FORM
5

Application No. :
Reference No. :
(For official use)

FORM 5
ENVIRONMENTAL IMPACT ASSESSMENT ORDINANCE
(CHAPTER 499)
SECTION 13(1)

Application for Variation of an Environmental Permit

PART A PREVIOUS APPLICATIONS

☐ No previous application for variation of an environmental permit.

☑ The environmental permit was previously amended.

Application No. : VEP-510/2016

PART B DETAILS OF APPLICANT

B1. Name : (person or company)

MTR Corporation Limited

[Note : In accordance with section 13(1) of the Ordinance, the person holding an environmental permit or a person who assumes responsibility for the designated project may apply for variation of the environmental permit.]

B2. Business Registration No. : (if applicable) [redacted]

B3. Correspondence Address : [redacted]

B4. Name of Contact Person : [redacted]

B5. Position of Contact Person : [redacted]

B6. Telephone No. : [redacted]

B7. Fax No. : [redacted]

B8. E-mail Address : (if any) [redacted]

PART C DETAILS OF CURRENT ENVIRONMENTAL PERMIT

C1. Name of the Current Environmental Permit Holder :

MTR Corporation Limited

C2. Application No. of the Current Environmental Permit : VEP-510/2016

C3. The Current Environmental Permit was Issued in : month / year

1 1 / 2 0 1 6

Important Notes : Please submit the application together with

(a) 3 copies of this completed form; and

(b) appropriate fee as stipulated in the Environmental Impact Assessment (Fees) Regulation

to the Environmental Protection Department at the following address :

The EIA Ordinance Register Office,
27th floor, Southorn Centre,130 Hennessy Road,
Wan Chai, Hong Kong.

RECEIVED
31 DEC 2018
EIAO Register Office, E.P.D.

☐ Tick (✓) the appropriate box

PART D **PROPOSED VARIATIONS TO THE CONDITIONS IN CURRENT ENVIRONMENTAL PERMIT**

D1. Condition(s) in the Current Environmental Permit	D2. Proposed Variation (s):	D3. Reason for Variation(s):	D4. Describe the environmental changes arising from the proposed variation(s):	D5. Describe how the environment and the community might be affected by the proposed variation(s):	D6. Describe how and to what extent the environmental performance requirements set out in the EIA report previously approved or project profile previously submitted for this project may be affected:	D7. Describe any additional measures proposed to eliminate, reduce or control any adverse environmental impact arising from the proposed variation(s) and to meet the requirements in the Technical Memorandum on Environmental Impact Assessment Process:
Condition 2.31 of the current EP (EP-436/2012/E)	Vary Condition 2.31 as follows: "...the design of the fixed plant noise sources associated with the Project complies with the maximum sound power levels determined in the EIA Report, or otherwise approved by the Director in compliance with the requirements in Technical Memorandum on Environmental Impact Assessment Process having due regard to the characteristics of tonality, impulsiveness and intermittency. ~~The audit report shall also confirm that noise emitted from the fixed noise sources shall be free of the characteristics of tonality, impulsiveness and intermittency.~~ The audit report shall be certified by the ET Leader and verified by the IEC as conforming to the information and recommendations contained in the EIA Report or all relevant documents in the Register."	Based on the latest design information, the arrangement of the fixed plant noise sources at North Ventilation Building, Plant Rooms and Emergency Access (NOV) were reviewed and updated.	The proposed variation of the Project would not result in material change leading to adverse environmental impact with the implementation of the recommended mitigation measures. Please refer to the enclosed Environmental Review Report (ERR) for details.	The proposed variation of the Project would not result in material change leading to adverse environmental impact that would affect the environment and community with the implementation of the recommended mitigation measures. Please refer to the enclosed Environmental Review Report (ERR) for details.	The environmental performance requirements as stated in the approved EIA Report will not be violated due to the proposed variation and the conclusions of the EIA would not be affected. Please refer to the enclosed Environmental Review Report (ERR).	No additional mitigation measure is required for the proposed variation. Please refer to the enclosed Environmental Review Report (ERR) for details.

PART E DECLARATION BY APPLICANT

E1. I hereby certify that the particulars given above are correct and true to the best of my knowledge and belief. I understand the environmental permit may be suspended, varied or cancelled if any information given above is false, misleading, wrong or incomplete.

[redacted] | [redacted] | [redacted]

Signature of Applicant | Full Name in Block Letters | Position

on behalf of MTR Corporation Limited

MTR Corporation Limited 香港鐵路有限公司 MTR-Environment

31st December 2018

Company Name and Chop (as appropriate) | Date

NOTES :

1. A person who constructs or operates a designated project in Part I of Schedule 2 of the Ordinance or decommissions a designated project listed in Part II of Schedule 2 of the Ordinance without an environmental permit or contrary to the permit conditions commits an offence under the Ordinance and is liable to a maximum fine of $5,000,000 and to a maximum imprisonment for 2 years.

2. A person for whom a designated project is constructed, operated or decommissioned and who permits the carrying out of the designated project in contravention of the Ordinance commits an offence and is liable to a maximum fine of $5,000,000 and to a maximum imprisonment for 2 years.

AECOM

MTR Corporation Limited

Consultancy Agreement No. C11033B

Shatin to Central Link–
Hung Hom to Admiralty Section
[SCL (HUH-ADM)]

Environmental Review Report for Update of Fixed Plant Noise Sources at North Ventilation Building, Plant Rooms and Emergency Access (NOV)

December 2018

	Name	Signature
Prepared & Checked:	Angela Tong	
Reviewed & Approved:	pp Josh Lam	

Version:	A	Date: 20 December 2018

AECOM Asia Co. Ltd.
8/F, Grand Central Plaza, Tower 2, 138 Shatin Rural Committee Road, Shatin, NT, Hong Kong
Tel: (852) 3922 9000 Fax: (852) 3922 9797 www.aecom.com

Table of Content

Page

List of Tables

List of Figures

List of Appendices

1 INTRODUCTION

1.1 Background

1.1.1 The Shatin to Central Link (SCL) is a 17km extension of the existing Ma On Shan Line (MOL) and East Rail Line (EAL) comprising (i) The East-West Corridor which extends the MOL from Tai Wai to Hung Hom via East Kowloon to connect with the West Rail Line (WRL) at Hung Hom Station (HUH) and Stabling Sidings at Hung Hom Freight Yard (HHS); and (ii) The North-South Corridor which is an extension of the EAL at Hung Hom across the harbour to Admiralty Station (ADM).

1.1.2 The SCL is covered by a total of 5 Environmental Impact Assessment (EIA) Reports of which EIA Report for SCL – Hung Hom to Admiralty Section [SCL (HUH-ADM)] (Register No.: AEIAR-166/2012) is related to this environmental review. Following the approval of the EIA Report, the Environmental Permit (EP) (EP No: EP-436/2012), covering the construction and operation of SCL (HUH-ADM) (hereinafter referred to as "the Project"), was granted on 22 March 2012. Variations of environmental permit (VEP) have subsequently been applied for and the latest Environmental Permit (EP No: EP-436/2012/E) was issued by Director of Environmental Protection (DEP) on 23 November 2016.

1.1.3 Fixed plant noise impact assessment for each station, ventilation buildings, ventilation shafts and cooling facilities of the Project was conducted during the EIA stage and the maximum sound power level of each fixed plant noise source is presented in the approved EIA Report. Pursuant to EP Condition 2.31, the design of the fixed plant noise sources associated with the Project should comply with the maximum sound power levels determined in the approved EIA Report.

1.1.4 The design of North Ventilation Building, Plant Rooms and Emergency Access (NOV) was refined in the Scheme Design and the associated potential impacts were assessed in Environmental Review Report – Design Changes of North Ventilation Building and Shek O Casting Basin[1] (ERR). The fixed plant noise impact assessment findings in ERR is extracted in **Appendix 1.1**. Subsequent to the completion of Scheme Design, there are further updates on the plant design and additional fixed plant noise sources are proposed. Based on the latest arrangement of fixed plant noise sources at NOV, fixed plant noise assessment has been conducted to review and update the maximum allowable sound power level of each fixed plant noise source at NOV where necessary.

1.1.5 For other fixed plants at other stations and associated facilities of the Project, as there are no updates for the other stations and facilities at this stage, the information in the EIA Report and other relevant document under the Register are still valid.

1.1.6 The nature and scope of the update of fixed plant noise sources are related to potential impact during operational phase only, and there are no changes of construction works boundary and construction method.

1.1.7 Based on the discussion in **Sections 1.1.4** to **1.1.6**, only potential fixed plant noise impact would arise from the latest design of fixed plant noise sources at NOV.

1.2 Purpose of This Report

1.2.1 This Environmental Review Report (ERR) is prepared to review and present the latest findings of the fixed noise impact assessment for NOV pertinent to the updated fixed plant noise information.

1.3 Report Structure

1.3.1 The reminder of this Report comprises the following sections:

[1] Environmental Review Report – Design Changes of North Ventilation Building and Shek O Casting Basin (April 2014) for supporting the application of variation of environmental permit (Application No. VEP-433/2014).

- Section 2 presents the findings and recommendations of fixed plant noise assessment.
- Section 3 presents the conclusions of the assessment.

2 FIXED PLANT NOISE ASSESSMENT

2.1 Introduction

2.1.1 According to the review in **Section 1.1.7**, potential fixed plant noise impact arising from the operation of NOV is assessed in this section.

2.2 Representative Noise Sensitive Receiver

2.2.1 A review of the existing and planned noise sensitive receivers (NSRs) located in the vicinity of the NOV was conducted. The representative NSR identified in the ERR remains valid and no additional NSR was identified. The representative NSR as extracted from Table 7.1 of ERR is shown in **Table 2.2**. The location of the representative NSR for fixed plant noise assessment at NOV is shown in **Figure no. C11033B/C/SCL/ACM/M63/131.**

Table 2.1 Representative Noise Sensitive Receiver

NSR ID	Description	Land Use	Existing / Planned NSR	Area Sensitivity Rating
HH9b	Harbourfront Horizon (with centralised fresh-air supply)	Commercial/ Service Apartment	Existing	B(1)

Note:
(1) NSR is located in urban area and is not affected by any influencing factor.

2.3 Sources of Noise Impact

2.3.1 A summary of the updated fixed plant noise sources at NOV has been prepared according to the latest arrangement of fixed plant noise sources and is presented in **Table 2.2**. Locations of the fixed plant noise sources are illustrated in **Figure No. C11033B/C/SCL/ACM/M63/131.**

Table 2.2 Identified Fixed Plant Noise Sources

Plant Item(1)	Direction Facing
NOV VS1	Top
NOV VS2	Top
NOV-LV-03	East
NOV-LV-04	North
NOV-LV-05	North
NOV-LV-06	West
NOV-LV-07	West
NOV-LV-09	South
NOV-LV-10	North
NOV-LV-12	South
NOV-LV-13	South-East
NOV-LV-19	South
NOV-LV-22	South
NOV-LV-24	East
NOV-LV-26	North

Note:
(1) "VS" stands for Vent Shaft for Tunnel Ventilation and "LV" stands for Lourve for Building Ventilation.

2.4 Evaluation of Noise Impact

2.4.1 The approach for fixed plant noise assessment follows the same methodology and assumption used in the EIA Report. The maximum permissible sound power levels (SWLs) of the identified fixed noise sources louvers were determined by adopting standard acoustics principles.

2.4.2 It is expected that fixed plant noise impact from the operation of the proposed HUH and HHS which is considered under SCL (MKK-HUH) and SCL (HHS) projects would result in cumulative impact on the representative NSR. Based on the best available information of fixed plant noise sources at HUH and HHS[2] (**Appendix 2.1** refers), the potential cumulative fixed plant noise impact arising from the louvres of HUH, HHS and NOV, which are located within 300m from the representative NSR, has been assessed for checking compliance with the noise criterion stipulated in the *Technical Memorandum on Noise from Places other than Domestic Premises, Public Places or Construction Sites* (IND-TM). **Table 2.3** shows the maximum SWLs calculated for the identified fixed noise sources. Details of the calculation are given in **Appendix 2.2**.

Table 2.3 Maximum Allowable SWLs for the Fixed Plant Noise Sources at NOV

Plant ID	Direction Facing	Maximum allowable Sound Power Level, dB(A)(1)	
		Day and Evening (0700 to 2300 hours)	Night (2300 to 0700 hours)
NOV VS1	Top	97	87
NOV VS2	Top	97	87
NOV-LV-03	East	95	85
NOV-LV-04	North	95	85
NOV-LV-05	North	104	94
NOV-LV-06	West	102	92
NOV-LV-07	West	107	97
NOV-LV-09	South	97	87
NOV-LV-10	North	94	84
NOV-LV-12	South	96	86
NOV-LV-13	South-East	95	85
NOV-LV-19	South	91	81
NOV-LV-22	South	98	88
NOV-LV-24	East	91	81
NOV-LV-26	North	91	81

Note:
(1) If the noise exhibits any tonality, intermittency or impulsiveness characteristics during the operation of the plant, the noise design limit should be reduced to take into account the corrections, in the range of 3 to 6 dB(A), in accordance with the recommendation given in Section 3.3 of IND-TM.

2.4.3 Provided that the fixed plants in NOV are properly designed to meet the maximum allowable SWLs listed in **Table 2.3**, and the SWLs of fixed plants in HHS and HUH meet with those listed in **Appendix 2.2**, there would be no residual impacts predicted.

2.4.4 The fixed plant noise assessment is considered to be conservative by assuming simultaneous operation of all noise sources. Nonetheless, the Contractor shall install acoustic silencers, noise barriers, and acoustic louvers where appropriate to ensure that the specified maximum SWLs shown in **Table 2.3** will not be exceeded. As stipulated in EP (EP-436/2012/E) Condition 2.31, a fixed plant noise audit shall be carried out to demonstrate that the Project complies with the EIAO-TM and relevant environmental legislation. If the selected equipment could not be free of characteristics of tonality, impulsiveness and intermittency, their effects would be considered in accordance with Section 3.3 of the IND-TM under the Noise Control Ordinance. Without contravention of the IND-TM, corrections of tonality, impulsiveness and intermittency shall be applied where necessary to the measured SWL for obtaining the corrected SWL during the fixed plant noise audit and commissioning test.

[2] Environmental Review Report for Update of Fixed Plant Noise Sources at Hung Hom Station (HUH) and Stabling Siding at Hung Hom Freight Yard (HHS) for supporting the application of variation of Environmental Permit EP-437/2012/A (Application No. VEP-535/2017). Excerpt of this ERR is provided in Appendix 2.1.

2.5 Environmental Monitoring and Audit

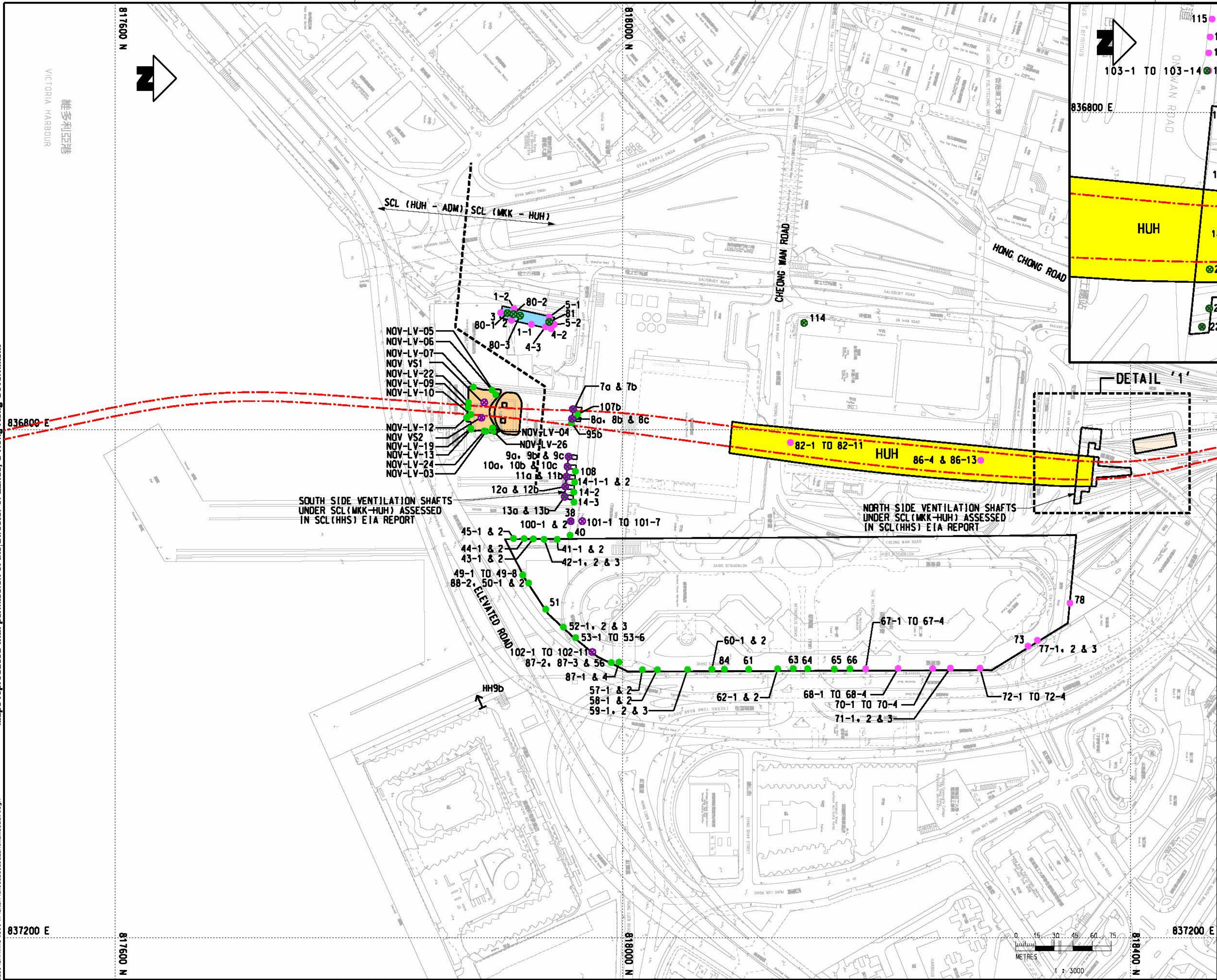
2.5.1 Since there is no adverse noise impacts anticipated, no additional monitoring and audit requirements for the proposed variations are required. The EM&A requirements as recommended in the EM&A Manual are still valid.

3 CONCLUSION

3.1.1 Based on the assessment results presented in **Section 2.4**, the maximum allowable SWLs at the fixed plant noise sources at NOV are considered achievable to minimise the fixed plant noise impacts. As stipulated in EP (EP-436/2012/E) Condition 2.31, a fixed plant noise audit shall be carried out to demonstrate that the Project complies with the EIAO-TM and relevant environmental legislation.

3.1.2 It is concluded that the fixed plant noise sources at NOV, with the adoption of maximum allowable SWLs, would comply with EIAO-TM requirements and would not induce adverse environmental impacts exceeding or violating the environmental performance in the approved SCL (HUH - ADM) EIA Report, and thus the proposed variations would not result in material change. No additional monitoring and audit requirements are therefore required due to the change of maximum allowable SWLs at the fixed plant noise sources at NOV.

Figure



NOTES:

1. SHORT FORM OF SOURCE IDS ARE ADOPTED IN THE FIGURE. THE FULL ID OF SOURCES LOCATED AT HUH AND HHS ARE NAMED AS HUH-XX AND HHS-XX RESPECTIVELY AS SHOWN IN APPENDIX 2.1 OF THIS ERR.
2. NSR HH9b AS IDENTIFIED IN SCL(HUH-ADM) EIA REPORT IS SAME AS THE NSR HUH-10-1 AS IDENTIFIED IN SCL(HHS) EIA REPORT. TO AVOID CONFUSION, NSR ID FOLLOWING SCL(HUH-ADM) EIA REPORT HAS BEEN ADOPTED IN THIS ASSESSMENT.

LEGEND:

- SCL ALIGNMENT
- HUNG HOM STATION
- TRANSFORMER ROOM
- COOLING TOWER
- NORTH VENTILATION BUILDING (NOV)
- NSR LOCATION
- APPROXIMATE NOISE SOURCE LOCATION (FACADE) WITHIN 300m OF HH9b
- APPROXIMATE NOISE SOURCE LOCATION (FACADE) OUTSIDE 300m OF HH9b
- APPROXIMATE NOISE SOURCE LOCATION (TOP) WITHIN 300m OF HH9b
- APPROXIMATE NOISE SOURCE LOCATION (TOP) OUTSIDE 300m OF HH9b

ABBREVIATIONS:

SCL	SHATIN TO CENTRAL LINK
SCL (MKK - HUH)	SHATIN TO CENTRAL LINK - MONG KOK EAST TO HUNG HOM SECTION
SCL (HUH - ADM)	SHATIN TO CENTRAL LINK - HUNG HOM TO ADMIRALTY SECTION
SCL (HHS)	SHATIN TO CENTRAL LINK - STABLING SIDINGS AT HUNG HOM FREIGHT YARD

PLOT DRV: v:\ustnset\MTR\PLOTDRIVER\WINDOWS\A3 COLOUR.plt
MODELNAME: Default PRINTED BY: GaoYU 12/13 *** IT02101
FILENAME: P:\projects\60280233\DRAWING\000\K\ENSR\C11033B_C_SCL_ACM_M63_131A.dgn

REV	DESCRIPTION	BY	DATE	APPROVED	REV	DESCRIPTION	BY	DATE	APPROVED

DRAWN	ZFX
DESIGNED	---
CHECKED	---
APPROVED	---
DATE	18/JUL/2018

MTR

SHATIN TO CENTRAL LINK

ORIGINATOR

AECOM

CADD REF. C11033B_C_SCL_ACM_M63_131A.dgn

TITLE

C11033B

SCL (HUH - ADM)

LOCATIONS OF REPRESENTATIVE NSR AND FIXED PLANT NOISE SOURCES AT HUNG HOM AND NOV

SCALE 1 : 3000 (A3)

FIGURE NO. C11033B/C/SCL/ACM/M63/131

REV. A

Appendix 1.1

Excerpt of Environmental Review Report – Design Changes of North Ventilation Building and Shek O Casting Basin (April 2014)

7 AIRBORNE NOISE IMPACT ASSESSMENT

7.1 Introduction

7.1.1 Airborne noise impact assessment was undertaken for the construction and operation of SCL (HUH-ADM) in the EIA Report. Based on the preliminary review in **Section 2.4.2**, potential airborne noise impact arising from the operation of NOV is reviewed in this section.

7.1.2 For the proposed changes in Shek O, as discussed in **Section 2.4.7**, there would be no adverse construction noise impact at the noise sensitive receivers located at 300m away as similar plant inventory would be adopted for the construction works.

7.2 Representative Noise Sensitive Receivers

7.2.1 A review of the existing and planned noise sensitive receivers (NSRs) located in the vicinity of the proposed changes was conducted based on the latest available information. The representative NSRs identified in the EIA Report remain valid and no additional NSR was identified. **Table 7.1** present the details of representative NSRs for fixed plant noise impact assessment. Location of the representative NSRs are shown in **Figure No. C11033B/C/SCL/ACM/M52/111**.

Table 7.1 Representative Noise Sensitive Receiver for Operational Airborne Noise (Fixed Plant Noise) Impact Assessment

NSR ID	Description	Land Use	Existing / Planned NSR	Area Sensitivity Rating
HH9b	Harbourfront Horizon (with centralised fresh-air supply)	Commercial Service Apartment	Existing	B(1)

Note:
(1) NSR is located in urban area and is not affected by any influencing factors.

7.3 Sources of Noise Impact

7.3.1 As a result of the design changes, the design, number and locations of fixed plant noise sources at NOV have to be altered accordingly. Based on the current design, the major fixed plant noise sources identified at NOV are exhaust/intakes of ventilation shafts.

7.3.2 A summary of the updated fixed plant noise sources at NOV is presented in **Table 7.2**. Locations of the fixed plant noise sources are illustrated in **Figure No. C11033B/C/SCL/ACM/M52/111.**

Table 7.2 Identified Fixed Plant Noise Sources

Plant Item	Direction Facing
NOV VS1	Top
NOV VS2	Top
NOV VS3	North
NOV VS4	North
NOV VS5A	East
NOV VS5B	East
NOV VS6	South
NOV VS7	West
NOV VS8	West
NOV VS9A	North
NOV VS9B	North
NOV VS10	West
NOV VS11	East

7.4 Evaluation of Noise Impact

7.4.1 The approach for fixed plant noise assessment follows the same methodology and assumption used in the EIA Report. The maximum permissible sound power levels (SWLs) of the identified fixed noise sources louvers were determined by adopting standard acoustics principles. The cumulative noise levels from all louvres on different facades have been assessed for compliance with the noise criterion stipulated in the *Technical Memorandum on Noise from Places other than Domestic Premises, Public Places or Construction Sites* (IND-TM). It is expected that fixed plant noise impact from the operation of the proposed HUH and HHS which is considered under SCL (MKK-HUH) and SCL (HHS) projects would result in cumulative impact on the NSR. The potential cumulative fixed plant noise impact arising from the operation of the HHS, HUH and NOV was therefore considered in this assessment. **Table 7.3** shows the maximum SWLs calculated for the identified fixed noise sources. Details of the calculation are given in **Appendix 7.1**.

Table 7.3 Maximum Sound Power Levels of the Identified Fixed Plant Noise Sources

Plant item	Direction Facing	Maximum allowable SWL, dB(A)[1]	
		Day and Evening (0700 to 2300 hours)	Night (2300 to 0700 hours)
NOV VS1	Top	94	84
NOV VS2	Top	94	84
NOV VS3	North	101	91
NOV VS4	North	92	82
NOV VS5A	East	92	82
NOV VS5B	East	92	82
NOV VS6	South	93	83
NOV VS7	West	104	94
NOV VS8	West	99	89
NOV VS9A	North	95	85
NOV VS9B	North	94	84
NOV VS10	West	102	92
NOV VS11	East	93	83

Remark:
(1) If the noise exhibits any tonality, intermittency or impulsiveness characteristics during the operation of the plant, the noise design limit should be reduced to take into account the corrections, in the range of 3 to 6 dB(A), in accordance with the recommendation given in Section 3.3 of IND-TM.

7.4.2 Provided that the fixed plants are properly designed to meet the maximum allowable SWLs listed in **Table 7.3**, there would be no residual impacts predicted. Notwithstanding this, it is recommended that the following noise reduction measures should be considered as far as practicable:

- Choose quieter plant such as those which have been effectively silenced.
- Include noise levels specification when ordering new plant (including E/M equipment).
- Locate fixed plant/louvres away from any NSRs as far as practicable.
- Locate fixed plant in walled plant rooms or in specially designed enclosures.
- Locate noisy machines in a basement.
- Install direct noise mitigation measures including silencers, acoustic louvres and acoustic enclosure where necessary.
- Develop and implement a regularly scheduled plant maintenance programme so that equipment is properly operated and serviced in order to maintain controlled level of noise. The programme should be implemented by properly trained personnel.

7.5 Environmental Monitoring and Audit

7.5.1 Since there is no adverse noise impacts anticipated, no additional monitoring and audit requirements for the proposed variations are required. The EM&A requirements as recommended in the EM&A Manual are still valid.

817600 N
818000 N
818400 N
836800 E
837200 E

SCL (HUH - ADM)
SCL (MKK - HUH)
CHEONG WAN ROAD
HONG CHONG ROAD
ELEVATED ROAD
HUH UNDER SCL (MKK - HUH)
COOLING TOWER UNDER SCL (MKK - HUH)
HUNG HOM

VS-HUH-1
VS-HUH-2
VS-HUH-3
VS-HUH-4
VS-HUH-24
VS-HUH-25
VS-HUH-26
NOV VS1
NOV VS2
NOV VS3
NOV VS4
NOV VS5A
NOV VS5B
NOV VS6
NOV VS7
NOV VS8
NOV VS9A
NOV VS9B
NOV VS10
NOV VS11
NOV
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23

SOUTH SIDE VENTILATION SHAFTS (VS-HUH- 7 TO 14) UNDER SCL (MKK-HUH) ASSESSED IN SCL(HHS) EIA (AEIAR-164/2012)

NORTH SIDE VENTILATION SHAFTS (VS-HUH-15 TO 23) UNDER SCL (MKK-HUH) ASSESSED IN SCL(HHS) EIA (AEIAR-164/2012)

VS-HHS-1
VS-HHS-2
VS-HHS-3
VS-HHS-4
VS-HHS-5
VS-HHS-6
VS-HHS-7
VS-HHS-8
VS-HHS-9
VS-HHS-10
VS-HHS-11
VS-HHS-12
VS-HHS-13
VS-HHS-14
VS-HHS-15

HH9b

0 15 30 45 60 75
METRES
1 : 3000

LEGEND:

- SCL ALIGNMENT
- 300m STUDY AREA
- ABOVEGROUND STRUCTURES
- PROPOSED VENTILATION SHAFTS
- HH9b — AIRBORNE NSR
- VENTILATION SHAFTS UNDER SCL(MKK-HUH) OR SCL(HHS) ASSESSED IN SCL(HHS) EIA (AEIAR-164/2012) WITHIN 300m OF HH9b
- VENTILATION SHAFTS UNDER SCL(MKK-HUH) OR SCL(HHS) ASSESSED IN SCL (HHS) EIA (AEIAR-164/2012) OUTSIDE 300m OF HH9b

ABBREVIATIONS:

SCL	SHATIN TO CENTRAL LINK
HUH	HUNG HOM STATION
NOV	NORTH VENTILATION BUILDING
SCL (MKK - HUH)	SHATIN TO CENTRAL LINK - MONG KOK EAST TO HUNG HOM SECTION
SCL (HUH - ADM)	SHATIN TO CENTRAL LINK - HUNG HOM TO ADMIRALTY SECTION
SCL (HHS)	SHATIN TO CENTRAL LINK - STABLING SIDINGS AT HUNG HOM FREIGHT YARD

REPRESNTATIVE NOISE SENSITIVE RECEIVER		OPERATION PHASE
		FIXED SOURCE
HH9b	HARBOURFRONT HORIZON	Y

REV	DESCRIPTION	BY	DATE	APPROVED

DRAWN	YJP
DESIGNED	---
CHECKED	---
APPROVED	---
DATE	23/SEP/2013

MTR

SHATIN TO CENTRAL LINK

ORIGINATOR: AECOM

CADD REF. C11033B_C_SCL_ACM_M52_111A.dgn

TITLE
C11033B
SCL (HUH - ADM)
LOCATION OF NOISE SENSITIVE RECEIVER AND FIXED PLANT NOISE SOURCES AT NOV

SCALE 1 : 3000 (A3)
FIGURE NO. C11033B/C/SCL/ACM/M52/111
REV. A

PLOT DRV: \\ustrnse1\MTR\PLOTDRIVER\WINDOWS\A3 COLOUR.plt
MODELNAME: Default
FILENAME: P:\Projects\60280233\DRAWING\0000\K\ENSR\C11033B_C_SCL_ACM_M52_WA.dgn
PRINTED BY: PENWW
2013/12/30 17:05:48

Appendix 2.1

Excerpt of Environmental Review Report for Update of Fixed Plant Noise Sources at Hung Hom Station (HUH) and Stabling Siding at Hung Hom Freight Yard (HHS) (October 2017)

Notes:
(1) Day: 0700 to 1900 hours, Evening: 1900 to 2300 hours, Night: 2300 to 0700 hours.
(2) Prevailing background noise level determined based on the measurement result recorded at the representative location nearest to the respective NSR as shown in Appendix 8.1 of the SCL (HHS) EIA Report.
(3) A 5 dB(A) has been deducted from ANL as specified in requirement of TM-EIAO.
(4) The minimum of (2) & (3) is adopted.

2.5 Assessment Methodology

2.5.1 The following approach, which is the same as that adopted in the approved EIA Reports, has been adopted for the fixed noise assessment:

- Identify and locate representative NSRs that may be affected by the noise sources;
- Determine the noise criteria for both daytime and night-time;
- Use standard acoustic principle for attenuation and directivity; and
- Determine the maximum allowable SWLs for the fixed noise sources.

2.6 Assessment Result

2.6.1 Based on the latest design information, the fixed plant noise assessment has been conducted and details of the assessment results are presented in **Appendix 2.1**. The predicted maximum allowable SWLs for the fixed noise sources at HUH and HHS are summarised in **Table 2.4**.

Table 2.4 Maximum Allowable SWLs for the Fixed Plant Noise Sources at HUH and HHS

Station/Location	Plant ID	Maximum Allowable Sound Power Level, dB(A)	
		Daytime	Night-time
Hung Hom Station (HUH)	HUH-1-1	108	98
	HUH-1-2	113	103
	HUH-2	113	103
	HUH-3	113	103
	HUH-4-2	93	83
	HUH-4-3	93	83
	HUH-5-1	93	83
	HUH-5-2	93	83
	HUH-7a	90	80
	HUH-7b	90	80
	HUH-8a	91	81
	HUH-8b	90	80
	HUH-8c	90	80
	HUH-9a	91	81
	HUH-9b	91	81
	HUH-9c	91	81
	HUH-10a	91	81

Station/Location	Plant ID	Maximum Allowable Sound Power Level, dB(A)	
		Daytime	Night-time
	HUH-10b	91	81
	HUH-10c	91	81
	HUH-11a	91	81
	HUH-11b	91	81
	HUH-12a	91	81
	HUH-12b	91	81
	HUH-13a	91	81
	HUH-13b	91	81
	HUH-14-1-1	91	81
	HUH-14-1-2	91	81
	HUH-14-2	91	81
	HUH-14-3	91	81
	HUH-15-1	94	84
	HUH-15-2	94	84
	HUH-15-3	94	84
	HUH-16a	89	79
	HUH-16b	89	79
	HUH-17	94	84
	HUH-18	90	80
	HUH-19a	93	83
	HUH-19b	96	86
	HUH-20	90	80
	HUH-21a	93	83
	HUH-21b	93	83
	HUH-22a	93	83
	HUH-22b	93	83
	HUH-26H	93	83
	HUH-27H	93	83
	HUH-29	93	83
	HUH-30H	94	84
	HUH-32H	94	84
	HUH-33H	93	83
	HUH-37H	98	88
	HUH-80-1	113	103
	HUH-80-2	113	103
	HUH-80-3	113	103
	HUH-81	93	83
	HUH-82-1	88	78

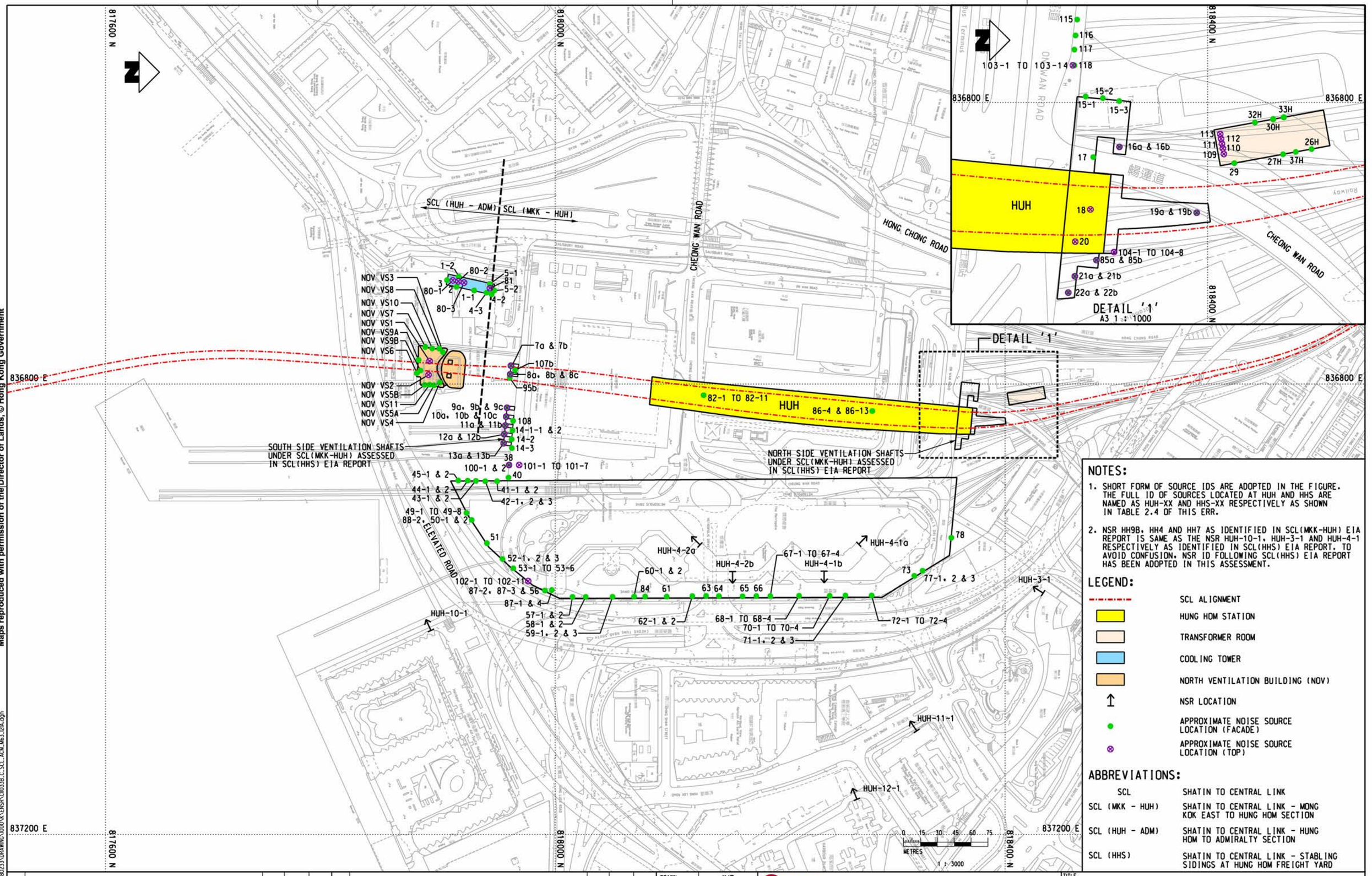
Station/Location	Plant ID	Maximum Allowable Sound Power Level, dB(A)	
		Daytime	Night-time
	HUH-82-2	88	78
	HUH-82-3	88	78
	HUH-82-4	88	78
	HUH-82-5	88	78
	HUH-82-6	88	78
	HUH-82-7	88	78
	HUH-82-8	88	78
	HUH-82-9	88	78
	HUH-82-10	88	78
	HUH-82-11	88	78
	HHS-84	86	76
	HUH-85a	91	81
	HUH-85b	91	81
	HUH-86-4	89	79
	HUH-86-13	89	79
	HUH-95b	91	81
	HUH-103-1	91	81
	HUH-103-2	91	81
	HUH-103-3	91	81
	HUH-103-4	91	81
	HUH-103-5	91	81
	HUH-103-6	91	81
	HUH-103-7	91	81
	HUH-103-8	91	81
	HUH-103-9	91	81
	HUH-103-10	91	81
	HUH-103-11	91	81
	HUH-103-12	91	81
	HUH-103-13	91	81
	HUH-103-14	91	81
	HUH-104-1	88	78
	HUH-104-2	88	78
	HUH-104-3	88	78
	HUH-104-4	88	78
	HUH-104-5	88	78
	HUH-104-6	88	78
	HUH-104-7	88	78
	HUH-104-8	88	78

Station/Location	Plant ID	Maximum Allowable Sound Power Level, dB(A)	
		Daytime	Night-time
	HUH-107b	88	78
	HUH-108	88	78
	HUH-109	88	78
	HUH-110	88	78
	HUH-111	88	78
	HUH-112	88	78
	HUH-113	88	78
	HUH-115	88	78
	HUH-116	88	78
	HUH-117	88	78
	HUH-118	88	78
Stabling Sidings at Hung Hom Freight Yard	HHS-38	88	78
	HHS-40	88	78
	HHS-41-1	85	75
	HHS-41-2	85	75
	HHS-42-1	85	75
	HHS-42-2	85	75
	HHS-42-3	85	75
	HHS-43-1	85	75
	HHS-43-2	85	75
	HHS-44-1	85	75
	HHS-44-2	85	75
	HHS-45-1	85	75
	HHS-45-2	85	75
	HHS-49-1	85	75
	HHS-49-2	85	75
	HHS-49-3	85	75
	HHS-49-4	85	75
	HHS-49-5	85	75
	HHS-49-6	85	75
	HHS-49-7	85	75
	HHS-49-8	85	75
	HHS-50-1	83	73
	HHS-50-2	83	73
	HHS-51	83	73
	HHS-52-1	83	73
	HHS-52-2	83	73
	HHS-52-3	83	73

Station/Location	Plant ID	Maximum Allowable Sound Power Level, dB(A)	
		Daytime	Night-time
	HHS-53-1	83	73
	HHS-53-2	83	73
	HHS-53-3	83	73
	HHS-53-4	83	73
	HHS-53-5	83	73
	HHS-53-6	83	73
	HHS-56	87	77
	HHS-57-1	85	75
	HHS-57-2	85	75
	HHS-58-1	85	75
	HHS-58-2	85	75
	HHS-59-1	85	75
	HHS-59-2	85	75
	HHS-59-3	85	75
	HHS-60-1	85	75
	HHS-60-2	85	75
	HHS-61	85	75
	HHS-62-1	85	75
	HHS-62-2	85	75
	HHS-63	85	75
	HHS-64	85	75
	HHS-65	85	75
	HHS-66	86	76
	HHS-67-1	86	76
	HHS-67-2	86	76
	HHS-67-3	86	76
	HHS-67-4	86	76
	HHS-68-1	86	76
	HHS-68-2	86	76
	HHS-68-3	86	76
	HHS-68-4	86	76
	HHS-70-1	86	76
	HHS-70-2	86	76
	HHS-70-3	86	76
	HHS-70-4	86	76
	HHS-71-1	86	76
	HHS-71-2	86	76
	HHS-71-3	86	76

Station/Location	Plant ID	Maximum Allowable Sound Power Level, dB(A)	
		Daytime	Night-time
	HHS-72-1	86	76
	HHS-72-2	86	76
	HHS-72-3	86	76
	HHS-72-4	86	76
	HHS-73	86	76
	HHS-77-1	93	83
	HHS-77-2	93	83
	HHS-77-3	93	83
	HHS-78	93	83
	HHS-87-1	86	76
	HHS-87-2	86	76
	HHS-87-3	86	76
	HHS-87-4	86	76
	HHS-88-2	83	73
	HHS-100-1	98	88
	HHS-100-2	98	88
	HHS-101-1	98	88
	HHS-101-2	98	88
	HHS-101-3	98	88
	HHS-101-4	98	88
	HHS-101-5	98	88
	HHS-101-6	98	88
	HHS-101-7	98	88
	HHS-102-1	83	73
	HHS-102-2	83	73
	HHS-102-3	83	73
	HHS-102-4	83	73
	HHS-102-5	83	73
	HHS-102-6	83	73
	HHS-102-7	83	73
	HHS-102-8	83	73
	HHS-102-9	83	73
	HHS-102-10	83	73
	HHS-102-11	83	73

2.6.2 The fixed plant noise assessment is considered to be conservative by assuming simultaneous operation of all noise sources. Nonetheless, the Contractor shall install acoustic silencers, noise barriers, and acoustic louvers where appropriate to ensure that the specified maximum SWLs shown in **Table 2.4** will not be exceeded. As stipulated in EP (EP-437/2012) Condition



NOTES:

1. SHORT FORM OF SOURCE IDS ARE ADOPTED IN THE FIGURE. THE FULL ID OF SOURCES LOCATED AT HUH AND HHS ARE NAMED AS HUH-XX AND HHS-XX RESPECTIVELY AS SHOWN IN TABLE 2.4 OF THIS ERR.
2. NSR HH9B, HH4 AND HH7 AS IDENTIFIED IN SCL(MKK-HUH) EIA REPORT IS SAME AS THE NSR HUH-10-1, HUH-3-1 AND HUH-4-1 RESPECTIVELY AS IDENTIFIED IN SCL(HHS) EIA REPORT. TO AVOID CONFUSION, NSR ID FOLLOWING SCL(HHS) EIA REPORT HAS BEEN ADOPTED IN THIS ASSESSMENT.

LEGEND:

- SCL ALIGNMENT
- HUNG HOM STATION
- TRANSFORMER ROOM
- COOLING TOWER
- NORTH VENTILATION BUILDING (NOV)
- NSR LOCATION
- APPROXIMATE NOISE SOURCE LOCATION (FACADE)
- APPROXIMATE NOISE SOURCE LOCATION (TOP)

ABBREVIATIONS:

SCL	SHATIN TO CENTRAL LINK
SCL (MKK - HUH)	SHATIN TO CENTRAL LINK - MONG KOK EAST TO HUNG HOM SECTION
SCL (HUH - ADM)	SHATIN TO CENTRAL LINK - HUNG HOM TO ADMIRALTY SECTION
SCL (HHS)	SHATIN TO CENTRAL LINK - STABLING SIDINGS AT HUNG HOM FREIGHT YARD

PLOT DRV: \\ustrnse1\WTR\PLOTDRIVER\WINDOWS\A3_COLOUR.plt
MODEL NAME: DefaultPRINTED BY: ZENGFA 2017/9/14
FILENAME: P:\projects\60280233\DRAWING\0000\ACENSR\C11033B_C_SCL_ACM_M63_121A.dgn

REV	DESCRIPTION	BY	DATE	APPROVED

DRAWN	YJP
DESIGNED	---
CHECKED	---
APPROVED	---
DATE	10/APR/2017

MTR

SHATIN TO CENTRAL LINK

ORIGINATOR

AECOM

CADD REF. C11033B_C_SCL_ACM_M63_121A.dgn

TITLE

C11033B
SCL (HUH - ADM)
LOCATIONS OF REPRESENTATIVE NOISE SENSITIVE RECEIVERS AND FIXED PLANT NOISE SOURCES AT HUHG HOM

SCALE	FIGURE NO.	REV.
1 : 3000 (A3)	C11033B/C/SCL/ACM/M63/121	A

Appendix 2.2

Fixed Plant Noise Assessment Results at NOV

Appendix 2.2 Fixed Plant Noise Assessment Results at NOV

Fixed Plant Noise Calculation - HH9b

Noise Assessment Points	Description	Plant item	Direction Facing	Horizontal Distance , m [1]	SWL, dB(A)	Correction for line of sight [2], dB(A)	Distance Correction of Point Source, dB(A)	Façade Correction, dB(A)	Predicted SPL, dB(A)	Total SPL, dB(A)	NCO Daytime Noise Criteria, dB(A)
Hung Hom Station Ventilation Shaft											
HH9b											
Day and Evening											
HH9b	Harbourfront Horizon	HUH-1-1	East	304	108	0	-58	3	-		
		HUH-1-2	West	315	113	-10	-58	3	-		
		HUH-2	East	306	113	0	-58	3	-		
		HUH-3	South	311	113	0	-58	3	-		
		HUH-4-2	North	304	93	0	-58	3	-		
		HUH-4-3	East	304	93	0	-58	3	-		
		HUH-5-1	West	312	93	-10	-58	3	-		
		HUH-5-2	North	307	93	0	-58	3	-		
		HUH-7a	Top	246	90	0	-56	3	37		
		HUH-7b	South	246	90	0	-56	3	37		
		HUH-8a	Top	238	91	0	-56	3	38		
		HUH-8b	South	238	90	0	-56	3	37		
		HUH-8c	East	238	90	0	-56	3	37		
		HUH-9a	Top	209	91	0	-54	3	40		
		HUH-9b	South	209	91	0	-54	3	40		
		HUH-9c	East	209	91	0	-54	3	40		
		HUH-10a	Top	201	91	0	-54	3	40		
		HUH-10b	South	201	91	0	-54	3	40		
		HUH-10c	East	201	91	0	-54	3	40		
		HUH-11a	Top	194	91	0	-54	3	40		
		HUH-11b	South	194	91	0	-54	3	40		
		HUH-12a	Top	186	91	0	-53	3	41		
		HUH-12b	South	186	91	0	-53	3	41		
		HUH-13a	Top	178	91	0	-53	3	41		
		HUH-13b	South	178	91	0	-53	3	41		
		HUH-14-1-1	South	192	91	0	-54	3	40		
		HUH-14-1-2	South	192	91	0	-54	3	40		
		HUH-14-2	South	184	91	0	-53	3	41		
		HUH-14-3	South	177	91	0	-53	3	41		
		HUH-15-1	West	523	94	-10	-62	3	-		
		HUH-15-2	West	528	94	-10	-62	3	-		
		HUH-15-3	West	532	94	-10	-63	3	-		
		HUH-16a	Top	526	89	-10	-62	3	-		
		HUH-16b	East	526	89	-10	-62	3	-		
		HUH-17	North	518	94	-10	-62	3	-		
		HUH-18	Top	511	90	-10	-62	3	-		
		HUH-19a	Top	540	93	-10	-63	3	-		
		HUH-19b	North	540	96	-10	-63	3	-		
		HUH-20	Top	504	90	-10	-62	3	-		
		HUH-21a	Top	500	93	-10	-62	3	-		
		HUH-21b	North	500	93	-10	-62	3	-		
		HUH-22a	Top	497	93	-10	-62	3	-		
		HUH-22b	North	497	93	-10	-62	3	-		
		HUH-26H	East	579	93	-10	-63	3	-		
		HUH-27H	East	570	93	-10	-63	3	-		
		HUH-29	East	556	93	-10	-63	3	-		
		HUH-30H	West	571	94	-10	-63	3	-		
		HUH-32H	West	566	94	-10	-63	3	-		
		HUH-33H	West	575	93	-10	-63	3	-		
		HUH-37H	East	574	98	-10	-63	3	-		
		HHS-38	South	163	88	0	-52	3	39		
		HHS-40	South	152	88	-10	-52	3	29		
		HHS-41-1	West	145	85	-10	-51	3	27		
		HHS-41-2	West	145	85	-10	-51	3	27		
		HHS-42-1	West	141	85	-10	-51	3	27		
		HHS-42-2	West	141	85	-10	-51	3	27		
		HHS-42-3	West	141	85	-10	-51	3	27		
		HHS-43-1	West	139	85	-10	-51	3	27		
		HHS-43-2	West	139	85	-10	-51	3	27		
		HHS-44-1	West	137	85	-10	-51	3	27		
		HHS-44-2	West	137	85	-10	-51	3	27		
		HHS-45-1	West	135	85	-10	-51	3	27		
		HHS-45-2	West	135	85	-10	-51	3	27		
		HHS-49-1	East	109	85	0	-49	3	39		
		HHS-49-2	East	109	85	0	-49	3	39		
		HHS-49-3	East	109	85	0	-49	3	39		
		HHS-49-4	East	109	85	0	-49	3	39		
		HHS-49-5	East	109	85	0	-49	3	39		
		HHS-49-6	East	109	85	0	-49	3	39		
		HHS-49-7	East	109	85	0	-49	3	39		
		HHS-49-8	East	109	85	0	-49	3	39		
		HHS-50-1	East	105	83	0	-48	3	38		
		HHS-50-2	East	105	83	0	-48	3	38		
		HHS-51	East	92	83	0	-47	3	39		
		HHS-52-1	East	90	83	0	-47	3	39		
		HHS-52-2	East	90	83	0	-47	3	39		
		HHS-52-3	East	90	83	0	-47	3	39		
		HHS-53-1	East	92	83	0	-47	3	39		
		HHS-53-2	East	92	83	0	-47	3	39		
		HHS-53-3	East	92	83	0	-47	3	39		
		HHS-53-4	East	92	83	0	-47	3	39		
		HHS-53-5	East	92	83	0	-47	3	39		
		HHS-53-6	East	92	83	0	-47	3	39		
		HHS-56	East	107	87	0	-49	3	41		
		HHS-57-1	East	129	85	0	-50	3	38		
		HHS-57-2	East	129	85	0	-50	3	38		
		HHS-58-1	East	141	85	0	-51	3	37		
		HHS-58-2	East	141	85	0	-51	3	37		
		HHS-59-1	East	164	85	0	-52	3	36		
		HHS-59-2	East	164	85	0	-52	3	36		
		HHS-59-3	East	164	85	0	-52	3	36		
		HHS-60-1	East	183	85	0	-53	3	35		
		HHS-60-2	East	183	85	0	-53	3	35		
		HHS-61	East	211	85	0	-54	3	34		
		HHS-62-1	East	234	85	0	-55	3	33		
		HHS-62-2	East	234	85	0	-55	3	33		
		HHS-63	East	247	85	0	-56	3	32		
		HHS-64	East	258	85	0	-56	3	32		
		HHS-65	East	279	85	0	-57	3	31		
		HHS-66	East	291	86	0	-57	3	32		
		HHS-67-1	East	303	86	0	-58	3	-		
		HHS-67-2	East	303	86	0	-58	3	-		
		HHS-67-3	East	303	86	0	-58	3	-		
		HHS-67-4	East	303	86	0	-58	3	-		
		HHS-68-1	East	329	86	0	-58	3	-		
		HHS-68-2	East	329	86	0	-58	3	-		
		HHS-68-3	East	329	86	0	-58	3	-		
		HHS-68-4	East	329	86	0	-58	3	-		
		HHS-70-1	East	356	86	0	-59	3	-		
		HHS-70-2	East	356	86	0	-59	3	-		
		HHS-70-3	East	356	86	0	-59	3	-		
		HHS-70-4	East	356	86	0	-59	3	-		

Appendix 2.2 Fixed Plant Noise Assessment Results at NOV

Fixed Plant Noise Calculation - HH9b

		HHS-71-1	East	370	86	0	-59	3	-		
		HHS-71-2	East	370	86	0	-59	3	-		
		HHS-71-3	East	370	86	0	-59	3	-		
		HHS-72-1	East	393	86	0	-60	3	-		
		HHS-72-2	East	393	86	0	-60	3	-		
		HHS-72-3	East	393	86	0	-60	3	-		
		HHS-72-4	East	393	86	0	-60	3	-		
		HHS-73	East	433	86	-10	-61	3	-		
		HHS-77-1	East	440	93	-10	-61	3	-		
		HHS-77-2	East	440	93	-10	-61	3	-		
		HHS-77-3	East	440	93	-10	-61	3	-		
		HHS-78	North	470	93	-10	-61	3	-		
		HUH-80-1	Top	311	113	0	-58	3	-		
		HUH-80-2	Top	311	113	0	-58	3	-		
		HUH-80-3	Top	310	113	0	-58	3	-		
		HUH-81	Top	308	93	0	-58	3	-		
		HUH-82-1	South	320	88	0	-58	3	-		
		HUH-82-2	South	320	88	0	-58	3	-		
		HUH-82-3	South	320	88	0	-58	3	-		
		HUH-82-4	South	320	88	0	-58	3	-		
		HUH-82-5	South	320	88	0	-58	3	-		
		HUH-82-6	South	320	88	0	-58	3	-		
		HUH-82-7	South	320	88	0	-58	3	-		
		HUH-82-8	South	320	88	0	-58	3	-		
		HUH-82-9	South	320	88	0	-58	3	-		
		HUH-82-10	South	320	88	0	-58	3	-		
		HUH-82-11	South	320	88	0	-58	3	-		
		HHS-84	East	193	86	0	-54	3	35		
		HUH-85a	Top	508	91	-10	-62	3	-		
		HUH-85b	North	508	91	-10	-62	3	-		
		HUH-86-4	North	438	89	-10	-61	3	-		
		HUH-86-13	North	438	89	-10	-61	3	-		
		HHS-87-1	East	113	86	0	-49	3	40		
		HHS-87-2	East	107	86	0	-49	3	40		
		HHS-87-3	East	107	86	0	-49	3	40		
		HHS-87-4	East	115	86	0	-49	3	40		
		HHS-88-2	East	105	83	0	-48	3	38		
		HUH-95b	South	235	91	0	-55	3	39		
		HHS-100-1	Top	162	98	-10	-52	3	39		
		HHS-100-2	Top	162	98	-10	-52	3	39		
		HHS-101-1	Top	166	98	-10	-52	3	39		
		HHS-101-2	Top	166	98	-10	-52	3	39		
		HHS-101-3	Top	166	98	-10	-52	3	39		
		HHS-101-4	Top	166	98	-10	-52	3	39		
		HHS-101-5	Top	166	98	-10	-52	3	39		
		HHS-101-6	Top	166	98	-10	-52	3	39		
		HHS-101-7	Top	166	98	-10	-52	3	39		
		HHS-102-1	Top	97	83	0	-48	3	38		
		HHS-102-2	Top	97	83	0	-48	3	38		
		HHS-102-3	Top	97	83	0	-48	3	38		
		HHS-102-4	Top	97	83	0	-48	3	38		
		HHS-102-5	Top	97	83	0	-48	3	38		
		HHS-102-6	Top	97	83	0	-48	3	38		
		HHS-102-7	Top	97	83	0	-48	3	38		
		HHS-102-8	Top	97	83	0	-48	3	38		
		HHS-102-9	Top	97	83	0	-48	3	38		
		HHS-102-10	Top	97	83	0	-48	3	38		
		HHS-102-11	Top	97	83	0	-48	3	38		
		HUH-103-1	Top	524	91	-10	-62	3	-		
		HUH-103-2	Top	524	91	-10	-62	3	-		
		HUH-103-3	Top	524	91	-10	-62	3	-		
		HUH-103-4	Top	524	91	-10	-62	3	-		
		HUH-103-5	Top	524	91	-10	-62	3	-		
		HUH-103-6	Top	524	91	-10	-62	3	-		
		HUH-103-7	Top	524	91	-10	-62	3	-		
		HUH-103-8	Top	524	91	-10	-62	3	-		
		HUH-103-9	Top	524	91	-10	-62	3	-		
		HUH-103-10	Top	524	91	-10	-62	3	-		
		HUH-103-11	Top	524	91	-10	-62	3	-		
		HUH-103-12	Top	524	91	-10	-62	3	-		
		HUH-103-13	Top	524	91	-10	-62	3	-		
		HUH-103-14	Top	524	91	-10	-62	3	-		
		HUH-104-1	Top	513	88	-10	-62	3	-		
		HUH-104-2	Top	513	88	-10	-62	3	-		
		HUH-104-3	Top	513	88	-10	-62	3	-		
		HUH-104-4	Top	513	88	-10	-62	3	-		
		HUH-104-5	Top	513	88	-10	-62	3	-		
		HUH-104-6	Top	513	88	-10	-62	3	-		
		HUH-104-7	Top	513	88	-10	-62	3	-		
		HUH-104-8	Top	513	88	-10	-62	3	-		
		HUH-107b	South	243	88	0	-56	3	35		
		HUH-108	South	200	88	0	-54	3	37		
		HUH-109	Top	554	88	-10	-63	3	-		
		HUH-110	Top	554	88	-10	-63	3	-		
		HUH-111	Top	555	88	-10	-63	3	-		
		HUH-112	Top	555	88	-10	-63	3	-		
		HUH-113	Top	555	88	-10	-63	3	-		
		HUH-115	North	531	88	-10	-62	3	-		
		HUH-116	North	528	88	-10	-62	3	-		
		HUH-117	North	526	88	-10	-62	3	-		
		HUH-118	North	524	88	-10	-62	3	-		
		NOV-VS1	Top	240	97	0	-56	3	44		
		NOV-VS2	Top	228	97	0	-55	3	45		
		NOV-LV-03	East	218	95	0	-55	3	43		
		NOV-LV-04	North	220	95	-10	-55	3	33		
		NOV-LV-05	North	247	104	0	-56	3	51		
		NOV-LV-06	West	250	102	-10	-56	3	39		
		NOV-LV-07	West	253	107	-10	-56	3	44		
		NOV-LV-09	South	237	97	0	-55	3	45		
		NOV-LV-10	North	231	94	0	-55	3	42		
		NOV-LV-12	South	229	96	0	-55	3	44		
		NOV-LV-13	South-East	219	95	0	-55	3	43		
		NOV-LV-19	South	220	91	0	-55	3	39		
		NOV-LV-22	South	241	98	0	-56	3	45		
		NOV-LV-24	East	218	91	0	-55	3	39		
		NOV-LV-26	North	218	91	0	-55	3	39	**60**	**60**

Appendix 2.2 Fixed Plant Noise Assessment Results at NOV

Fixed Plant Noise Calculation - HH9b

Noise Assessment Points	Description	Plant item	Direction Facing	Horizontal Distance , m	SWL, dB(A)	Correction for line of sight [2], dB(A)	Distance Correction of Point Source, dB(A)	Façade Correction, dB(A)	Predicted SPL, dB(A)	Total SPL, dB(A)	NCO Night-time Noise Criteria, dB(A)
Hung Hom Station Ventilation Shaft											
HH9b											
Night-time											
HH9b	Harbourfront Horizon	HUH-1-1	East	304	98	0	-58	3	-		
		HUH-1-2	West	315	103	-10	-58	3	-		
		HUH-2	East	306	103	0	-58	3	-		
		HUH-3	South	311	103	0	-58	3	-		
		HUH-4-2	North	304	83	0	-58	3	-		
		HUH-4-3	East	304	83	0	-58	3	-		
		HUH-5-1	West	312	83	-10	-58	3	-		
		HUH-5-2	North	307	83	0	-58	3	-		
		HUH-7a	Top	246	80	0	-56	3	27		
		HUH-7b	South	246	80	0	-56	3	27		
		HUH-8a	Top	238	81	0	-56	3	28		
		HUH-8b	South	238	80	0	-56	3	27		
		HUH-8c	East	238	80	0	-56	3	27		
		HUH-9a	Top	209	81	0	-54	3	30		
		HUH-9b	South	209	81	0	-54	3	30		
		HUH-9c	East	209	81	0	-54	3	30		
		HUH-10a	Top	201	81	0	-54	3	30		
		HUH-10b	South	201	81	0	-54	3	30		
		HUH-10c	East	201	81	0	-54	3	30		
		HUH-11a	Top	194	81	0	-54	3	30		
		HUH-11b	South	194	81	0	-54	3	30		
		HUH-12a	Top	186	81	0	-53	3	31		
		HUH-12b	South	186	81	0	-53	3	31		
		HUH-13a	Top	178	81	0	-53	3	31		
		HUH-13b	South	178	81	0	-53	3	31		
		HUH-14-1-1	South	192	81	0	-54	3	30		
		HUH-14-1-2	South	192	81	0	-54	3	30		
		HUH-14-2	South	184	81	0	-53	3	31		
		HUH-14-3	South	177	81	0	-53	3	31		
		HUH-15-1	West	523	84	-10	-62	3	-		
		HUH-15-2	West	528	84	-10	-62	3	-		
		HUH-15-3	West	532	84	-10	-63	3	-		
		HUH-16a	Top	526	79	-10	-62	3	-		
		HUH-16b	East	526	79	-10	-62	3	-		
		HUH-17	North	518	84	-10	-62	3	-		
		HUH-18	Top	511	80	-10	-62	3	-		
		HUH-19a	Top	540	83	-10	-63	3	-		
		HUH-19b	North	540	86	-10	-63	3	-		
		HUH-20	Top	504	80	-10	-62	3	-		
		HUH-21a	Top	500	83	-10	-62	3	-		
		HUH-21b	North	500	83	-10	-62	3	-		
		HUH-22a	Top	497	83	-10	-62	3	-		
		HUH-22b	North	497	83	-10	-62	3	-		
		HUH-26H	East	579	83	-10	-63	3	-		
		HUH-27H	East	570	83	-10	-63	3	-		
		HUH-29	East	556	83	-10	-63	3	-		
		HUH-30H	West	571	84	-10	-63	3	-		
		HUH-32H	West	566	84	-10	-63	3	-		
		HUH-33H	West	575	83	-10	-63	3	-		
		HUH-37H	East	574	88	-10	-63	3	-		
		HHS-38	South	163	78	0	-52	3	29		
		HHS-40	South	152	78	-10	-52	3	19		
		HHS-41-1	West	145	75	-10	-51	3	17		
		HHS-41-2	West	145	75	-10	-51	3	17		
		HHS-42-1	West	141	75	-10	-51	3	17		
		HHS-42-2	West	141	75	-10	-51	3	17		
		HHS-42-3	West	141	75	-10	-51	3	17		
		HHS-43-1	West	139	75	-10	-51	3	17		
		HHS-43-2	West	139	75	-10	-51	3	17		
		HHS-44-1	West	137	75	-10	-51	3	17		
		HHS-44-2	West	137	75	-10	-51	3	17		
		HHS-45-1	West	135	75	-10	-51	3	17		
		HHS-45-2	West	135	75	-10	-51	3	17		
		HHS-49-1	East	109	75	0	-49	3	29		
		HHS-49-2	East	109	75	0	-49	3	29		
		HHS-49-3	East	109	75	0	-49	3	29		
		HHS-49-4	East	109	75	0	-49	3	29		
		HHS-49-5	East	109	75	0	-49	3	29		
		HHS-49-6	East	109	75	0	-49	3	29		
		HHS-49-7	East	109	75	0	-49	3	29		
		HHS-49-8	East	109	75	0	-49	3	29		
		HHS-50-1	East	105	73	0	-48	3	28		
		HHS-50-2	East	105	73	0	-48	3	28		
		HHS-51	East	92	73	0	-47	3	29		
		HHS-52-1	East	90	73	0	-47	3	29		
		HHS-52-2	East	90	73	0	-47	3	29		
		HHS-52-3	East	90	73	0	-47	3	29		
		HHS-53-1	East	92	73	0	-47	3	29		
		HHS-53-2	East	92	73	0	-47	3	29		
		HHS-53-3	East	92	73	0	-47	3	29		
		HHS-53-4	East	92	73	0	-47	3	29		
		HHS-53-5	East	92	73	0	-47	3	29		
		HHS-53-6	East	92	73	0	-47	3	29		
		HHS-56	East	107	77	0	-49	3	31		
		HHS-57-1	East	129	75	0	-50	3	28		
		HHS-57-2	East	129	75	0	-50	3	28		
		HHS-58-1	East	141	75	0	-51	3	27		
		HHS-58-2	East	141	75	0	-51	3	27		
		HHS-59-1	East	164	75	0	-52	3	26		
		HHS-59-2	East	164	75	0	-52	3	26		
		HHS-59-3	East	164	75	0	-52	3	26		
		HHS-60-1	East	183	75	0	-53	3	25		
		HHS-60-2	East	183	75	0	-53	3	25		
		HHS-61	East	211	75	0	-54	3	24		
		HHS-62-1	East	234	75	0	-55	3	23		
		HHS-62-2	East	234	75	0	-55	3	23		
		HHS-63	East	247	75	0	-56	3	22		
		HHS-64	East	258	75	0	-56	3	22		
		HHS-65	East	279	75	0	-57	3	21		
		HHS-66	East	291	76	0	-57	3	22		
		HHS-67-1	East	303	76	0	-58	3	-		
		HHS-67-2	East	303	76	0	-58	3	-		
		HHS-67-3	East	303	76	0	-58	3	-		
		HHS-67-4	East	303	76	0	-58	3	-		
		HHS-68-1	East	329	76	0	-58	3	-		
		HHS-68-2	East	329	76	0	-58	3	-		
		HHS-68-3	East	329	76	0	-58	3	-		
		HHS-68-4	East	329	76	0	-58	3	-		
		HHS-70-1	East	356	76	0	-59	3	-		
		HHS-70-2	East	356	76	0	-59	3	-		
		HHS-70-3	East	356	76	0	-59	3	-		
		HHS-70-4	East	356	76	0	-59	3	-		

Appendix 2.2 Fixed Plant Noise Assessment Results at NOV

Fixed Plant Noise Calculation - HH9b

		HHS-71-1	East	370	76	0	-59	3	-		
		HHS-71-2	East	370	76	0	-59	3	-		
		HHS-71-3	East	370	76	0	-59	3	-		
		HHS-72-1	East	393	76	0	-60	3	-		
		HHS-72-2	East	393	76	0	-60	3	-		
		HHS-72-3	East	393	76	0	-60	3	-		
		HHS-72-4	East	393	76	0	-60	3	-		
		HHS-73	East	433	76	-10	-61	3	-		
		HHS-77-1	East	440	83	-10	-61	3	-		
		HHS-77-2	East	440	83	-10	-61	3	-		
		HHS-77-3	East	440	83	-10	-61	3	-		
		HHS-78	North	470	83	-10	-61	3	-		
		HUH-80-1	Top	311	103	0	-58	3	-		
		HUH-80-2	Top	311	103	0	-58	3	-		
		HUH-80-3	Top	310	103	0	-58	3	-		
		HUH-81	Top	308	83	0	-58	3	-		
		HUH-82-1	South	320	78	0	-58	3	-		
		HUH-82-2	South	320	78	0	-58	3	-		
		HUH-82-3	South	320	78	0	-58	3	-		
		HUH-82-4	South	320	78	0	-58	3	-		
		HUH-82-5	South	320	78	0	-58	3	-		
		HUH-82-6	South	320	78	0	-58	3	-		
		HUH-82-7	South	320	78	0	-58	3	-		
		HUH-82-8	South	320	78	0	-58	3	-		
		HUH-82-9	South	320	78	0	-58	3	-		
		HUH-82-10	South	320	78	0	-58	3	-		
		HUH-82-11	South	320	78	0	-58	3	-		
		HHS-84	East	193	76	0	-54	3	25		
		HUH-85a	Top	508	81	-10	-62	3	-		
		HUH-85b	North	508	81	-10	-62	3	-		
		HUH-86-4	North	438	79	-10	-61	3	-		
		HUH-86-13	North	438	79	-10	-61	3	-		
		HHS-87-1	East	113	76	0	-49	3	30		
		HHS-87-2	East	107	76	0	-49	3	30		
		HHS-87-3	East	107	76	0	-49	3	30		
		HHS-87-4	East	115	76	0	-49	3	30		
		HHS-88-2	East	105	73	0	-48	3	28		
		HUH-95b	South	235	81	0	-55	3	29		
		HHS-100-1	Top	162	88	-10	-52	3	29		
		HHS-100-2	Top	162	88	-10	-52	3	29		
		HHS-101-1	Top	166	88	-10	-52	3	29		
		HHS-101-2	Top	166	88	-10	-52	3	29		
		HHS-101-3	Top	166	88	-10	-52	3	29		
		HHS-101-4	Top	166	88	-10	-52	3	29		
		HHS-101-5	Top	166	88	-10	-52	3	29		
		HHS-101-6	Top	166	88	-10	-52	3	29		
		HHS-101-7	Top	166	88	-10	-52	3	29		
		HHS-102-1	Top	97	73	0	-48	3	28		
		HHS-102-2	Top	97	73	0	-48	3	28		
		HHS-102-3	Top	97	73	0	-48	3	28		
		HHS-102-4	Top	97	73	0	-48	3	28		
		HHS-102-5	Top	97	73	0	-48	3	28		
		HHS-102-6	Top	97	73	0	-48	3	28		
		HHS-102-7	Top	97	73	0	-48	3	28		
		HHS-102-8	Top	97	73	0	-48	3	28		
		HHS-102-9	Top	97	73	0	-48	3	28		
		HHS-102-10	Top	97	73	0	-48	3	28		
		HHS-102-11	Top	97	73	0	-48	3	28		
		HUH-103-1	Top	524	81	-10	-62	3	-		
		HUH-103-2	Top	524	81	-10	-62	3	-		
		HUH-103-3	Top	524	81	-10	-62	3	-		
		HUH-103-4	Top	524	81	-10	-62	3	-		
		HUH-103-5	Top	524	81	-10	-62	3	-		
		HUH-103-6	Top	524	81	-10	-62	3	-		
		HUH-103-7	Top	524	81	-10	-62	3	-		
		HUH-103-8	Top	524	81	-10	-62	3	-		
		HUH-103-9	Top	524	81	-10	-62	3	-		
		HUH-103-10	Top	524	81	-10	-62	3	-		
		HUH-103-11	Top	524	81	-10	-62	3	-		
		HUH-103-12	Top	524	81	-10	-62	3	-		
		HUH-103-13	Top	524	81	-10	-62	3	-		
		HUH-103-14	Top	524	81	-10	-62	3	-		
		HUH-104-1	Top	513	78	-10	-62	3	-		
		HUH-104-2	Top	513	78	-10	-62	3	-		
		HUH-104-3	Top	513	78	-10	-62	3	-		
		HUH-104-4	Top	513	78	-10	-62	3	-		
		HUH-104-5	Top	513	78	-10	-62	3	-		
		HUH-104-6	Top	513	78	-10	-62	3	-		
		HUH-104-7	Top	513	78	-10	-62	3	-		
		HUH-104-8	Top	513	78	-10	-62	3	-		
		HUH-107b	South	243	78	0	-56	3	25		
		HUH-108	South	200	78	0	-54	3	27		
		HUH-109	Top	554	78	-10	-63	3	-		
		HUH-110	Top	554	78	-10	-63	3	-		
		HUH-111	Top	555	78	-10	-63	3	-		
		HUH-112	Top	555	78	-10	-63	3	-		
		HUH-113	Top	555	78	-10	-63	3	-		
		HUH-115	North	531	78	-10	-62	3	-		
		HUH-116	North	528	78	-10	-62	3	-		
		HUH-117	North	526	78	-10	-62	3	-		
		HUH-118	North	524	78	-10	-62	3	-		
		NOV-VS1	Top	240	87	0	-56	3	34		
		NOV-VS2	Top	228	87	0	-55	3	35		
		NOV-LV-03	East	218	85	0	-55	3	33		
		NOV-LV-04	North	220	85	-10	-55	3	23		
		NOV-LV-05	North	247	94	0	-56	3	41		
		NOV-LV-06	West	250	92	-10	-56	3	29		
		NOV-LV-07	West	253	97	-10	-56	3	34		
		NOV-LV-09	South	237	87	0	-55	3	35		
		NOV-LV-10	North	231	84	0	-55	3	32		
		NOV-LV-12	South	229	86	0	-55	3	34		
		NOV-LV-13	South-East	219	85	0	-55	3	33		
		NOV-LV-19	South	220	81	0	-55	3	29		
		NOV-LV-22	South	241	88	0	-56	3	35		
		NOV-LV-24	East	218	81	0	-55	3	29		
		NOV-LV-26	North	218	81	0	-55	3	29	**50**	**50**

Remark:
[1] As a conservative approach, only horizontal distance has been considered in the calculation of distance correction.
[2] A negative correction of 10 dB(A) has been adopted to the direction facing of the ventilation shaft totally screened by buildings and negative correction of 5 dB(A) for NSR do not have direct line of sight to the ventilation shaft.