00201194)	RION - NC73 (S/N 10786708)
	11:24	11:29	Fine	72.1	73.0	71.0			-				
	11:29	11:34	Fine	72.0	72.9	71.0			-				
	11:19	11:34	Fine	72.0	72.9	70.9			Average results during 15 min minitoring				
31-Jan-10	11:09	11:14	Fine	71.9	72.9	71.0	No construction activities.	Traffic noise and helicopter noise	-	21	0.5	RION- NA27 (S/N 00201194)	RION - NC73 (S/N 10786708)
	11:14	11:19	Fine	71.6	72.6	70.5			-				
	11:19	11:24	Fine	72.9	73.6	71.0			-				
	11:19	11:34	Fine	72.0	72.9	70.9			Average results during 15 min minitoring				
			Min.	**71.1**									
			Max.	**72.9**									



Remark:

- 75dB(A) was adopted as the Limit Level during normal weekdays in January 2010
- 70dB(A) was dopted as the Limit Level during restricted hours in January 2010

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

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Early Bar
Progress Bar
Critical Activity

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

Annex D8 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

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Early Bar
Progress Bar
Critical Activity

WPU7 Sheet 2 of 2

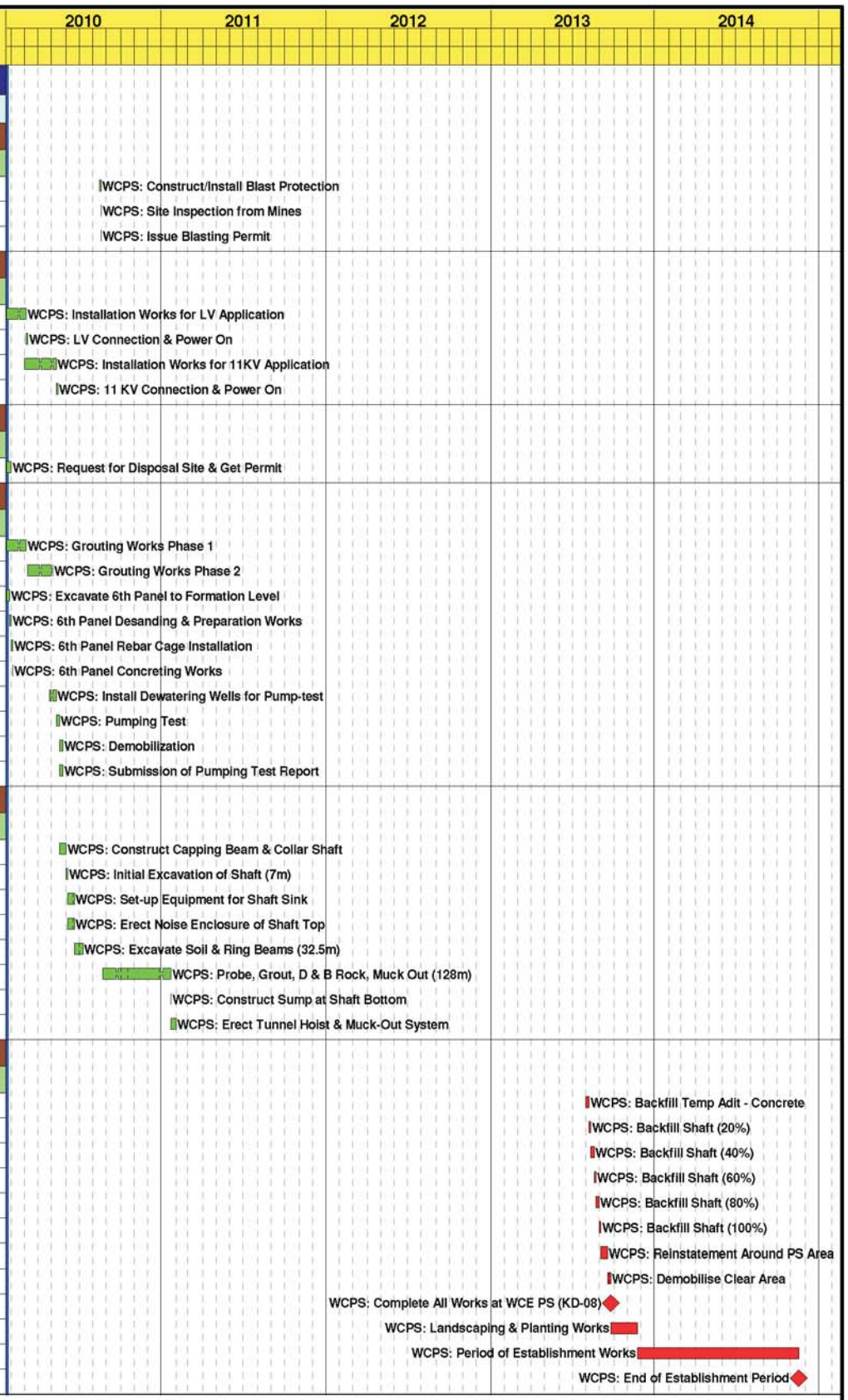
Habour Area Treatment Scheme Stage 2A
Contract No. DC/2007/23 - Construction of Sewage Conveyance from North Point to Stonecutters Island Programme

Annex D8 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

Early Bar
Progress Bar
Critical Activity

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WPU7 Sheet 1 of 1

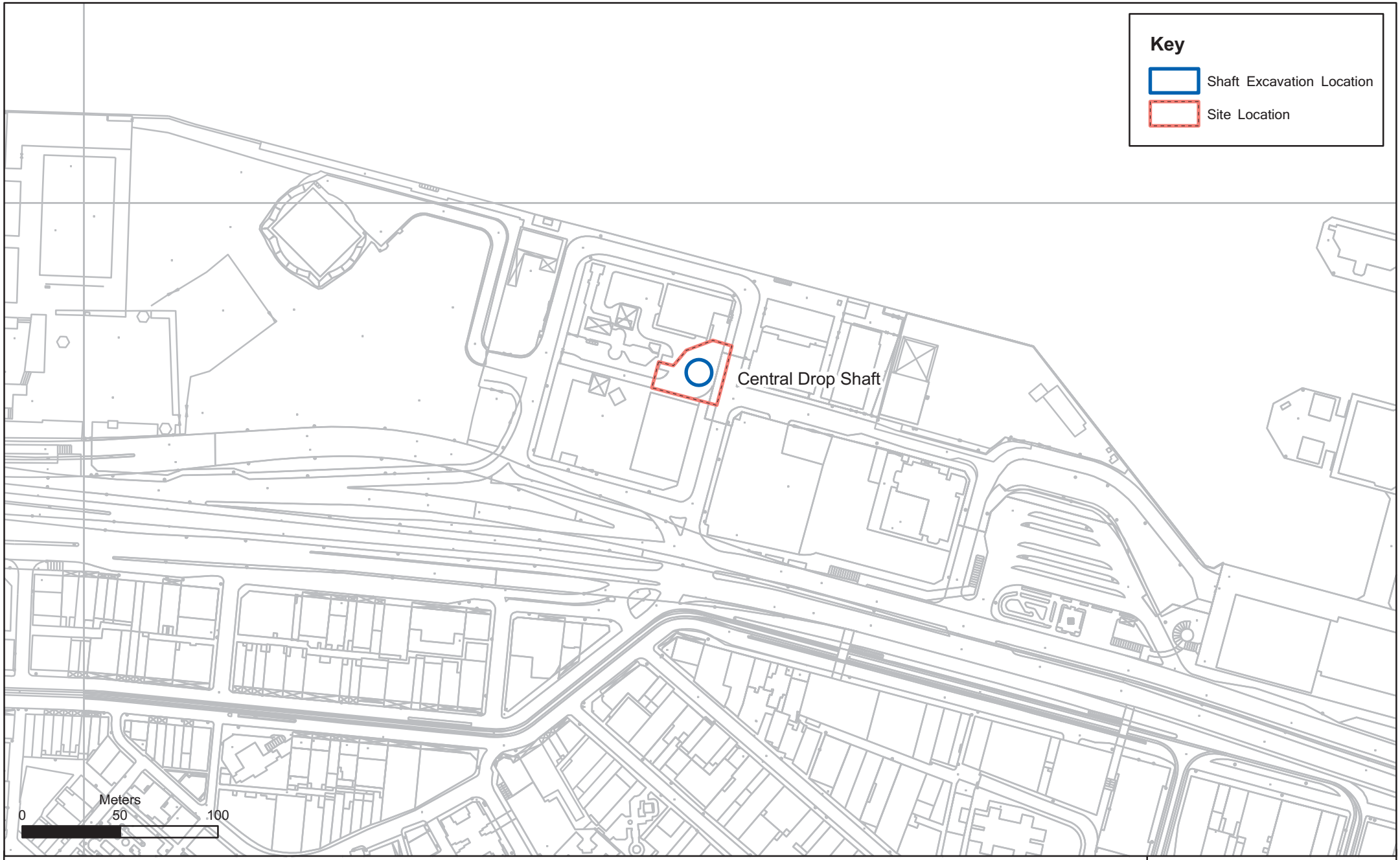
Habour Area Treatment Scheme Stage 2A
Contract No. DC/2007/23 - Construction of Sewage Conveyance from North Point to Stonecutters Island
Programme

Annex D8 Construction Programme for the Project

Date	Revision	Checked	Approved

Annex E

Central Drop Shaft



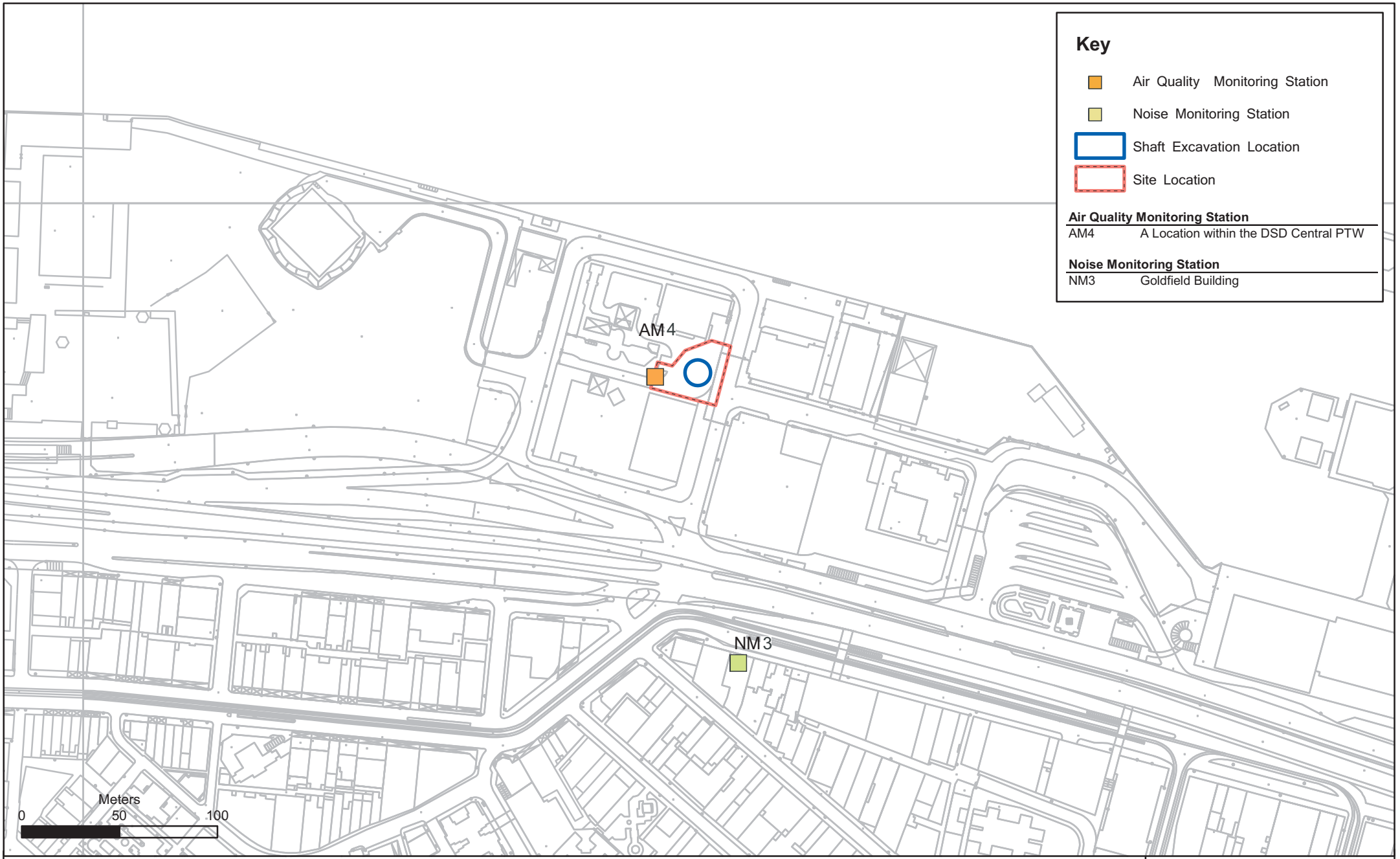
Annex E1

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

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

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 Station (Central)

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

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 - A Location within the DSD Central PTW
Monitoring Month : January 2010

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1-Jan	2-Jan
					new year holiday	
3-Jan	4-Jan	5-Jan	6-Jan	7-Jan	8-Jan	9-Jan
	1-hr and 24-hr Monitoring					1-hr and 24-hr Monitoring
10-Jan	11-Jan	12-Jan	13-Jan	14-Jan	15-Jan	16-Jan
					1-hr and 24-hr Monitoring	
17-Jan	18-Jan	19-Jan	20-Jan	21-Jan	22-Jan	23-Jan
				1-hr and 24-hr Monitoring		
24-Jan	25-Jan	26-Jan	27-Jan	28-Jan	29-Jan	30-Jan
			1-hr and 24-hr Monitoring			
31-Jan						

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 - A Location within the DSD Central PTW
Monitoring Month : February 2009

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1-Feb	2-Feb	3-Feb	4-Feb	5-Feb	6-Feb
		1-hr and 24-hr Monitoring				
7-Feb	8-Feb	9-Feb	10-Feb	11-Feb	12-Feb	13-Feb
	1-hr and 24-hr Monitoring			1-hr and 24-hr Monitoring		The day preceding Lunar New Year's Day
14-Feb	15-Feb	16-Feb	17-Feb	18-Feb	19-Feb	20-Feb
The first day of the Lunar New Year	The second day of the Lunar New Year	The third day of the Lunar New Year		1-hr and 24-hr Monitoring		
21-Feb	22-Feb	23-Feb	24-Feb	25-Feb	26-Feb	27-Feb
			1-hr and 24-hr Monitoring			
28-Feb						

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 Monitoring Schedule

NM3 - Goldfield Building
Monitoring Month : January 2010

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1-Jan	2-Jan
					New Year Day	
3-Jan	4-Jan	5-Jan	6-Jan	7-Jan	8-Jan	9-Jan
	Noise Monitoring					
10-Jan	11-Jan	12-Jan	13-Jan	14-Jan	15-Jan	16-Jan
					Noise Monitoring	
17-Jan	18-Jan	19-Jan	20-Jan	21-Jan	22-Jan	23-Jan
				Noise Monitoring		
24-Jan	25-Jan	26-Jan	27-Jan	28-Jan	29-Jan	30-Jan
			Noise Monitoring			
31-Jan						

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 Monitoring Schedule

NM3 - Goldfield Building
Monitoring Month : February 2009

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1-Feb	2-Feb	3-Feb	4-Feb	5-Feb	6-Feb
		Noise Monitoring				
7-Feb	8-Feb	9-Feb	10-Feb	11-Feb	12-Feb	13-Feb
	Noise Monitoring					The day preceding Lunar New Year's Day
14-Feb	15-Feb	16-Feb	17-Feb	18-Feb	19-Feb	20-Feb
The first day of the Lunar New Year	The second day of the Lunar New Year	The third day of the Lunar New Year		Noise Monitoring		
21-Feb	22-Feb	23-Feb	24-Feb	25-Feb	26-Feb	27-Feb
			Noise Monitoring			
28-Feb						

TSP Monitoring Equipment

Monitoring Station ID	Location	Monitoring Equipment		Last Calibration Date	Next Calibration Date
24-hr and 1-hr TSP		**HVS**	**Calibrator**		
AM4	A Location within the DSD Central PTW	GMW GS-2310 (S/N 9315)	CM-AIR-43 (S/N 9833620)	25 January 2010	25 March 2010

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AM4
Calibrated by	:	K.T.Ho
Date	:	22/01/2010

Sampler

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

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	9833620
Service Date	:	18 May 2009
Slope (m)	:	1.97702
Intercept (b)	:	-0.00070
Correlation Coefficient(r)	:	0.99992

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1018
Ta(K)	:	290

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	12.0	3.520	1.781	61	62.0
2	13 holes	9.4	3.116	1.576	54	54.9
3	10 holes	7.6	2.801	1.417	48	48.8
4	7 holes	4.8	2.226	1.126	37	37.8
5	5 holes	3.0	1.760	0.891	28	28.5

Sampler Calibration Relationship

Slope(m):37.862 Intercept(b): -5.090 Correlation Coefficient(r): 0.9998

Checked by: Magnum Fan Date: 25/01/2010

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 minimize 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	Δ

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 four times per day within worksites at the Central PTW; • the barging points should be continuous watering throughout the whole unloading process.	All work sites / during construction	Δ
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 minimize 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 deodorization system should be included in the Design and Construction Contract Document.	All PTW and SCISTW/ during 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 utilized 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	Δ
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	Δ

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Construction Works in Close Proximity of Storm Drains or Seafront To minimize 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	Δ

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 minimize 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 minimize 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	Δ
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	√

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, oxidizing, 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	Δ
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	Δ
Operational Phase	•		
Landscape & Visual	• Aesthetic design of the façade of PTW and associated structures to harmonize 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 E6 24-hour and 1-hour TSP Monitoring Results

24-hour TSP Monitoring Results

Station AM4

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time (hrs)	Flow Rate (m^3/min)			TSP Conc. ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Observations / Remarks	Sampler ID	Filter ID
Date	Time	Date	Time		Initial	Final	Initial	Final		Initial	Final	Average						
4-Jan-10	15:00	5-Jan-10	15:00	Sunny	2.7955	3.0030	16776.85	16800.85	24.00	1.14	1.14	1.1400	126	211	260	Construction work in progress.	9315	0279
9-Jan-10	13:30	10-Jan-10	13:30	Fine	2.7917	2.9826	16803.85	16827.85	24.00	1.1400	1.1400	1.1400	116	211	260	Construction work in progress.	9315	0284
15-Jan-10	15:10	16-Jan-10	15:10	Sunny	2.8215	3.0205	16830.85	16854.85	24.00	1.1400	1.1400	1.1400	121	211	260	Construction work in progress.	9315	0291
21-Jan-10	14:00	22-Jan-10	14:00	Fine	2.8306	2.9904	16857.85	16881.85	24.00	1.1400	1.1400	1.1400	97	211	260	Construction work in progress.	9315	0320
27-Jan-10	14:35	28-Jan-10	14:35	Fine	2.8625	3.0780	16884.85	16908.85	24.00	1.1900	1.1900	1.1900	126	211	260	Construction work in progress.	9315	0330
												Min.	**97**					
												Max.	**126**					
												Average	**117**					

Annex E6 24-hour and 1-hour TSP Monitoring Results

1-hour TSP Monitoring Results

Station AM4

Date	Start Time	Finish Time	Weather	TSP Concentration ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Site Conditions / Observations / Remarks	Temperature (℃)	Wind Speed * (m/s)	Sampler ID	Filter ID
4-Jan-10	8:00	9:00	Sunny	173	393	500	Construction work in progress.	17		9315	0277
4-Jan-10	9:30	10:30	Sunny	203	393	500	Construction work in progress.	17		9315	5385
4-Jan-10	10:30	11:30	Sunny	149	393	500	Construction work in progress.	17		9315	8278
9-Jan-10	8:00	9:00	Fine	291	393	500	Construction work in progress.	17		9315	0285
9-Jan-10	10:10	11:10	Fine	281	393	500	Construction work in progress.	17		9315	0289
9-Jan-10	11:15	12:15	Fine	184	393	500	Construction work in progress.	17		9315	0282
15-Jan-10	8:00	9:00	Sunny	**365**	393	500	Construction work in progress.	18		9315	0290
15-Jan-10	13:00	14:00	Sunny	209	393	500	Construction work in progress.	18		9315	0297
15-Jan-10	14:05	15:05	Sunny	279	393	500	Construction work in progress.	18		9315	0294
21-Jan-10	7:48	8:48	Fine	167	393	500	Construction work in progress.	20		9315	0298
21-Jan-10	11:50	12:50	Fine	327	393	500	Construction work in progress.	20		9315	0300
21-Jan-10	12:55	13:55	Fine	209	393	500	Construction work in progress.	20		9315	5415
27-Jan-10	8:00	9:00	Fine	186	393	500	Construction work in progress.	18		9315	5425
27-Jan-10	12:25	13:25	Fine	188	393	500	Construction work in progress.	18		9315	0316
27-Jan-10	13:30	14:30	Fine	266	393	500	Construction work in progress.	18		9315	0319
			Min.	**149**							
			Max.	**365**							
			Average	**232**							

* Wind Speed data is presented in the following table

Meteorological Data Extracted from the Hong Kong Observatory

Date	Weather	King's Park Station				
		Average Air Temperature (°C)	Average Relative Humiditiy (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
02/01/2010	Rainy	17.4	88	5.2	0-18	SE
04/01/2010	Sunny	17.9	81	-	1-17	SE
05/01/2010	Rainy	17.3	84	0.8	0-30	SE
08/01/2010	Rainy	13.7	80	0.9	0-10	NE
09/01/2010	Sunny	15.1	78	-	0-20	E
14/01/2010	Sunny	14.4	65	-	0-26	E
15/01/2010	Sunny	16.6	65	-	1-26	SE
16/01/2010	Sunny	18.1	67	-	0-18	SE
20/01/2010	Sunny	21.4	83	-	0-15	SE
21/01/2010	Sunny	22.9	87	-	0-12	SE
22/01/2010	Sunny	18.4	86	-	1-23	SE
26/01/2010	Sunny	16.0	78	-	0-20	E
27/01/2010	Sunny	17.0	85	-	7-18	SE
28/01/2010	Sunny	19.3	90	-	0-14	E, W

Date	Weather	Kai Tak Station				
		Average Air Temperature (°C) *	Average Relative Humiditiy (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
02/01/2010	Rainy	17.4	88	5.2	1-20	E
04/01/2010	Sunny	17.9	81	-	7-20	SE
05/01/2010	Rainy	17.3	84	0.8	0-30	E
08/01/2010	Rainy	13.7	80	0.9	0-18	NW, NE
09/01/2010	Sunny	15.1	78	-	3-27	E
14/01/2010	Sunny	14.4	65	-	0-32	E
15/01/2010	Sunny	16.6	65	-	2-29	E
16/01/2010	Sunny	18.1	67	-	0-27	SE
20/01/2010	Sunny	21.4	83	-	1-22	E
21/01/2010	Sunny	22.9	87	-	2-28	SE
22/01/2010	Sunny	18.4	86	-	9-31	E
26/01/2010	Sunny	16.0	78	-	3-24	NE, E
27/01/2010	Sunny	17.0	85	-	6-26	E
28/01/2010	Sunny	19.3	90	-	0-21	SE

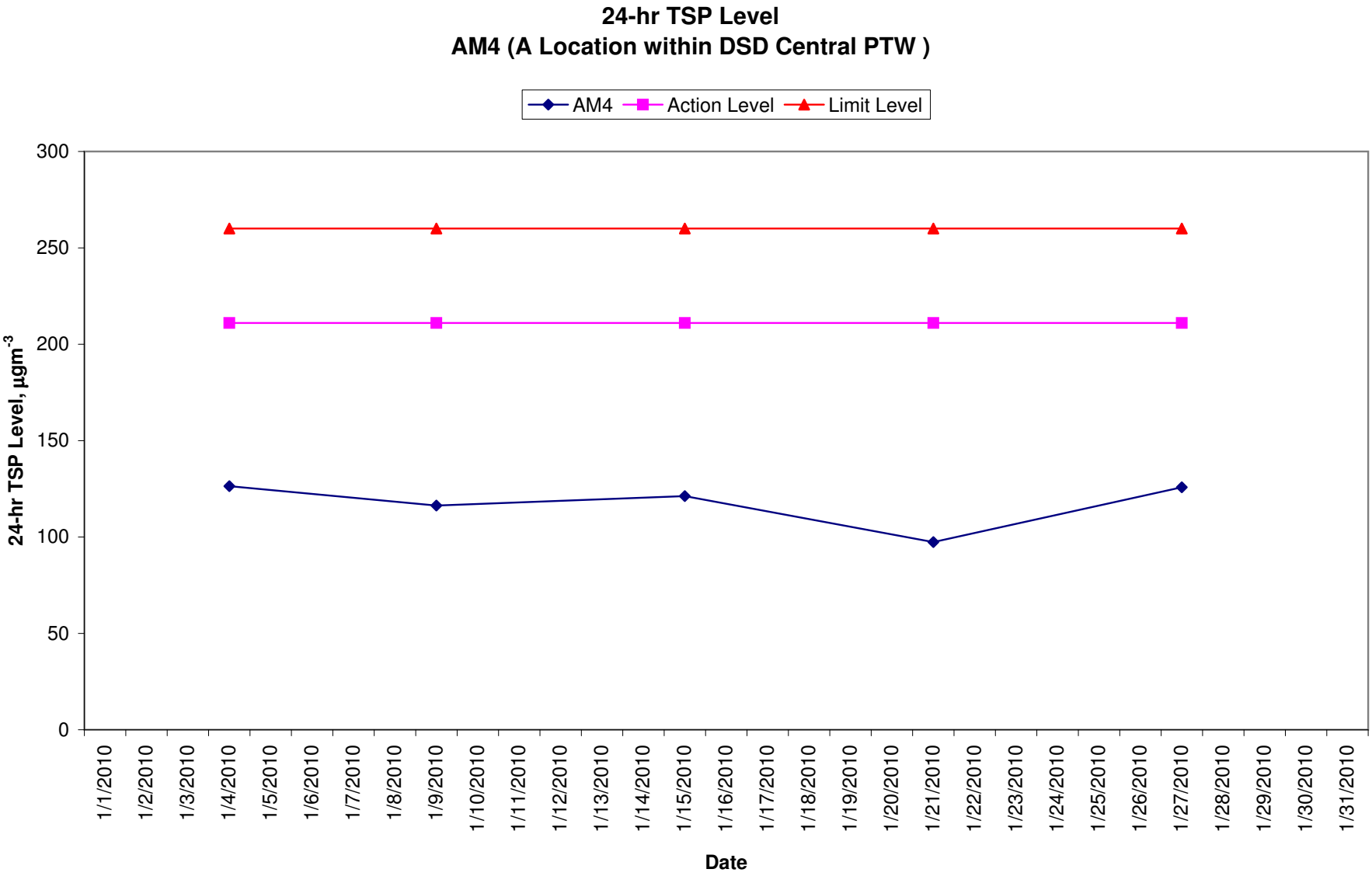
* king's park data
\- data were not available
\# less than 24 hourly observations per day

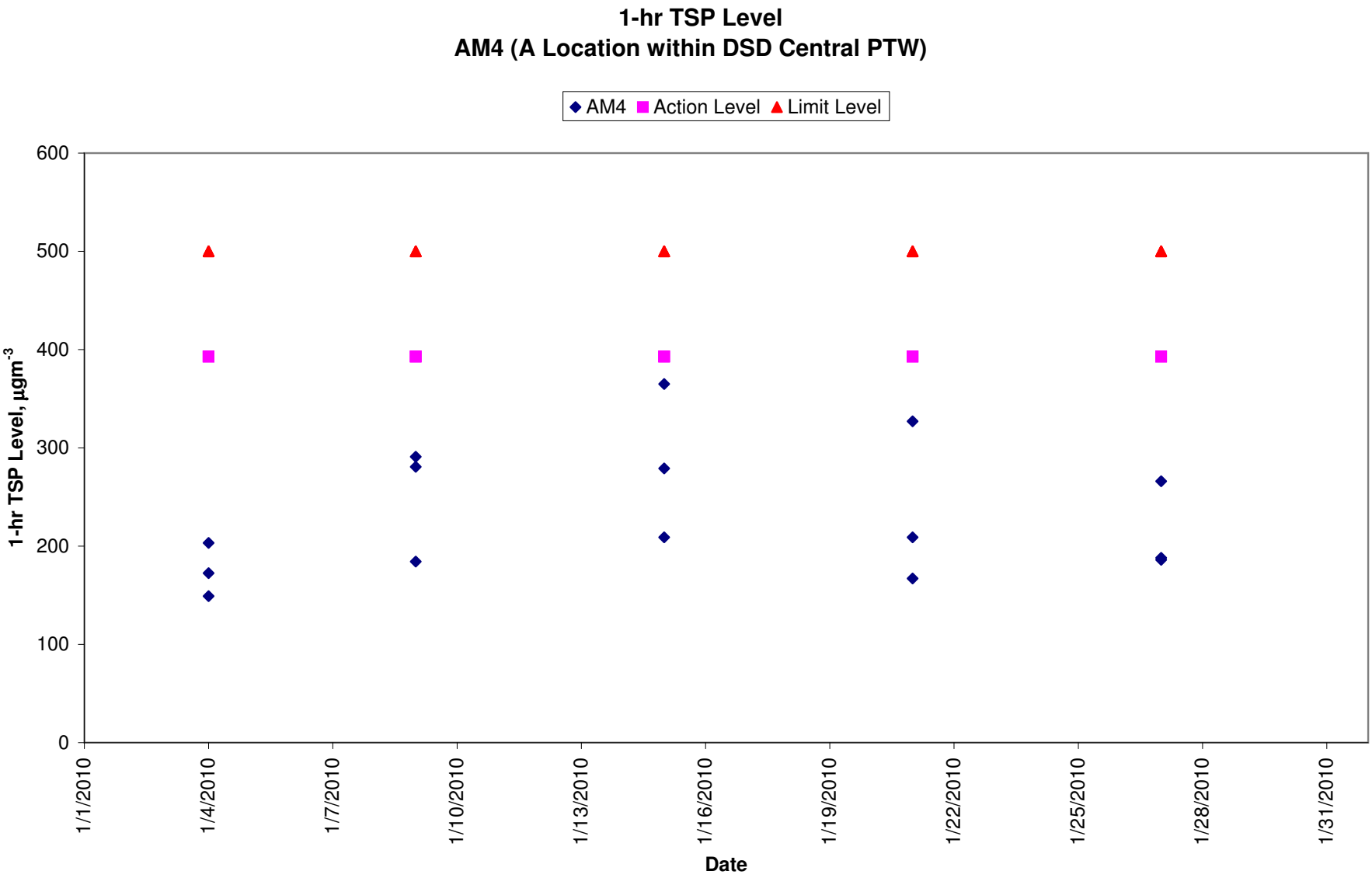
Meteorological Data Extracted from the Hong Kong Observatory

Date	Weather	Tsing Yi Station				
		Average Air Temperature (°C)	Average Relative Humiditiy (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
02/01/2010	Rainy	17.4	88	5.2	2-15	SE, NW
04/01/2010	Sunny	17.9	81	-	1-16	SE
05/01/2010	Rainy	17.3	84	0.8	1-19	E, NW
08/01/2010	Rainy	13.7	80	0.9	0-15	NW
09/01/2010	Sunny	15.1	78	-	0.5-18	SE
14/01/2010	Sunny	14.4	65	-	2-22	E
15/01/2010	Sunny	16.6	65	-	2-22	E
16/01/2010	Sunny	18.1	67	-	0-21	E
20/01/2010	Sunny	21.4	83	-	0-16	E
21/01/2010	Sunny	22.9	87	-	0-16	E
22/01/2010	Sunny	18.4	86	-	6-24	SE
26/01/2010	Sunny	16.0	78	-	0-16	E
27/01/2010	Sunny	17.0	85	-	3-19	SE
28/01/2010	Sunny	19.3	90	-	2-10	NW

Date	Weather	Green Island Station				
		Average Air Temperature (°C) *	Average Relative Humiditiy (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
02/01/2010	Rainy	17.4	88	5.2	5-43	NE
04/01/2010	Sunny	17.9	81	-	3-39	NE
05/01/2010	Rainy	17.3	84	0.8	2-58	NE
08/01/2010	Rainy	13.7	80	0.9	10-40	NW
09/01/2010	Sunny	15.1	78	-	10-51	NE
14/01/2010	Sunny	14.4	65	-	20-36	NE
15/01/2010	Sunny	16.6	65	-	40-55	NE
16/01/2010	Sunny	18.1	67	-	7-50	NE
20/01/2010	Sunny	21.4	83	-	14-33	NE
21/01/2010	Sunny	22.9	87	-	0-30	NE
22/01/2010	Sunny	18.4	86	-	15-55	NE
26/01/2010	Sunny	16.0	78	-	14-52	NE
27/01/2010	Sunny	17.0	85	-	31-49	NE
28/01/2010	Sunny	19.3	90	-	4-27	NE

* king's park data
\- data were not available
\# less than 24 hourly observations per day


24-hr TSP Level
AM4 (A Location within DSD Central PTW)
AM4
Action Level
Limit Level
24-hr TSP Level, µgm-3
300
250
200
150
100
50
0
1/1/2010
1/2/2010
1/3/2010
1/4/2010
1/5/2010
1/6/2010
1/7/2010
1/8/2010
1/9/2010
1/10/2010
1/11/2010
1/12/2010
1/13/2010
1/14/2010
1/15/2010
1/16/2010
1/17/2010
1/18/2010
1/19/2010
1/20/2010
1/21/2010
1/22/2010
1/23/2010
1/24/2010
1/25/2010
1/26/2010
1/27/2010
1/28/2010
1/29/2010
1/30/2010
1/31/2010
Date

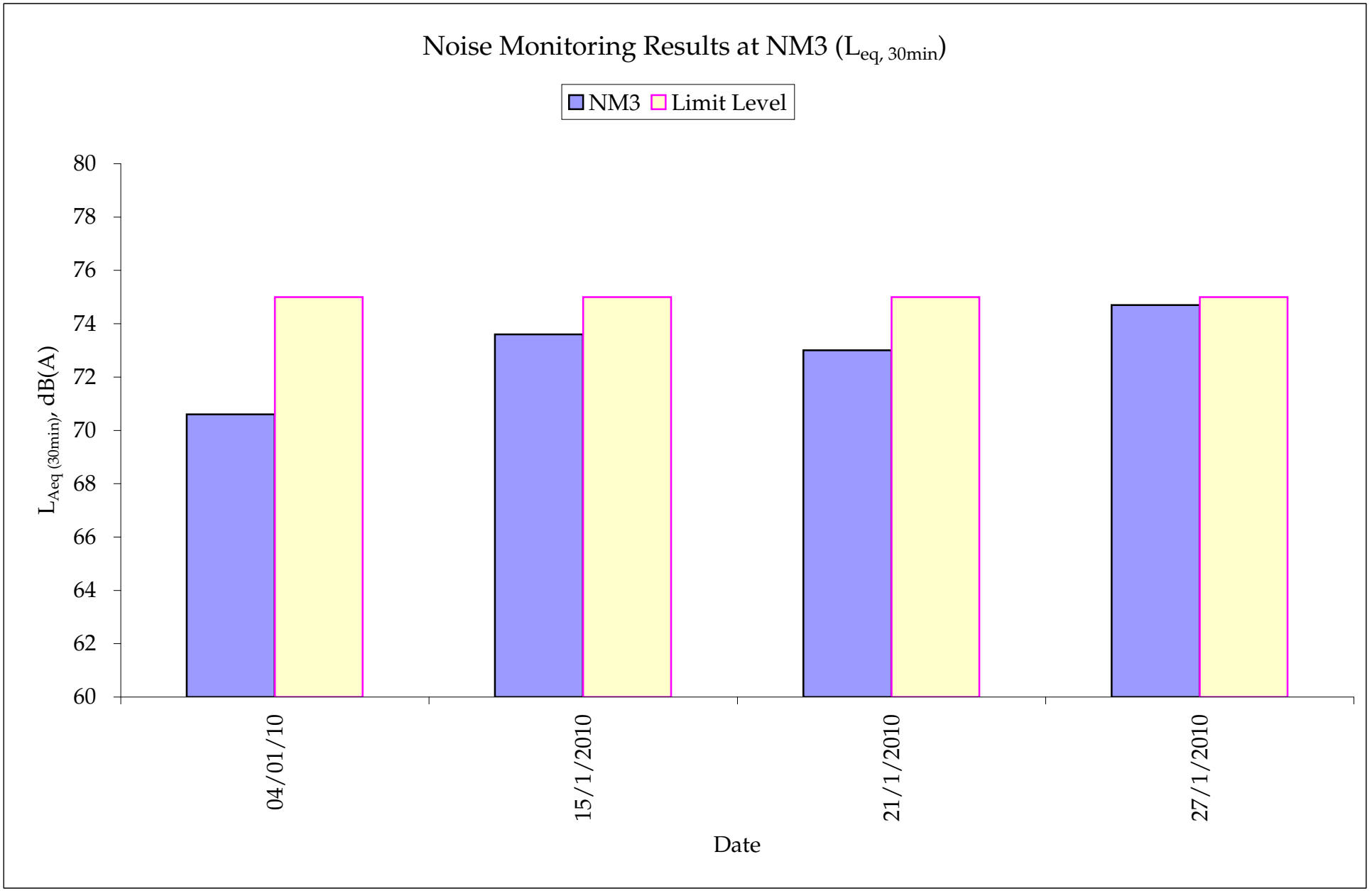

1-hr TSP Level
AM4 (A Location within DSD Central PTW)
AM4
Action Level
Limit Level
600
500
400
300
200
100
0
1-hr TSP Level, µgm-3
1/1/2010
1/4/2010
1/7/2010
1/10/2010
1/13/2010
1/16/2010
1/19/2010
1/22/2010
1/25/2010
1/28/2010
1/31/2010
Date

Annex E7 Noise Monitoring Results

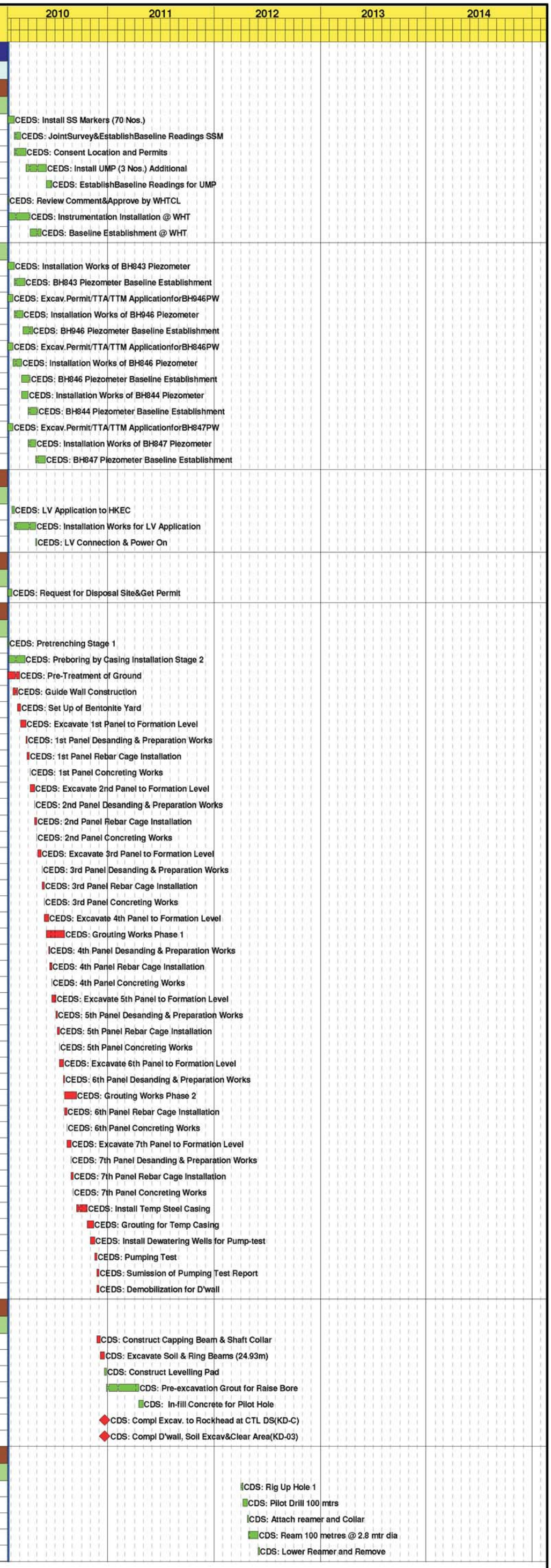
Daytime Noise Monitoring Results

Station NM3

Date	Start Time	End Time	Weather	Noise level (dB(A)), 30 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (℃)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
4-Jan-10	9:45	10:15	Sunny	70.6	72.3	68.7	Excavation works	Traffic noise	-	20	1.5	RION- NA27 (S/N 00201194)	RION - NC73 (S/N 10786708)
15-Jan-10	14:20	14:50	Sunny	73.6	75.0	70.9	Excavation works	Traffic noise	-	15	1.2	RION- NA27 (S/N 00201194)	RION - NC73 (S/N 10786708)
21-Jan-10	13:10	13:40	Fine	73.0	74.6	70.4	Cranes operation, excavation work	Traffic noise	-	17	1.0	RION- NA27 (S/N 00201194)	RION - NC73 (S/N 10786708)
27-Jan-10	15:56	16:26	Sunny	74.7	76.8	72.7	Mobile crane were working, exvacation work	Traffic noise	-	17	0.8	RION- NA27 (S/N 00201194)	RION - NC73 (S/N 10786708)
			Min.	**70.6**									
			Max.	**74.7**									


Noise Monitoring Results at NM3 ($L_{eq, 30min}$)
NM3
Limit Level
80
78
76
74
72
70
68
66
64
62
60
$L_{Aeq\ (30min)}$, dB(A)
04/01/10
15/1/2010
21/1/2010
27/1/2010
Date

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

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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

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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

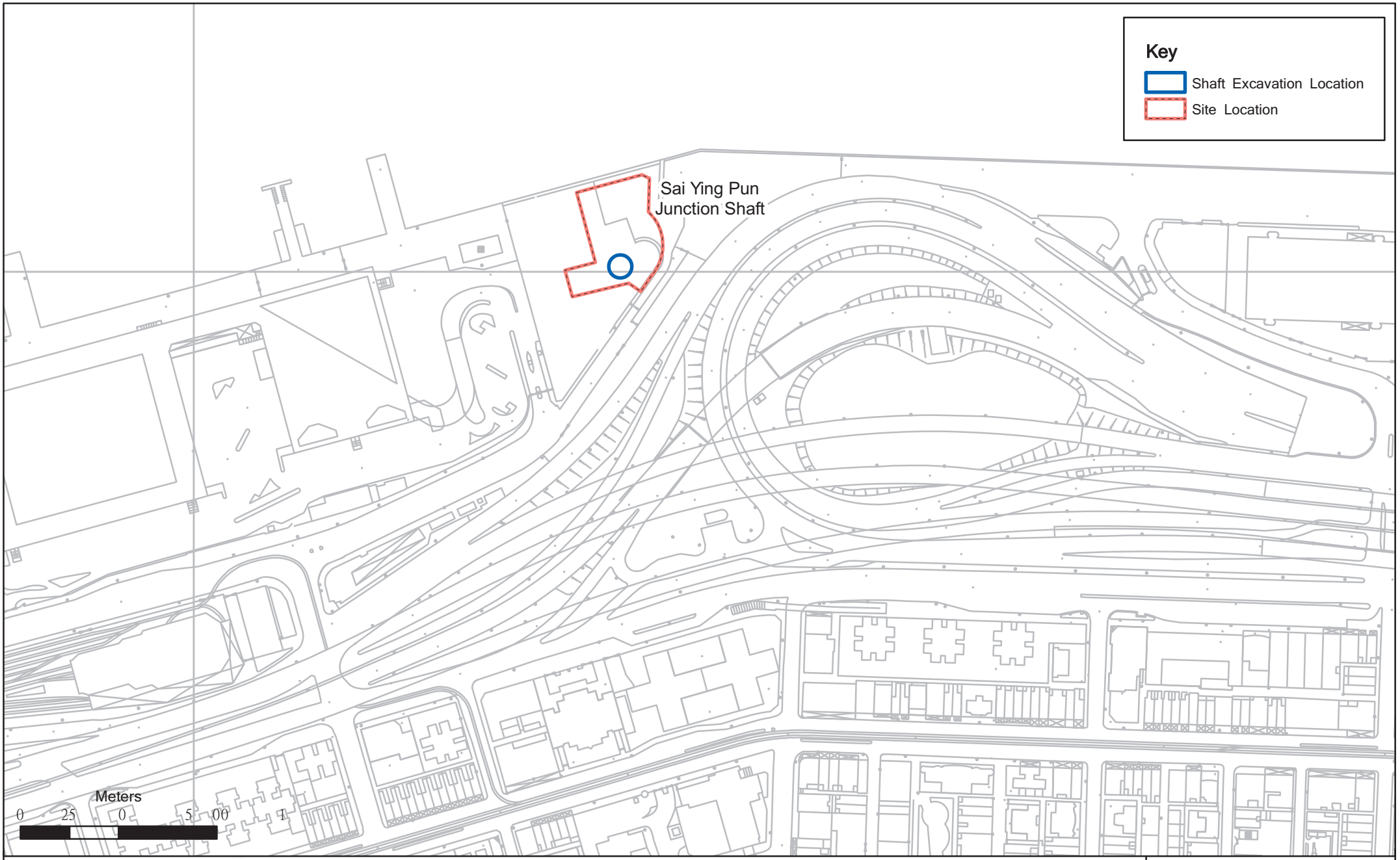
Annex E8 Construction Programme for the Project

Gammon

Date	Revision	Checked	Approved

Annex F

Sai Ying Pun Junction Shaft



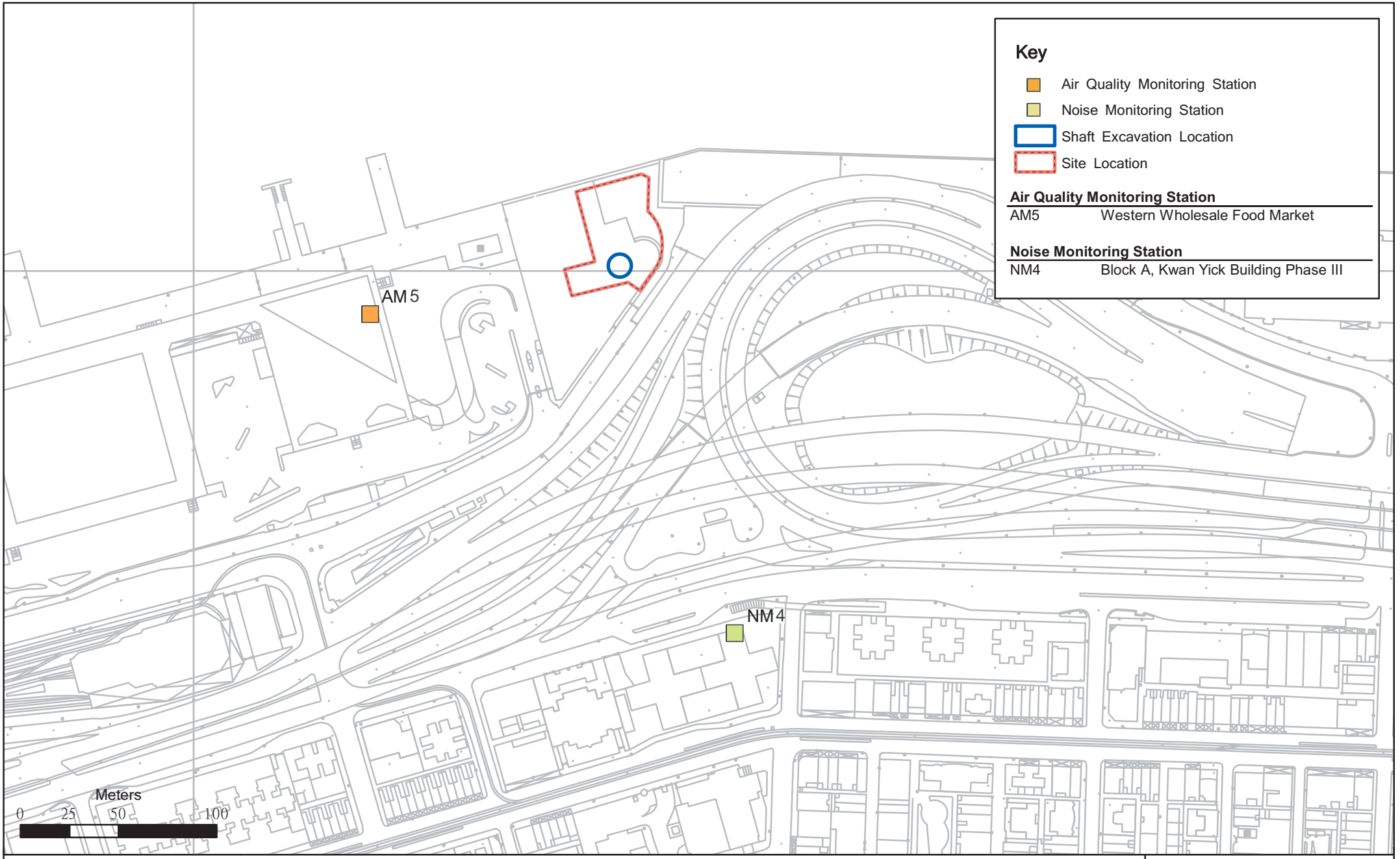
Annex F1

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

File: EM&A and proposed station\0104887_Sai Ying Pun.mxd
Date: 29/10/2009

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 Station (Fung Mat Road)

File: EM&A and proposed station\0104887_Sai Ying Pun.mxd
Date: 29/10/2009

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 : January 2010

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1-Jan	2-Jan
					new year holiday	1-hr and 24-hr Monitoring
3-Jan	4-Jan	5-Jan	6-Jan	7-Jan	8-Jan	9-Jan
					1-hr and 24-hr Monitoring	
10-Jan	11-Jan	12-Jan	13-Jan	14-Jan	15-Jan	16-Jan
				1-hr and 24-hr Monitoring		
17-Jan	18-Jan	19-Jan	20-Jan	21-Jan	22-Jan	23-Jan
			1-hr and 24-hr Monitoring			
24-Jan	25-Jan	26-Jan	27-Jan	28-Jan	29-Jan	30-Jan
		1-hr and 24-hr Monitoring				
31-Jan						

* 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 Air Quality Monitoring Schedule *

AM5 - Western Wholesale Food Market
Monitoring Month : February 2010

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1-Feb	2-Feb	3-Feb	4-Feb	5-Feb	6-Feb
	1-hr and 24-hr Monitoring					1-hr and 24-hr Monitoring
7-Feb	8-Feb	9-Feb	10-Feb	11-Feb	12-Feb	13-Feb
				1-hr and 24-hr Monitoring		The day preceding Lunar New Year's Day
14-Feb	15-Feb	16-Feb	17-Feb	18-Feb	19-Feb	20-Feb
The first day of the Lunar New Year	The second day of the Lunar New Year	The third day of the Lunar New Year	1-hr and 24-hr Monitoring			
21-Feb	22-Feb	23-Feb	24-Feb	25-Feb	26-Feb	27-Feb
		1-hr and 24-hr Monitoring				
28-Feb						

* 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 Monitoring Schedule

NM4 - Block A, Kwan Yick Building Phase III
Monitoring Month : January 2010

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1-Jan	2-Jan
					New Year Day	
3-Jan	4-Jan	5-Jan	6-Jan	7-Jan	8-Jan	9-Jan
	Noise Monitoring					
10-Jan	11-Jan	12-Jan	13-Jan	14-Jan	15-Jan	16-Jan
					Noise Monitoring	
17-Jan	18-Jan	19-Jan	20-Jan	21-Jan	22-Jan	23-Jan
				Noise Monitoring		
24-Jan	25-Jan	26-Jan	27-Jan	28-Jan	29-Jan	30-Jan
			Noise Monitoring			
31-Jan						

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 Monitoring Schedule

NM4 - Block A, Kwan Yick Building Phase III
Monitoring Month : February 2009

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1-Feb	2-Feb	3-Feb	4-Feb	5-Feb	6-Feb
		Noise Monitoring				
7-Feb	8-Feb	9-Feb	10-Feb	11-Feb	12-Feb	13-Feb
Noise Monitoring (during daytime of sundays/ public holidays)	Noise Monitoring					Noise Monitoring The day preceding Lunar New Year's Day
14-Feb	15-Feb	16-Feb	17-Feb	18-Feb	19-Feb	20-Feb
The first day of the Lunar New Year	The second day of the Lunar New Year	The third day of the Lunar New Year		Noise Monitoring		
21-Feb	22-Feb	23-Feb	24-Feb	25-Feb	26-Feb	27-Feb
Noise Monitoring (during daytime of sundays/ public holidays)			Noise Monitoring			
28-Feb						
Noise Monitoring (during daytime of sundays/ public holidays)						

TSP Monitoring Equipment

Monitoring Station ID	Location	Monitoring Equipment		Last Calibration Date	Next Calibration Date
24-hr and 1-hr TSP		**HVS**	**Calibrator**		
AM5	Western Wholesale Food Market	GMW GS-2310 (S/N 8162)	CM-AIR-43 (S/N 9833620)	25 January 2010	25 March 2010

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AM5
Calibrated by	:	K.T.Ho
Date	:	25/1/2010

Sampler

Model	:	GMWS-2310 ACCU-VOL
Serial Number	:	S/N 8162

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	9833620
Service Date	:	18 May 2009
Slope (m)	:	1.97702
Intercept (b)	:	-0.00070
Correlation Coefficient(r)	:	0.99992

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1018
Ta(K)	:	290

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	10.9	3.338	1.689	53	53.6
2	13 holes	8.8	2.999	1.517	47	47.5
3	10 holes	6.5	2.578	1.304	39	39.4
4	7 holes	4.4	2.121	1.073	30	30.3
5	5 holes	2.7	1.661	0.841	21	21.2

Sampler Calibration Relationship

Slope(m):38.301 Intercept(b):-10.710 Correlation Coefficient(r): 0.9998

Checked by: Magnum Fan Date: 25/01/2010

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 minimize 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	Δ

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	Δ
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 minimize 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 deodorization system should be included in the Design and Construction Contract Document.	All PTW and SCISTW/ during 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 utilized 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	Δ
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	Δ

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Construction Works in Close Proximity of Storm Drains or Seafront To minimize 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	Δ

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 minimize 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 minimize 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	Δ
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	√

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, oxidizing, 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	Δ
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	Δ
Operational Phase	•		
Landscape & Visual	• Aesthetic design of the façade of PTW and associated structures to harmonize 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 F6 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 (hrs)	Flow Rate (m^3/min)			TSP Conc. ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Observations / Remarks	Sampler ID	Filter ID
Date	Time	Date	Time		Initial	Final	Initial	Final		Initial	Final	Average						
2-Jan-10	11:45	3-Jan-10	11:45	Cloudy	2.8462	3.0547	10683.76	10707.76	24.00	1.17	1.17	1.1700	124	188	260	Construction work in progress.	8162	0270
8-Jan-10	11:30	9-Jan-10	11:30	Cloudy	2.8717	3.0580	10710.76	10734.76	24.00	1.1700	1.1700	1.1700	111	188	260	Construction work in progress.	8162	5324
14-Jan-10	12:00	15-Jan-10	12:00	Sunny	2.8853	3.0258	10737.76	10761.76	24.00	1.1921	1.1921	1.1921	82	188	260	Construction work in progress.	8162	5380
20-Jan-10	12:05	21-Jan-10	12:05	Fine	2.8713	3.0411	10764.76	24.00	24.00	1.1857	1.1857	1.1857	99	188	260	Construction work in progress.	8162	5439
26-Jan-10	12:15	27-Jan-10	12:15	Cloudy	2.8742	3.0114	10791.76	1081.76	24.00	1.1921	1.1921	1.1921	80	188	260	Construction work in progress.	8162	5497
												Min.	**80**					
												Max.	**124**					
												Average	**99**					

Annex F6 24-hour and 1-hour TSP Monitoring Results

1-hour TSP Monitoring Results

Station AM5

Date	Start Time	Finish Time	Weather	TSP Concentration ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Site Conditions / Observations / Remarks	Temperature (℃)	Wind Speed * (m/s)	Sampler ID	Filter ID
2-Jan-10	8:30	9:30	Cloudy	191	332	500	Construction work in progress.	17		8162	0267
2-Jan-10	9:34	10:34	Cloudy	236	332	500	Construction work in progress.	17		8162	0265
2-Jan-10	10:40	11:40	Cloudy	242	332	500	Construction work in progress.	17		8162	0259
8-Jan-10	8:15	9:15	Cloudy	187	332	500	Construction work in progress.	15		8162	5386
8-Jan-10	9:20	10:20	Cloudy	207	332	500	Construction work in progress.	15		8162	5389
8-Jan-10	10:25	11:25	Cloudy	201	332	500	Construction work in progress.	15		8162	5391
14-Jan-10	8:30	9:30	Sundy	177	332	500	Construction work in progress.	17		8162	5392
14-Jan-10	9:40	10:40	Sundy	230	332	500	Construction work in progress.	17		8162	5403
14-Jan-10	10:45	11:45	Sundy	219	332	500	Construction work in progress.	17		8162	5401
20-Jan-10	8:30	9:30	Fine	189	332	500	Construction work in progress.	19		8162	5413
20-Jan-10	9:38	10:38	Fine	150	332	500	Construction work in progress.	19		8162	5424
20-Jan-10	11:00	12:00	Fine	167	332	500	Construction work in progress.	19		8162	5438
26-Jan-10	8:30	9:30	Cloudy	180	332	500	Construction work in progress.	17		8162	5440
26-Jan-10	9:45	10:45	Cloudy	203	332	500	Construction work in progress.	17		8162	5472
26-Jan-10	11:00	12:00	Cloudy	180	332	500	Construction work in progress.	17		8162	5474
			Min.	**150**							
			Max.	**242**							
			Average	**197**							

* Wind Speed data is presented in the following table

Meteorological Data Extracted from the Hong Kong Observatory

Date	Weather	King's Park Station				
		Average Air Temperature (°C)	Average Relative Humiditiy (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
02/01/2010	Rainy	17.4	88	5.2	0-18	SE
04/01/2010	Sunny	17.9	81	-	1-17	SE
05/01/2010	Rainy	17.3	84	0.8	0-30	SE
08/01/2010	Rainy	13.7	80	0.9	0-10	NE
09/01/2010	Sunny	15.1	78	-	0-20	E
14/01/2010	Sunny	14.4	65	-	0-26	E
15/01/2010	Sunny	16.6	65	-	1-26	SE
16/01/2010	Sunny	18.1	67	-	0-18	SE
20/01/2010	Sunny	21.4	83	-	0-15	SE
21/01/2010	Sunny	22.9	87	-	0-12	SE
22/01/2010	Sunny	18.4	86	-	1-23	SE
26/01/2010	Sunny	16.0	78	-	0-20	E
27/01/2010	Sunny	17.0	85	-	7-18	SE
28/01/2010	Sunny	19.3	90	-	0-14	E, W

Date	Weather	Kai Tak Station				
		Average Air Temperature (°C) *	Average Relative Humiditiy (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
02/01/2010	Rainy	17.4	88	5.2	1-20	E
04/01/2010	Sunny	17.9	81	-	7-20	SE
05/01/2010	Rainy	17.3	84	0.8	0-30	E
08/01/2010	Rainy	13.7	80	0.9	0-18	NW, NE
09/01/2010	Sunny	15.1	78	-	3-27	E
14/01/2010	Sunny	14.4	65	-	0-32	E
15/01/2010	Sunny	16.6	65	-	2-29	E
16/01/2010	Sunny	18.1	67	-	0-27	SE
20/01/2010	Sunny	21.4	83	-	1-22	E
21/01/2010	Sunny	22.9	87	-	2-28	SE
22/01/2010	Sunny	18.4	86	-	9-31	E
26/01/2010	Sunny	16.0	78	-	3-24	NE, E
27/01/2010	Sunny	17.0	85	-	6-26	E
28/01/2010	Sunny	19.3	90	-	0-21	SE

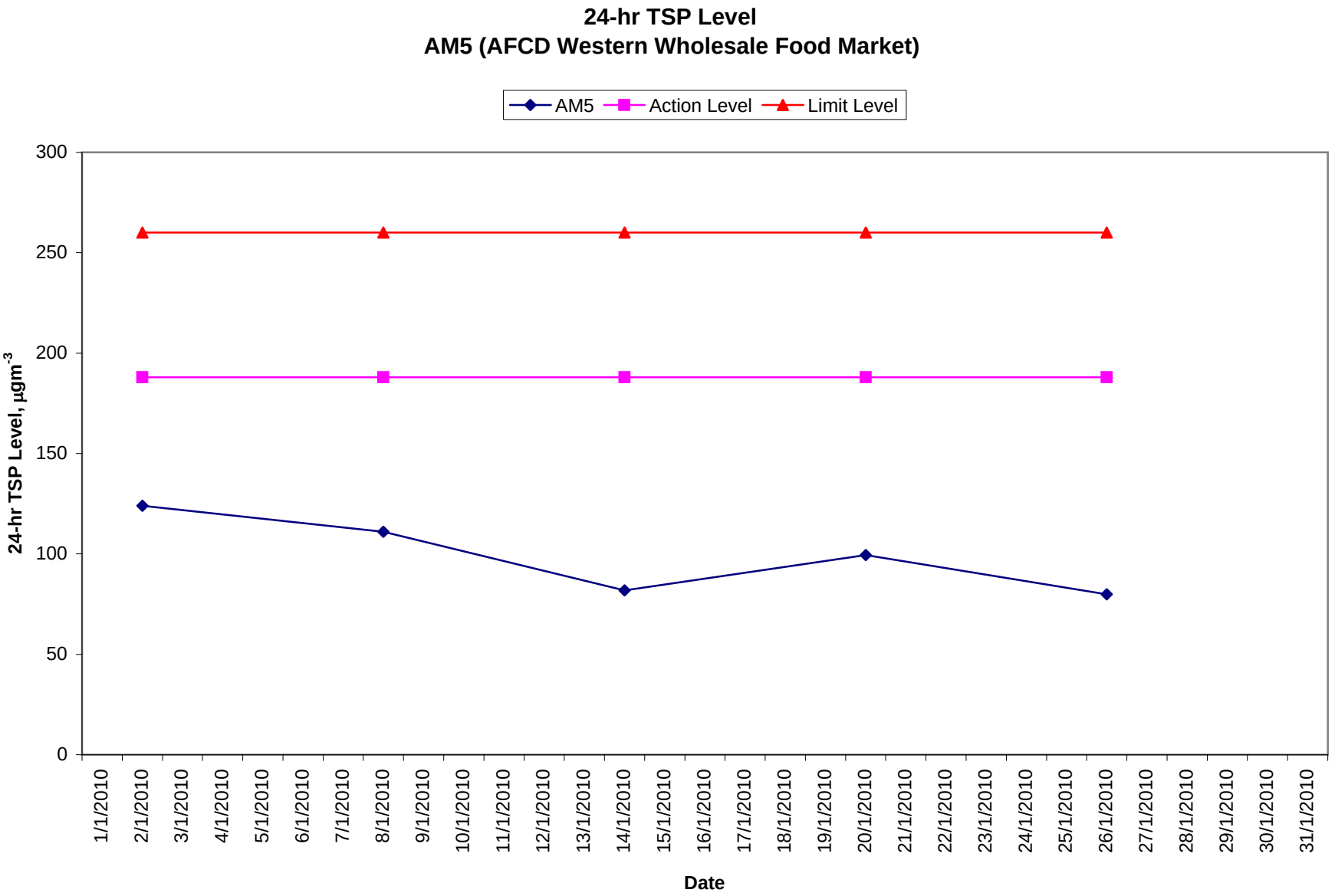
* king's park data
\- data were not available
\# less than 24 hourly observations per day

Meteorological Data Extracted from the Hong Kong Observatory

Date	Weather	Tsing Yi Station				
		Average Air Temperature (°C)	Average Relative Humiditiy (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
02/01/2010	Rainy	17.4	88	5.2	2-15	SE, NW
04/01/2010	Sunny	17.9	81	-	1-16	SE
05/01/2010	Rainy	17.3	84	0.8	1-19	E, NW
08/01/2010	Rainy	13.7	80	0.9	0-15	NW
09/01/2010	Sunny	15.1	78	-	0.5-18	SE
14/01/2010	Sunny	14.4	65	-	2-22	E
15/01/2010	Sunny	16.6	65	-	2-22	E
16/01/2010	Sunny	18.1	67	-	0-21	E
20/01/2010	Sunny	21.4	83	-	0-16	E
21/01/2010	Sunny	22.9	87	-	0-16	E
22/01/2010	Sunny	18.4	86	-	6-24	SE
26/01/2010	Sunny	16.0	78	-	0-16	E
27/01/2010	Sunny	17.0	85	-	3-19	SE
28/01/2010	Sunny	19.3	90	-	2-10	NW

Date	Weather	Green Island Station				
		Average Air Temperature (°C) *	Average Relative Humiditiy (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
02/01/2010	Rainy	17.4	88	5.2	5-43	NE
04/01/2010	Sunny	17.9	81	-	3-39	NE
05/01/2010	Rainy	17.3	84	0.8	2-58	NE
08/01/2010	Rainy	13.7	80	0.9	10-40	NW
09/01/2010	Sunny	15.1	78	-	10-51	NE
14/01/2010	Sunny	14.4	65	-	20-36	NE
15/01/2010	Sunny	16.6	65	-	40-55	NE
16/01/2010	Sunny	18.1	67	-	7-50	NE
20/01/2010	Sunny	21.4	83	-	14-33	NE
21/01/2010	Sunny	22.9	87	-	0-30	NE
22/01/2010	Sunny	18.4	86	-	15-55	NE
26/01/2010	Sunny	16.0	78	-	14-52	NE
27/01/2010	Sunny	17.0	85	-	31-49	NE
28/01/2010	Sunny	19.3	90	-	4-27	NE

* king's park data
\- data were not available
\# less than 24 hourly observations per day


24-hr TSP Level
AM5 (AFCD Western Wholesale Food Market)
AM5
Action Level
Limit Level
24-hr TSP Level, µgm-3
300
250
200
150
100
50
0
1/1/2010
2/1/2010
3/1/2010
4/1/2010
5/1/2010
6/1/2010
7/1/2010
8/1/2010
9/1/2010
10/1/2010
11/1/2010
12/1/2010
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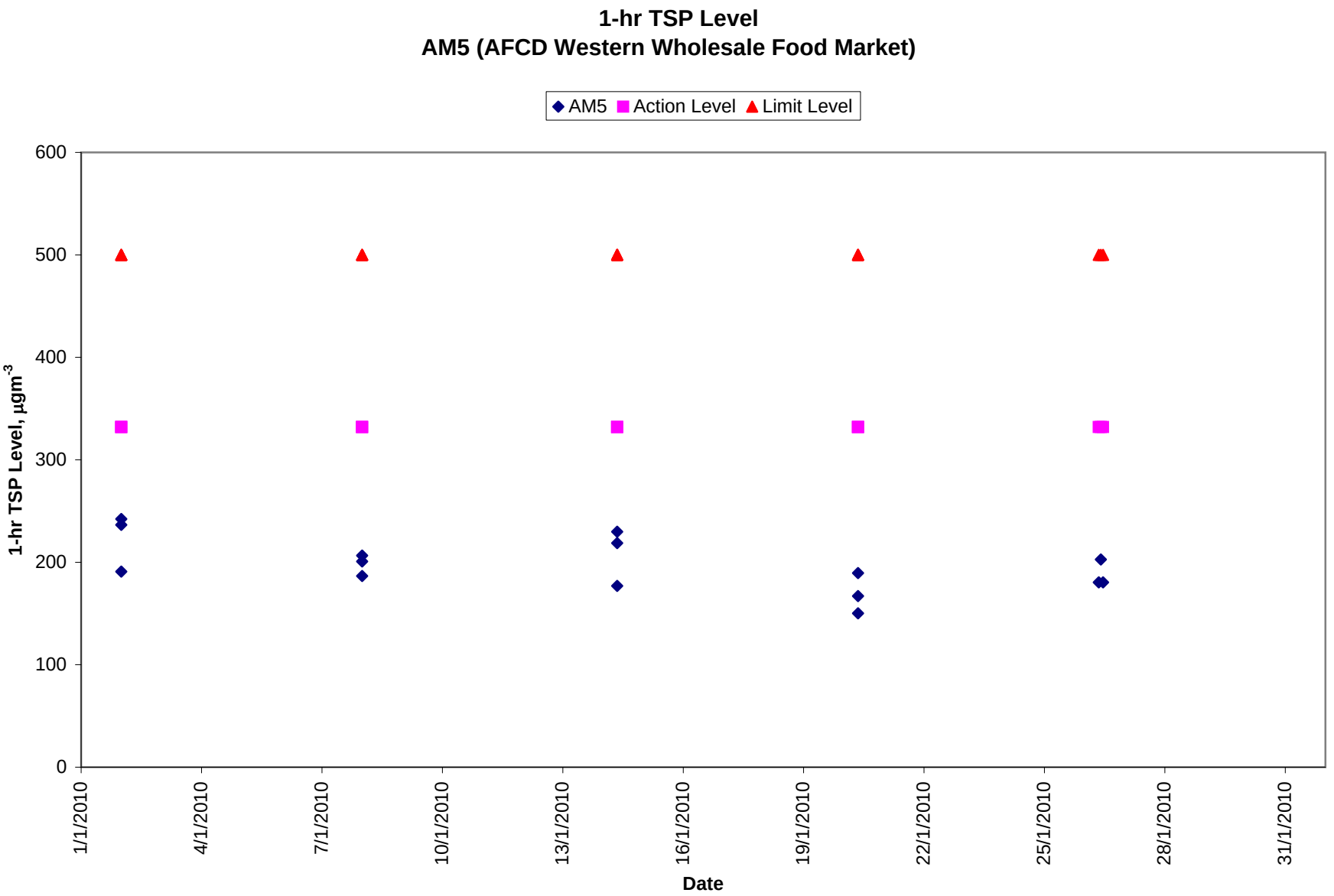
31/1/2010
Date

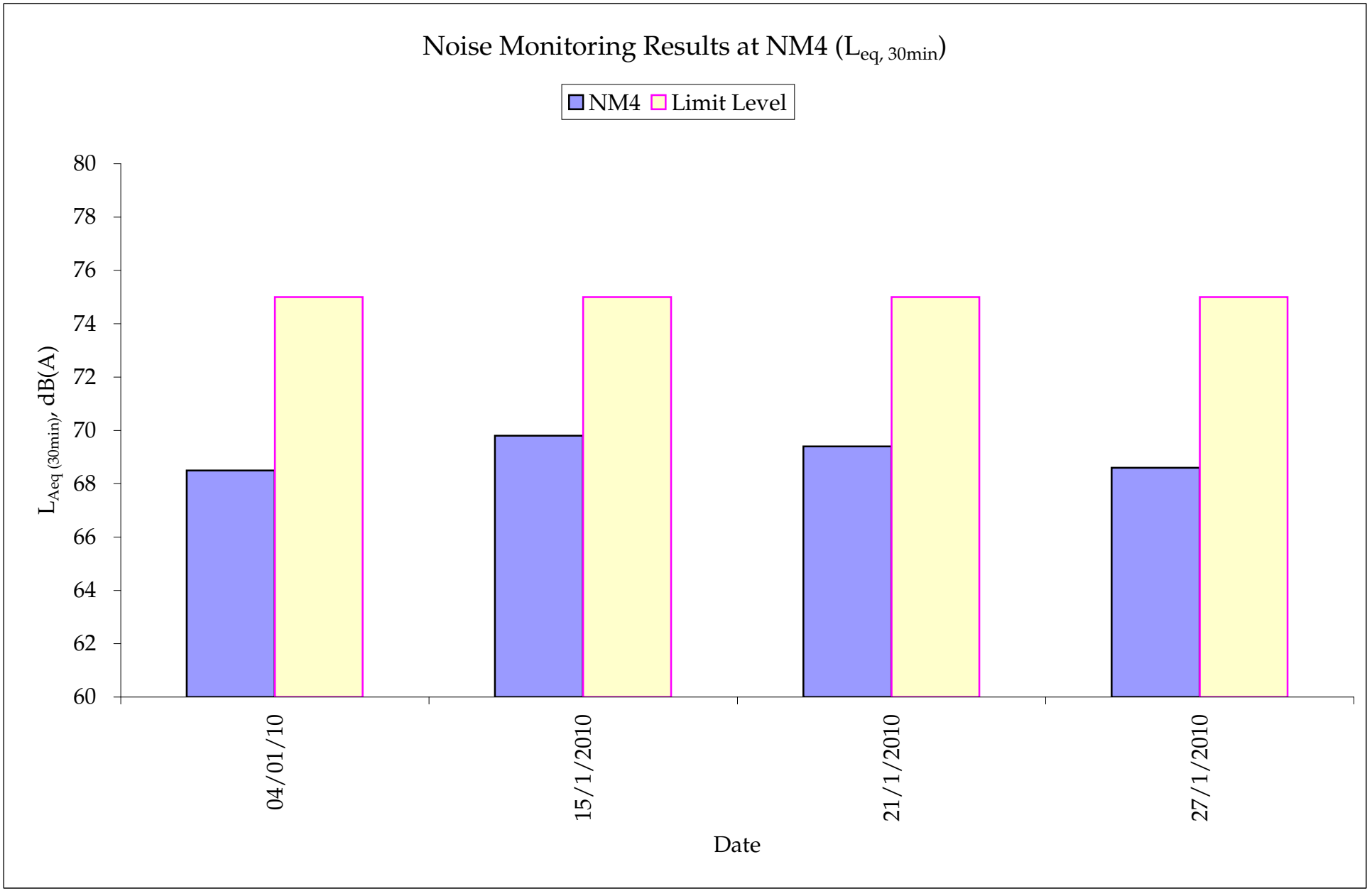

1-hr TSP Level
AM5 (AFCD Western Wholesale Food Market)
AM5
Action Level
Limit Level
1-hr TSP Level, µgm-3
600
500
400
300
200
100
0
1/1/2010
4/1/2010
7/1/2010
10/1/2010
13/1/2010
16/1/2010
19/1/2010
22/1/2010
25/1/2010
28/1/2010
31/1/2010
Date

Annex F7 Noise Monitoring Results

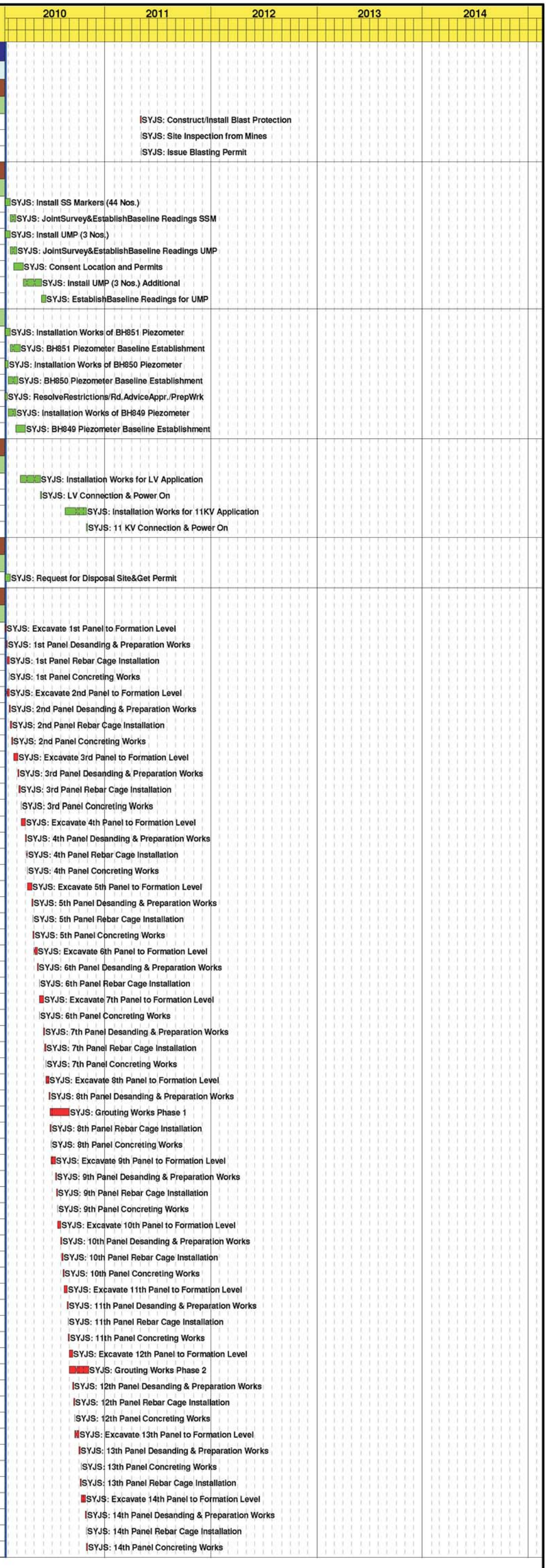
Daytime Noise Monitoring Results

Station NM5

Date	Start Time	End Time	Weather	Noise level (dB(A)), 30 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (℃)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
4-Jan-10	11:10	11:40	Sunny	71.0	71.4	70.6	Excavation works, Bentonite filltering work and generator	Aricraft noise and traffic noise	-	20	0.5	RION- NA31 (S/N 00410224)	RION - NC73 (S/N 10786708)
14-Jan-10	9:00	9:30	Sunny	70.4	70.8	69.8	Excavation works, Bentonite filltering work and generator	Aricraft noise and traffic noise	-	14.5	0.3	RION- NA27 (S/N 00201194)	RION - NC73 (S/N 10786708)
20-Jan-10	13:13	13:43	Fine	64.8	65.7	64.0	Bentonite filltering work and generator	Aricraft noise and traffic noise	-	21	0.5	RION- NA27 (S/N 00201194)	RION - NC73 (S/N 10786708)
26-Jan-10	14:12	14:42	Fine	64.9	65.7	64.1	Mobile cranes movement, generator	Aircraft noise and traffic noise	-	16	0.8	RION- NA27 (S/N 00201194)	RION - NC73 (S/N 10786708)
			Min.	**64.8**									
			Max.	**71.0**									


Noise Monitoring Results at NM4 ($L_{eq, 30min}$)
NM4
Limit Level
80
78
76
74
72
70
68
66
64
62
60
$L_{Aeq\ (30min)}$, dB(A)
04/01/10
15/1/2010
21/1/2010
27/1/2010
Date

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

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WPU7 Sheet 1 of 2

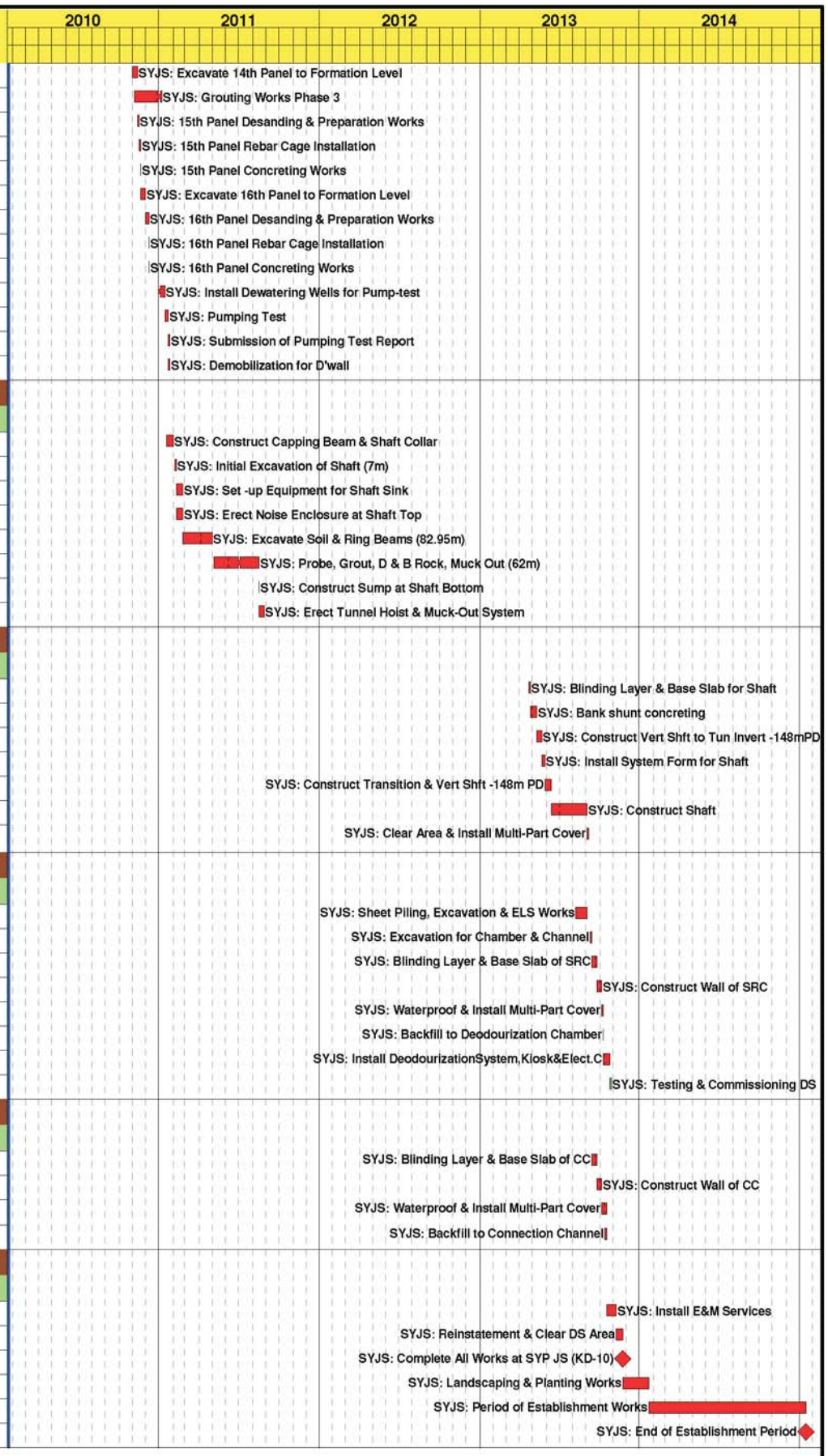
Habour Area Treatment Scheme Stage 2A
Contract No. DC/2007/23 - Construction of Sewage Conveyance from North Point to Stonecutters Island
Programme

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

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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

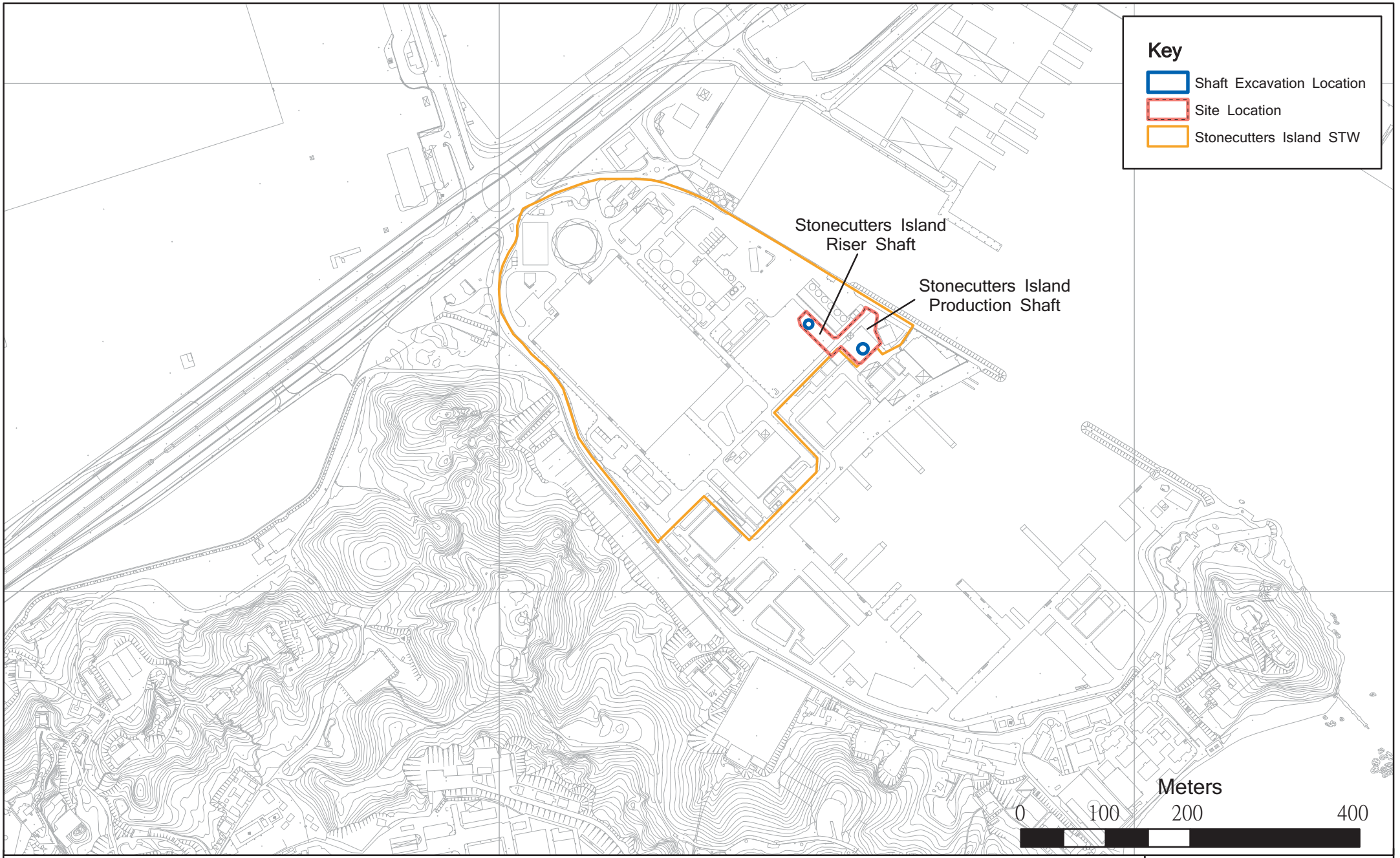
Annex F8 Construction Programme for the Project

Gammon

Date	Revision	Checked	Approved

Annex G

Stonecutters Island Production and Riser Shafts



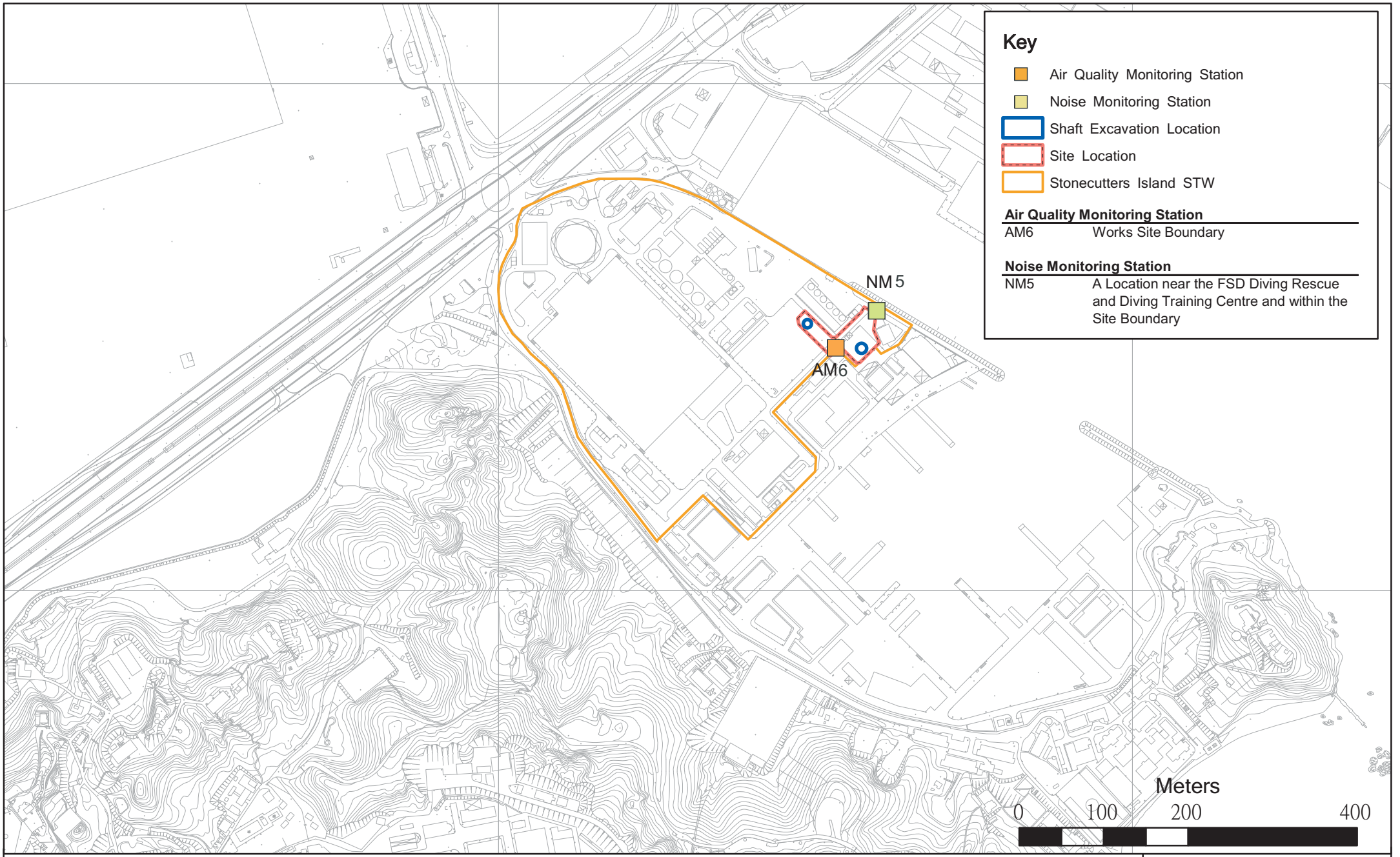
Annex G1

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

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

Environmental
Resources
Management

ERM



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 Monitoring Station (Stonecutters Island STW)

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

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 : January 2010

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1-Jan	2-Jan
					new year holiday	
3-Jan	4-Jan	5-Jan	6-Jan	7-Jan	8-Jan	9-Jan
	1-hr and 24-hr Monitoring				1-hr and 24-hr Monitoring	
10-Jan	11-Jan	12-Jan	13-Jan	14-Jan	15-Jan	16-Jan
				1-hr and 24-hr Monitoring		
17-Jan	18-Jan	19-Jan	20-Jan	21-Jan	22-Jan	23-Jan
			1-hr and 24-hr Monitoring			
24-Jan	25-Jan	26-Jan	27-Jan	28-Jan	29-Jan	30-Jan
		1-hr and 24-hr Monitoring				
31-Jan						

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 : February 2009

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1-Feb	2-Feb	3-Feb	4-Feb	5-Feb	6-Feb
	1-hr and 24-hr Monitoring				1-hr and 24-hr Monitoring	
7-Feb	8-Feb	9-Feb	10-Feb	11-Feb	12-Feb	13-Feb
				1-hr and 24-hr Monitoring		The day preceding Lunar New Year's Day
14-Feb	15-Feb	16-Feb	17-Feb	18-Feb	19-Feb	20-Feb
The first day of the Lunar New Year	The second day of the Lunar New Year	The third day of the Lunar New Year	1-hr and 24-hr Monitoring			
21-Feb	22-Feb	23-Feb	24-Feb	25-Feb	26-Feb	27-Feb
		1-hr and 24-hr Monitoring				
28-Feb						

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 Monitoring Schedule

NM5 - A Location near the FSD Diving Rescue and Diving Training Centre near the Site Boundary
Monitoring Month : January 2010

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1-Jan	2-Jan
					New Year Day	
3-Jan	4-Jan	5-Jan	6-Jan	7-Jan	8-Jan	9-Jan
Noise Monitoring (during daytime of sundays/ public holidays)	Noise Monitoring					
10-Jan	11-Jan	12-Jan	13-Jan	14-Jan	15-Jan	16-Jan
Noise Monitoring (during daytime of sundays/ public holidays)				Noise Monitoring		
17-Jan	18-Jan	19-Jan	20-Jan	21-Jan	22-Jan	23-Jan
Noise Monitoring (during daytime of sundays/ public holidays)			Noise Monitoring			
24-Jan	25-Jan	26-Jan	27-Jan	28-Jan	29-Jan	30-Jan
Noise Monitoring (during daytime of sundays/ public holidays)		Noise Monitoring				
31-Jan						
Noise Monitoring (during daytime of sundays/ public holidays)						

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 Monitoring Schedule

NM5 - A Location near the FSD Diving Rescue and Diving Training Centre near the Site Boundary
Monitoring Month : February 2009

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1-Feb	2-Feb	3-Feb	4-Feb	5-Feb	6-Feb
	Noise Monitoring					
7-Feb	8-Feb	9-Feb	10-Feb	11-Feb	12-Feb	13-Feb
Noise Monitoring (during daytime of sundays/ public holidays)				Noise Monitoring		Noise Monitoring The day preceding Lunar New Year's Day
14-Feb	15-Feb	16-Feb	17-Feb	18-Feb	19-Feb	20-Feb
The first day of the Lunar New Year	The second day of the Lunar New Year	The third day of the Lunar New Year	Noise Monitoring			
21-Feb	22-Feb	23-Feb	24-Feb	25-Feb	26-Feb	27-Feb
Noise Monitoring (during daytime of sundays/ public holidays)		Noise Monitoring				
28-Feb						
Noise Monitoring (during daytime of sundays/ public holidays)						

TSP Monitoring Equipment

Monitoring Station ID	Location	Monitoring Equipment		Last Calibration Date	Next Calibration Date
24-hr and 1-hr TSP		**HVS**	**Calibrator**		
AM6	Works Site Boundary	GMW GS-2310 (S/N 1254)	CM-AIR-43 (S/N 9833620)	25 January 2010	25 March 2010

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AM6
Calibrated by	:	P.F.Yeung
Date	:	25/01/2010

Sampler

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

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	9833620
Service Date	:	18 May 2009
Slope (m)	:	1.97702
Intercept (b)	:	-0.00070
Correlation Coefficient(r)	:	0.99992

Standard Conditjon

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

Calibration Condition

Pa (hpa)	:	1018
Ta(K)	:	291

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	9.5	3.127	1.582	62	62.9
2	13 holes	7.4	2.760	1.396	56	56.8
3	10 holes	5.4	2.357	1.193	48	48.7
4	7 holes	3.4	1.871	0.947	40	40.6
5	5 holes	2.0	0.726	0.726	32	32.5

Sampler Calibration Relationship

Slope(m):35.660 Intercept(b): 6.614 Correlation Coefficient(r): 0.9996

Checked by: Magnum Fan Date: 26/01/2010

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 minimize 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	Δ

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	Δ
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 minimize 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 deodorization system, the extraction vent(s) of the deodorization 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 deodorization system should be included in the Design and Construction Contract Document.	All PTW and SCISTW/ during 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 utilized 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	Δ
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	Δ

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
Water Quality	Construction Works in Close Proximity of Storm Drains or Seafront To minimize 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	Δ

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 minimize 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 minimize 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 minimize 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

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
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
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 oxidized 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 / minimize the potential TIN exceedances.	SCISTW / Operation Stage	NA. Measures not required until commencement of operational phase
Construction Phase			

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
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 minimize 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	√
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	Δ

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
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	√
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	√

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
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, oxidizing, 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	Δ
Operation Phase			
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

Type of Impact	Environmental Protection Measures	Location/ Timing	Status
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	Δ
Operational Phase	•		
Landscape & Visual	• Aesthetic design of the façade of PTW and associated structures to harmonize 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 15.10 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 G6 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 (hrs)	Flow Rate (m^3/min)			TSP Conc. ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Observations / Remarks	Sampler ID	Filter ID
Date	Time	Date	Time		Initial	Final	Initial	Final		Initial	Final	Average						
4-Jan-10	12:06	5-Jan-10	12:06	Sunny	2.8334	2.9921	5682.03	5706.03	24.00	1.23	1.23	1.2300	90	196	260	Construction work in progress.	1254	5214
8-Jan-10	12:06	9-Jan-10	12:06	Fine	2.8986	3.0679	5709.03	5733.03	24.00	1.2300	1.2300	1.2300	96	196	260	Construction work in progress.	1254	5218
14-Jan-10	11:36	15-Jan-10	11:36	Sunny	2.8629	2.9992	5736.03	5760.03	24.00	1.2300	1.2300	1.2300	77	196	260	Construction work in progress.	1254	5222
20-Jan-10	14:12	21-Jan-10	14:12	Fine	2.8621	3.0321	5763.03	5787.03	24.00	1.2300	1.2300	1.2300	96	196	260	Construction work in progress.	1254	5226
26-Jan-10	17:06	27-Jan-10	17:06	Cloudy	2.8324	3.0101	5790.03	5814.03	24.00	1.1000	1.1000	1.1000	112	196	260	Construction work in progress.	1254	5544
												Min.	77					
												Max.	112					
												Average	94					

Annex G6 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 (℃)	Wind Speed * (m/s)	Sampler ID	Filter ID
4-Jan-10	9:00	10:00	Sunny	248	346	500	Construction work in progress.	20		1254	5211
4-Jan-10	10:02	11:02	Sunny	280	346	500	Construction work in progress.	20		1254	5212
4-Jan-10	11:04	12:04	Sunny	224	346	500	Construction work in progress.	20		1254	5213
8-Jan-10	9:00	10:00	Fine	202	346	500	Construction work in progress.	22		1254	5215
8-Jan-10	10:02	11:02	Fine	220	346	500	Construction work in progress.	22		1254	5216
8-Jan-10	11:04	12:04	Fine	214	346	500	Construction work in progress.	22		1254	5217
14-Jan-10	8:30	9:30	Sunny	144	346	500	Construction work in progress.	17		1254	5219
14-Jan-10	9:32	10:32	Sunny	169	346	500	Construction work in progress.	17		1254	5220
14-Jan-10	10:34	11:34	Sunny	142	346	500	Construction work in progress.	17		1254	5221
20-Jan-10	10:00	11:00	Fine	171	346	500	Construction work in progress.	20		1254	5223
20-Jan-10	11:02	12:02	Fine	173	346	500	Construction work in progress.	20		1254	5224
20-Jan-10	13:10	14:10	Fine	201	346	500	Construction work in progress.	20		1254	5225
26-Jan-10	14:00	15:00	Cloudy	182	346	500	Construction work in progress.	17		1254	5227
26-Jan-10	15:02	16:02	Cloudy	214	346	500	Construction work in progress.	17		1254	5228
26-Jan-10	16:04	17:04	Cloudy	245	346	500	Construction work in progress.	17		1254	5229
			Min.	**142**							
			Max.	**280**							
			Average	**202**							

* Wind Speed data is presented in the following table

Meteorological Data Extracted from the Hong Kong Observatory

Date	Weather	King's Park Station				
		Average Air Temperature (°C)	Average Relative Humiditiy (%)	Total Rainfall (mm)	Average Wind Speed (km/h)	Wind Direction
02/01/2010	Rainy	17.4	88	5.2	0-18	SE
04/01/2010	Sunny	17.9	81	-	1-17	SE
05/01/2010	Rainy	17.3	84	0.8	0-30	SE
08/01/2010	Rainy	13.7	80	0.9	0-10	NE
09/01/2010	Sunny	15.1	78	-	0-20	E
14/01/2010	Sunny	14.4	65	-	0-26	E
15/01/2010	Sunny	16.6	65	-	1-26	SE
16/01/2010	Sunny	18.1	67	-	0-18	SE
20/01/2010	Sunny	21.4	83	-	0-15	SE
21/01/2010	Sunny	22.9	87	-	0-12	SE
22/01/2010	Sunny	18.4	86	-	1-23	SE
26/01/2010	Sunny	16.0	78	-	0-20	E
27/01/2010	Sunny	17.0	85	-	7-18	SE
28/01/2010	Sunny	19.3	90	-	0-14	E, W

Date	Weather	Kai Tak Station				
		Average Air Temperature (°C) *	Average Relative Humiditiy (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
02/01/2010	Rainy	17.4	88	5.2	1-20	E
04/01/2010	Sunny	17.9	81	-	7-20	SE
05/01/2010	Rainy	17.3	84	0.8	0-30	E
08/01/2010	Rainy	13.7	80	0.9	0-18	NW, NE
09/01/2010	Sunny	15.1	78	-	3-27	E
14/01/2010	Sunny	14.4	65	-	0-32	E
15/01/2010	Sunny	16.6	65	-	2-29	E
16/01/2010	Sunny	18.1	67	-	0-27	SE
20/01/2010	Sunny	21.4	83	-	1-22	E
21/01/2010	Sunny	22.9	87	-	2-28	SE
22/01/2010	Sunny	18.4	86	-	9-31	E
26/01/2010	Sunny	16.0	78	-	3-24	NE, E
27/01/2010	Sunny	17.0	85	-	6-26	E
28/01/2010	Sunny	19.3	90	-	0-21	SE

* king's park data
\- data were not available
\# less than 24 hourly observations per day

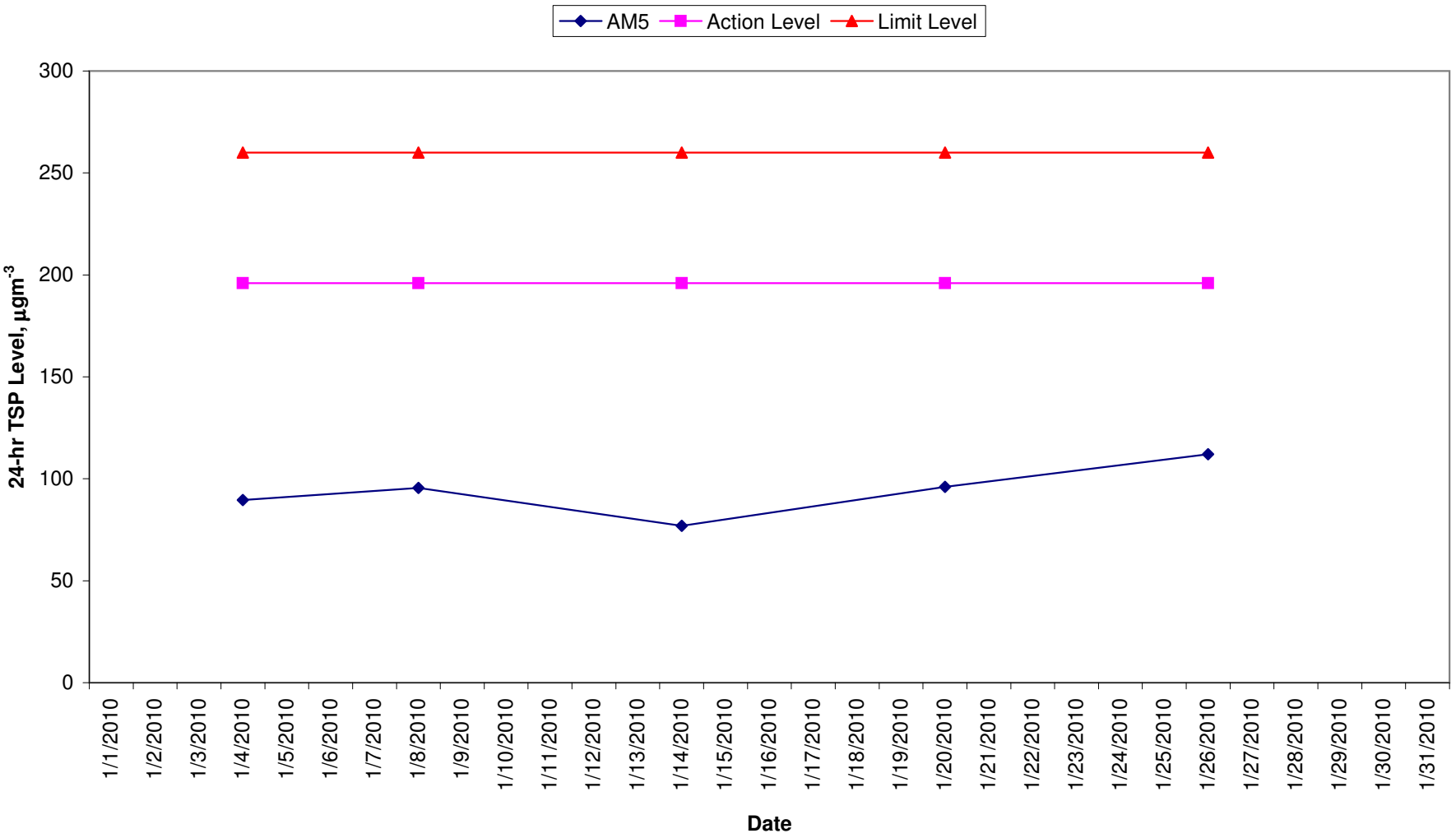
Meteorological Data Extracted from the Hong Kong Observatory

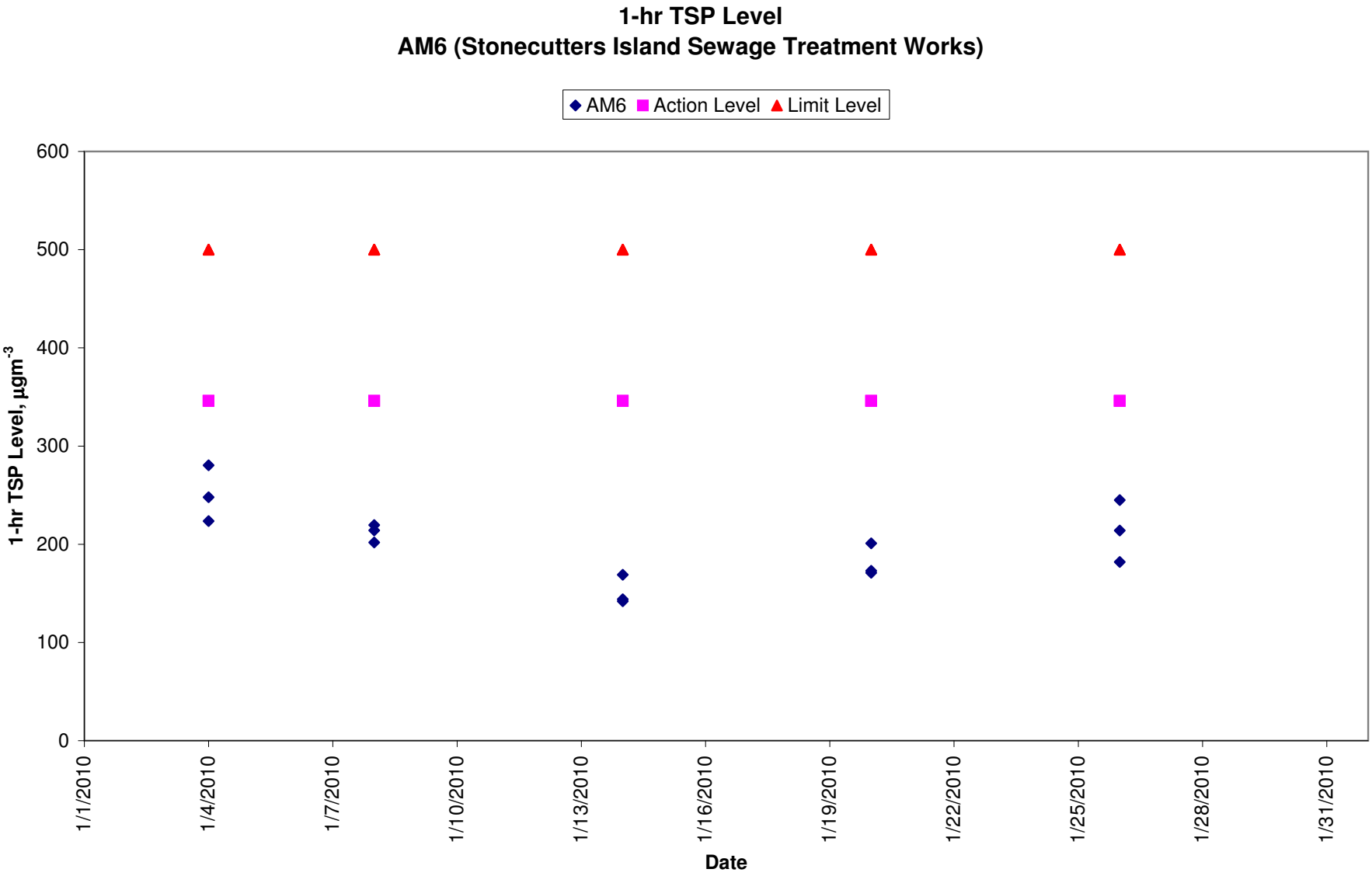
Date	Weather	Tsing Yi Station				
		Average Air Temperature (°C)	Average Relative Humiditiy (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
02/01/2010	Rainy	17.4	88	5.2	2-15	SE, NW
04/01/2010	Sunny	17.9	81	-	1-16	SE
05/01/2010	Rainy	17.3	84	0.8	1-19	E, NW
08/01/2010	Rainy	13.7	80	0.9	0-15	NW
09/01/2010	Sunny	15.1	78	-	0.5-18	SE
14/01/2010	Sunny	14.4	65	-	2-22	E
15/01/2010	Sunny	16.6	65	-	2-22	E
16/01/2010	Sunny	18.1	67	-	0-21	E
20/01/2010	Sunny	21.4	83	-	0-16	E
21/01/2010	Sunny	22.9	87	-	0-16	E
22/01/2010	Sunny	18.4	86	-	6-24	SE
26/01/2010	Sunny	16.0	78	-	0-16	E
27/01/2010	Sunny	17.0	85	-	3-19	SE
28/01/2010	Sunny	19.3	90	-	2-10	NW

Date	Weather	Green Island Station				
		Average Air Temperature (°C) *	Average Relative Humiditiy (%) *	Total Rainfall (mm) *	Average Wind Speed (km/h)	Wind Direction
02/01/2010	Rainy	17.4	88	5.2	5-43	NE
04/01/2010	Sunny	17.9	81	-	3-39	NE
05/01/2010	Rainy	17.3	84	0.8	2-58	NE
08/01/2010	Rainy	13.7	80	0.9	10-40	NW
09/01/2010	Sunny	15.1	78	-	10-51	NE
14/01/2010	Sunny	14.4	65	-	20-36	NE
15/01/2010	Sunny	16.6	65	-	40-55	NE
16/01/2010	Sunny	18.1	67	-	7-50	NE
20/01/2010	Sunny	21.4	83	-	14-33	NE
21/01/2010	Sunny	22.9	87	-	0-30	NE
22/01/2010	Sunny	18.4	86	-	15-55	NE
26/01/2010	Sunny	16.0	78	-	14-52	NE
27/01/2010	Sunny	17.0	85	-	31-49	NE
28/01/2010	Sunny	19.3	90	-	4-27	NE

* king's park data
\- data were not available
\# less than 24 hourly observations per day

24-hr TSP Level
AM6 (Stonecutters Island Sewage Treatment Works




1-hr TSP Level
AM6 (Stonecutters Island Sewage Treatment Works)
AM6
Action Level
Limit Level
600
500
400
300
200
100
0
1-hr TSP Level, µgm-3
1/1/2010
1/4/2010
1/7/2010
1/10/2010
1/13/2010
1/16/2010
1/19/2010
1/22/2010
1/25/2010
1/28/2010
1/31/2010
Date

Annex G7 Noise Monitoring Results

Daytime Noise Monitoring Results

Station NM5

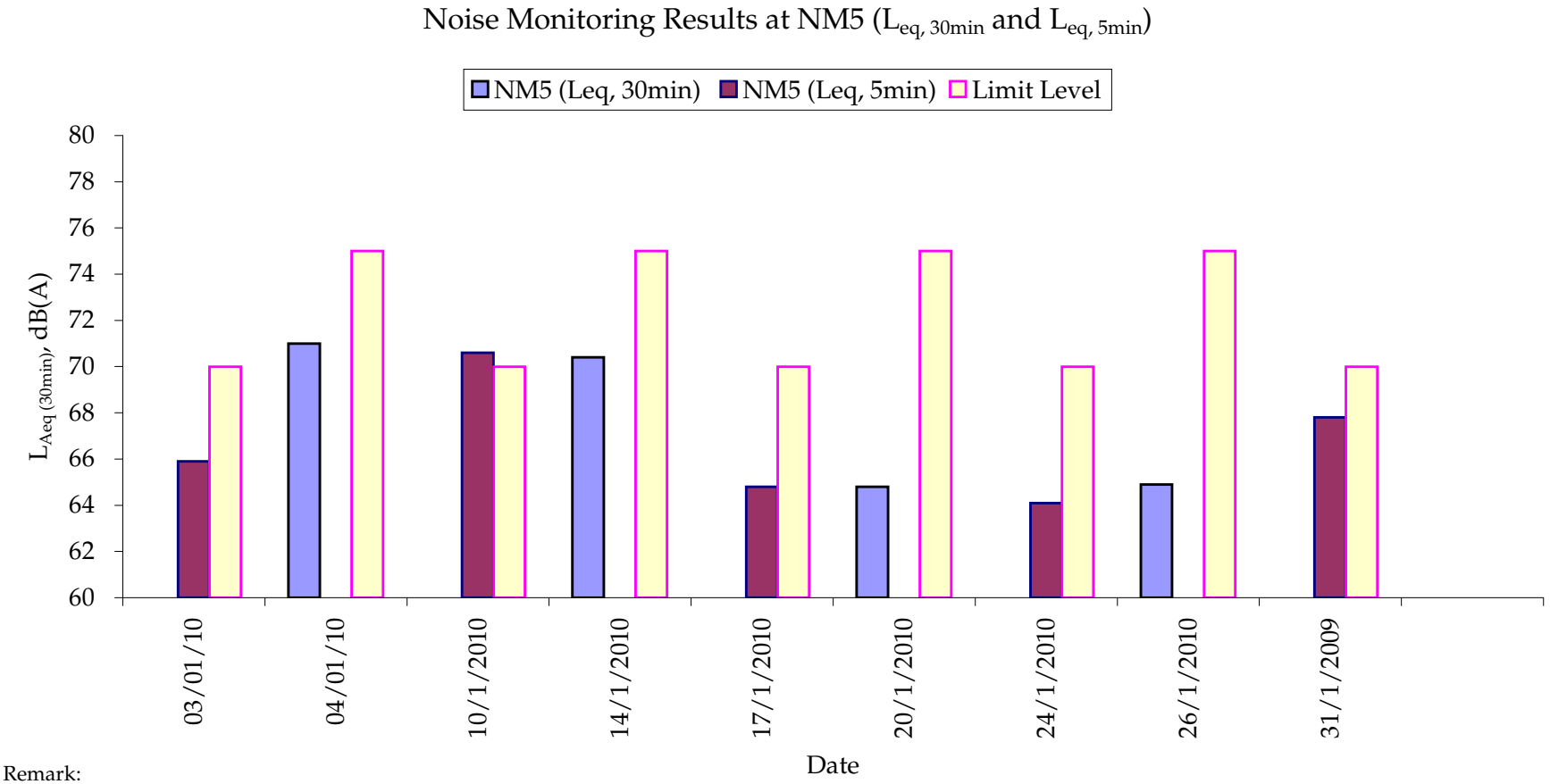
Date	Start Time	End Time	Weather	Noise level (dB(A)), 30 min			Major Construction Noise Source(s)	Other Noise Source(s)	Remarks	Temp. (°C)	Wind Speed	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
4-Jan-10	11:10	11:40	Sunny	71.0	71.4	70.6	Excavation works, Bentonite filltering work and generator	Aricraft noise and traffic noise	-	20	0.5	RION- NA31 (S/N 00410224)	RION - NC73 (S/N 10786708)
14-Jan-10	9:00	9:30	Sunny	70.4	70.8	69.8	Excavation works, Bentonite filltering work and generator	Aricraft noise and traffic noise	-	14.5	0.3	RION- NA27 (S/N 00201194)	RION - NC73 (S/N 10786708)
20-Jan-10	13:13	13:43	Fine	64.8	65.7	64.0	Bentonite filltering work and generator	Aricraft noise and traffic noise	-	21	0.5	RION- NA27 (S/N 00201194)	RION - NC73 (S/N 10786708)
26-Jan-10	14:12	14:42	Fine	64.9	65.7	64.1	Mobile cranes movement, generator	Aircraft noise and traffic noise	-	16	0.8	RION- NA27 (S/N 00201194)	RION - NC73 (S/N 10786708)
			Min.	**64.8**									
			Max.	**71.0**									

Annex G7 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-Jan-10	09:50	09:55	Fine	66.0	67.3	64.7	Bentonite filltering work and generator.	Aircraft noise and traffic noise.	-	17	0.5	RION- NA27 (S/N 00201194)	RION - NC73 (S/N 10786708)
	09:55	10:00	Fine	65.8	67.5	64.4			-				
	10:00	10:05	Fine	66.0	67.3	64.7			-				
	09:50	10:05	Fine	65.9	67.4	64.6			Average results during 15 min minitoring				
10-Jan-10	14:00	14:05	Cloudy	70.4	71.1	69.3	Bentonite filltering work.	Aircraft noise and traffic noise.	-	17	1.0	RION- NA27 (S/N 00201194)	RION - NC73 (S/N 10786708)
	14:05	14:10	Cloudy	70.5	71.4	69.6			-				
	14:10	14:15	Cloudy	70.8	71.7	69.7			-				
	14:00	14:15	Cloudy	70.6	71.4	69.5			Average results during 15 min minitoring				
17-Jan-10	10:40	10:45	Cloudy	63.7	64.5	62.5	Bentonite filltering work and generator.	Aircraft noise and traffic noise.	-	17	0.3	RION- NA27 (S/N 00201194)	RION - NC73 (S/N 10786708)
	10:45	10:50	Cloudy	63.9	65.1	63.0			-				
	10:50	10:55	Cloudy	66.4	67.5	64.2			-				
	10:40	10:55	Sunny	64.8	65.9	63.3			Average results during 15 min minitoring				
24-Jan-10	10:10	10:15	FIne	63.6	65.1	62.3	Mobile cranes movement, generator	Aircraft noise and traffic noise.	-	18	0.5	RION- NA27 (S/N 00201194)	RION - NC73 (S/N 10786708)
	10:15	10:20	Fine	63.9	65.3	62.6			-				
	10:20	10:25	Fine	64.9	66.4	63.1			-				
	10:10	10:25	Fine	64.1	65.6	62.7			Average results during 15 min minitoring				
31-Jan-10	14:10	14:15	Fine	68.0	69.7	68.0	Mobile cranes movement, generator	-	-	24	0.5	RION- NA27 (S/N 00201194)	RION - NC73 (S/N 10786708)
	14:15	14:20	Fine	68.0	67.6	66.6			-				
	14:20	14:25	Fine	67.3	68.3	66.6			-				
	14:10	14:25	Fine	67.8	68.5	67.1			Average results during 15 min minitoring				
			Min.	**63.6**									
			Max.	**70.8**									



Remark:
- 75dB(A) was adopted as the Limit Level during normal weekdays in January 2010
- 70dB(A) was dopted as the Limit Level during restricted hours in January 2010

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

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Early Bar
Progress Bar
Critical Activity

WPU7 Sheet 1 of 1

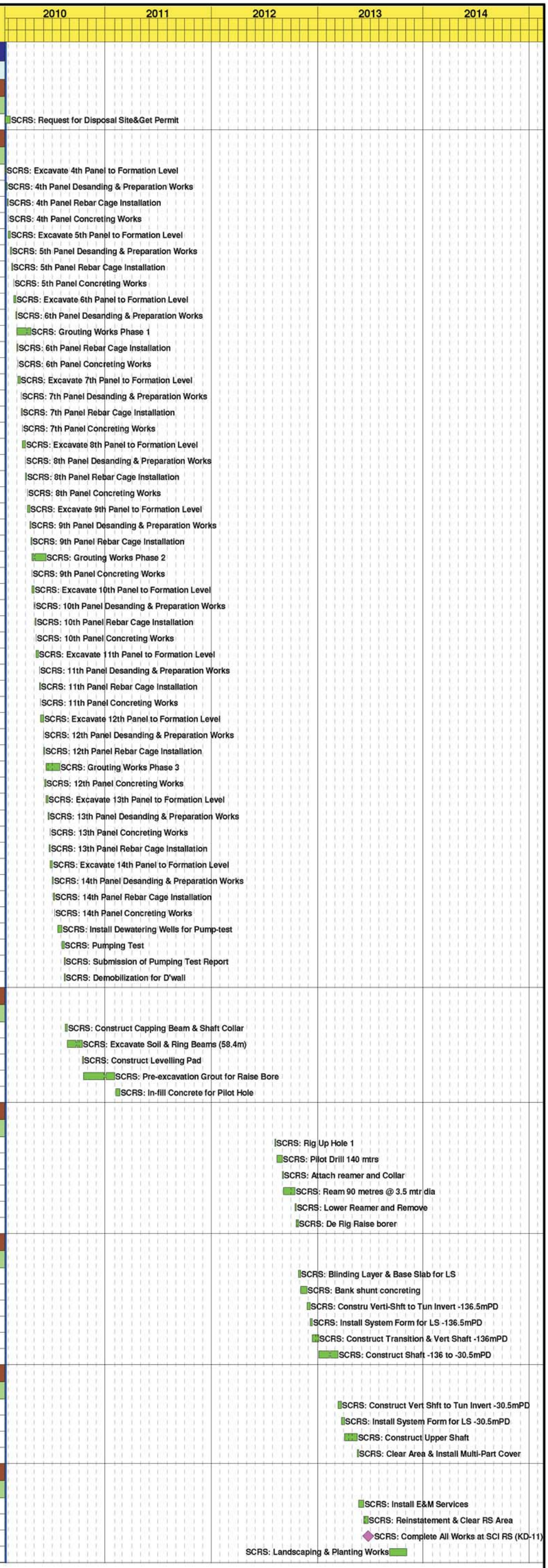
Habour Area Treatment Scheme Stage 2A
Contract No. DC/2007/23 - Construction of Sewage Conveyance from North Point to Stonecutters Island
Programme

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

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WPU7 Sheet 1 of 2

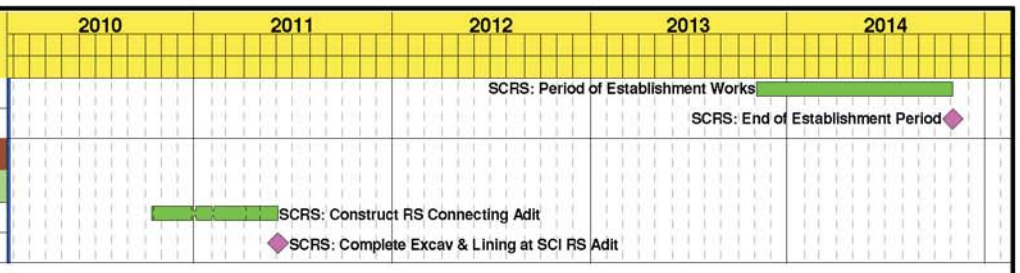
Habour Area Treatment Scheme Stage 2A
Contract No. DC/2007/23 - Construction of Sewage Conveyance from North Point to Stonecutters Island Programme

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

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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 Sound Level Meters for All Sites

Noise 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 10786708)	10 July 2009	10 July 2010
	Sound Level Meter	Rion NL-18 (S/N 00360030)	6 July 2009	6 July 2010
		Rion NL-31 (S/N 00320533)	16 July 2009	16 July 2010
		Rion NL-31 (S/N 00410224)	8 May 2009	8 May 2010
		Rion NA-27 (S/N 00201194)	10 July 2009	10July 2010

[a] The sound level meter (Rion NL-18 (S/N 00360030) or Rion NL-31 (S/N 00320533) or Rion NL-31 (S/N 00410224) or Rion NA-27 (S/N 00201194)) is used in NM1, NM2, NM3, NM4 and NM5.

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

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

Certificate No. : C093598

Certificate of Calibration

This is to certify that the equipment

Description : Sound Level Calibrator

Manufacturer : Rion

Model No. : NC-73

Serial No. : 10786708

has been calibrated for the specific items and ranges.
The results are shown in the Calibration Report No. C093598.

The equipment is supplied by

Co. Name : Envirotech Services Co.

Address : Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road, Hong Kong

Send to: Winnie RO Ref:
Received by: Date:
Action taken:
Send to: Date: Action:

Date Received by ERM
Login Ref IC-370

Date of Issue : 10 July 2009

Certified by : H C Chan

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Calibration and Testing Laboratory of Sun Creation Engineering Limited
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
Tel: 2927 2606 Fax: 2744 8986 E-mail: callab@suncreation.com Website: www.suncreation.com

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

Report No. : C093598

Calibration Report

ITEM TESTED

DESCRIPTION : Sound Level Calibrator
MANUFACTURER : Rion
MODEL NO. : NC-73
SERIAL NO. : 10786708

TEST CONDITIONS

AMBIENT TEMPERATURE : (23 ± 2)°C RELATIVE HUMIDITY : (55 ± 20)%
LINE VOLTAGE : ---

TEST SPECIFICATIONS

Calibration check

DATE OF TEST : 9 July 2009 ***JOB NO.*** : IC09-1664

TEST RESULTS

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 : *K C Lee* *Date : 10 July 2009*

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Calibration and Testing Laboratory of Sun Creation Engineering Limited
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
Tel: 2927 2606 Fax: 2744 8986 E-mail: callab@suncreation.com Website: www.suncreation.com

Report No. : C093598

Calibration Report

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 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.
TST150A	Measuring Amplifier	C080751
CL129	Universal Counter	C093121
CL281	Multifunction Acoustic Calibrator	DC090052

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	93.9	± 0.5	± 0.2

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (Hz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	0.991 6	1 kHz ± 2 %	± 0.1

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

Note :
The values given in this Calibration Report 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 National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

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

Certificate No. : C093473

Certificate of Calibration

This is to certify that the equipment

Description : Precision Integrating Sound Level Meter

Manufacturer : Rion

Model No. : NL-18

Serial No. : 00360030

has been calibrated for the specific items and ranges.
The results are shown in the Calibration Report No. C093473.

The equipment is supplied by

Co. Name : Envirotech Services Co.

Address : Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road, Hong Kong

Date of Issue : 6 July 2009

Certified by : H C Chan

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Calibration and Testing Laboratory of Sun Creation Engineering Limited
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
Tel: 2927 2606 Fax: 2744 8986 E-mail: caliab@suncreation.com Website: www.suncreation.com

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

Report No. : C093473

Calibration Report

ITEM TESTED

DESCRIPTION : Precision Integrating Sound Level Meter
MANUFACTURER : Rion
MODEL NO. : NL-18
SERIAL NO. : 00360030

TEST CONDITIONS

AMBIENT TEMPERATURE : (23 ± 2)°C RELATIVE HUMIDITY : (55 ± 20)%
LINE VOLTAGE : ---

TEST SPECIFICATIONS

Calibration check

DATE OF TEST : 3 July 2009 ***JOB NO.*** : IC09-1664

TEST RESULTS

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 : *K C Lee* *Date : 6 July 2009*

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Calibration and Testing Laboratory of Sun Creation Engineering Limited
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
Tel: 2927 2606 Fax: 2744 8986 E-mail: callab@suncreation.com Website: www.suncreation.com

Report No. : C093473

Calibration Report

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 hours, and switched on to warm up for over 10 minutes before the commencement of the test.

2. Self-calibration using the internal standard (After Adjustment) was performed before the test 6.1.2 - 6.4.

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	C090024
CL281	Multifunction Acoustic Calibrator	DC090052

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 651 Type 1
Range (dB)	Mode	Weight	Response	Level (dB)	Freq. (kHz)	Before Adjustment	After Adjustment	Spec. (dB)
50 - 110	LA	A	Fast	94.00	1	93.3	94.1	± 0.7

6.1.2 Linearity

UUT Setting				Applied Value		UUT
Range (dB)	Mode	Weight	Response	Level (dB)	Freq. (kHz)	Reading (dB)
60 - 120	LA	A	Fast	94.00	1	94.2 (Ref.)
				104.00		104.2
				114.00		114.2

IEC 651 Type 1 Spec. : ± 0.4 dB per 10 dB step and ± 0.7 dB for overall different.

6.2 Time Weighting

6.2.1 Continuous Signal

UUT Setting				Applied Value		UUT	IEC 651 Type 1
Range (dB)	Mode	Weight	Response	Level (dB)	Freq. (kHz)	Reading (dB)	Spec. (dB)
50 - 110	LA	A	Fast	94.00	1	94.1	Ref.
			Slow			94.0	± 0.1

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Report No. : C093473

Calibration Report

6.2.2 Tone Burst Signal (2 kHz)

UUT Setting				Applied Value		UUT Reading (dB)	IEC 651 Type 1 Spec. (dB)
Range (dB)	Mode	Weight	Response	Level (dB)	Burst Duration		
50 -110	LA	A	Fast	106.00	Continuous	106.0	Ref.
	LAmx				200 ms	105.0	-1.0 ± 1.0
	LA		Slow		Continuous	106.0	Ref.
	LAmx				500 ms	102.4	-4.1 ± 1.0

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 651 Type 1 Spec. (dB)
Range (dB)	Mode	Weight	Response	Level (dB)	Freq.		
40 - 100	LA	A	Fast	94.00	31.5 Hz	54.7	-39.4 ± 1.5
					63 Hz	68.0	-26.2 ± 1.5
					125 Hz	78.0	-16.1 ± 1.0
					250 Hz	85.4	-8.6 ± 1.0
					500 Hz	90.8	-3.2 ± 1.0
					1 kHz	94.1	Ref.
					2 kHz	95.3	+1.2 ± 1.0
					4 kHz	94.9	+1.0 ± 1.0
					8 kHz	91.7	-1.1 (+1.5 ; -3.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 651 Type 1 Spec. (dB)
Range (dB)	Mode	Weight	Response	Level (dB)	Freq.		
40 - 100	LC	C	Fast	94.00	31.5 Hz	91.4	-3.0 ± 1.5
					63 Hz	93.6	-0.8 ± 1.5
					125 Hz	94.1	-0.2 ± 1.0
					250 Hz	94.2	0.0 ± 1.0
					500 Hz	94.2	0.0 ± 1.0
					1 kHz	94.1	Ref.
					2 kHz	93.9	-0.2 ± 1.0
					4 kHz	93.1	-0.8 ± 1.0
					8 kHz	89.8	-3.0 (+1.5 ; -3.0)

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Report No. : C093473

Calibration Report

6.4 Time Averaging

UUT Setting				Applied Value					UUT	IEC 60804
Range (dB)	Mode	Freq. Weight	Integrating Time	Freq. (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)	Reading (dB)	Type 1 Spec. (dB)
50 - 110	LAeq	A	10 sec.	4	1	1/10	110.0	100	100.2	± 0.5
						$1/10^2$		90	90.2	± 0.5
			60 sec.			$1/10^3$		80	79.8	± 1.0
			5 min.			$1/10^4$		70	70.2	± 1.0

Remarks : - Mfr's Spec. : IEC 651 Type 1 & IEC 60804 Type 1

- Uncertainties of Applied Value : 94 dB : 31.5Hz - 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
  104 dB : 1 kHz : ± 0.10 dB (Ref. 94 dB)
  114 dB : 1 kHz : ± 0.10 dB (Ref. 94 dB)
  Burst equivalent level : ± 0.2 dB (Ref. 110 dB continuous sound level)

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

Note :
The values given in this Calibration Report 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 National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

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

Certificate No. : C093733

Certificate of Calibration

This is to certify that the equipment

Description : Sound Level Meter

Manufacturer : Rion

Model No. : NL-31

Serial No. : 00320533

has been calibrated for the specific items and ranges.
The results are shown in the Calibration Report No. C093733.

The equipment is supplied by

Co. Name : Envirotech Services Co.

Address : Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road, Hong Kong

Date of Issue : 16 July 2009

Certified by : _____
H C Chan

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Calibration and Testing Laboratory of Sun Creation Engineering Limited
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
Tel: 2927 2606 Fax: 2744 8986 E-mail: callab@suncreation.com Website: www.suncreation.com

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

Report No. : C093733

Calibration Report

ITEM TESTED

DESCRIPTION : Sound Level Meter
MANUFACTURER : Rion
MODEL NO. : NL-31
SERIAL NO. : 00320533

TEST CONDITIONS

AMBIENT TEMPERATURE : (23 ± 2)°C RELATIVE HUMIDITY : (55 ± 20)%
LINE VOLTAGE : ---

TEST SPECIFICATIONS

Calibration check

DATE OF TEST : 15 July 2009 ***JOB NO.*** : IC09-1740

TEST RESULTS

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 : *K C Lee* *Date : 16 July 2009*

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Report No. : C093733

Calibration Report

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 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	C090024
CL281	Multifunction Acoustic Calibrator	DC090052

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 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 120	L_A	A	Fast	94.00	1	94.2	± 0.7

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	94.2 (Ref.)
				104.00		104.2
				114.00		114.2

IEC 60651 Type 1 Spec. : ± 0.4 dB per 10 dB step and ± 0.7 dB for overall different.

6.2 Time Weighting

6.2.1 Continuous Signal

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 120	L_A	A	Fast	94.00	1	94.2	Ref.
			Slow			94.1	± 0.1

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Report No. : C093733

Calibration Report

6.2.2 Tone Burst Signal (2 kHz)

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Burst Duration		
20 - 110	L_A	A	Fast	106.00	Continuous	106.0	Ref.
	L_{Amax}				200 ms	105.0	-1.0 ± 1.0
	L_A		Slow		Continuous	106.0	Ref.
	L_{Amax}				500 ms	102.0	-4.1 ± 1.0

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 120	L_A	A	Fast	94.00	31.5 Hz	55.0	-39.4 ± 1.5
					63 Hz	68.3	-26.2 ± 1.5
					125 Hz	78.3	-16.1 ± 1.0
					250 Hz	85.7	-8.6 ± 1.0
					500 Hz	91.0	-3.2 ± 1.0
					1 kHz	94.2	Ref.
					2 kHz	95.2	+1.2 ± 1.0
					4 kHz	94.4	+1.0 ± 1.0
					8 kHz	90.1	-1.1 (+1.5 ; -3.0)
					12.5 kHz	83.9	-4.3 (+3.0 ; -6.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 120	L_C	C	Fast	94.00	31.5 Hz	91.4	-3.0 ± 1.5
					63 Hz	93.6	-0.8 ± 1.5
					125 Hz	94.1	-0.2 ± 1.0
					250 Hz	94.3	0.0 ± 1.0
					500 Hz	94.3	0.0 ± 1.0
					1 kHz	94.2	Ref.
					2 kHz	93.9	-0.2 ± 1.0
					4 kHz	92.7	-0.8 ± 1.0
					8 kHz	88.3	-3.0 (+1.5 ; -3.0)
					12.5 kHz	82.1	-6.2 (+3.0 ; -6.0)

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Report No. : C093733

Calibration Report

6.4 Time Averaging

UUT Setting				Applied Value					UUT	IEC 60804
Range (dB)	Mode	Frequency Weighting	Time Weighting	Freq. (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)	Reading (dB)	Type I Spec. (dB)
20 - 110	L_{Aeq}	A	10 sec.	4	1	1/10	110.0	100	100.3	± 0.5
						$1/10^2$		90	90.3	± 0.5
			60 sec.			$1/10^3$		80	80.3	± 1.0
			5 min.			$1/10^4$		70	70.3	± 1.0

Remarks : - Mfr's Spec. : IEC 60651 & IEC 60804 Type 1

- Uncertainties of Applied Value : 94 dB : 31.5 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)
  Burst equivalent level : ± 0.2 dB (Ref. 110 dB continuous sound level)

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

Note :
The values given in this Calibration Report 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 National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

輝創工程有限公司

Sun Creation Engineering Limited Calibration and Testing Laboratory

Certificate No. : C092284

Certificate of Calibration

This is to certify that the equipment

Description : Sound Level Meter

Manufacturer : Rion

Model No. : NL-31

Serial No. : 00410224

has been calibrated for the specific items and ranges.
The results are shown in the Calibration Report No. C092284.

The equipment is supplied by

Co. Name : Envirotech Services Co.

Address : Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road, Hong Kong

Date of Issue : 8 May 2009

Certified by : K C Lee

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Calibration and Testing Laboratory of Sun Creation Engineering Limited
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
Tel: 2927 2606 Fax: 2744 8986 E-mail: callab@suncreation.com Website: www.suncreation.com

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

Report No. : C092284

Calibration Report

ITEM TESTED

DESCRIPTION : Sound Level Meter
MANUFACTURER : Rion
MODEL NO. : NL-31
SERIAL NO. : 00410224

TEST CONDITIONS

AMBIENT TEMPERATURE : (23 ± 2)°C RELATIVE HUMIDITY : (55 ± 20)%
LINE VOLTAGE : ---

TEST SPECIFICATIONS

Calibration

DATE OF TEST : 7 May 2009 ***JOB NO.*** : IC09-1058

TEST RESULTS

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification. (after adjustment)
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

Tested by : *H C Chan* *Date : 8 May 2009*

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Report No. : C092284

Calibration Report

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 hours, and switched on to warm up for over 10 minutes before the commencement of the test.

2. Self-calibration using the internal standard (after adjustment) was performed before the test 6.1.2 - 6.4.

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	C090024
CL281	Multifunction Acoustic Calibrator	DC090052

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 651 Type 1
Range (dB)	Mode	Weight	Response	Level (dB)	Freq. (kHz)	Before Adjustment	After Adjustment	Spec. (dB)
20 - 100	L_A	A	Fast	94.00	1	* 91.4	94.0	± 0.7

* Out of Mfr's Spec.

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Mode	Weight	Response	Level (dB)	Freq. (kHz)	
30 - 120	L_A	A	Fast	94.00	1	94.0 (Ref.)
				104.00		104.0
				114.00		114.3

IEC 651 Type 1 Spec. : ± 0.4 dB per 10 dB step and ± 0.7 dB for overall different.

6.2 Time Weighting

6.2.1 Continuous Signal

UUT Setting				Applied Value		UUT Reading (dB)	IEC 651 Type 1 Spec. (dB)
Range (dB)	Mode	Weight	Response	Level (dB)	Freq. (kHz)		
20 - 100	L_A	A	Fast	94.00	1	94.0	Ref.
			Slow			94.0	± 0.1

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Report No. : C092284

Calibration Report

6.2.2 Tone Burst Signal (2 kHz)

UUT Setting				Applied Value		UUT Reading (dB)	IEC 651 Type 1 Spec. (dB)
Range (dB)	Mode	Weight	Response	Level (dB)	Burst Duration		
20 - 110	L_A	A	Fast	106.00	Continuous	106.0	Ref.
	L_{Amax}				200 ms	105.0	-1.0 ± 1.0
	L_A		Slow		Continuous	106.0	Ref.
	L_{Amax}				500 ms	102.0	-4.1 ± 1.0

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 651 Type 1 Spec. (dB)
Range (dB)	Mode	Weight	Response	Level (dB)	Freq.		
20 - 100	L_A	A	Fast	94.00	31.5 Hz	54.9	-39.4 ± 1.5
					63 Hz	68.1	-26.2 ± 1.5
					125 Hz	78.0	-16.1 ± 1.0
					500 Hz	90.8	-3.2 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	95.2	+1.2 ± 1.0
					4 kHz	94.7	+1.0 ± 1.0
					8 kHz	90.2	-1.1 (+1.5 ; -3.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 651 Type 1 Spec. (dB)
Range (dB)	Mode	Weight	Response	Level (dB)	Freq.		
20 - 100	L_C	C	Fast	94.00	31.5 Hz	91.3	-3.0 ± 1.5
					63 Hz	93.4	-0.8 ± 1.5
					125 Hz	93.9	-0.2 ± 1.0
					500 Hz	94.1	0.0 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	93.8	-0.2 ± 1.0
					4 kHz	92.9	-0.8 ± 1.0
					8 kHz	88.4	-3.0 (+1.5 ; -3.0)

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Report No. : C092284

Calibration Report

6.4 Time Averaging

UUT Setting				Applied Value					UUT	IEC 60804
Range (dB)	Mode	Weight	Integrating Time	Freq. (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)	Reading (dB)	Type 1 Spec. (dB)
20 - 110	L_{Aeq}	A	10 sec.	4	1	1/10	110.0	100	100.1	± 0.5
						$1/10^2$		90	90.1	± 0.5
			60 sec.			$1/10^3$		80	80.0	± 1.0
			5 min.			$1/10^4$		70	70.0	± 1.0

Remarks : - Mfr's Spec. : IEC 651 & IEC 60804 Type 1

- Uncertainties of Applied Value : 94 dB : 31.5Hz - 125 Hz : ± 0.35 dB
  500 Hz : ± 0.30 dB
  1 kHz : ± 0.20 dB
  2 kHz - 4 kHz : ± 0.35 dB
  8 kHz : ± 0.45 dB
  104 dB : 1 kHz : ± 0.10 dB (Ref. 94 dB)
  114 dB : 1 kHz : ± 0.10 dB (Ref. 94 dB)
  Burst equivalent level : ± 0.2 dB (Ref. 110 dB continuous sound level)

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

Note :
The values given in this Calibration Report 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 National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

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

Certificate No. : C093599

Certificate of Calibration

This is to certify that the equipment

Description : Precision Sound Level Meter

Manufacturer : Rion

Model No. : NA-27

Serial No. : 00201194

has been calibrated for the specific items and ranges.
The results are shown in the Calibration Report No. C093599.

The equipment is supplied by

Co. Name : Envirotech Services Co.

Address : Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road, Hong Kong

Date of Issue : 10 July 2009

Certified by : H C Chan

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Calibration and Testing Laboratory of Sun Creation Engineering Limited
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
Tel: 2927 2606 Fax: 2744 8986 E-mail: callab@suncreation.com Website: www.suncreation.com

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

Report No. : C093599

Calibration Report

ITEM TESTED

DESCRIPTION : Precision Sound Level Meter
MANUFACTURER : Rion
MODEL NO. : NA-27
SERIAL NO. : 00201194

TEST CONDITIONS

AMBIENT TEMPERATURE : (23 ± 2)°C RELATIVE HUMIDITY : (55 ± 20)%
LINE VOLTAGE : ---

TEST SPECIFICATIONS

Calibration check

DATE OF TEST : 9 July 2009 ***JOB NO.*** : IC09-1664

TEST RESULTS

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 : K C Lee *Date : 10 July 2009*

The test equipment used for calibration are traceable to the National Standards as specified in this report.
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1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 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 measurement at each calibration point.

4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C090024
CL281	Multifunction Acoustic Calibrator	DC090052

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 60651 Type 1 Spec. (dB)
Range (dB)	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 110	LA	Fast	94.00	1	94.0	± 0.7

6.1.2 Linearity

UUT Setting			Applied Value		UUT Reading (dB)
Range (dB)	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
60 - 120	LA	Fast	94.00	1	94.0 (Ref.)
			104.00		104.0
			114.00		114.0

IEC 60651 Type 1 Spec. : ± 0.4 dB per 10 dB step and ± 0.7 dB for overall different.

6.2 Time Weighting

6.2.1 Continuous Signal

UUT Setting			Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 110	LA	Fast	94.00	1	94.0	Ref.
		Slow			94.0	± 0.1

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6.2.2 Tone Burst Signal (2 kHz)

UUT Setting			Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Frequency Weighting	Time Weighting	Level (dB)	Burst Duration		
50 -110	LA	Fast	106.00	Continuous	106.0	Ref.
	LAmax			200 ms	105.0	-1.0 ± 1.0
	LA	Slow		Continuous	106.0	Ref.
	LAmax			500 ms	102.0	-4.1 ± 1.0

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting			Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 110	LA	Fast	94.00	31.5 Hz	54.5	-39.4 ± 1.5
				63 Hz	68.0	-26.2 ± 1.5
				125 Hz	78.1	-16.1 ± 1.0
				250 Hz	85.5	-8.6 ± 1.0
				500 Hz	90.9	-3.2 ± 1.0
				1 kHz	94.0	Ref.
				2 kHz	95.4	+1.2 ± 1.0
				4 kHz	95.6	+1.0 ± 1.0
				8 kHz	93.7	-1.1 (+1.5 ; -3.0)
				12.5 kHz	89.2	-4.3 (+3.0 ; -6.0)

6.3.2 C-Weighting

UUT Setting			Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 110	LC	Fast	94.00	31.5 Hz	91.1	-3.0 ± 1.5
				63 Hz	93.3	-0.8 ± 1.5
				125 Hz	93.8	-0.2 ± 1.0
				250 Hz	94.0	0.0 ± 1.0
				500 Hz	94.0	0.0 ± 1.0
				1 kHz	94.0	Ref.
				2 kHz	93.9	-0.2 ± 1.0
				4 kHz	93.7	-0.8 ± 1.0
				8 kHz	91.8	-3.0 (+1.5 ; -3.0)
				12.5 kHz	87.2	-6.2 (+3.0 ; -6.0)

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6.4 Time Averaging

UUT Setting			Applied Value					UUT	IEC 60804
Range (dB)	Mode	Integrating Time	Freq. (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)	Reading (dB)	Type I Spec. (dB)
50 - 110	LAeq	10 sec.	4	1	1/10	110.0	100	100.2	± 0.5
					$1/10^2$		90	90.3	± 0.5
		60 sec.			$1/10^3$		80	80.3	± 1.0
		5 min.			$1/10^4$		70	70.3	± 1.0

Remarks : - Mfr's Spec. : IEC 60651 Type 1 & IEC 60804 Type 1

- Uncertainties of Applied Value : 94 dB : 31.5 Hz : ± 0.85 dB
  63 Hz : ± 0.55 dB
  125 Hz : ± 0.45 dB
  250 Hz : ± 0.40 dB
  500 Hz : ± 0.40 dB
  1 kHz : ± 0.20 dB
  2 kHz : ± 0.45 dB
  4 kHz : ± 0.75 dB
  8 kHz : ± 1.35 dB
  12.5 kHz : ± 2.30 dB
  104 dB : 1 kHz : ± 0.10 dB (Ref. 94 dB)
  114 dB : 1 kHz : ± 0.10 dB (Ref. 94 dB)
  Burst equivalent level : ± 0.2 dB (Ref. 110 dB continuous sound level)

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

Note :
The values given in this Calibration Report 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.

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Annex I

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

Table I1 Event Action Plan for Air Quality Monitoring

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

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

Table I2 Event Action Plan for Noise Monitoring

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

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

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

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

Annex J

Waste Flow Table

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

Contract No. : DC/2007/23
Monthly Summary Waste Flow Table for 2009 (year)

Month	Actual Quantities of Inert C&D Materials Generated Monthly					Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete (see Note 3)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Metals (see Note 1)	Paper/ cardboard packaging (see Note 1)	Plastics (see Note 2)	Chemical Waste	Others, e.g. general refuse
	(in '000kg)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000L)	(in '000kg)
Jan										
Feb										
Mar										
Apr										
May										
June										
Sub-total										
July										
Aug										
Sept										
Oct										
Nov										
Dec	5197.55	0	0	0	5197.55	1	0.036	0	0	45.29
Total	5197.55	0	0	0	5197.55	1	0.036	0	0	45.29

Notes: (1) Metal and paper/cardboard packaging will be collected by recycler for recycling.
(2) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material and the wastes are collected by recycler for recycling.
(3) Broken concrete for recycling into aggregates

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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 3)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Metals (see Note 1)	Paper/ cardboard packaging (see Note 1)	Plastics (see Note 2)	Chemical Waste	Others, e.g. general refuse
	(in '000kg)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000L)	(in '000kg)
Jan	7986.1	0	0	0	7986.1	0	0.144	0	0.8	44.5
Feb										
Mar										
Apr										
May										
June										
Sub-total										
July										
Aug										
Sept										
Oct										
Nov										
Dec										
Total	7986.1	0	0	0	7986.1	0	0.144	0	0.8	44.5

Notes: (1) Metal and paper/cardboard packaging will be collected by recycler for recycling.
(2) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material and the wastes are collected by recycler for recycling.
(3) Broken concrete for recycling into aggregates

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