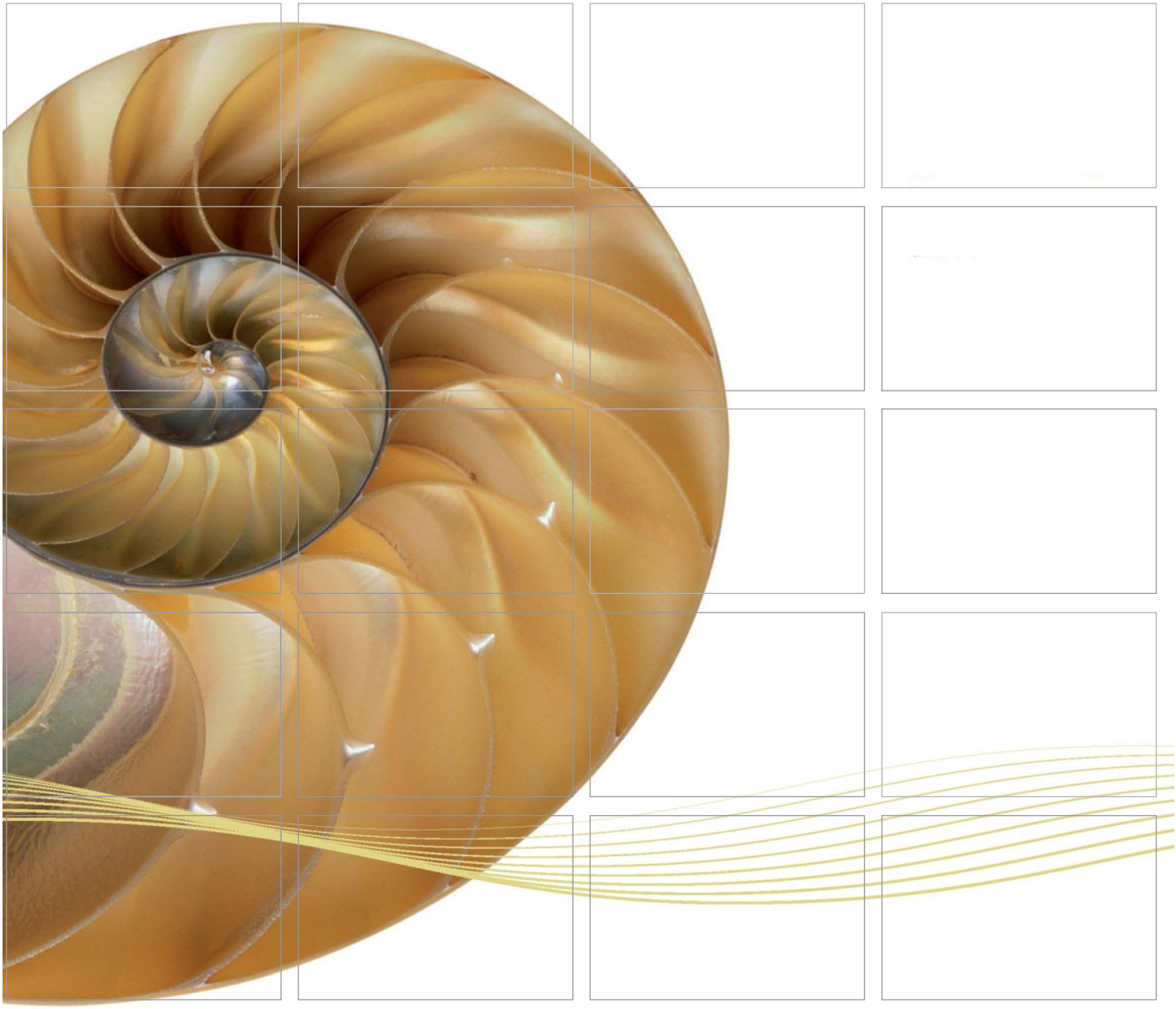
REPORT



Installation of Submarine Gas Pipelines and Associated Facilities from To Kwa Wan to North Point for Former Kai Tak Airport Development

Twenty-seventh Monthly Environmental Monitoring & Audit (EM&A) Report

15 September 2014

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ERM

The world's leading sustainability consultancy

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Twenty-seventh Monthly Environmental Monitoring & Audit (EM&A) Report

Document Code: 0158059_27th Monthly EM&A_ Rev 0.doc

Client:	Project No:
MKJV	0158059
Summary: This document presents the Twenty-seventh Monthly Environmental Monitoring and Audit (EM&A) Report for the Installation of Submarine Gas Pipelines and Associated Facilities from To Kwa Wan to North Point for Former Kai Tak Airport Development.	Date: 15 September 2014 Approved by: *Mr Craig Reid* *Partner*

Revision	Description	By	Checked	Approved	Date
v0	27th Monthly EM&A Report	RC	JT	CAR	15/9/14

Distribution

☒ Internal

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Installation of Submarine Gas Pipelines and Associated Facilities from To Kwa Wan to North Point for Former Kai Tak Airport Development

Environmental Certification Sheet

Environmental Permit No. EP-401/2010

Reference Document/~~Plan~~

Document/~~Plan~~ to be ~~Certified~~/ Verified:	Twenty-seventh Monthly Environmental Monitoring & Audit (EM&A) Report – August 2014
Date of Report: 15/9/2014	
Date prepared by ET: 15/9/2014	
Date received by IEC: 15/9/2014	

Reference EM&A Manual/ EP Requirement

EM&A Manual Requirement:	Section 12.4
Content:	*Monthly Environmental Monitoring & Audit (EM&A) Report*
12.4	"The EM&A report should be prepared by the ET, endorsed by IEC and submitted within 10 working days of the end of each reporting month ……".

EP Condition:	Condition No. 3.4
Content:	*Monthly Environmental Monitoring & Audit (EM&A) Report*
3.4	"Four hard copies and one electronic copy of monthly EM&A Report shall be submitted to the Director within two weeks after the end of the reporting month……."

ET Certification

I hereby certify that the above referenced document/~~plan~~ complies with the above referenced section/condition of the EM&A Manual and EP.

Ms Winnie Ko,
Environmental Team Leader:  Date: 15/9/2014

IEC Verification

I hereby verify that the above referenced document/~~plan~~ complies with the above referenced section/condition of the EM&A Manual and EP.

Dr Anne Kerr,
Independent Environmental Checker:  Date: 15/9/2014

CONTENTS

The construction works of the installation of submarine gas pipelines and associated facilities from To Kwa Wan to North Point for former Kai Tak Airport Development ("the Project") commenced on 13 June 2012. This is the 27th Monthly Environmental Monitoring and Audit (EM&A) Report presenting the EM&A works carried out during the period from 1 to 31 August 2014 in accordance with the EM&A Manual of the Project (1).

Summary of Construction Works undertaken during the Reporting Month

Works undertaken in the reporting month include:

- Reinstatement of ground inside police station;
- Reinstatement of fencing; and
- Backfilling of trench.

Environmental Monitoring and Audit Progress

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

● Air borne noise monitoring	4 sets
● Weekly Environmental Site Inspection	4 times

Air Borne Noise

Four sets of 30-minute construction noise measurements were carried out at the monitoring stations FSQ and SCH02 during normal weekdays of the reporting period. No exceedances of the Action and Limit Levels were identified during the reporting period and it is considered that construction works of the Project did not appear to generate any unacceptable noise impact during the monitoring period.

Waste Management

Waste generated from this Project includes non-inert construction and demolition (C&D) materials. 3.72 tonnes of non-inert C&D materials were generated in this reporting month.

Environmental Site Inspection

A total of four weekly site inspections were conducted by representatives of the Contractor and the Environmental Team (ET). Joint site inspection was conducted on 26 August 2014 by the Contractor, the ET, the Resident Engineer (RE) and the Independent Environmental Checker (IEC). Details of the audit

(1) Mott MacDonald 2010. Installation of Submarine Gas Pipelines and Associated Facilities from To Kwa Wan to North Point for Former Kai Tak Airport Development: Environmental Monitoring and Audit Manual.

findings and implementation status of the mitigation measures are presented in *Section 5.1*.

Non-conformance/Compliant/Summons and Prosecution

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

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

All major construction works were substantially completed in August 2014 and it is anticipated that the remaining site clearance works would not generate any unacceptable environmental impacts. Therefore, no further environmental monitoring will be conducted during the next reporting period of September 2014 and the Final EM&A Review Report will be produced within one month after the submission of the last monthly EM&A Report.

1 INTRODUCTION

ERM-Hong Kong, Limited (ERM) and Mott MacDonald Hong Kong Limited were appointed by the Hong Kong and China Gas Company Limited and McDow-Kaden JV as the Environmental Team (ET) and the Independent Environmental Checker (IEC), respectively, to undertake the Environmental Monitoring and Audit (EM&A) activities for the installation of submarine gas pipelines and associated facilities from To Kwa Wan to North Point for former Kai Tak Airport Development ("the Project").

1.1 PURPOSE OF THE REPORT

This is the 27th Monthly EM&A Report which summarises the impact monitoring results and inspection/audit findings for the EM&A programme during the reporting period from **1 to 31 August 2014**.

1.2 STRUCTURE OF THE REPORT

The remainder of the report is structured as follows:

Section 2 : **Project Information**
summarises the background and scope of the Project, works locations and construction works undertaken.

Section 3 : **Environmental Monitoring and Audit (EM&A) Requirements**
summarises the environmental monitoring and audit requirements including monitoring programmes, monitoring methodologies, monitoring parameters, monitoring frequency, monitoring locations, Action and Limit Levels, Event/Action Plans, environmental mitigation measures as recommended in the approved Environmental Impact Assessment (EIA) report, Environmental Permit (EP) and relevant environmental requirements stated in the Contract Specifications.

Section 4 : **Implementation Status on Environmental Mitigation Measures**
summarises the implementation of environmental mitigation measures as recommended in the approved EIA report, EM&A Manual, EP and relevant environmental requirements stated in the Contract Specifications.

Section 5 : **Monitoring Results**
summarises the monitoring results obtained in the reporting period and the findings of the weekly site inspection undertaken within the reporting period.

Section 6 : **Environmental Non-conformance**
summarises any non-compliance of environmental performance standard, and environmental complaints and environmental summons received within the reporting period.

Section 7 : **Future Key Issues**
summarises the impact forecast and monitoring schedule for the next reporting month.

Section 8 : **Conclusion**

2 PROJECT INFORMATION

2.1 PROJECT BACKGROUND

The Project proposed by the Hong Kong and China Gas Company Limited comprises the construction of a new gas pipeline network from To Kwa Wan to North Point so as to replace the existing one affected by the proposed Cruise Terminal dredging works adjacent to the former Kai Tak runway and the proposed Central Kowloon Route crossing the Kowloon Bay at To Kwa Wan.

The EIA report (*Register No.: AEIAR-153/2010*) for the Project was approved by the Director of Environmental Protection (DEP) on 2 August 2010 under the Environmental Impact Assessment Ordinance (EIAO). Subsequent to the approval of the EIA, an EP (*Permit No. EP-401/2010*) for the Project was granted by the DEP on 6 October 2010.

2.2 GENERAL SITE DESCRIPTION

The Project involves the construction of the twin submarine gas pipelines across the Victoria Harbour from To Kwa Wan to North Point and the construction of the land gas pipelines and pigging stations for pigging operation at both To Kwa Wan and North Point.

2.3 CONSTRUCTION ACTIVITIES UNDERTAKEN DURING THE REPORTING PERIOD

A summary of the major construction activities undertaken in the reporting period is shown in *Table 2.1*. The locations of the construction activities are shown in *Annex A*.

Table 2.1 Summary of Construction Activities Undertaken in Reporting Period

Construction Activities Undertaken
• Reinstatement of ground inside police station; • Reinstatement of fencing; and • Backfilling of trench.

2.4 STATUS OF ENVIRONMENTAL APPROVAL DOCUMENTS

A summary of the valid permits, licences and notifications on environmental protection for this Project is presented in *Table 2.2*.

Table 2.2 Summary of Environmental Licensing, Notification and Permit Status

Permit/ Licences/ Notification	Reference	Validity Period	Remarks
Environmental Permit	EP-401/2010	Throughout the Contract	Permit granted on 6 October 2010
Notification of Commencement of Works	Ref No. 1123/01.01/12/ 0233/L	Throughout the Contract	-
Water Discharge License (North Point)	WT00012521-2012	Till 31 March 2017	Wastewater discharge licence was issued by EPD on 22 March 2012
Water Discharge License (To Kwa Wan)	WT00012299-2012	Till 30 April 2017	Wastewater discharge licence was issued by EPD on 25 April 2012
Construction Noise Permit (Marine works)	GW-RE0486-12	Till 17 December 2012; Expired; new permit granted	Issued on 20 June 2012
Construction Noise Permit (Marine works)	GW-RE0976-12	Till 9 March 2013; Expired; new permit granted	Issued on 13 November 2012
Construction Noise Permit (Marine works)	GW-RE0193-13	Till 9 April 2013; Expired; new permit granted	Issued on 1 March 2013
Construction Noise Permit (Marine works)	GW-RE0313-13	Till 9 August 2013; Expired; new permit granted	Issued on 27 March 2013
Construction Noise Permit (Marine works)	GW-RE0570-13	Till 25 July 2013; Expired; new permit granted	Issued on 15 June 2013
Construction Noise Permit (Marine works)	GW-RS0761-13	Till 11 September 2013; Expired; new permit granted	Issued on 10 July 2013
Construction Noise Permit (Marine works)	GW-RE1014-13	Till 16 December 2013; Expired; new permit granted	Issued on 18 September 2013
Construction Noise Permit (Marine works)	GW-RS1115-13	Till 31 December 2013; Expired; new permit granted	Issued on 10 October 2013
Construction Noise Permit (Marine works)	GW-RE0069-14	Till 30 April 2014; Expired; new permit granted	Issued on 20 January 2014

Permit/ Licences/ Notification	Reference	Validity Period	Remarks
Construction Noise Permit (Marine works)	GW-RE0391-14	Till 31 October 2014	Issued on 8 April 2014
Chemical Waste Producer Registration	5213-244-M2830-01	Throughout the Contract	License approved on 17 February 2012
Marine Dumping Permit (Sediment Type 1, Cheung Chau South)	EP/MD/12-125	Till 14 November 2012; Expired; new permit granted	Issued on 15 May 2012
Marine Dumping Permit (Sediment Type 1, Cheung Chau South)	EP/MD/13-102	Till 17 June 2013; Expired; Expired; new permit granted	Issued on 17 December 2012
Marine Dumping Permit (Sediment Type 1, Cheung Chau South)	EP/MD/14-028	Till 25 December 2013; Expired	Issued on 26 June 2013
Marine Dumping Permit (Sediment Type 1, East Ninepin)	EP/MD/13-012	Till 30 September 2012; Expired	Issued on 29 May 2012
Marine Dumping Permit (Sediment Type 2, East Sha Chau)	EP/MD/13-023	Till 17 July 2012; Expired; new permit granted	Issued on 15 June 2012
Marine Dumping Permit (Sediment Type 2, East Sha Chau)	EP/MD/13-042	Till 17 August 2012; Expired; new permit granted	Issued on 17 July 2012
Marine Dumping Permit (Sediment Type 2, East Sha Chau)	EP/MD/13-054	Till 20 September 2012; Expired; new permit granted	Issued on 20 August 2012
Marine Dumping Permit (Sediment Type 2, East Sha Chau)	EP/MD/13-078	Till 8 November 2012; Expired; new permit granted	Issued on 8 October 2012
Marine Dumping Permit (Sediment Type 2, East Sha Chau)	EP/MD/13-090	Till 8 December 2012; Expired; new permit granted	Issued on 8 November 2012
Marine Dumping Permit (Sediment Type 2, East Sha Chau)	EP/MD/13-136	Till 21 April 2013; Expired; new permit granted	Issued on 21 March 2013
Marine Dumping Permit (Sediment Type 2, East Sha Chau)	EP/MD/14-004	Till 31 May 2013; Expired	Issued on 30 April 2013
Marine Dumping Permit (Sediment Type 3, East Sha Chau)	EP/MD/12-127	Till 8 September 2012; Expired; new permit granted	Issued on 8 August 2012
Marine Dumping Permit (Sediment Type 3, East Sha Chau)	EP/MD/13-067	Till 24 October 2012; Expired	Issued on 25 September 2012

3 EM&A REQUIREMENTS

3.1 AIR BORNE NOISE MONITORING

3.1.1 Monitoring Location

In accordance with the EM&A Manual, monitoring of construction noise impact should be conducted at the designated monitoring stations. The construction noise monitoring location for this Project is listed in *Table 3.1* and is shown in *Annexes B1 and B2*.

Table 3.1 Noise Monitoring Location

Monitoring Station	Area	Description
SCH02	To Kwa Wan	CCC Kei To Secondary School
FSQ	North Point	North Point Fire Services Married Quarters

3.1.2 Monitoring Parameter and Frequency

Weekly construction noise monitoring was conducted in accordance with the requirements stipulated in the EM&A Manual. The monitoring programme for this reporting period is shown in *Annex B3*.

The construction noise levels were measured in terms of A-weighted equivalent continuous sound pressure level (L_{eq}) in decibels dB(A). $L_{eq\ (30min)}$ was used as the monitoring parameter for the period in between 0700 – 1900 hours on normal weekdays. In order to obtain supplementary information for data auditing, two statistical sound levels L_{10} and L_{90} (ie 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.

3.1.3 Action and Limit Levels

The Action and Limit levels for noise monitoring during different monitoring periods are summarised in *Table 3.2*.

Table 3.2 Summary of Action and Limit Levels for Construction Noise

Time Period	Action Level	Limit Level (dB(A))
0700-1900 hrs on normal weekdays	When one documented compliant is received	75*
1900-2300 hrs on normal weekdays	When one documented compliant is received	70
Restricted hours (2300-0700 hrs)	When one documented compliant is received	55

Note:

* 70 dB(A) for schools and 65 dB(A) during school examination periods.

3.1.4 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 3.3*, complied with *IEC 651: 1979 and 804:1985 (Type 1)* specification. The calibration certificates of the sound level meter and calibrator are included in *Annex E*.

Table 3.3 Noise Monitoring Equipment

Monitoring Station	Monitoring Equipment (Sound Level Meter and Calibrator)
SCH02	Rion NL-18 (S/N 00360030), NC-73 (S/N 10997142)
FSQ	Rion NL-52 (S/N 00131627), NC-73 (S/N 10997142)

Immediately before and after 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.

3.1.5 Event and Action Plan

The Event and Action Plan (EAP) for noise monitoring is presented in *Annex C1*.

4 IMPLEMENTATION STATUS ON ENVIRONMENTAL MITIGATION MEASURES

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

5 MONITORING RESULTS

5.1 SITE INSPECTIONS & AUDITS

Weekly site inspections were conducted by representatives of the Contractor and the ET on 7, 13, 22 and 26 August 2014. Joint site inspection was conducted by the Contractor, the ET, the Resident Engineer (RE) and the IEC on 26 August 2014.

Major observations during the reporting period were summarised as follows:

7 August 2014

- To Kwa Wan Land-based Site:
  - Rubbish bin was full during site inspection. The Contractor was reminded to maintain good house-keeping practice and clear the general refuse more regularly.

13 August 2014

- Construction works were not carried out at To Kwa Wan and North Point Construction Sites during site inspection.

22 August 2014

- Construction works were not carried out at To Kwa Wan and North Point Construction Sites during site inspection.

26 August 2014

- To Kwa Wan Construction Site:
  - Drip tray should be provided to the oil drums.

- North Point Construction Site:
  - Uncovered cement bag was observed, the Contractor was reminded to cover it properly.
  - Sand bags should be provided near the sea front to avoid surface water runoff.
  - Stagnant water should be cleared.

5.2 AIR BORNE NOISE MONITORING

Thirty-minute construction noise measurements were carried out on 6, 13, 20, and 27 August 2014 at monitoring station FSQ and on 7, 14, 21 and 28 August 2014 at monitoring station SCH02 during normal working hours of the reporting period (see *Annex B3* for monitoring schedule).

The monitoring results together with graphical presentations are presented in *Annexes B4 – B7*. No exceedances of Action and Limit Level were recorded in the reporting period. The local impacts observed near the monitoring stations of SCH02 and FSQ were due to traffic noise from Sung On Street and Island Eastern Corridor, respectively.

Overall, it is considered that construction works of the Project did not appear to generate any unacceptable noise impact during the monitoring period.

5.3 WASTE MANAGEMENT EM&A

Waste generated from this Project includes non-inert construction and demolition (C&D) materials. Reference has been made to the Monthly Summary Waste Flow Table prepared by the Contractor (*Annex F*). 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 5.1*. During the reporting period of August 2014, 3.72 tonnes of non-inert C&D materials were generated in August 2014 and disposed of at the SENT Landfill.

Table 5.1 Quantities of Waste Generated from the Project for all Sites

Month / Year	Quantity					
	C&D Materials (inert) [a]	C&D Materials (non-inert)	Chemical Waste	Marine Deposit		
				Type 1	Type 2	Type 3
August 2014	0 tonnes	3.72 tonnes [b]	0 L	0 m^3	0 m^3	0 m^3

Notes:
(a) Inert C&D materials include bricks, concrete, building debris, rubble and excavated soil.
(b) The non-inert C&D materials consisted of 3.72 tonnes of general refuse generated in this reporting month.

6 ENVIRONMENTAL NON-COMFORMANCE

6.1 SUMMARY OF ENVIRONMENTAL NON-COMPLIANCE

No non-compliance of EIA/ EM&A/ EP/ legislative requirements was recorded during the reporting period.

6.2 SUMMARY OF ENVIRONMENTAL COMPLAINT

No complaint was received during the reporting period. The cumulative compliant/summons/prosecution log is shown in *Annex G*.

6.3 SUMMARY OF ENVIRONMENTAL SUMMON AND SUCCESSFUL PROSECUTION

No summons/ prosecution was received during the reporting period. The cumulative compliant/summons/prosecution log is shown in *Annex G*.

All major construction works were substantially completed in August 2014 and it is anticipated that the remaining site clearance works would not generate any unacceptable environmental impacts. Therefore, no further environmental monitoring will be conducted during the next reporting period of September 2014 and the Final EM&A Review Report will be produced within one month after the submission of the last monthly EM&A Report.

8 CONCLUSION

This 27th Monthly EM&A Report presents the EM&A programme undertaken during the reporting period from 1 to 31 August 2014 in accordance with EM&A Manual and requirements of the EP (EP-401/2010).

Thirty-minute construction noise measurements were carried out on 6, 13, 20, and 27 August 2014 at monitoring station FSQ and on 7, 14, 21 and 28 August 2014 at monitoring station SCH02 during normal working hours of the reporting period. No exceedances of the Action and Limit Levels were identified during the reporting period and it is considered that construction works of the Project did not appear to generate any unacceptable noise impact during the monitoring period.

Weekly site inspections were conducted in the reporting period. Mitigation measures recommended in the EIA/ EM&A manual/ EP were implemented by the Contractor. Follow-up actions for the observed environmental deficiency during the site inspections were taken as reported by the Contractor and observed in the next weekly site inspection conducted.

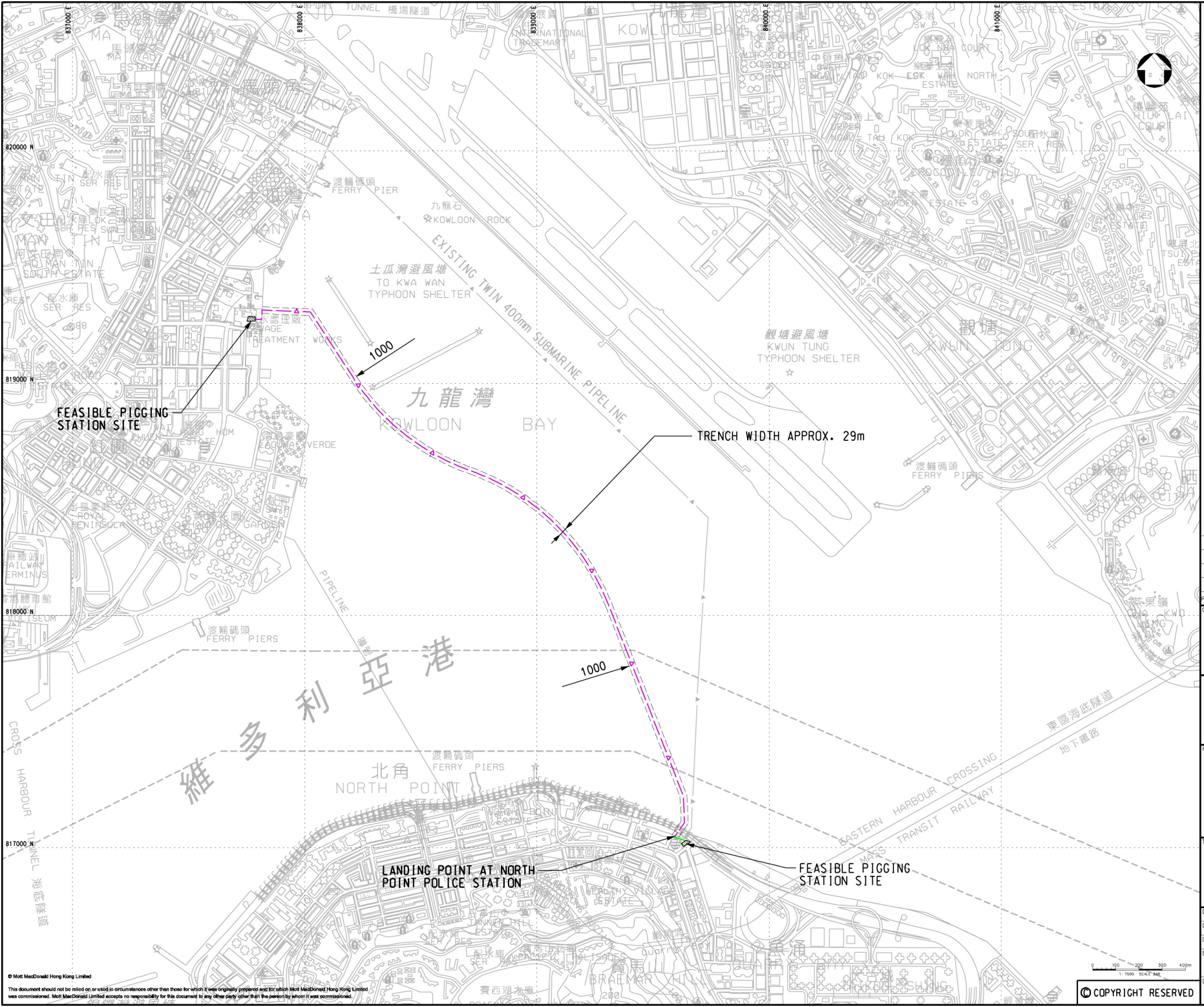
No non-compliance event was recorded during the reporting period.

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

All major construction works were substantially completed in August 2014 and it is anticipated that the remaining site clearance works would not generate any unacceptable environmental impacts. Therefore, no further environmental monitoring will be conducted during the next reporting period of September 2014 and the Final EM&A Review Report will be produced within one month after the submission of the last monthly EM&A Report.

Annex A

Locations of Works Areas



LEGEND:

- PROPOSED TWIN 450 SUBMARINE GAS MAIN
- CONNECTION TO NEW PIGGING STATION

Rev	Date	Drawn	Description	Ch'k'd	App'd
P4	FEB 10	MING	GENERAL REVISION	FY	TI
P3	DEC 09	MING	GENERAL REVISION	BL	TI
P2	JUN 09	MING	MINOR AMENDMENT	BL	TI
P1	DEC 08	MING	FIRST ISSUE	BL	TI

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Project

INSTALLATION OF SUBMARINE GAS PIPELINES AND ASSOCIATED FACILITIES FROM TO KWA WAN TO NORTH POINT FOR FORMER KAI TAK AIRPORT DEVELOPMENT

Title

GENERAL LAYOUT

Designed	DL		Eng.Chk.	TT	
Drawn	YKL		Coordination	DL	
Dwg.Chk.	DL		Approved	TI	

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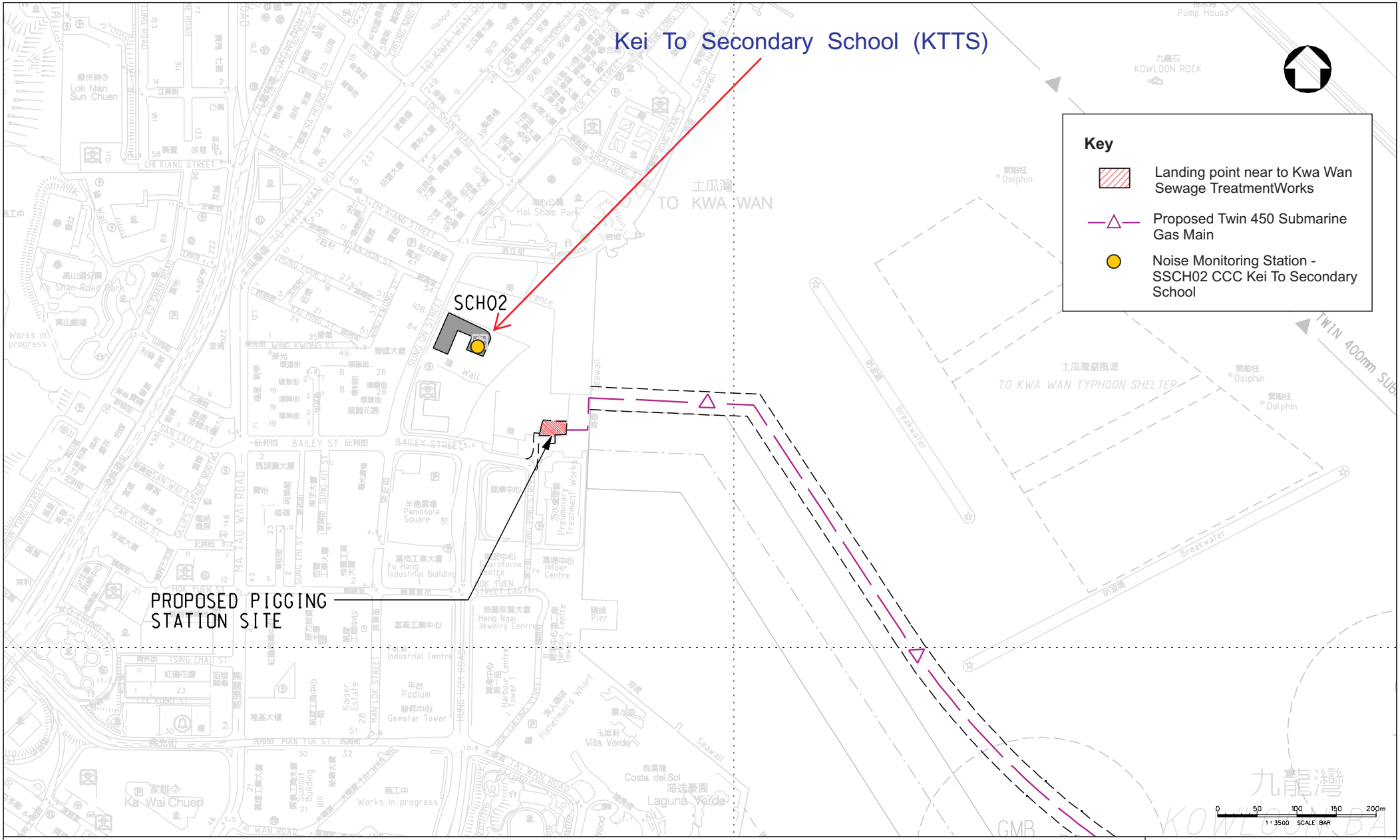
Drawing No. Annex A1

Rev P4

Annex B

Air Borne Noise Monitoring



Annex B1

Location of Noise Monitoring Stations (To Kwa Wan)

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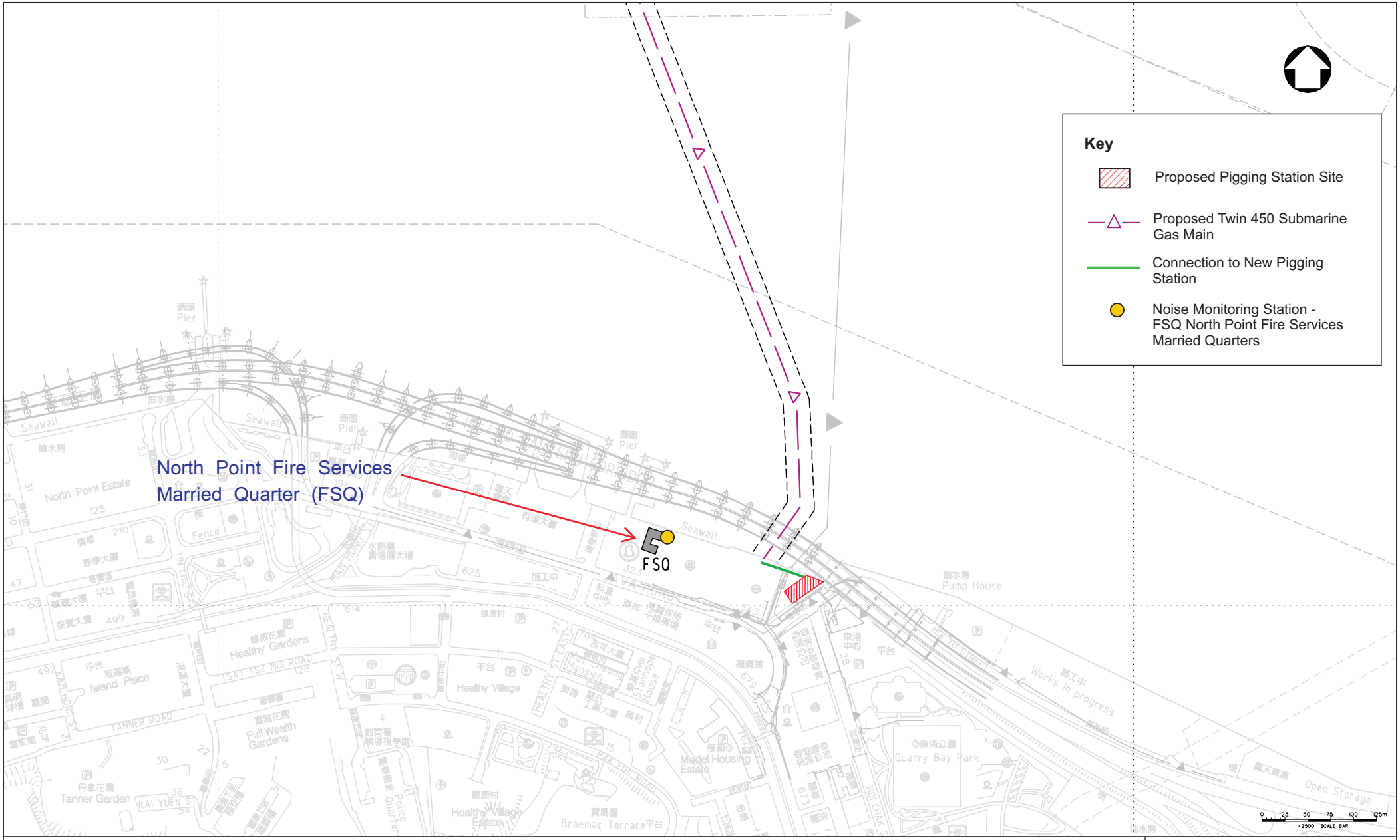
DATE: 03/04/2012

Environmental Resources Management

ERM



Annex B2

Location of Noise Monitoring Stations (North Point)

FILE: 0158059b
DATE: 03/04/2012

Environmental Resources Management

ERM

Annex B3 Installation of Submarine Gas Pipelines and Associated Facilities from To Kwa Wan to North Point for Former Kai Tak Airport Development Impact Noise Monitoring Schedule (August 2014)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					01-Aug	02-Aug
03-Aug	04-Aug	05-Aug	06-Aug	07-Aug	08-Aug	09-Aug
			Noise Monitoring at FSQ	Noise Monitoring at SCH02		
10-Aug	11-Aug	12-Aug	13-Aug	14-Aug	15-Aug	16-Aug
			Noise Monitoring at FSQ	Noise Monitoring at SCH02		
17-Aug	18-Aug	19-Aug	20-Aug	21-Aug	22-Aug	23-Aug
			Noise Monitoring at FSQ	Noise Monitoring at SCH02		
24-Aug	25-Aug	26-Aug	27-Aug	28-Aug	29-Aug	30-Aug
			Noise Monitoring at FSQ	Noise Monitoring at SCH02		
31-Aug						

SCH02 Kei To Secondary School (KTTS) at To Kwa Wan
FSQ North Point Fire Services Married Quarter

Annex B4 Noise Monitoring Results

Daytime Noise Monitoring Results

FSQ Monitoring Station

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							
06-Aug-14	14:09	14:39	Sunny	73	75	71	-	Traffic noise	-	30	0.3	RION- NL52 (S/N 00131627)	RION- NC73 (S/N 10997142)
13-Aug-14	11:01	11:31	Sunny	73	74	71	-	Traffic noise	-	26	0.2	RION- NL52 (S/N 00131627)	RION- NC73 (S/N 10997142)
20-Aug-14	09:38	10:08	Fine	74	75	72	-	Traffic noise	-	25	0.2	RION- NL52 (S/N 00131627)	RION- NC73 (S/N 10997142)
27-Aug-14	09:13	09:43	Fine	72	73	70	-	Traffic noise	-	30	0.3	RION- NL52 (S/N 00131627)	RION- NC73 (S/N 10997142)
			Min.	**72**									
			Max.	**74**									

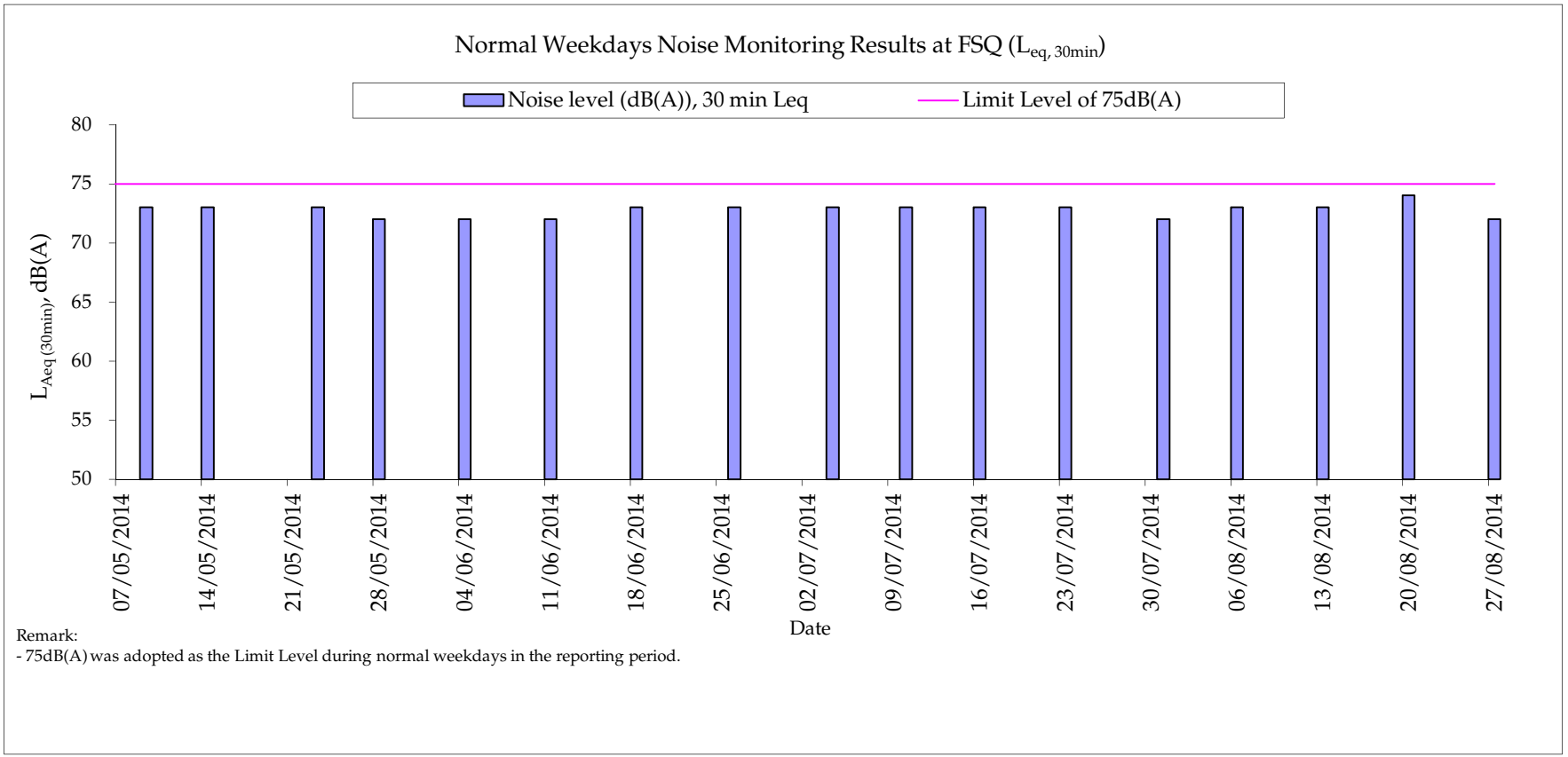
Annex B5 Noise Monitoring Results

Daytime Noise Monitoring Results

SCH02 Monitoring Station

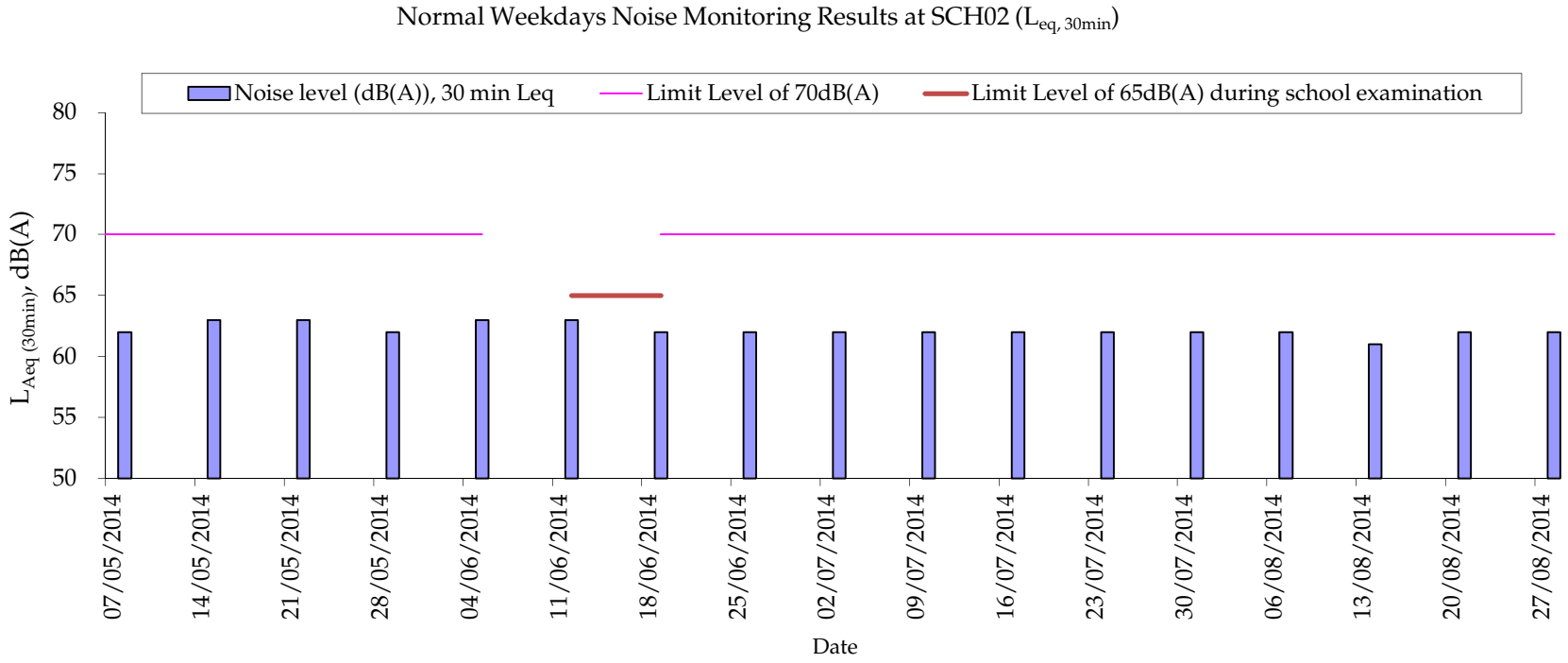
Date	Start Time	End Time	Weather	Noise level (dB(A)), 30 min			Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Remarks	Temp. (℃)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
				Leq	L10	L90							
07-Aug-14	09:15	09:45	Cloudy	62	64	60	-	Traffic noise	-	30	0.5	RION- NL18 (S/N 00360030)	RION- NC73 (S/N 10997142)
14-Aug-14	09:00	09:30	Cloudy	61	63	59	-	Traffic noise	-	28	0.5	RION- NL18 (S/N 00360030)	RION- NC73 (S/N 10997142)
21-Aug-14	09:30	10:00	Fine	62	64	60	-	Traffic noise	-	27	0.5	RION- NL18 (S/N 00360030)	RION- NC73 (S/N 10997142)
28-Aug-14	09:00	09:30	Sunny	62	64	60	-	Traffic noise	-	30	0.5	RION- NL18 (S/N 00360030)	RION- NC73 (S/N 10997142)
			Min.	**61**									
			Max.	**62**									

Annex B6 - Noise Monitoring Result



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

Annex B7 - Noise Monitoring Result



Remarks:
- 70dB(A) was adopted as the Limit Level during school normal teaching period in the reporting period.
- 65dB(A) was adopted as the Limit Level during school examination period in the reporting period.
- School examinations were carried out in CCC Kei To Secondary School on 5 and 12 May 2014.
- School examinations were carried out in CCC Kei To Secondary School on 4, 11-13, 16-20 & 23-25 June 2014..

Annex C

Event /Action Plans for Air Borne Noise Monitoring

Annex C1 *Event and Action Plan for Air-borne Noise Monitoring during Construction Phase*

	Action			
Event	**ET** [1]	**IEC** [1]	**ER** [1]	**Contractor(s)**
Action Level	1. Notify IEC and the Contractor	1. Review with analysed results submitted by ET	1. Confirm receipt of notification of exceedance in writing	1. Submit noise mitigation proposals to IEC
	2. Carry Out investigation	2. Review the proposed remedial measures by the Contractor and advise ER accordingly	2. Notify the Contractor.	2. Implement noise mitigation proposals.
	3. Report the results of investigation to IEC and the Contractor	3. supervise the implement of remedial measures.	3. Require the Contractor to proposed remedial measures for the analysed noise problem	
	4. Discuss with the Contractor and formulate remedial measures		4. Ensure remedial measures are properly implemented	
	5. Increase monitoring frequency to check mitigation measures			
Limit Level	1. Identify the source	1. Discuss amongst ER, ET Leader and the Contractor on the potential remedial actions	1. Confirm receipt of notification of exceedance in writing	1. Take immediate action to avoid further exceedance
	2. Notify IEC, ER, EPD and the Contractor	2. Review the Contractor's remedial actions whenever necessary to assure their effectiveness and advise ER accordingly	2. Notify the Contractor	2. Submit proposals for remedial actions to IEC within 3 working days of notification.
	3. Repeat measurement to confirm findings	3. Supervise the implement of remedial measures.	3. Require the Contractor to proposed remedial measures for the analysed noise problem	3. Implemet the agreed proposals.
	4. Increase monitoring frequency		4. Ensure remedial measures are properly implemented	4. Resubmit proposals if problem still not under control.
	5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented		5. If exceedance continues, consider what activity of the work is responsible and instruct the Contractor to stop that activity of work until the exceedance is abated	5. Stop the relevant activity of works as determined by the ER until exceedance is abated.
	6. Inform IEC, ER and EPD the causes and actions taken for the exceedances			

Event	Action			
	ET [1]	**IEC** [1]	**ER**[1]	**Contractor(s)**
	7. Assess effectiveness of the Contractor's remedial actions and keep IEC, EPD and ER informed of the results			
	8. If exceedance stops, cease additional monitoring			

Note: [1] ET – Environmental Team, IEC – Independent Environmental Checker, ER – Engineer's Representative

Annex D

Implementation Schedule

ANNEX D SUMMARY OF MITIGATION MEASURE IMPLEMENTATION SCHEDULE

Environmental Protection Measures	Location	Timing	Status
Water Quality			
Mitigation Measures for Dredging Although adverse water quality impact is not predicted during the construction phase, implementation of the following mitigation measures is recommended to minimise the potential SS impact from dredging activities: • Dredging shall be carried out by closed grab dredger to minimize release of sediment and other contaminants during dredging; • The maximum production rate for dredging from the seabed for installation of the submarine gas pipelines shall not be more than 4,000m^3 per day (and no more than 1 closed grab dredger); and • Deployment of frame type silt curtain to fully enclose the grab while dredging works are in progress. An illustration of a typical configuration of frame type silt curtain is shown in EM&A manual Figure 3.10. The frame type silt curtain shall be designed to enclose local pollution caused by the grab dredger and suspended by a steel frame mounted on the grab dredger and floating on water. This frame type silt curtain shall be fabricated from permeable, durable, abrasion resistant membrane like geotextiles and be mounted on a floating boom structure. The frame type silt curtain shall also extend to the seabed to cover the entire water column. Steel chain or ballast shall be attached to the bottom of the silt curtain. Mid-ballast may be added as necessary. The structure of the silt curtain shall be maintained by metal grids. The frame type silt curtain shall be capable or reducing sediment loss to outside by a factor of 4 (or about 75%). Other Good Site Practices for Dredging Other good site practices that shall be undertaken during dredging includes: • all vessels shall be sized so that adequate clearance is maintained between vessels and the seabed in all tide conditions, to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash; • all barges / dredgers used shall be fitted with tight fitting seals to their bottom openings to prevent leakage of material; • construction activities shall not cause foam, oil, grease, scum, litter or other objectionable matter to be present on the water within the site or dumping grounds; • barges or hopper shall not be filled to a level that will cause the overflow of materials or polluted water during loading or transportation; and • before commencement of dredging works, the holder of the Environmental Permit shall submit detailed proposal of the design and arrangement of the frame type silt curtain to EPD for approval.	Construction Work Sites (Along the alignment of dredging)	During Marine Dredging works	N.A.
Effluent from Hydrostatic/ Commissioning Tests of the Gas Pipeline System For hydrostatic testing of gas pipelines, the gas pipelines would be filled with potable water (a nearly incompressible liquid) and examined for leaks or permanent changes in shape with a specified test pressure. The test would be carried out at room temperature and dosing of chemicals into the water for testing is not required. Water used for testing shall be reused as far as possible (e.g. water	Construction Work Sites (General)	During Hydrostatic Tests	N.A.

Environmental Protection Measures	Location	Timing	Status
spray for dust suppression on site). To ensure compliance with the standards for effluent discharged into the inshore waters or marine waters of Victoria Harbour WCZ as shown in Tables 9a and 9b of the TM-DSS, sedimentation tanks with sufficient capacity, constructed from pre-formed individual cells of approximately 6 to 8 m3 capacities, are recommended as a general mitigation measure which can be used for settling surface runoff prior to disposal. The system capacity shall be flexible and suited to applications where the influent is pumped.			
Surface Runoff, Sewage and Wastewater from Construction Activities Appropriate measures shall be implemented to control runoff and prevent high loads of SS from entering the marine environment. Proper site management is essential to minimize surface runoff and sewage effluents. • Construction site runoff shall be prevented or minimised in accordance with the guidelines stipulated in the EPD's Practice Note for Professional Persons, Construction Site Drainage (ProPECC PN 1/94). All discharges from the construction site shall be controlled to comply with the standards for effluents discharged into the Victoria Harbour WCZ under the TM-DSS. Good housekeeping and stormwater best management practices, as detailed below, shall be implemented to ensure all construction runoff complies with WPCO standards and no unacceptable impact on the WSRs as a result of construction of the proposed submarine gas pipelines; • Sedimentation tanks with sufficient capacity, constructed from pre-formed individual cells of approximately 6 to 8 m^3 capacities, are recommended as a general mitigation measure which can be used for settling surface runoff prior to disposal. The system capacity shall be flexible and able to handle multiple inputs from a variety of sources and suited to applications where the influent is pumped; • Manholes (including newly constructed ones) shall always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the storm runoff being directed into foul sewers; • All vehicles and plant shall be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and located wheel washing bay shall be provided at every site exit, and wash-water shall have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel-wash bay to the public road shall be paved with sufficient backfill toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains; • Precautions shall be taken at any time of year when rainstorms are likely. Actions shall be taken when a rainstorm is imminent or forecast. Actions to be taken during or after rainstorms are summarised in Appendix A2 of ProPECC PN 1/94. Particular attention shall be paid to the control of silty surface runoff during storm events, particularly for areas located near steep slopes; • Fuel tanks and storage areas shall be provided with locks and be located on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank, to prevent spilled fuel oils from reaching the coastal waters of the Victoria Harbour and Western and Eastern Buffer WCZs; • Portable chemical toilets shall be used to handle construction workforce sewage prior to discharge to the existing trunk sewer. Sufficient numbers of portable toilets shall be provided by a licensed contractor to serve the construction workers. The Contractor should also be responsible for waste disposal and maintenance practices.	Construction Work Sites (General)	Construction period	Δ
Waste Management			
Good Site Practices Adverse impacts related to waste management are not expected to arise, provided that good site practices are strictly followed. Recommendations for good site practices during the construction activities include:	Construction Work Sites (General)	Construction period	Δ

Environmental Protection Measures	Location	Timing	Status
• 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 handling procedures, separation of chemical wastes with appropriate treatment which is mentioned in Section 4.6.5 • Provision of sufficient waste disposal points and regular collection of waste • Barges filled with dredged sediment shall be towed away immediately for disposal. In doing so, odour is not anticipated to be an issue to distant sensitive receivers • Well planned delivery programme for offsite disposal such that adverse impact from transporting sediment material is not anticipated • Well maintained PME should be operated on site • Regular cleaning and maintenance of the drainage systems for construction of the landing points • Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers			
<u>Waste Reduction Measures</u> Good management and control can prevent the generation of a significant amount of waste. Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Recommendations to achieve waste reduction include: • Sort C&D material from demolition and decommissioning of the 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 by providing separate labelled bins to enable this waste to be segregated from other general refuse generated by the work force; • Proper storage and site practices to minimise the potential for damage or contamination of construction materials; and • Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.	Construction Work Sites (General)	Construction period	Δ
<u>C&D Material</u> In order to minimise impacts resulting from collection and transportation of C&D material for off-site disposal, the excavated materials shall be reused on-site as backfilling material and for landscaping works as far as practicable. Surplus C&D material generated from excavation works shall be disposed of at public fill reception facilities for other beneficial uses. Other mitigation requirements are listed below: • A Waste Management Plan shall be prepared;	Construction Work Sites (General)	Construction period	√

Environmental Protection Measures	Location	Timing	Status
• A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) shall be proposed; and • In order to monitor the disposal of C&D material and solid wastes at public filling facilities and landfills, and to control fly-tipping, a trip-ticket system (e.g. ETWB TCW No. 31/2004) shall be included.			
General Refuse General refuse shall be stored in enclosed bins or compaction units separate from C&D material. A reputable waste collector shall be employed by the contractor to remove general refuse from the site, separately from C&D material. Preferably an enclosed and covered area shall be provided to reduce the occurrence of 'wind blown' light material.	Construction Work Sites (General)	Construction period	Δ
Chemical Waste Good quality containers compatible with the chemical wastes shall be used, and incompatible chemicals shall be stored separately. Appropriate labels shall 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.	Construction Work Sites (General)	Construction period	Δ
Marine Dredged Sediment During transportation and disposal of the dredged marine sediments, the following measures shall be taken to minimise potential impacts on water quality: • Bottom opening of barges shall be fitted with tight fitting seals to prevent leakage of material. Excess material shall be cleaned from the decks and exposed fittings of barges and dredgers before the vessel is moved; • Monitoring of the barge loading shall be conducted to ensure that loss of material does not take place during transportation. Transport barges or vessels shall be equipped with automatic self-monitoring devices as specified by the EPD; and Barges or hopper barges shall not be filled to a level that would cause the overflow of materials or sediment laden water during loading or transportation. • The use of 300 m^3 geosynthetic container, with outer woven fabric tensile strength of 200 kN/m and seam strength of 140 kN/m for effective method for contained disposal which meets ETWB TCW No. 34/2002 requirements for assuring negligible loss of contaminants to marine environment during disposal. • Allocation of marine disposal sites and all necessary permits shall be applied from relevant authorities for disposal of dredged sediment. Project Proponent will obtain confirmation from CEDD/Marine Fill Committee (MFC) on the disposal options before commencement of the Project.	Construction Work Sites (Along the alignment of dredging)	During Marine Dredging works	√
Marine Ecology			
Placement of a second silt curtain between the dredger and the To Kwa Wan breakwater. The silt curtain shall be 75m long. This curtain shall be moved along with the dredger as the work progresses. The curtain shall be arranged so that at least 15m of the curtain shall extend past the dredger in each direction. This curtain shall remain in a suitable position between the dredger and the corals until the dredger is 250m from the corals.	Proposed dredging near To Kwa Wan breakwaters	Construction period	√
Hazard to Life			
• Proper general traffic management measures. • Minimisation of works activity footprint – dredging and backfilling. • Safety provision during dredging and backfilling. • Liaison with relevant Government Departments before and during construction stage. • Requirements during the submarine pipe pulling.	Construction Work Sites	Construction period	√
Risk mitigation measures to prevent the damage of submarine pipeline during operation will be adopted. They are listed as follows:	Construction Work	Construction	N.A.

Environmental Protection Measures	Location	Timing	Status
• The submarine gas pipeline will be covered by armour rock, damage from anchor drop could be prevented.	Sites	period	
Landscape			
Screening of construction works by hoardings/noise barriers around Works area in visually unobtrusive colours, to screen Works.	Construction Work Sites	Construction period	N.A.
Hydroseeding or sheeting of soil stockpiles with visually unobtrusive material (in earth tone).	Construction Work Sites	Construction period	N.A.
Ensure no run-off into the harbour adjacent to the site.	Construction Work Sites	Construction period	N.A.
Cultural Heritage			
A Monitoring Brief shall be conducted as set out in Appendix H2 of the EIA. This can be done in parallel with the monitoring of barge loading as set out in section 4.6.	Construction Work Sites	Construction period	√
Noise			
Construction Noise Impact from Test before Backfilling and Hydrostatic/ Commissioning Test The total maximum allowable SWL of the test before backfilling and hydrostatic/ commissioning test is ranged from 112-126 dB(A) at different location and period, the Contractor shall strictly follow the specification listed above to meet the noise criteria and closely liaise with the schools nearby before carrying out the activities. Noise mitigation measures including the use of movable noise barriers and/ or noise enclosure to block the direct line of sight to the receivers, installation of mufflers and/ or silencers on the machine(s) should be implemented if necessary.	Construction Work Sites (Landmain work)	Construction period	√
Using Quiet PME The use of quiet PME recognized by the Noise Control Authority for the purpose of CNP application can effectively reduce the noise generated from the construction plants. Quiet PME are construction plants and equipments that are notably quieter, more environmental friendly and efficiently. The noise level reduction ranges from 5 – 10 dB(A) depending on the type of equipment used. The Contractor should note the required procedures involved in application of the QPME. A list of QPME recommended is list in **Table 10.11** of the EIA report.	Construction Work Sites (Along the alignment of dredging and landmain works)	Construction period	√
Using Movable Noise Barriers Movable noise barriers to be erected near to the construction plants would reduce the noise levels for commonly 5 – 10 dB(A) depending on the types of items of PME and materials of the barriers. It is recommended that the Contractor should screen noisy works and noise from stationary items of PME whenever practicable.	Construction Work Sites (Landmain work)	Construction period	√
Good Site Practices Good site practice and noise management can significantly reduce the impact of construction site activities on nearby NSRs. The following package of measures shall be followed during construction: • The Contractor shall adopt the Code of Practice on Good Management Practice to Prevent Violation of the Noise Control Ordinance (Chapter 400) (for Construction Industry) published by EPD; • The Contractor shall observe and comply with the statutory and non-statutory requirements and guidelines; • Before commencing any work, the Contractor shall submit to the Engineer Representative for approval the method of working, equipment and noise mitigation measures intended to be used at the site; • The Contractor shall devise and execute working methods to minimise the noise impact on the surrounding sensitive uses, and provide experienced personnel with suitable training to ensure that those methods are implemented; • Unused equipment shall be turned off. Number of operating PME shall be kept to a minimum and the parallel use of noisy equipment / machinery shall be avoided;	Construction Work Sites (Along the alignment of dredging and landmain works)	Construction period	√

Environmental Protection Measures	Location	Timing	Status
• Regular maintenance of all plant and equipment; and • Material stockpiles and other structures shall be effectively utilised as noise barriers, where practicable.			
Construction Dust			
Mitigation Measures for Fugitive Dust To mitigate fugitive dust impact, all dust control measures recommended in the Air Pollution Control (Construction Dust) Regulation, where applicable, shall be implemented. Relevant dust control measures include: • The works area for site clearance shall be sprayed with water before, during and after the operation so as to maintain the entire surface wet; • Restricting heights from which materials are to be dropped, as far as practicable to minimise the fugitive dust arising from unloading/ loading; • Immediately before leaving a construction site, all vehicles shall be washed to remove any dusty materials from the bodies and wheels. However, all spraying of materials and surfaces should avoid excessive water usage; • Where a vehicle leaving a construction site is carrying a load of dusty materials, the load shall be covered entirely by clean impervious sheeting to ensure that the dusty materials will not leak from the vehicle; • Any stockpile of dusty materials shall be covered entirely by impervious sheeting; and/or placed in an area sheltered on the top and 4 sides; and • All dusty materials shall be sprayed with water immediately prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet.	Construction Work Sites (General)	Construction period	√

Remark:

√ Compliance of Mitigation Measures

<> Compliance of Mitigation but need improvement

x Non-compliance of Mitigation Measures

Δ Deficiency of Mitigation Measures but rectified by the Contractor

N.A. Not Applicable

Annex E

Calibration Reports for Monitoring Equipments

Annex E1 Noise Monitoring Equipment

Monitoring Station ID	Monitoring Equipment	Model & Serial No.	Last Calibration Date	Next Calibration Date
FSQ and SCH02	Calibrator	Rion NC-73 (S/N 10997142)	28 June 2014	28 June 2015
	Sound Level Meter	Rion NL-52 (S/N 00131627)	17 March 2014	17 March 2015
		Rion NL-18 (S/N 00360030)	19 July 2014	19 July 2015

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

Certificate of Calibration
校正證書

Certificate No. : C143980
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC14-1497) Date of Receipt / 收件日期 : 23 June 2014

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

TEST CONDITIONS / 測試條件

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

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 28 June 2014

TEST RESULTS / 測試結果

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

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

Tested By 測試 : K C Lee, Project Engineer

Certified By 核證 : K M Wu, Engineer

Date of Issue 簽發日期 : 2 July 2014

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

Certificate of Calibration
校正證書

Certificate No. : C143980
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.

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

3. Test equipment :

Equipment ID	Description	Certificate No.
CL130	Universal Counter	C143868
CL281	Multifunction Acoustic Calibrator	DC130171
TST150A	Measuring Amplifier	C141558

4. Test procedure : MA100N.

5. Results :

5.1 Sound Level Accuracy

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

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	0.987	1 kHz ± 2 %	± 1

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

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

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

Certificate of Calibration
校正證書

Certificate No. : C141622
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC14-0645) Date of Receipt / 收件日期 : 11 March 2014

Description / 儀器名稱 : Sound Level Meter
Manufacturer / 製造商 : Rion
Model No. / 型號 : NL-52
Serial No. / 編號 : 00131627
Supplied By / 委託者 : Envirotech Services Co.
Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road,
Hong Kong

TEST CONDITIONS / 測試條件

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

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 17 March 2014

TEST RESULTS / 測試結果

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

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

Tested By 測試 : K C Lee
Project Engineer

Certified By 核證 : K M Wu
Engineer

Date of Issue 簽發日期 : 20 March 2014

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
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Certificate of Calibration
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Certificate No. : C141622
證書編號

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

2. Self-calibration was performed before the test.

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

4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C140016
CL281	Multifunction Acoustic Calibrator	DC130171

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L_A	A	Fast	94.00	1	94.1	± 1.1

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 130	L_A	A	Fast	94.00	1	94.1 (Ref.)
				104.00		104.1
				114.00		114.1

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

6.2 Time Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L_A	A	Fast	94.00	1	94.1	Ref.
			Slow			94.1	± 0.3

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Certificate of Calibration
校正證書

Certificate No. : C141622
證書編號

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L_A	A	Fast	94.00	63 Hz	67.8	-26.2 ± 1.5
					125 Hz	77.8	-16.1 ± 1.5
					250 Hz	85.4	-8.6 ± 1.4
					500 Hz	90.8	-3.2 ± 1.4
					1 kHz	94.1	Ref.
					2 kHz	95.3	+1.2 ± 1.6
					4 kHz	95.1	+1.0 ± 1.6
					8 kHz	93.0	-1.1 (+2.1 ; -3.1)
					12.5 kHz	89.6	-4.3 (+3.0 ; -6.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L_A	C	Fast	94.00	63 Hz	93.2	-0.8 ± 1.5
					125 Hz	93.8	-0.2 ± 1.5
					250 Hz	94.0	0.0 ± 1.4
					500 Hz	94.1	0.0 ± 1.4
					1 kHz	94.1	Ref.
					2 kHz	93.9	-0.2 ± 1.6
					4 kHz	93.3	-0.8 ± 1.6
					8 kHz	91.1	-3.0 (+2.1 ; -3.1)
					12.5 kHz	87.7	-6.2 (+3.0 ; -6.0)

Remarks : - UUT Microphone Model No. : UC-59 & S/N : 04663

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value :

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

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

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

Certificate of Calibration
校正證書

Certificate No. : C144281
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC14-1719) Date of Receipt / 收件日期 : 11 July 2014

Description / 儀器名稱	:	Precision Integrating Sound Level Meter
Manufacturer / 製造商	:	Rion
Model No. / 型號	:	NL-18
Serial No. / 編號	:	00360030
Supplied By / 委託者	:	Envirotech Services Co. Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road, Hong Kong

TEST CONDITIONS / 測試條件

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

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 19 July 2014

TEST RESULTS / 測試結果

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

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

Tested By 測試 : K C Lee, Project Engineer

Certified By 核證 : K M Wu, Engineer

Date of Issue 簽發日期 : 23 July 2014

Sun Creation Engineering Limited – Calibration & Testing Laboratory
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1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.

2. Self-calibration was performed before the test.

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

4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C140016
CL281	Multifunction Acoustic Calibrator	DC130171

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 110	LA	A	Fast	94.00	1	94.1	± 0.7

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
60 - 120	LA	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)		
50 - 110	LA	A	Fast	94.00	1	94.1	Ref.
			Slow			94.1	± 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)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Burst Duration		
50 -110	LA	A	Fast	106.00	Continuous	106.0	Ref.
	LAmx				200 ms	105.1	-1.0 ± 1.0
	LA		Slow		Continuous	106.0	Ref.
	LAmx				500 ms	102.5	-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.		
50 - 110	LA	A	Fast	94.00	31.5 Hz	54.4	-39.4 ± 1.5
					63 Hz	67.7	-26.2 ± 1.5
					125 Hz	77.7	-16.1 ± 1.0
					250 Hz	85.3	-8.6 ± 1.0
					500 Hz	90.7	-3.2 ± 1.0
					1 kHz	94.1	Ref.
					2 kHz	95.3	+1.2 ± 1.0
					4 kHz	95.1	+1.0 ± 1.0
					8 kHz	93.0	-1.1 (+1.5 ; -3.0)
					12.5 kHz	89.8	-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.		
50 - 110	LC	C	Fast	94.00	31.5 Hz	90.9	-3.0 ± 1.5
					63 Hz	93.3	-0.8 ± 1.5
					125 Hz	94.0	-0.2 ± 1.0
					250 Hz	94.1	0.0 ± 1.0
					500 Hz	94.1	0.0 ± 1.0
					1 kHz	94.1	Ref.
					2 kHz	93.9	-0.2 ± 1.0
					4 kHz	93.3	-0.8 ± 1.0
					8 kHz	91.0	-3.0 (+1.5 ; -3.0)
					12.5 kHz	87.8	-6.2 (+3.0 ; -6.0)

Certificate of Calibration
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6.4 Time Averaging

UUT Setting				Applied Value					UUT Reading (dB)	IEC 60804 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Integrating Time	Freq. (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)		
50 - 110	LAeq	A	10 sec.	4	1	1/10	110	100	99.9	± 0.5
						$1/10^2$		90	89.9	± 0.5
			60 sec.			$1/10^3$		80	79.5	± 1.0
			5 min.			$1/10^4$		70	69.8	± 1.0

Remarks : - UUT Microphone Model No. : UC-53A & S/N : 307435

- Mfr's Spec. : IEC 60651 Type 1 & 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 :
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Annex F

Waste Flow Table

The installation of submarine gas pipelines and associated facilities from To Kwa Wan to North Point for former Kai Tak Airport

Monthly Summary Waste Flow Table for Year 2012-2014

Month	Actual Quantities of Inert C&D Materials Generated Monthly (see Note 1)						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete (see Note 2)	Reused in the Contract	Reused in other Projects	Disposed at Public Fill	Stockpiling	General refuse	Vegetation / Rubbish	Disposal at Landfill	Chemical Waste Recycling (see Note 3)	Recycling of Rubbish
	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in'000kg / '000L)	(in '000kg)
Jun 12	858.93	858.93	150	0	8.93	700	0	0	0	0	0
Jul 12	398.16	398.16	150	0	98.16	150	0	0	0	0	0
Aug 12	316.12	316.12	290	0	25.87	0	0.25	0.5	0	0	0.5
Sep 12	136.5	136.5	80.5	0	56.1	0	0.5	0.5	0	0	0.5
Oct 12	82.39	82.39	30	0	52.39	0	0.2	0.3	0	0	0.2
Nov 12	71.23	71.23	44.84	0	26.39	0	0.1	0.1	0	0	0.1
Dec 12	168.22	168.22	95.35	0	72.87	0	0.15	0.15	0	0	0.15
Jan 13	1872.19	469.54	106.92	0	1765.27	0	0.5	0.06	0.51	0	0.05
Feb 13	1838.82	477.36	238.68	0	1480.8	119.34	0.04	0	0	0.2	0
Mar 13	473.94	473.94	57.6	0	377.94	38.4	1.24	0	1.24	0	0
Apr 13	210.07	166.07	66.96	0	99.11	0	0.5	0	0	0	0
May 13	253.8	253.8	192.6	0	0	61.2	2.06	0	2.56	0	0
Jun 13	172.8	172.8	45.07	0	57.71	70.02	7.27	0	7.27	0	0
Jul 13	151.57	151.57	41.18	0	92.39	18	0.96	0	0.96	0	0
Aug 13	575.18	575.18	41.18	0	516	18	2.63	0	2.63	0	0
Sep 13	615.37	0	0	0	597.37	18	5.74	0	0	0	0
Oct 13	706.56	0	0	0	688.56	18	2.98	0	0	0	0
Nov 13	525.56	0	60.31	0	435.25	30	0	0	0	0	0
Dec 13	231.54	0	21.09	0	210.45	0	2.91	0	2.91	0	0

Month	Actual Quantities of Inert C&D Materials Generated Monthly (see Note 1)						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete (see Note 2)	Reused in the Contract	Reused in other Projects	Disposed at Public Fill	Stockpiling	General refuse	Vegetation / Rubbish	Disposal at Landfill	Chemical Waste Recycling (see Note 3)	Recycling of Rubbish
	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in'000kg / '000L)	(in '000kg)
Jan 14	231.54	0	126.6	0	104.94	0	3.46	0	3.46	0	0
Feb 14	115.00	0	75.92	0	9.08	30	4.25	0	0	0	0
Mar 14	37.80	0	30.00	0	0	7.8	4.25	0	0	0	0
Apr 14	0	0	0	0	0	0	1.07	0	0	0	0
May 14	27	0	27	0	0	0	1.12	0	0	0	0
Jun 14	36	0	36	0	0	0	2.34	0	0	0	0
Jul 14	28.8	0	28.8	0	0	0	0.2	0	0	0	0
Sub-total	**10135.09**	**4771.81**	**2036.60**	**0**	**6775.58**	**1278.76**	**44.72**	**1.61**	**21.54**	**0.20**	**1.50**
Aug 14	0	0	0	0	0	0	3.72	0	3.72	0	0
Total	**10135.09**	**4771.81**	**2036.60**	**0**	**6775.58**	**1278.76**	**48.44**	**1.61**	**25.26**	**0.20**	**1.50**

Notes: (1) If necessary, use the conversion factor: 1 full load of dumping truck being equivalent to 6.5 m^3 by volume.
(2) Broken concrete for recycling into aggregates.
(3) For chemical waste, the actual quantities of empty paint cans will be in kilogram (kg) and spent lubrication oil will be in litre (L).

Annex G

Cumulative Complaint and Summons/Prosecutions Log

Annex G Cumulative Complaint and Summons/Prosecutions Log

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