

Environmental Permit No. EP-457/2013/C


Central Kowloon Route

Independent Environmental Checker Verification

Works Contract:	Yau Ma Tei East (HY/2014/08)
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Reference Document/Plan	
Document/Plan to be Certified/ Verified:	Construction Noise Mitigation Measure Plan
Date of Report:	- (Rev. 11)
Date received by IEC:	9 July 2019

Reference EP Condition	
Environmental Permit Condition:	2.9
<p>To further reduce the air-borne construction noise impacts on Yau Ma Tei Catholic Primary School (Hoi Wang Road), Tak Cheong Building, Prosperous Garden Block 1, The Coronation Tower 1, Ko Fai House of Kwun Fat Court, Grand Waterfront Tower 3 and Hang Chien Court Block J, the Permit Holder shall, no later than one month before the commencement of construction of the corresponding component(s) of the Project, submit to the Director for approval four hard copies and one electronic copy of an updated Construction Noise Mitigation Measure Plan (CNMMP). The plan shall include:-</p> <ul style="list-style-type: none">(a) a schedule of construction works to be carried out at the works areas of the Project within 300m from the NSRs;(b) an updated construction methodology of the construction works;(c) an updated powered mechanical equipment (PME) list for the construction works;(d) an updated proposal of air-borne construction noise mitigation measures for the Noise Sensitive Receivers as mentioned above, including the provision of noise barriers, enclosures;(e) other initiatives proposed by the Permit Holder; and(f) an updated prediction of noise levels in accordance with the above updated information and mitigation proposals in place. <p>Before submission to the Director, the CNMMP shall be certified by the ET and verified by the IEC as conforming to the relevant information and recommendations contained in the EIA Report. The approved CNMMP shall be fully and properly implemented.</p>	

IEC Verification	
I hereby verify that the above referenced document /plan complies with the above referenced condition of EP-457/2013/C.	
	
Ms Mandy To Independent Environmental Checker	Date: 15 July 2019

Response to Comments Table for Construction Noise Mitigation Measures Plan Rev.10.1

Comments		Responses
Your Ref.: () in Ax(1) to EP2/K2/A/04 pt.28 Issued Date: 28 June 2019		
Major Comments		
1	In response to our previous comment concerning the substantiation of proper NMM implementation, the consultant stated that “Site records, including photos and measurement reports, for substantiating proper implementation of the Plan shall be well kept by the contractor on site for review/ checking by ET/IEC/EPD at any time”. As the records (e.g. site photos, noise measurement reports of the quiet PME and noise barriers/enclosures adopted on site, etc.) are considered as critical and important to substantiate proper implementation of the NMM (including the use of quiet PME and noise barriers with no line-of-site from the NSRs, etc.), the project proponent / consultant should provide such records either in the relevant EM&A report or the above suggested review report every 6 months, in addition to keeping on-site records for inspection.	Currently, such records are available on site, regularly reviewed, inspected and checked by ET and IEC. No exceedance of impact monitoring noise level as stipulated in the EM&A manual was recorded since commencement of the Contract. In response, BKSKJV will regularly provide records about the updated noise mitigation measures implemented in review report. Meanwhile, the EM&A report content was suggested to be aligned with other contracts of CKR and agreed by the project proponent.
Specific Comments		
1	<u>Section 3.2</u> - Please advise what major PME will be involved for the construction works of decanting of Library and Government Offices in MSCB and YMT Police Station (worksite S17 and S31).	- To further clarify, no PME will be involved for the construction works of decanting of Library and Government Offices in MSCB and YMT Police Station (worksite S17 and S31). Decanting just simply decant the building but is not demolition of building. For demolition, please refer to worksite S18 and S35.

Build King – SKEC Joint Venture

Central Kowloon Route Contract HY/2014/08

Yau Ma Tei East Section

Construction Noise Mitigation Measures Plan

Rev.11

Certified by: Kevin Li



Position: Environmental Team Leader

Date: 15 July 2019

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PART A GENERAL

1.0 Background

1.1 Project Description

Central Kowloon Route (CKR) was proposed in the West Kowloon Reclamation Transport Study that a route in tunnel should be developed to link the West Kowloon Highway since 1990.

Highways Department (HyD) commissioned the Design and Construction Assignment for the Central Kowloon Route in June 1998. CKR is a dual 3-lane trunk road across central Kowloon linking the West Kowloon in the west and the proposed Kai Tak Development (KTD) in the east. The CKR will be about 4.7km long with an underground tunnel section of about 3.9km long, in particular, there will be an underwater tunnel of about 370m long in Kowloon Bay to the north of the To Kwa Wan Typhoon Shelter. It will connect the West Kowloon Highway at Yau Ma Tei Interchange with the road network at Kowloon Bay and the future Trunk Road T2 at KTD which will connect to the future Tseung Kwan O – Lam Tin Tunnel (TKO-LTT) and Cross Bay Link (CBL). CKR, Trunk Road T2 and TKO-LTT will form a strategic highway link, namely Route 6, connecting West Kowloon and Tseung Kwan O. Consultancy studies for Trunk Road T2, TKO-LTT and CBL have been commissioned by CEDD. In addition, 3 ventilation buildings, which will be located in Yau Ma Tei, Ho Man Tin and ex-Kai Tak airport area, are proposed to ensure acceptable air quality within the tunnel.

The Central Kowloon Route – Design and Construction Environmental Impact Assessment Report (Register No.: AEIAR-171/2013) was approved with conditions by the Environmental Protection Department (EPD) on 11 July 2013. An Environmental Permit (EP-457/2013) was issued on 9 August 2013. Variations of EP (VEP) was subsequently applied for and the latest EP (EP-457/2013/C) was issued by EPD on 16 January 2017.

Build King - SKEC Joint Venture (BKSKJV) was commissioned by Highways Department as the appointed main contractor for Contract No. HY/2014/08: Central Kowloon Route – Yau Ma Tei East (YMTE).

The Works to be executed under this Contract included, but not exclusively, the following items:

- Construction of approximately 390m long cut-and-cover tunnel between Yau Cheung Road and Shanghai Street;
- Construction and subsequent handover of Yau Ma Tei Access Shaft for facilitating the access and using by the contractor of CKR – Central Tunnel contract for the construction of tunnelling works of CKR;
- Construction and maintenance of a composite building for the temporary Public Library cum Jade Hawker Bazaar and a building for the temporary Maternal and Child Health Centre;
- Re-provisioning of a Methadone Clinic in the Yau Ma Tei Jockey Club Polyclinic Building;
- Demolition of the existing Yau Ma Tei Multi-storey Carpark Building, the existing Yau Ma Tei Specialist Clinic Extension Building and the existing Yau Ma Tei Jade Hawker Bazaars;
- Demolition of existing Subway No. KS55 and ancillary buildings of existing Yau Ma Tei Police Station;
- Design and construction of the Noise Barrier Works
- Demolition and re-provisioning of a section of Gascoigne Road Flyover (GRF) between Nathan Road and Ferry Street. Implementation of temporary measures for maintaining the normal operation of the GRF during the contract period;
- Other civil works

A Site Layout showing the site boundary is shown in **Appendix A**.

1.2 Requirements for Construction Noise Mitigation Measure Plan (CNMMP)

According to the condition 2.9 of the EP-457/2013/C, the Permit Holder shall, no later than one month before the commencement of construction of the Project, submit to the Director of Environmental Protection (DEP) for approval four hard copies and one electronic copies of an update Construction Noise Mitigation Measure Plan (CNMMP) to further reduce the air-borne construction noise impacts on Yau Ma Tei Catholic Primary School (Hoi Wang Road), Tak Cheong Building, Prosperous Garden Block 1, The Coronation Tower 1, Ko Fai House of Kwun Fat Court, Grand Waterfront Tower 3 and Hang Chien Court Block J. In view of the worksites location under this contract and their respective distance to the above NSRs (300 meters study area according to the EIA methodology), predicted noise impact on Yau Ma Tei Catholic Primary School (Hoi Wang Road), Tak Cheong Building, Prosperous Garden Block 1, The Coronation Tower 1 are studied in this CNMMP, while that of Ko Fai House of Kwun Fat Court, Grand Waterfront Tower 3 and Hang Chien Court Block J would be assessed in other Sections of the Central Kowloon Route according to their worksite location.

The CNMMP shall include:

- A schedule of construction works to be carried out at the works areas of the Project within 300m from the Noise Sensitive Receivers (NSRs);
- An updated construction methodology of the construction works;
- An updated powered mechanical equipment (PME) list for the proposed construction works;
- An updated proposal of air-borne construction noise mitigation measures for the Noise Sensitive Receivers as mentioned above, including the provision of noise barriers, enclosures;
- Other initiatives proposed by the Permit Holder; and
- An updated prediction of noise levels in accordance with the above updated information and mitigation proposals in place.

Before submission to the Director, the CNMMP shall be certified by the ET and verified by the IEC as conforming to the relevant information and recommendations contained in the EIA Report (Register No. AEIAR-171/2013).

2.0 Description of Construction Works in the Study Area

2.1 Noise Sensitive Receivers

According to Further Environmental Permit No. FEP-02/457/2013/C for CKR-YMTE, 4 Noise Sensitive Receivers (NSRs) would be addressed in this CNMMP. The 4 NSRs are Yau Ma Tei Catholic Primary School (Hoi Wang Road) (W-N1A), Tak Cheong Building (W-N8A), Prosperous Garden Block 1 (W-N25A) and The Coronation Tower 1 (W-P11).

The list of NSRs are shown in **Table 2.1**. The Layout plans of the works area showing the NSRs and their distance to the works area are provided in **Appendix A and Appendix F**.

Table 2.1 List of Noise Sensitive Receivers (NSRs)

NSRID	NSR Description	Use ^[1]	Criterion, dB(A) ^[2]	Maximum Construction Noise Levels, dB(A) ^[3]		Noise exceedance, dB(A) ^[3]
				Unmitigated	Mitigated	
W-N1A	Yau Ma Tei Catholic Primary School (Hoi Wang Road)	E	70(65)	82	70 (69)	-(4)
W-N8A	Tak Cheong Building	R	75	95	82	7
W-N25A	Prosperous Garden Block 1	R	75	93	81	6
W-P11	The Coronation (West Façade)	R	75	88	77	2

Notes:

[1] R- Residential; E- Educational Institution; GIC- Government, institution and community

[2] Values in parentheses indicate the noise criterion during examination period of educational institution

[3] Data are extracted from Tables 5.13 and 5.16 of approved EIA Report”

2.2 Construction Methodology

The proposed construction methodology is generally following that presented in Section 3.5 of the approved CKREIA Report (Register No. AEIAR-171/2013). The tunnel section of Yau Ma Tei (from Hoi Wang Road to Shanghai Street) will be constructed by ‘top-down’ cut-and-cover method to reduce impact upon the surrounding area, pedestrians and road traffic.

A breakdown of the major construction activities in sequence to be carried out within the contract are provided in **Appendix B**.

2.3 Updated Preliminary Construction Programme

The updated preliminary construction programme prepared by BKSKJV has been used in this CNMMP and has been presented on a monthly basis for the duration of the construction works in corresponding worksites.

Since the commencement of the project has been delayed for 3 years., the potential concurrent projects have been reviewed. Upon reviewing the concurrent projects close to YMTE, other than YMTW section under CKR itself, there is no additional potential concurrent projects which would have cumulative construction noise impacts on the NSRs during the construction phase. The concurrent effect on noise impact contributed by YMTW section is also considered.

The construction schedule has been adjusted such that to minimize concurrent construction works to be carried out in the vicinity as far as practicable. The updated preliminary construction programme is provided in **Appendix B**.

2.4 Updated Powered Mechanical Equipment List

The updated Powered Mechanical Equipment (PME) list for the construction works is provided in **Table 2.2**. The Sound Power Levels (SWL) for the PMEs have been adopted from EPD’s Technical Memorandum on Noise from Construction Work Other than Percussive Piling (GW-TM), list of SWLs of other commonly used PME or British Standard 5228 - Part 1:2009 Code of Practice for Noise and Vibration Control on Construction and Open Sites. It should be noted that the PMEs

proposed are commonly available in Hong Kong market. The PME's to be adopted for individual construction activities for this contract are provided in **Appendix C**.

Taking into account the latest construction programme and PME inventory, extra quiet PME for dump truck, roller and vibratory are proposed in addition to the quiet PME proposed in the Approved CKR EIA Report. The quiet PME as listed in Table 2.2 could be found in Hong Kong. However, if the exact model specified in the references of the listed quiet PME are not available during the construction period, the model with SWL not higher than the listed SWL shall be adopted. BKSKJV has also confirmed that the programme and plant inventory are reasonable and practicable for completing the works of CKR-YMTE within the scheduled timeframe.

Table 2.2: List of Updated Powered Mechanical Equipment (PME)

PME Description	TM Ref./ Other Ref. ^(a)/ BS 5228 Ref. ^(b)/ QPME ID Code ^(c)	Unit Sound Power Level, SWL dB(A)
Air Compressor	CNP003	104
Asphalt Paver	EPD-01226	104
Bar Bender and Cutter	CNP021	90
Bored Piling Crane mounted auger	BS D4-37	111
Breaker, Excavator Mounted (Hydraulic)	BS D8-13	110
Bulldozer	CNP030	115
Compactor, vibratory	CNP050	105
Concrete Lorry Mixer	CNP044	109
Concrete pump	CNP047	109
Concrete crusher, excavator mounted	CNP055	103
Crane Mobile	BS D7-114	101
Dump Truck with Grab	CNP069	105
Excavator/Loader, Wheeled/Tracked	EPD-01145	99
Generator	CNP103	95
Grout mixer	CNP105	90
Grout pump	CNP106	105
Lorry	CNP142	105
Piling, Diaphragm Wall, Bentonite	CNP162	105

Filtering Plant		
Piling, large dia bored, oscillator	CNP165	115
Poker, Vibratory, Hand Held	CNP173	102
Rock Crusher	Reference to approved West Island Line EIA report	118
Rock drill, crawler mounted (pneumatic)	SIL EIA	108
Rock Drill	SIL EIA	108
Road Roller	EPD-01183	97
Saw, Circular Wood	BS D7-79	103
Saw, Wire	CNP205	101
Tracked crane	BS D7-114	101
Ventilation Fan	CNP241	108
Water Pump, Submersible (Electric)	CNP283	85

Note:

- (a) Other references refer to the approved West Island Line EIA Report/South Island Line (East) EIA Report/SWLs of other commonly used PME provided in the document prepared by the Noise Control Authority
http://www.epd.gov.hk/epd/english/application_for_licences/guidance/files/OtherSWLe.pdf
- (b) BS 5228 Ref. refers to British Standard 5228 - Part 1:2009 Code of Practice for Noise and Vibration Control on Construction and Open Sites
- (c) QPME ID Code refer to Quiet Powered Mechanical Equipment from EPD's website
http://www.epd.gov.hk/cgi-bin/npg/qpme/search_gen.pl?lang=eng

3.0 Noise Assessment and Proposed Mitigation Measures

3.1 Assessment Methodology and Assumptions

The scope of this plan does not cover all the construction works of West Portion of CKR Project. This Plan only includes the noise assessment for CKR-YMTE's works area and the remaining works areas shall be addressed by another CKR contract namely CKR-YMTW. However, the cumulative effect from YMTW will be considered in the noise assessment of this Plan. Worksite S13 is located within the site boundary of both YMTE and YMTW. However, the construction of landscape deck at worksite S13 will be carried out by YMTW only and thus the noise assessment is not included in this plan, but the noise assessment is included in the cumulative effect of this plan. Besides, according to the contract information provided by HyD, some construction activities at worksites are different from those mentioned in EIA report or not included in the scope of works of YMTE contract. Worksite S9 is construction of Community Liaison Centre for CKR project and worksite S7 is the construction of Temporary Library & Temporary Jade Market. Activities in worksites S48 is the construction of Ferry Street Subway, which is not the scope of works under YMTE contract as per the contract information.

The construction noise assessment has been carried out in accordance with the methodology used in the approved CKR EIA Report (Register No. AEIAR-171/2013). Notional source distances adopted in the calculation has made reference to those used in the CKR EIA Report (Register No. AEIAR-171/2013) except worksite S3, S4, S5 and S13 according to the updated construction layout as provided in **Appendix A**. The updated distance between NSRs and worksite are tabled in **Appendix F**.

The percentage on-time for each PME has been estimated individually for each construction activity to ensure practicality and is consistent with assumptions made in CKR EIA Report (Register No. AEIAR-171/2013).

The BKSKJV has confirmed that the programme and plant inventory are reasonable and practicable for completing the Works Contract within the scheduled timeframe.

All mitigation measures and their effectiveness proposed in the CKR EIA Report (Register No. AEIAR-171/2013) including the use of temporary movable noise barrier and enclosure (with

sufficient ventilation) for relatively static plant, acoustic mat and quiet plant have been considered in this CNMMP. The use of quiet plant associated with construction work is prescribed in British Standard "Code of practice for noise and vibration control on construction and open sites, BS5228" which contains the SWLs for specific quiet PME.

Central Kowloon Route – Yau Ma Tei West (CKR-YMTW) is identified to be concurrent projects of the works at CKR-YMTE. CKR-YMTW commenced in November 2018 and is estimated to complete in October 2024. Cumulative construction noise impact from construction activities of CKR-YMTW is addressed in this CNMMP and detail assessment is shown in Appendix C. For the construction works for two noise enclosures at Gascoigne Road Flyover, they will be carried out under our contract.

3.2 Proposed Mitigation Strategy and Noise Assessment Results

The mitigation measures proposed in the approved CKR EIA report (Register No. AEIAR-171/2013) have been adopted.

Movable temporary noise barriers that can be located close to noisy plant and be moved concurrently with the plant along a worksite can be very effective for screening noise from NSRs. A typical design which has been used locally is a wooden framed barrier with a small-cantilevered on a skid footing with 25mm thick internal sound absorptive lining. This measure is particularly effective for low level zone of NSRs. A cantilevered top cover would be required to achieve screening benefits at upper floors of NSRs. Movable barriers will be used for some PME (e.g. asphalt paver, excavator etc). It is anticipated that suitably designed barriers could achieve at least 5 - 10dB(A) reduction. For a conservative assessment, only a reduction of 5dB(A) is assumed. The use of enclosure (with sufficient ventilation and surface mass at least 10 kg/m²) has been considered in this assessment to shelter relatively static plant including air compressor, generator. The enclosures barriers can provide about 10dB(A) noise reduction. For ventilation fan, enclosure namely SilentCUBE would be used as noise mitigation and -15 dB(A) would be applied in the assessment for conservatism. BKSKJV shall ensure the practicability to block the line-of-sight for nearby NSRs during the usage of noise barriers.

The construction activities to be carried out under traffic deck or underground, will adopt -20dB(A) screening effect has PMEs, except ventilation fan will be located at grade.

For one of the mucking out points in CKR project, the temporary full noise enclosure will be constructed after the access shaft completion to screen off the future construction activities for tunnelling works with the noise reduction of -15dB(A). The mucking out point with temporary full noise enclosure will be located at worksite S57. Such temporary full noise enclosure will be erected for the activities of dump trucks with grab and lorry at grade. Other activities and PME to be operated at worksite S57 will be carried out under the traffic deck and thus will adopt -20dB(A), except the construction activity of “Site Establishment, Utility Diversion and Mobilization of Plant”. The design drawing of the noise enclosure and the information of acoustic material are shown in **Appendix D**.

For the ventilation fan, dump truck with grab and lorry working at grade of mucking out area, they will be operated with noise barrier made of minimum 10 mm thick plywood (or 1 mm thick steel plate) and minimum 50 mm thick sound absorbing internal lining. The barrier can achieve noise reduction of -10dB(A). Details of the acoustic noise barriers are shown in **Appendix E**.

For the demolition works of the Yau Ma Tei Multi-storey Carpark Building, temporary noise barrier will be erected at the floor to be demolished surrounding the 4 sides of the building. The temporary noise barriers can provide about 10dB(A) noise reduction. Details of the acoustic noise barriers are shown in **Appendix G**.

The predicted noise levels at identified NSRs after implementation of mitigation measures, including quiet plants, noise enclosure/shed, movable barriers and acoustic fabric are shown in **Appendix C** and summarised in Table 3.1. The mitigation measures and noise control design will be implemented by the frontline staff of the contractor, supervised by the Environmental Officer/ Site Engineer and checked by the ET, IEC and RE during routine site inspection under the EM&A programme. Some of the construction activities will not involve PME and thus are not shown in noise assessment such as worksites S17 and S31 which are decanting of Library and Government Offices in MSCB and YMT Police Station respectively.

Site records, including photos and measurement reports, for substantiating proper implementation of the Plan shall be well kept by the Contractor on site for review/checking by ET/IEC/EPD at any time.

Table 3.1 Summary of Noise Assessment Result

NSR ID	NSR Description	Predicted Max. Noise Level ^(a) , dB(A)	Noise Criteria ^(b) , dB(A)	Exceedance, dB(A)	Duration (month) of Exceedance ^(c)
W-N1A	Yau Ma Tei Catholic Primary School (Hoi Wang Road)	67(67)	70(65)	-(2)	-(2)
W-N8A	Tak Cheong Building	82	75	7	35
W-N25A	Prosperous Garden Block 1	80	75	5	4
W-P11	The Coronation	75	75	-	-

Note:

- (a) Bolded values mean exceedance of the relevant noise criteria.
- (b) Values in parentheses indicate the noise criterion during examination period of educational institution.
- (c) Typical examination period is in May, June, November and December. The exceedance duration is subject to the examination schedule when available.

With the implementation of the above-mentioned mitigation measures, residual impacts exceeding the construction noise criterion are still expected. The comparison of residual impacts between CKR EIA Report and this CNMMP is shown in Table 3.2.

Table 3.2 Comparison of Residual Impacts between CKR EIA Report and this CNMMP (Residential Premises)

NSR	EIA Prediction					CNMMP Prediction				
	Max. Noise Level, dB(A)	Duration (month) of Exceedance				Max. Noise Level, dB(A)	Duration (month) of Exceedance			
		1-4 dB(A)	5 dB(A)	6 dB(A)	7 dB(A)		1-4 dB(A)	5 dB(A)	6 dB(A)	7 dB(A)
W-N8A	82	26	5	4	2	82	26	3	5	1
W-N25A	81	6	-	3	-	80	1	3	-	-
W-P11	77	4	-	-	-	75	-	-	-	-

Table 3.3 Comparison of Residual Impacts between CKR EIA Report and this CNMMP (Educational Institution During Examination Period)

NSR	EIA Prediction (during exam period)								CNMMP Prediction (during exam period)							
	Duration (month) of Exceedance								Duration (month) of Exceedance							
	1 dB(A)	2 dB(A)	3 dB(A)	4 dB(A)	5 dB(A)	6 dB(A)	7 dB(A)	≥8 dB(A)	1 dB(A)	2 dB(A)	3 dB(A)	4 dB(A)	5 dB(A)	6 dB(A)	7 dB(A)	≥8 dB(A)
W-N1A	2	3	-	1	-	-	-	-	-	2	-	-	-	-	-	-

Table 3.4 Comparison of Residual Impacts between CKR EIA Report and this CNMMP (Educational Institution During Normal Period)

NSR	EIA Prediction (during normal period)								CNMMP Prediction (during normal period)							
	Duration (month) of Exceedance								Duration (month) of Exceedance							
	1 dB(A)	2 dB(A)	3 dB(A)	4 dB(A)	5 dB(A)	6 dB(A)	7 dB(A)	≥8 dB(A)	1 dB(A)	2 dB(A)	3 dB(A)	4 dB(A)	5 dB(A)	6 dB(A)	7 dB(A)	8 dB(A)
W-N1A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

When comparing with the predicted noise impact in the EIA study, the residual impacts predicted in this CNMMP would either remain unchanged or reduced in respect of both exceedances and duration with the implementation of mitigation measures proposed in this CNMMP. Number of months of Examination periods for Yau Ma Tei Catholic Primary School (Hoi Wang Road) predicted to exceed the criterion for school examination periods was reduced from 6 from EIA report to 2 from this CNMMP. Number of months for Tak Cheong Building (W-N8A) predicted to experience the max. noise level (i.e. 82 dB(A)) was reduced from 2 months from EIA report to 1 month from this CNMMP. The predicted max. noise level at Prosperous Garden Block 1 (W-N25A) would be reduced from 81 dB(A) from EIA report to 80 dB(A) in this CNMMP and the during of exceedance would be reduced from 9 months from EIA report to 4 months from this CNMMP. Number of months for The Coronation Block 1 (W-P11) predicted to exceed the noise criteria was reduced from 4 months from EIA report to nil from this CNMMP.

Specific measures will be implemented for Tak Cheong Building (W-N8A), which is predicted to experience the most severe exceedance for the longest period. BKSKJV will well plan the working programme for those work sites close to W-N8A and try the best to shorten the working hours at weekends or avoid to carry out noisy activities at sensitive hours (0700 – 0900 & 1700 – 1900).

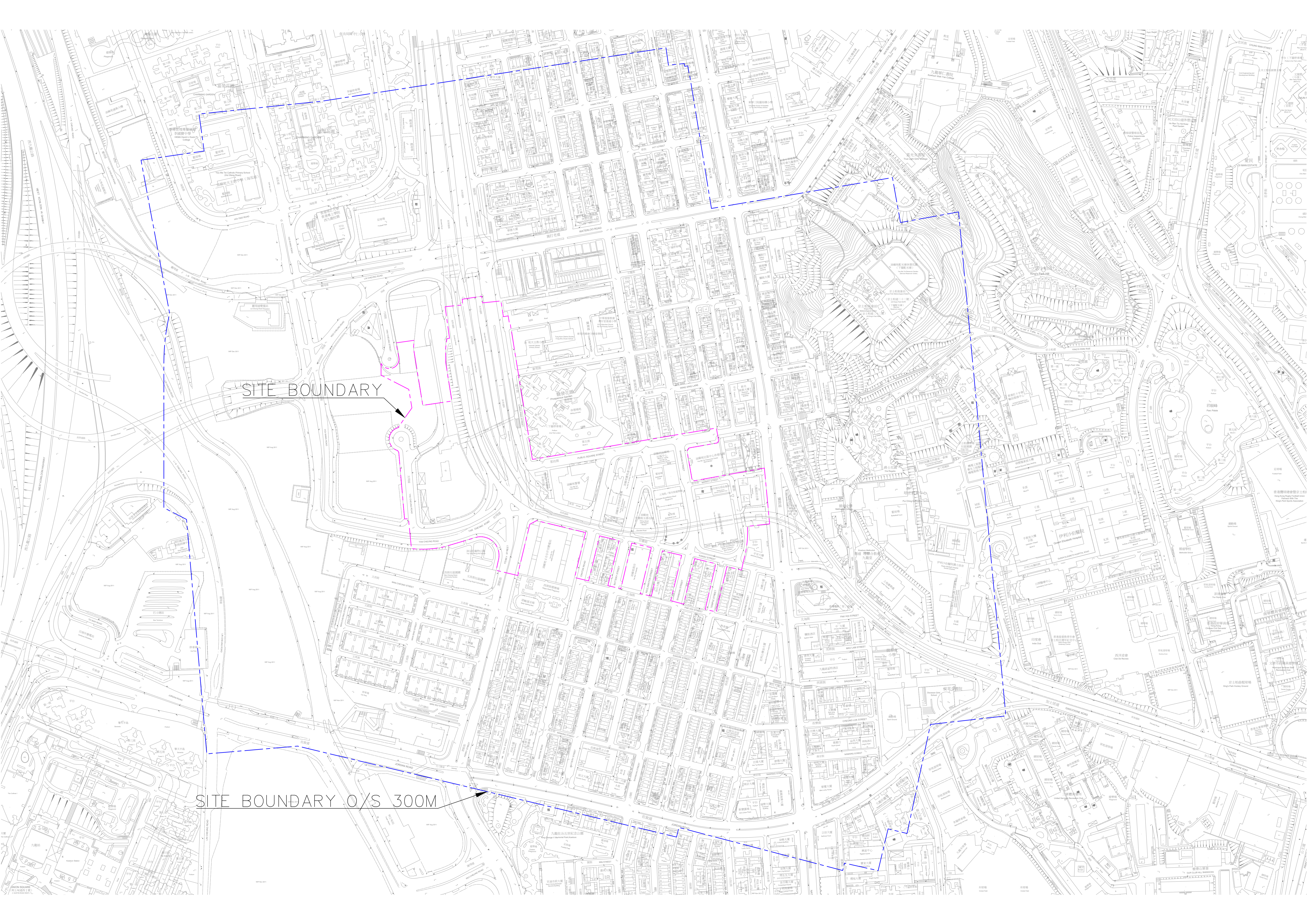
4.0 Conclusion

The CNMMP has predicted the construction noise impact from CKR-YMTE to identified NSRs. This plan has taken into account the updated information on PMEs and works programme which would be adopted by BKSKJV. With the implementation of mitigation measures in form of quiet plants, barrier and acoustic fabrics, the construction noise impact are predicted would either remain unchanged or to be reduced in respect of both exceedances and duration.

Further review and update will be performed with a frequency of at least every 6 months during the construction phase and liaison with affected parties is recommended to minimise the construction noise impacts as far as practicable.

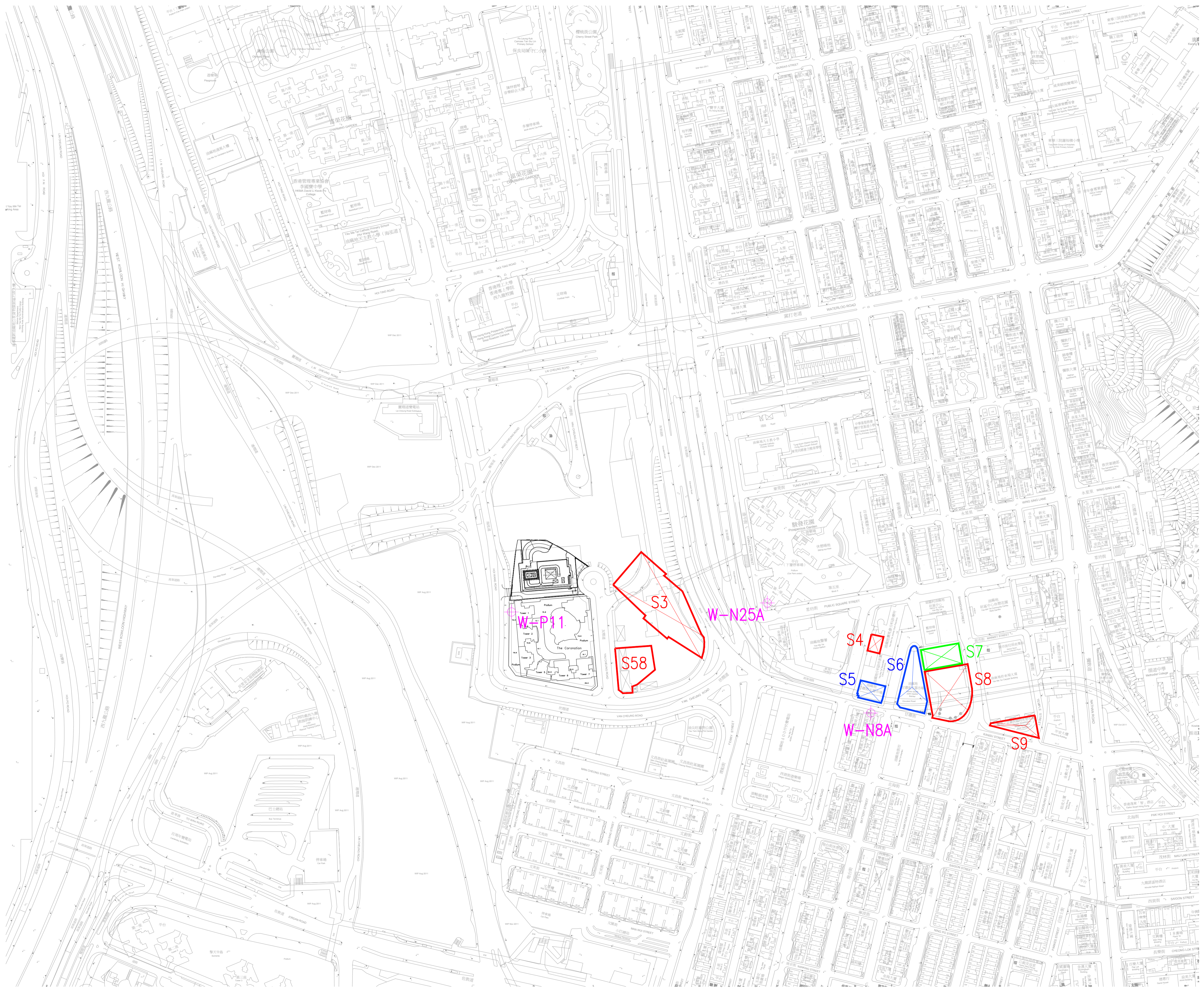
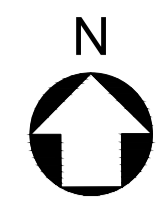
Appendix A

Site Layout and NSR Locations



SITE BOUNDARY

SITE BOUNDARY O/S 300M



A	SUBMISSION	PC	03/19
-	SUBMISSION	PC	06/18
Rev. 修訂	Description 內容摘要	By 設計	Date 日期

Contractor
 承建商



BUILD KING - SKEC JOINT VENTURE

Project title
 工程名稱

Contract No. HY/2014/08

Central Kowloon Route -
 Yau Ma Tei East

Drawing title
 圖紙名稱

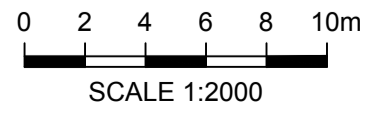
**APPENDIX
 LOCATIONS OF NSR'S AND
 NOTIONAL SOURCES
 (WEST PORTION - STAGE 1)**

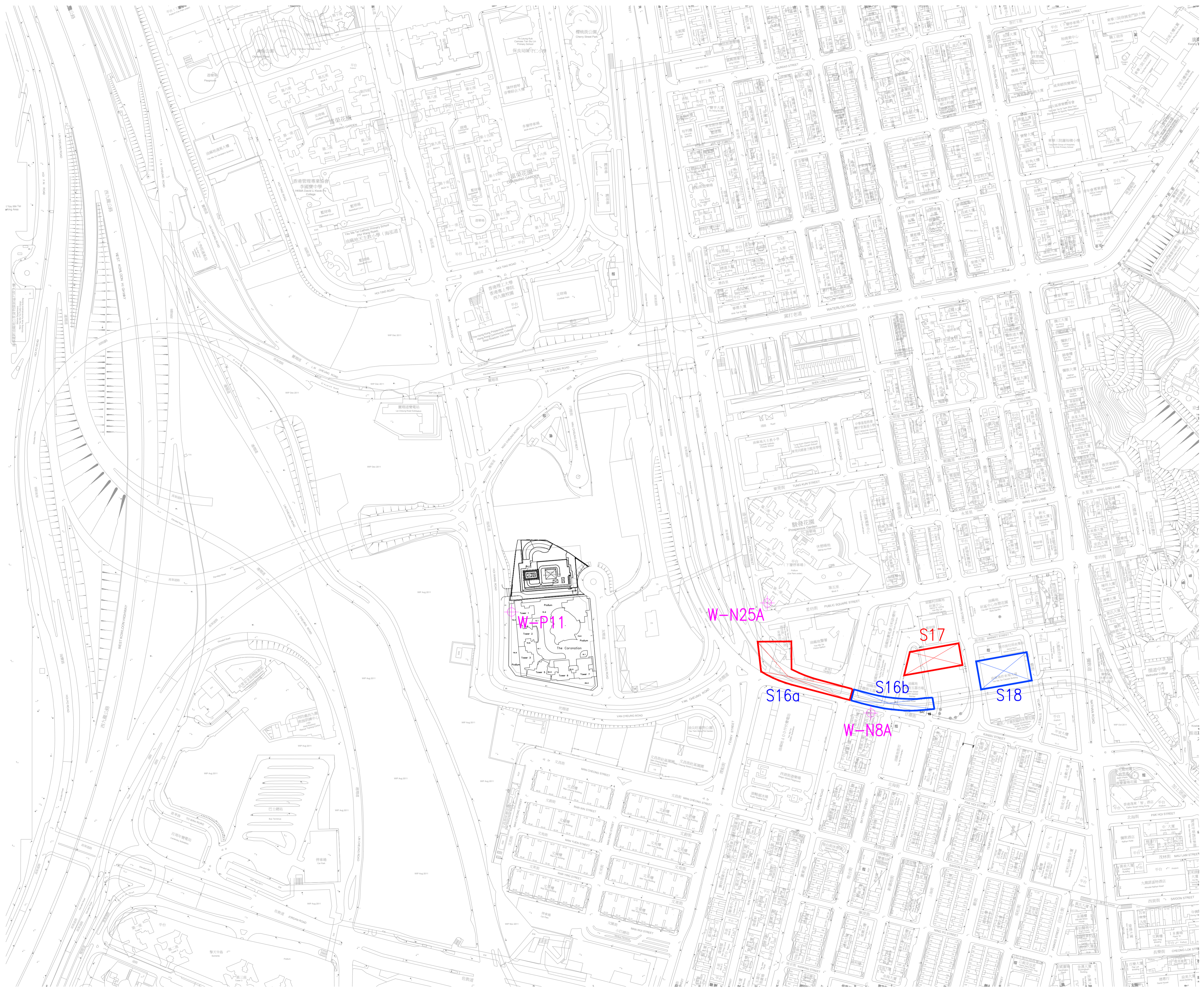
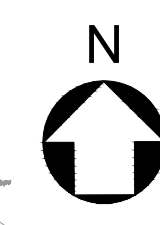
Drawing no. 圖紙編號	BKSK/YMTE/C/10001	Rev. 修訂	A
Drawn By 繪圖	PC	Checked By 覆核	LL
Approved By 批准人	AT	Status 階段	SUBMISSION

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Contractor
承建商



BUILD KING - SKEC JOINT VENTURE

Project title
工程名稱

Contract No. HY/2014/08

Central Kowloon Route -
Yau Ma Tei East

Drawing title
圖紙名稱

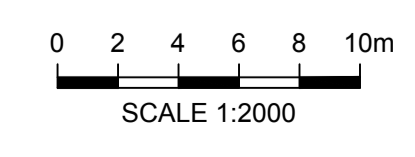
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LOCATIONS OF NSR'S AND
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(WEST PORTION - STAGE 2)**

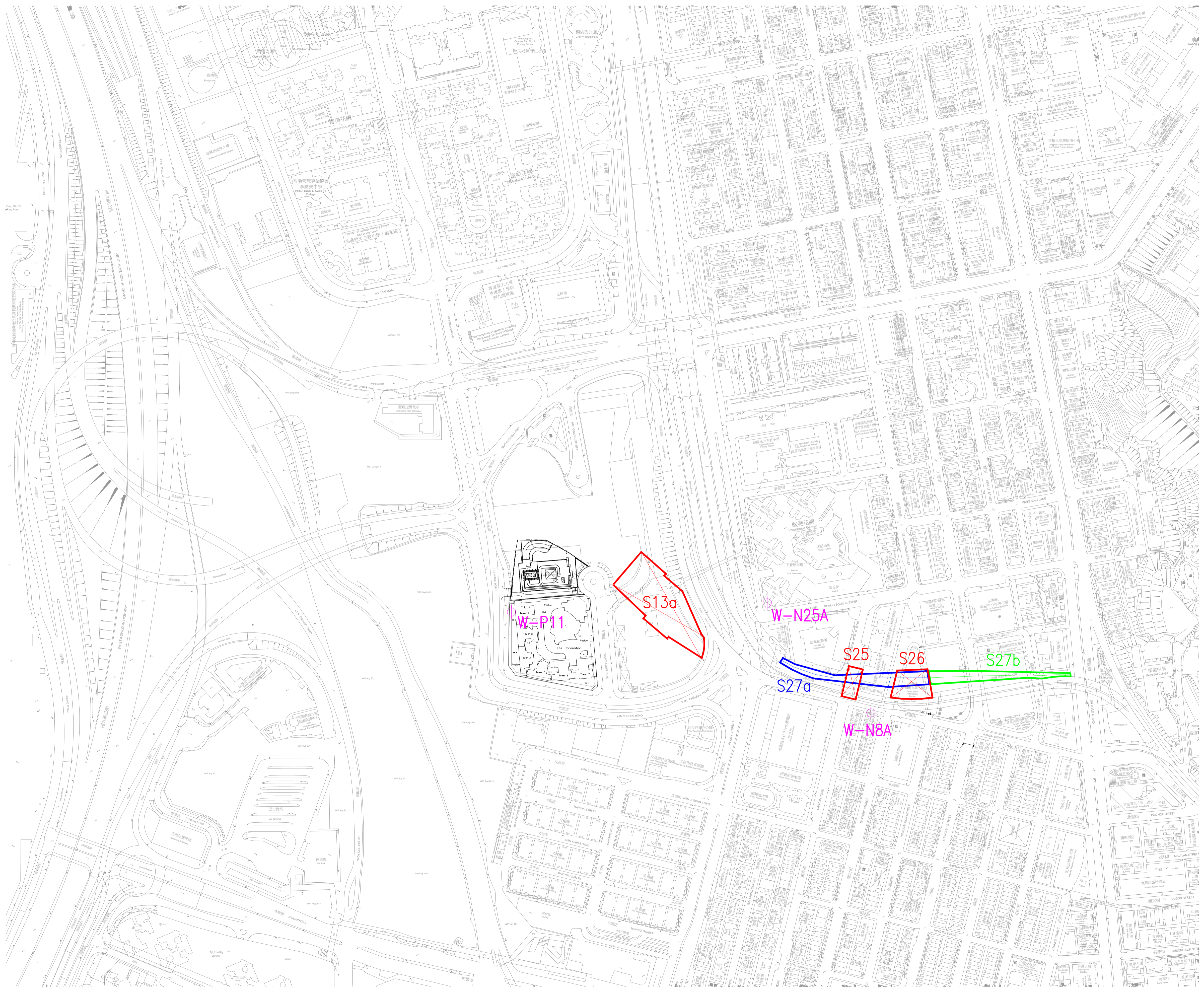
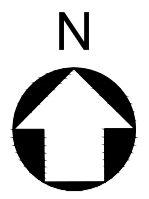
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Contract No. HY/2014/08

Central Kowloon Route -
Yau Ma Tei East

Drawing title
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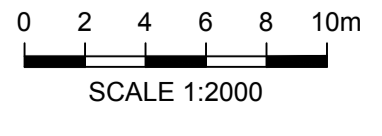
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LOCATIONS OF NSR'S AND
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(WEST PORTION - STAGE 3)**

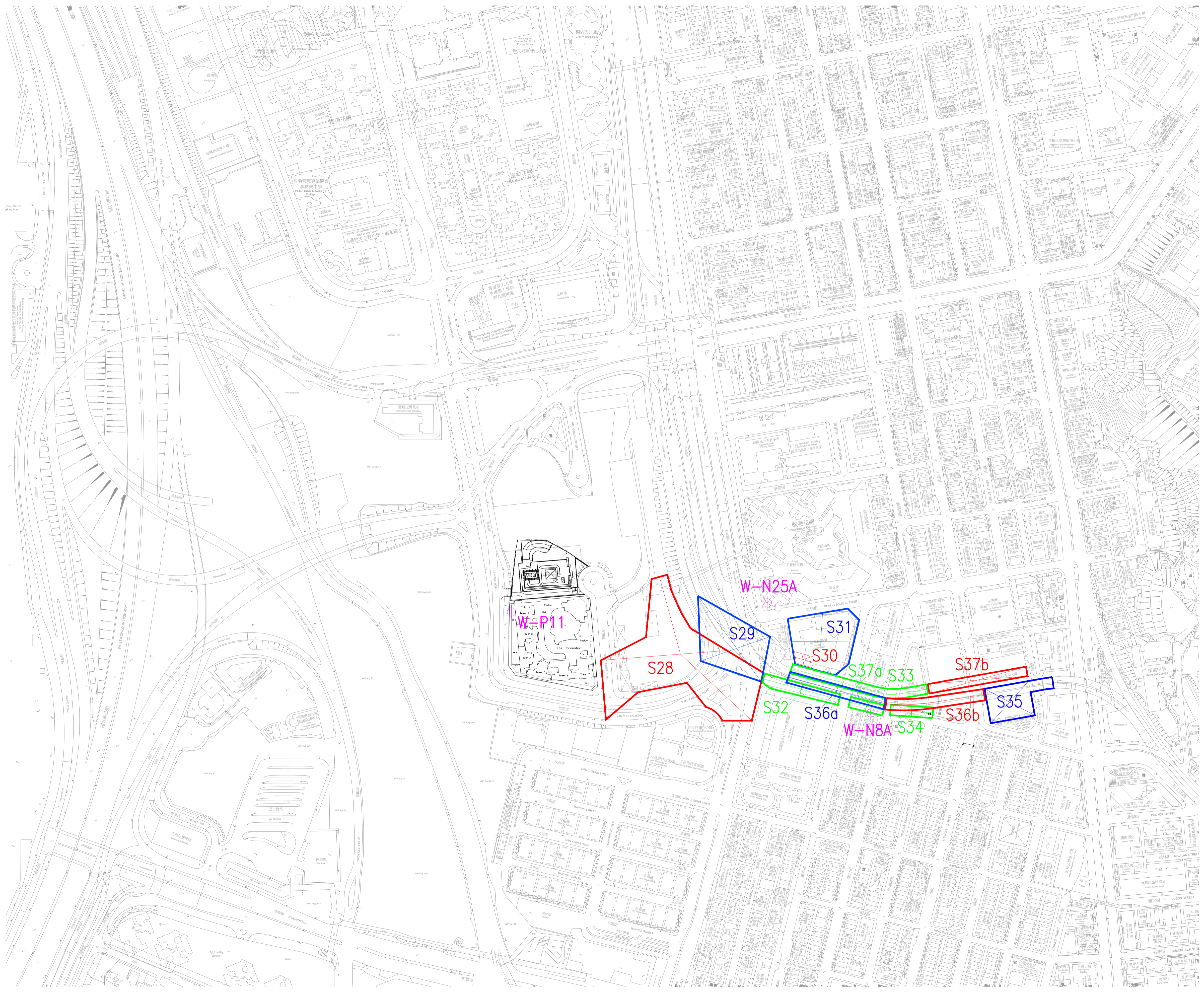
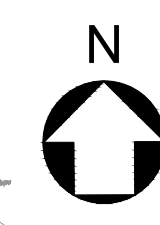
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BUILD KING - SKEC JOINT VENTURE

Project title
工程名稱

Contract No. HY/2014/08

Central Kowloon Route -
Yau Ma Tei East

Drawing title
圖紙名稱

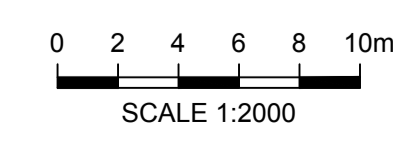
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LOCATIONS OF NSR'S AND
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(WEST PORTION - STAGE 4)**

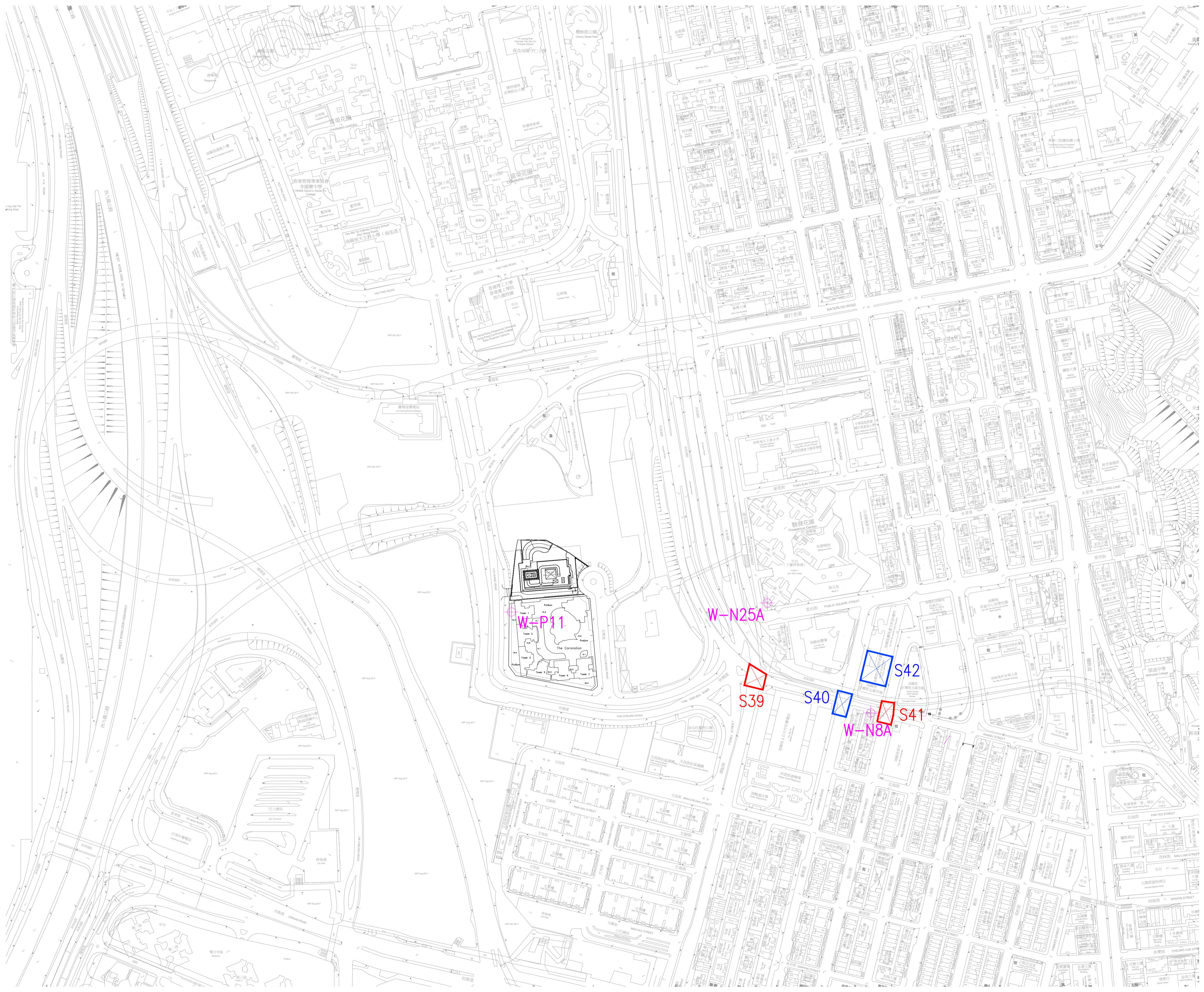
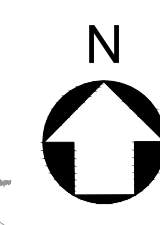
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Project title
工程名稱

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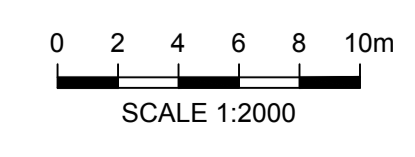
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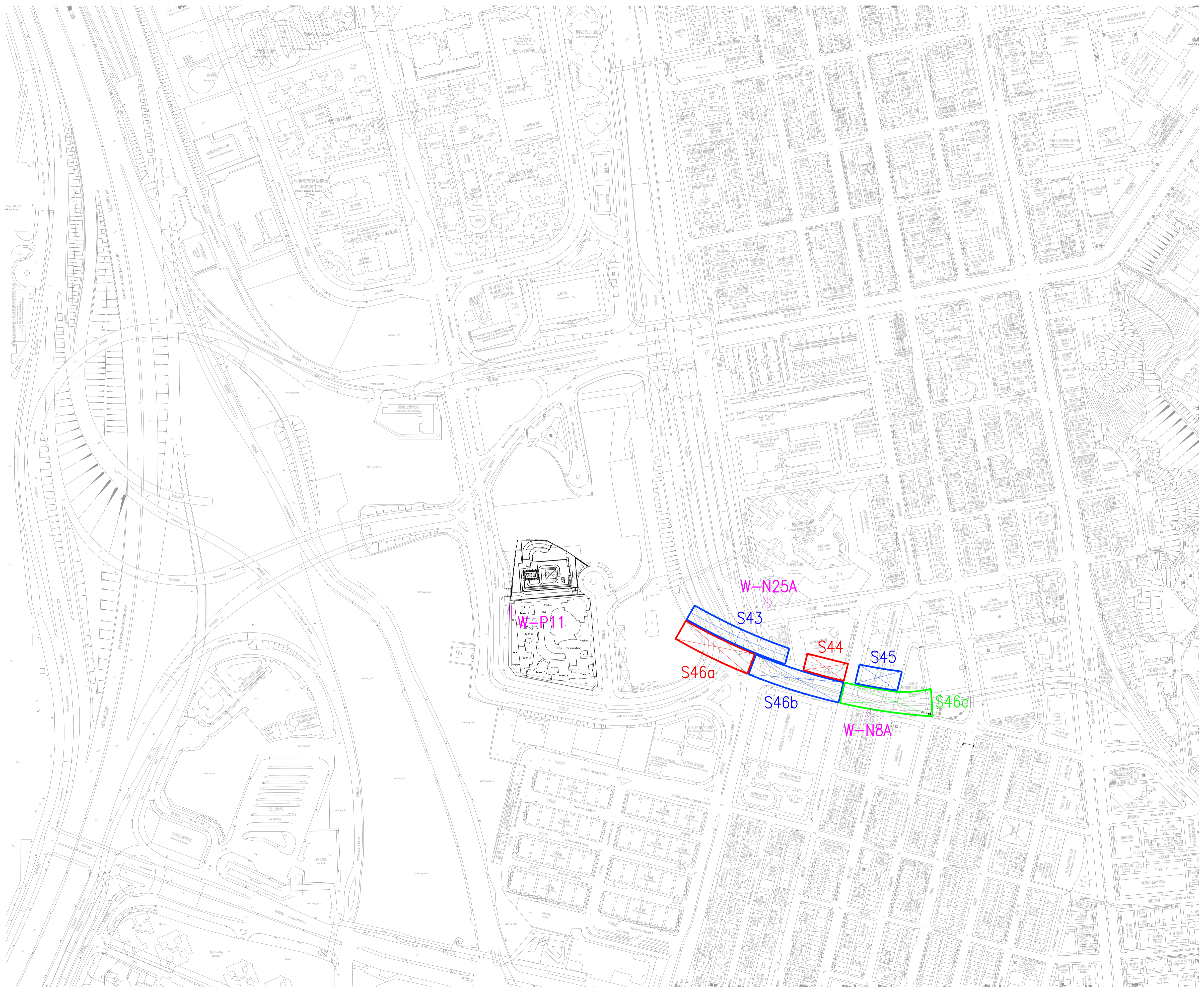
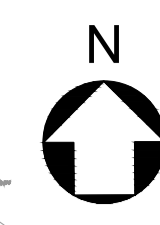
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LOCATIONS OF NSR'S AND
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工程名稱

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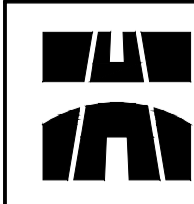
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Yau Ma Tei East

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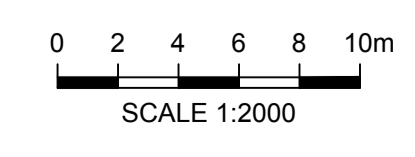
**APPENDIX
LOCATIONS OF NSR'S AND
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(WEST PORTION - STAGE 6)**

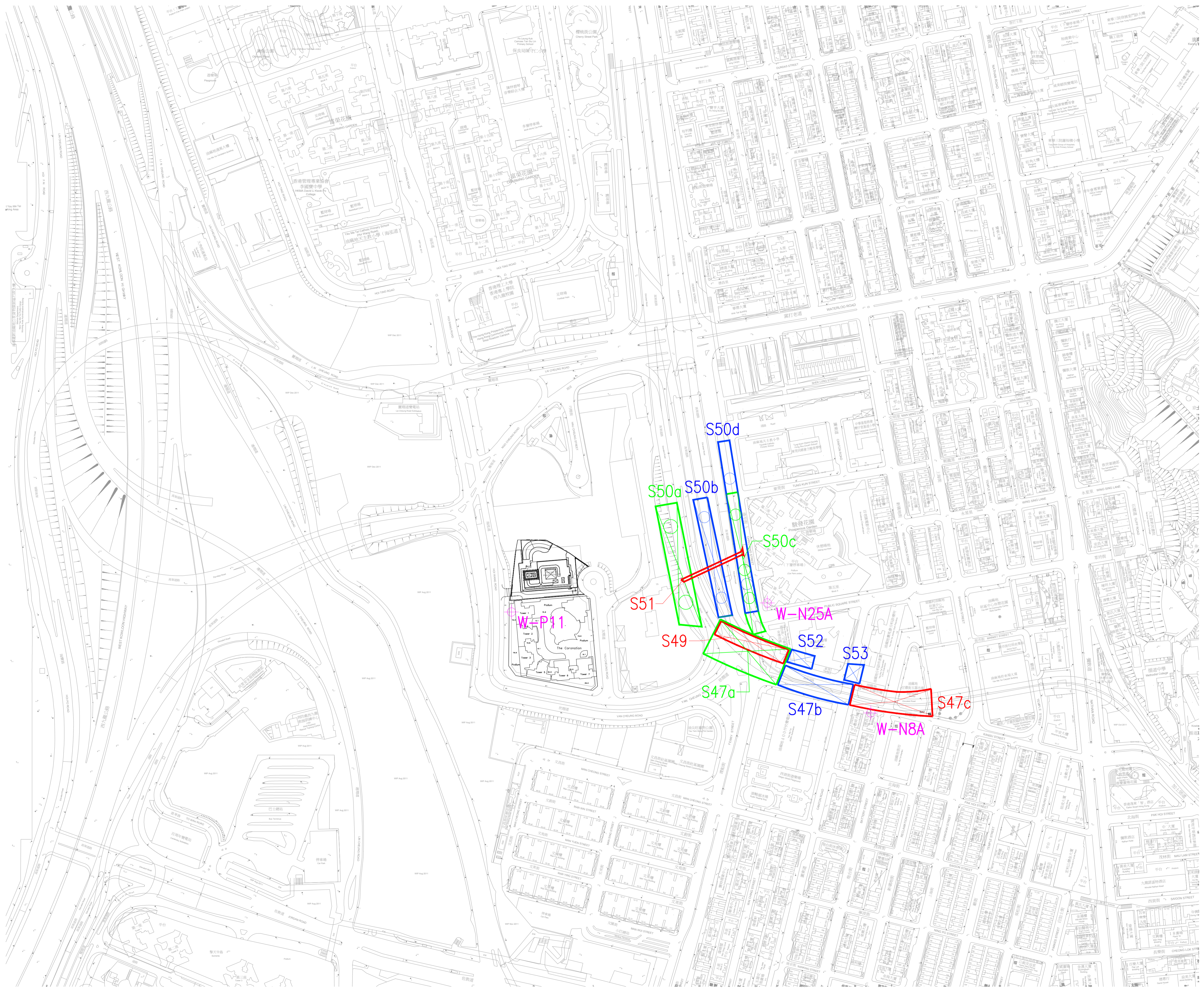
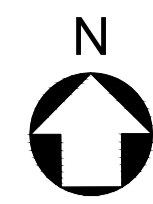
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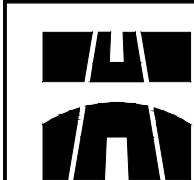
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 Yau Ma Tei East

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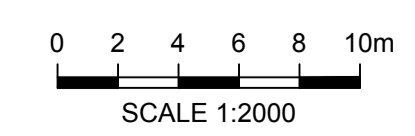
**APPENDIX
 LOCATIONS OF NSR'S AND
 NOTIONAL SOURCES
 (WEST PORTION - STAGE 7)**

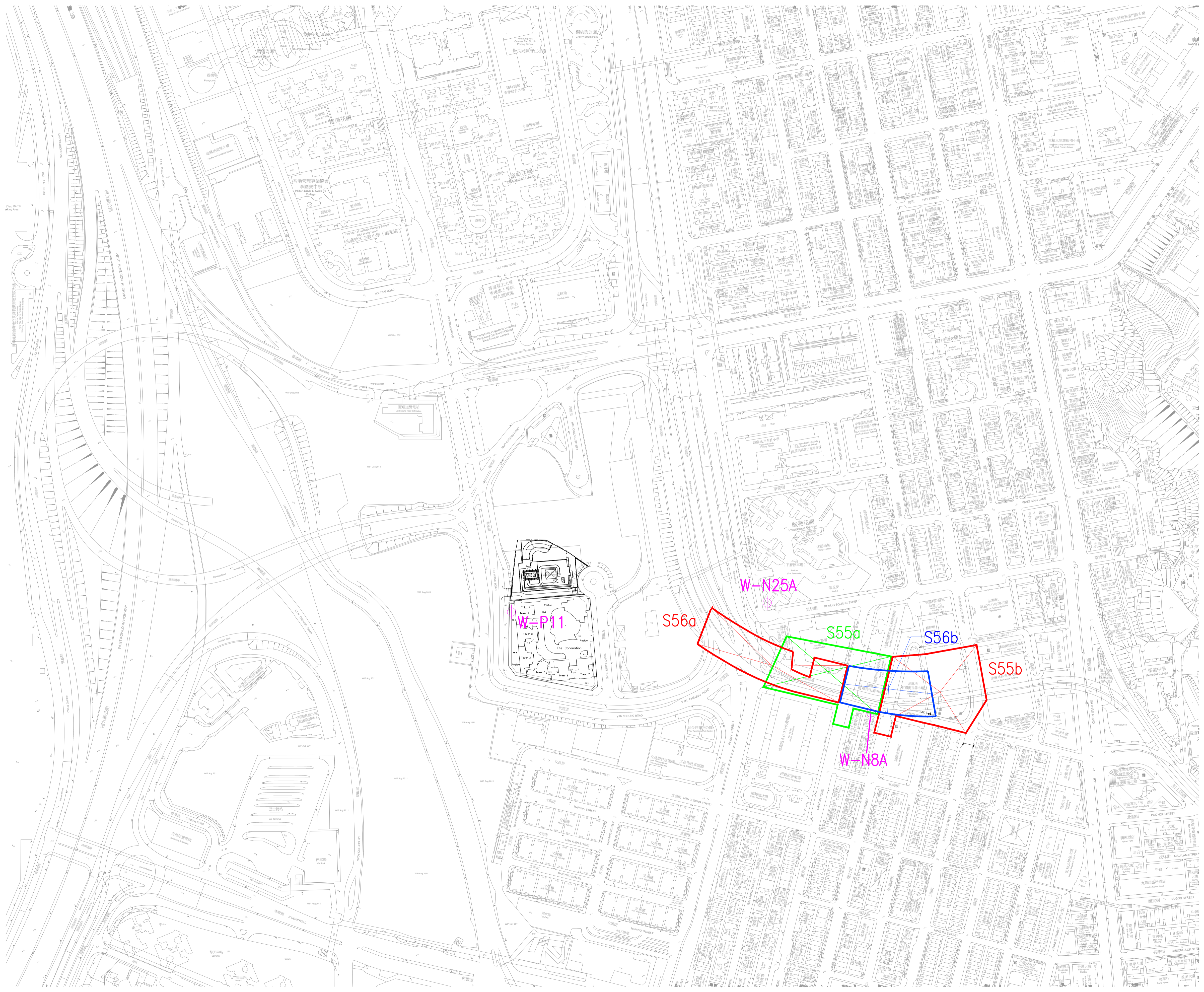
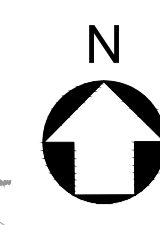
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Contract No. HY/2014/08

Central Kowloon Route -
Yau Ma Tei East

Drawing title
圖紙名稱

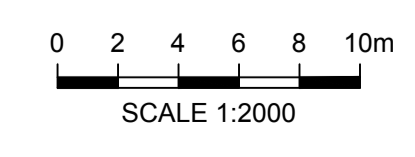
**APPENDIX
LOCATIONS OF NSR'S AND
NOTIONAL SOURCES
(WEST PORTION - STAGE 8)**

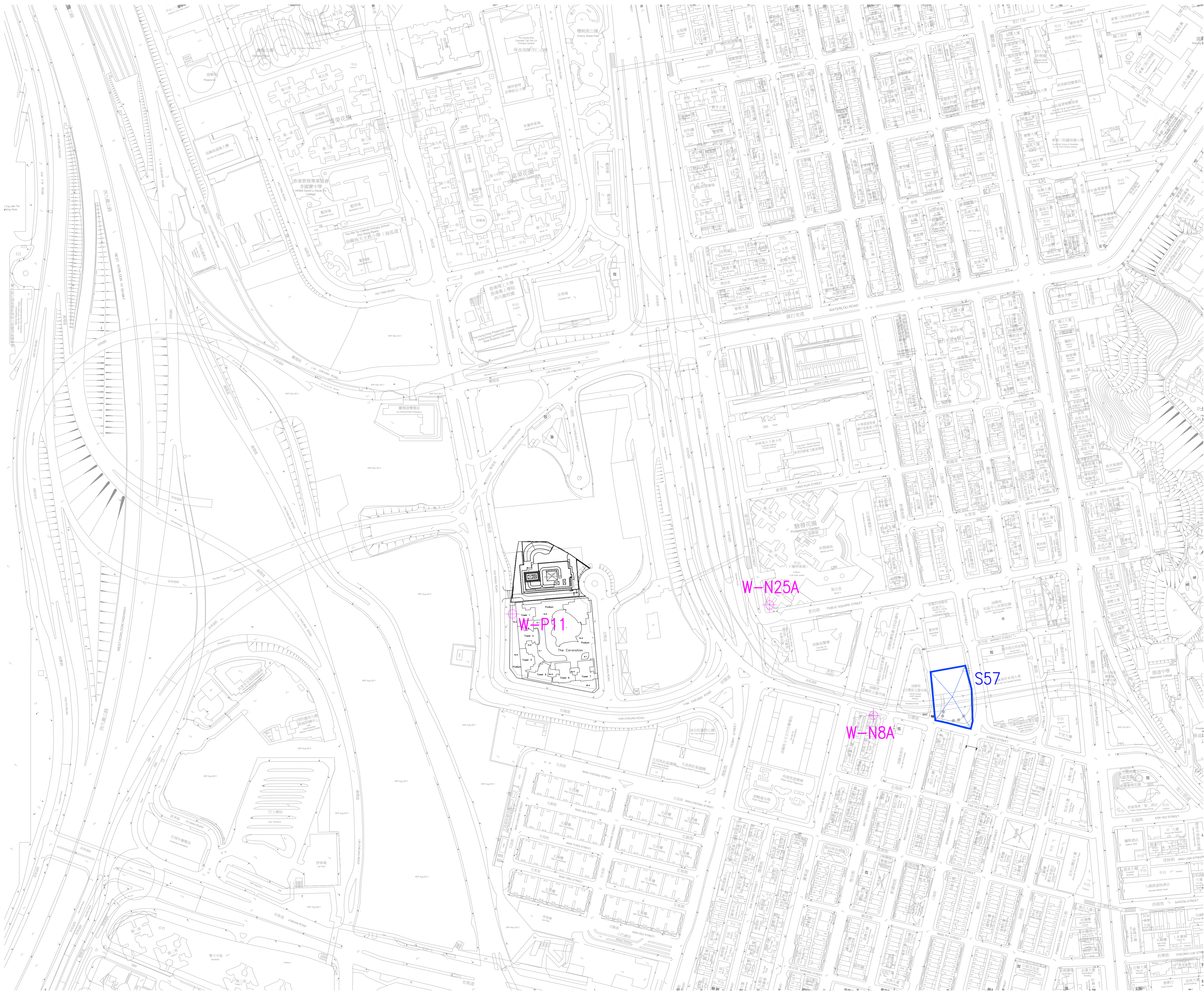
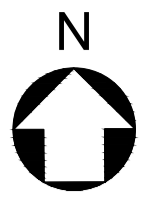
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BUILD KING - SKEC JOINT VENTURE

Project title
工程名稱

Contract No. HY/2014/08

**Central Kowloon Route -
Yau Ma Tei East**

Drawing title
圖紙名稱

**APPENDIX
LOCATIONS OF NSR'S AND
NOTIONAL SOURCES
(WEST PORTION ACCESS SHAFT)**

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SCALE 1:2000

Appendix B

Updated Preliminary Construction Programme

Appendix C

Detailed Construction Noise Assessment

Build King - SKEC Joint Venture

Construction Noise Assessment

Period: 0700 to 1900 (except general holidays)

Noise Sensitive Receiver: W-N1A Yau Ma Tei Catholic Primary School (Hoi Wang Road)

Mitigation Measures Scenario

Noise Criteria: 70dB(A), 65dB(A) during exam

Worksite	Activity	Period	PME	TM Ref. / other Ref.	Unit Quiet Plant SWL	On-time, %	Time Factor	Quiet Plant SWL with on-time %	No. of plants	Total SWL	Distance from Notional Sources, m	Distance Attenuation	Façade Correction, dB(A)	Barrier Correction, dB(A)	Predicted Noise Level, dB(A)	Total Predicted Noise Level for each group, dB(A)		
S3	Construct Dwall and Traffic Deck - Piling for King Post	Jul-18	Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	300	-58	3	-5	47	51		
			Concrete pump	CNP047	109	80	-1	108	1	108	300	-58	3	-5	43			
			Dump Truck with Grab	CNP069	105	70	-2	103	1	103	300	-58	3	-5	44			
			Generator	CNP103	95	100	0	95	2	98	300	-58	3	-5	33			
			Lorry	CNP142	105	60	-2	103	1	103	300	-58	3	-5	43			
			or															
			Generator	CNP103	95	100	0	95	2	98	300	-58	3	-5	33			
			Lorry	CNP142	105	60	-2	103	1	103	300	-58	3	-5	43			
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	300	-58	3	-5	40			
			Bored Piling Crane mounted auger	BS D4-37	111	70	-2	109	2	112	300	-58	3	-5	48			
	Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	300	-58	3	-5	38					
	Construct Dwall and Traffic Deck - Diaphragm Walls	Aug 2018 - Nov 2018	Bar Bender and Cutter	CNP021	90	70	-2	88	1	88	300	-58	3	0	34	51		
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	300	-58	3	-5	47			
			Concrete pump	CNP047	109	80	-1	108	1	108	300	-58	3	-5	43			
			Generator	CNP103	95	100	0	95	2	98	300	-58	3	-5	33			
			Lorry	CNP142	105	70	-2	103	1	103	300	-58	3	-5	44			
			Poker, Vibratory, Hand Held	CNP173	102	60	-2	100	1	100	300	-58	3	-5	40			
			or															
			Dump Truck with Grab	CNP069	105	70	-2	103	1	103	300	-58	3	-5	44			
			Generator	CNP103	95	100	0	95	2	98	300	-58	3	-5	33			
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	300	-58	3	-5	40			
	Construct Southern Dwall & Traffic Deck - Excavation for Diaphragm Walls	Nov 2018 - Jan 2019	Crane Mobile	BS D7-114	101	70	-2	99	1	99	300	-58	3	-5	40	49		
			Excavator/Loader, Wheeled/Tracked	CNP162	105	90	0	105	1	105	300	-58	3	-5	40			
			Dump Truck with Grab	CNP069	105	70	-2	103	1	103	300	-58	3	-5	44			
			Generator	CNP103	95	100	0	95	1	95	300	-58	3	-5	30			
			Lorry	CNP142	105	70	-2	103	1	103	300	-58	3	-5	44			
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	300	-58	3	-5	40			
			Excavator/Loader, Wheeled/Tracked	CNP162	105	90	0	105	1	105	300	-58	3	-5	40			
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	60	-2	97	1	97	300	-58	3	-5	37			
			Bar Bender and Cutter	CNP021	90	70	-2	88	1	88	300	-58	3	0	34			
Concrete Lorry Mixer			CNP044	109	60	-2	107	1	107	300	-58	3	-5	47				
Construct Southern Dwall & Traffic Deck - Concreting for Diaphragm Walls	Feb-19	Concrete pump	CNP047	109	80	-1	108	1	108	300	-58	3	-5	43	49			
		Generator	CNP103	95	70	-2	93	1	93	300	-58	3	-5	29				
Construct Southern Dwall & Traffic Deck - Temporary Traffic Deck	Mar-19	Generator	CNP103	95	70	-2	93	1	93	300	-58	3	-5	29	47			
		Lorry	CNP142	105	90	0	105	1	105	300	-58	3	-5	45				
		Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	300	-58	3	-5	38				
		Crane Mobile	BS D7-114	101	70	-2	99	1	99	300	-58	3	-5	40				
S13a	Removal of Excavated Material through West End Portal	Apr 2019 - Mar 2020	Dump Truck with Grab	CNP069	105	70	-2	103	10	113	300	-58	3	-5	54	54		

Worksite	Activity	Period	PME	TM Ref. / other Ref.	Unit Quiet Plant SWL	On-time, %	Time Factor	Quiet Plant SWL with on-time %	No. of plants	Total SWL	Distance from Notional Sources, m	Distance Attenuation	Facade Correction, dB(A)	Barrier Correction, dB(A)	Predicted Noise Level, dB(A)	Total Predicted Noise Level for each group, dB(A)
SS0b	Foundation (west side) for noise enclosure on GRF Flyover (Ferry Street Section)	Apr 2022 Jun 2022	Concrete Lorry Mixer	CNP044	109	60	-2	107	2	110	205	-54	3	-5	54	59
			Concrete pump	CNP047	109	80	-1	108	1	108	205	-54	3	-10	47	
			Generator	CNP103	95	100	0	95	3	100	205	-54	3	-10	39	
			Lorry	CNP142	105	70	-2	103	2	106	205	-54	3	-5	50	
			Crane Mobile	BS D7-114	101	60	-2	99	3	104	205	-54	3	-5	47	
			Bored Piling Crane mounted auger	BS D4-37	111	80	-1	110	2	113	205	-54	3	-10	52	
		Oct 2022 Apr 2023	Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	2	100	205	-54	3	-5	44	
			Compactor, vibratory	CNP050	105	70	-2	103	3	108	205	-54	3	-5	52	
			Dump Truck with Grab	CNP069	105	70	-2	103	1	103	205	-54	3	-5	47	
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	205	-54	3	-5	43	
			Generator	CNP103	95	100	0	95	1	95	205	-54	3	-10	34	
			Lorry	CNP142	105	70	-2	103	1	103	205	-54	3	-5	47	
SS0c	Foundation (west side) for noise enclosure on GRF Flyover (Ferry Street Section)	Jul 2022 Sep 2022	Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	170	-53	3	-5	52	59
			Concrete pump	CNP047	109	80	-1	108	1	108	170	-53	3	-10	48	
			Generator	CNP103	95	100	0	95	3	100	170	-53	3	-10	40	
			Lorry	CNP142	105	70	-2	103	1	103	170	-53	3	-5	49	
			Crane Mobile	BS D7-114	101	60	-2	99	2	102	170	-53	3	-5	47	
			Bored Piling Crane mounted auger	BS D4-37	111	80	-1	110	2	113	170	-53	3	-10	53	
		Oct 2022 Apr 2023	Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	2	100	170	-53	3	-5	46	
			Compactor, vibratory	CNP050	105	70	-2	103	2	106	170	-53	3	-5	52	
			Dump Truck with Grab	CNP069	105	70	-2	103	1	103	170	-53	3	-5	49	
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	170	-53	3	-10	35	
			Generator	CNP103	95	100	0	95	1	95	170	-53	3	-10	35	
			Lorry	CNP142	105	70	-2	103	1	103	170	-53	3	-5	49	
SS0d	Road works for re-align Ferry Street at-grade road	Jan 2022 Jun 2022	Asphalt Paver	EPD-01126	104	80	-1	103	1	103	185	-53	3	-5	48	57
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	185	-53	3	-5	51	
			Concrete pump	CNP047	109	80	-1	108	1	108	185	-53	3	-10	48	
			Dump Truck with Grab	CNP069	105	70	-2	103	1	103	185	-53	3	-5	48	
			Generator	CNP103	103	100	0	103	1	103	185	-53	3	-10	43	
			Poker, Vibratory, Hand Held	CNP173	102	70	-2	100	1	100	185	-53	3	-10	40	
		Jul 2022 Aug 2022	Road Roller	EPD-01183	97	80	-1	96	1	96	185	-53	3	-10	41	
			Bored Piling Crane mounted auger	BS D4-37	111	80	-1	110	1	110	185	-53	3	-10	50	
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	185	-53	3	-5	42	
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	185	-53	3	-5	44	
			Breaker, Excavator Mounted (Hydraulic)	BS D8-13	110	50	-3	107	1	107	225	-55	3	-5	50	
			Dump Truck with Grab	CNP069	105	70	-2	103	2	106	225	-55	3	-5	49	
SS1	Demolish the Existing Ferr Street Subway	Jul 2022 Aug 2022	Concrete crusher, excavator mounted	CNP055	103	80	-1	102	1	102	225	-55	3	-5	45	54
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	225	-55	3	-5	42	
			Saw, Wire	CNP205	101	70	-2	99	1	99	225	-55	3	-5	42	
			Dump Truck with Grab	CNP069	105	70	-2	103	1	103	85	-47	3	-5	55	
			Generator	CNP103	95	100	0	95	1	95	85	-47	3	-10	41	
			Lorry	CNP142	105	70	-2	103	1	103	85	-47	3	-5	55	
		Oct 2020	Crane Mobile	BS D7-114	101	70	-2	99	1	99	85	-47	3	-5	51	
			Piling, Diaphragm Wall, Bentonite Filtering Plant	CNP162	105	90	0	105	1	105	85	-47	3	-10	51	
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	60	-2	97	1	97	85	-47	3	-5	48	
			Bar Bender and Cutter	CNP021	90	70	-2	88	1	88	85	-47	3	0	45	
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	85	-47	3	-5	58	
			Concrete pump	CNP047	109	80	-1	108	1	108	85	-47	3	-10	54	
SS2	Construct Northern Dwall & Traffic Deck (cross road sections) - Excavation for Diaphragm Walls	Nov 2020	Generator	CNP103	95	100	0	95	3	93	85	-47	3	-10	40	60
			Lorry	CNP142	105	70	-2	103	1	103	85	-47	3	-5	56	
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	85	-47	3	-5	49	
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	85	-47	3	-5	51	
			Generator	CNP103	95	100	0	95	1	95	40	-40	3	-10	48	
			Lorry	CNP142	105	70	-2	103	1	103	40	-40	3	-5	61	
		Dec 2020	Piling, Diaphragm Wall, Bentonite Filtering Plant	CNP162	105	90	0	105	1	105	40	-40	3	-10	58	
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	60	-2	97	1	97	40	-40	3	-5	55	
			Bar Bender and Cutter	CNP021	90	70	-2	88	1	88	40	-40	3	0	51	
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	40	-40	3	-5	65	
			Concrete pump	CNP047	109	80	-1	108	1	108	40	-40	3	-10	61	
			Generator	CNP103	95	100	0	95	1	95	40	-40	3	-10	46	
SS3	Construct Northern Dwall & Traffic Deck (cross road sections) - Temporary Traffic Deck	Dec 2020	Lorry	CNP142	105	90	0	105	1	93	40	-40	3	-5	63	64
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	40	-40	3	-5	55	
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	40	-40	3	-5	57	
			Asphalt Paver	EPD-01126	104	80	-1	103	1	103	50	-42	3	-5	59	
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	50	-42	3	-5	63	
			Generator	CNP103	95	100	0	95	1	95	50	-42	3	-10	46	
		Jan 2020 Feb 2020	Poker, Vibratory, Hand Held	CNP173	102	60	-2	100	2	103	50	-42	3	-10	54	
			Road Roller	EPD-01183	97	70	-2	95	1	95	50	-42	3	-5	51	
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	50	-42	3	-5	53	
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	50	-42	3	-5	55	
			Asphalt Paver	EPD-01126	104	80	-1	103	1	103	50	-42	3	-5	59	
			Concrete Lorry Mixer	CNP044	109	60	-2	107	2	110	50	-42	3	-5	66	
SS5a	Road works for Section between Ferry Street and Nathan Road	Apr 2023 Sep 2023	Concrete pump	CNP047	109	80	-1	108	1	108	50	-42	3	-10	59	68
			Generator	CNP103	95	100	0	95	2	98	50	-42	3	-10	49	
			Poker, Vibratory, Hand Held	CNP173	102	70	-2	100	2	103	50	-42	3	-10	54	
			Road Roller	EPD-01183	97	80	-1	96	1	96	50	-42	3	-5	53	
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	50	-42	3	-5	53	
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	50	-42	3	-5	55	
		Jan 2020 Feb 2020	Asphalt Paver	EPD-01126	104	80	-1	103	1	103	35	-39	3	-5	62	
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	35	-39	3	-5	66	
			Generator	CNP103	95	100	0	95	1	95	35	-39	3	-10	49	
			Poker, Vibratory, Hand Held	CNP173	102	60	-2	100	1	100	35	-39	3	-10	54	
			Road Roller	EPD-01183	97	70	-2	95	1	95	35	-39	3	-5	55	
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	35	-39	3	-5	57	
SS5b	Reinstate the affected roads and footpaths	Jan 2020 Feb 2020	Crane Mobile	BS D7-114	101	70	-2	99	1	99	35	-39	3	-5	59	69
			Asphalt Paver	EPD-01126	104	80	-1	103	1	103	35	-39	3	-5	62	
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	35	-39	3	-5	66	
			Concrete pump	CNP047	109	80	-1	108	1	108	35	-39	3	-10	62	
			Generator	CNP103	95	100	0	95	1	95	35	-39	3	-10	49	
			Poker, Vibratory, Hand Held	CNP173	102	70	-2	100	1	100	35	-39	3	-10	55	
		Apr 2023 Sep 2023	Road Roller	EPD-01183	97	80	-1	96	1	96	35	-39	3	-5	53	
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	35	-39	3	-5	57	
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	35	-39	3	-5	59	
			Asphalt Paver	EPD-01126	104	80	-1	103	1	103	35	-39	3	-5	62	
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	35	-39	3	-5	66	
			Concrete pump	CNP047	109	80	-1	108	1	108	35	-39	3	-10	62	
SS5a	Construction of the Cut and Cover Tunnel (under cover of traffic deck)	Apr 2020 Nov 2022	Generator	CNP103	95	100	0	95	3	100	75	-46	3	-20	37	59
			Crane Mobile	BS D7-114	1											

Build King - SKEC Joint Venture

Construction Noise Assessment

Period: 0700 to 1900 (except general holidays)

Noise Sensitive Receiver: W-N8A Tak Cheong Building

Mitigation Measures Scenario

Noise Criteria: 75dB(A)

Worksite	Activity	Period	PME	TM Ref. / other Ref.	Unit Quiet Plant SWL	On-time, %	Time Factor	Quiet Plant SWL with on-time %	No. of plants	Total SWL	Distance from Notional Sources, m	Distance Attenuation	Facade Correction, dB(A)	Barrier Correction, dB(A)	Predicted Noise Level, dB(A)	Total Predicted Noise Level for each group, dB(A)
S57	Site Establishment, Utility Diversion and Mobilization of Plant	Apr 2018 Oct 2018	Air Compressor	CNP003	104	70	-2	102	1	102	75	-46	3	-10	50	67
			Breaker, Excavator Mounted (Hydraulic)	BS D8-13	110	70	-2	108	3	113	75	-46	3	-5	66	
			Dump Truck with Grab	CNP069	105	50	-3	102	2	105	75	-46	3	-5	57	
			Lorry	CNP142	105	50	-3	102	1	102	75	-46	3	-5	54	
			Saw, Wire	CNP205	101	70	-2	99	2	102	75	-46	3	-5	55	
	Diaphragm Walls Construction and Shaft Excavation - Bored Piling Works (underground)	Apr 2018 Jul 2018	Excavator/Loader, Wheeled/Tracked	EPD-01145	99	100	0	99	1	99	75	-46	3	-5	51	53
			Bar Bender and Cutter	CNP021	90	50	-3	87	2	90	75	-46	3	-20	27	
			Concrete Lorry Mixer	CNP044	109	70	-2	107	1	107	75	-46	3	-20	45	
			Concrete pump	CNP047	109	70	-2	107	1	107	75	-46	3	-20	45	
			Dump Truck with Grab	CNP069	105	50	-3	102	1	102	75	-46	3	-15	44	
			Generator	CNP103	95	100	0	95	3	100	75	-46	3	-20	37	
			Lorry	CNP142	105	50	-3	102	1	102	75	-46	3	-15	44	
			Crane Mobile	BS D7-114	101	50	-3	98	1	98	75	-46	3	-20	35	
			Piling, Diaphragm Wall, Bentonite Filtering Plant	CNP162	105	100	0	105	2	108	75	-46	3	-20	46	
			Poker, Vibratory, Hand Held	CNP173	102	70	-2	100	2	103	75	-46	3	-20	41	
	Diaphragm Walls Construction and Shaft Excavation - Diaphragm Walls (underground)	Apr 2018 Jul 2019	Excavator/Loader, Wheeled/Tracked	EPD-01145	99	50	-3	96	1	96	75	-46	3	-20	33	53
			Water Pump, Submersible (Electric)	CNP283	85	100	0	85	4	91	75	-46	3	-20	29	
			Bar Bender and Cutter	CNP021	90	70	-2	88	2	91	75	-46	3	-20	29	
			Concrete Lorry Mixer	CNP044	109	50	-3	106	2	109	75	-46	3	-20	46	
			Concrete pump	CNP047	109	50	-3	106	2	109	75	-46	3	-20	46	
			Dump Truck with Grab	CNP069	105	50	-3	102	1	102	75	-46	3	-15	44	
			Generator	CNP103	95	100	0	95	4	101	75	-46	3	-20	39	
			Lorry	CNP142	105	50	-3	102	1	102	75	-46	3	-15	44	
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	75	-46	3	-20	37	
			Piling, Diaphragm Wall, Bentonite Filtering Plant	CNP162	105	100	0	105	1	105	75	-46	3	-20	42	
Diaphragm Walls Construction and Shaft Excavation - Excavation of Access Shaft (underground)	Apr 2018 Jul 2019	Poker, Vibratory, Hand Held	CNP173	102	50	-3	99	2	102	75	-46	3	-20	39	53	
		Excavator/Loader, Wheeled/Tracked	EPD-01145	99	50	-3	96	1	96	75	-46	3	-20	33		
		Water Pump, Submersible (Electric)	CNP283	85	100	0	85	4	91	75	-46	3	-20	29		
		Breaker, Excavator Mounted (Hydraulic)	BS D8-13	110	70	-2	108	1	108	75	-46	3	-20	46		
		Dump Truck with Grab	CNP069	105	50	-3	102	4	108	75	-46	3	-15	51		
		Generator	CNP103	95	100	0	95	3	100	75	-46	3	-20	37		
		Lorry	CNP142	105	50	-3	102	1	102	75	-46	3	-15	44		
		Tracked crane	BS D7-114	101	70	-2	99	1	99	75	-46	3	-20	37		
		Excavator/Loader, Wheeled/Tracked	EPD-01145	99	100	0	99	3	104	75	-46	3	-20	41		
		Water Pump, Submersible (Electric)	CNP283	85	100	0	85	8	94	75	-46	3	-20	32		
Non-blast Tunnelling - Drilling Charge Hole, Mucking Out and Scaling (underground)	Jul 2019 - Apr 2022	Breaker, Excavator Mounted (Hydraulic)	BS D8-13	110	50	-3	107	2	110	75	-46	3	-20	47	60	
		Dump Truck with Grab	CNP069	105	70	-2	103	4	109	75	-46	3	-15	52		
		Lorry	CNP142	105	70	-2	103	4	109	75	-46	3	-15	52		
		Rock Drill	SIL EIA	108	70	-2	106	4	112	75	-46	3	-20	50		
		Tracked crane	BS D7-114	101	70	-2	99	3	104	75	-46	3	-20	42		
		Ventilation Fan	CNP241	108	100	0	108	4	114	75	-46	3	-15	57		
		Water Pump, Submersible (Electric)	CNP283	85	100	0	85	4	91	75	-46	3	-20	29		
		Rock Crusher	Reference to approved West Island Line EIA report	118	40	-4	114	1	114	75	-46	3	-20	52		
		Grout mixer	CNP105	90	70	-2	88	2	91	75	-46	3	-20	29		
		Grout pump	CNP106	105	70	-2	103	2	106	75	-46	3	-20	44		
Non-blast Tunnelling - Rock Bolting & Shotcreting (underground)	Jul 2019 - Apr 2022	Rock Drill	SIL EIA	108	70	-2	106	4	112	75	-46	3	-20	50	59	
		Ventilation Fan	CNP241	108	100	0	108	4	114	75	-46	3	-15	57		
		Water Pump, Submersible (Electric)	CNP283	85	100	0	85	4	91	75	-46	3	-20	29		
		Rock Crusher	Reference to approved West Island Line EIA report	118	40	-4	114	1	114	75	-46	3	-20	52		
		Bar Bender and Cutter	CNP021	90	100	0	90	2	93	75	-46	3	-20	31		
		Concrete Lorry Mixer	CNP044	109	70	-2	107	2	110	75	-46	3	-20	48		
		Concrete pump	CNP047	109	70	-2	107	2	110	75	-46	3	-20	48		
		Generator	CNP103	95	100	0	95	2	98	75	-46	3	-20	38		
		Crane Mobile	BS D7-114	101	100	0	101	1	101	75	-46	3	-20	38		
		Poker, Vibratory, Hand Held	CNP173	102	100	0	102	2	105	75	-46	3	-20	43		
S58	Construction of Temporary Maternal and Child Health Centre	Apr 2018 Jun 2018	Saw, Circular Wood	BS D7-79	103	50	-3	100	2	103	260	-56	3	-10	40	43
			Water Pump, Submersible (Electric)	CNP283	85	100	0	85	4	91	260	-56	3	-20	29	
			Poker, Vibratory, Hand Held	CNP173	102	50	-3	99	1	99	260	-56	3	-5	41	
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	260	-56	3	-5	39	
			Bar Bender and Cutter	CNP021	90	60	-2	88	2	91	260	-56	3	0	37	
	Construction of Temporary Maternal and Child Health Centre - Superstructure	Jul 2018 - Dec 2018	Concrete Lorry Mixer	CNP044	109	50	-3	106	2	109	260	-56	3	-5	51	53
			Concrete pump	CNP047	109	70	-2	107	1	107	260	-56	3	-10	44	
			Generator	CNP103	95	100	0	95	2	98	260	-56	3	-10	35	
			Crane Mobile	BS D7-114	101	50	-3	98	1	98	260	-56	3	-5	40	
			Saw, Circular Wood	BS D7-79	103	50	-3	100	2	103	260	-56	3	-5	45	
Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	260	-56	3	-5	39				

Build King - SKEC Joint Venture
Construction Noise Assessment

Period: 0700 to 1900 (except general holidays)

Noise Sensitive Receiver: W-N25A Prosperous Garden Block 1

Mitigation Measures Scenario

Noise Criteria: 75dB(A)

Worksite	Activity	Period	PME	TM Ref. / other Ref.	Unit Quiet Plant SWL	On-time, %	Time Factor	Quiet Plant SWL with on-time %	No. of plants	Total SWL	Distance from Notional Sources, m	Distance Attenuation	Facade Correction, dB(A)	Barrier Correction, dB(A)	Predicted Noise Level, dB(A)	Total Predicted Noise Level for each group, dB(A)
S3	Construct Dwell and Traffic Deck - Piling for King Post	Jul-18	Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	110	-49	3	-5	56	60
			Concrete pump	CNP047	109	80	-1	108	1	108	110	-49	3	-5	52	
			Dump Truck with Grab	CNP069	105	70	-2	103	1	103	110	-49	3	-5	53	
			Generator	CNP103	95	100	0	95	2	98	110	-49	3	-10	42	
			Lorry	CNP142	105	60	-2	103	1	103	110	-49	3	-5	52	
	Construct Dwell and Traffic Deck - Diaphragm Walls	Aug 2018 - Nov 2018	Generator	CNP103	95	100	0	95	2	98	110	-49	3	-10	42	59
			Lorry	CNP142	105	60	-2	103	1	103	110	-49	3	-5	52	
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	110	-49	3	-5	49	
			Bored Piling Crane mounted auger	BS D4-37	111	70	-2	109	2	112	110	-49	3	-10	57	
			Excavator/Loader, Wheeled/Tracked	EPP-01145	99	70	-2	97	1	97	110	-49	3	-5	47	
		Construct Southern Dwell & Traffic Deck - Excavation for Diaphragm Walls	Nov 2018 - Jan 2019	Bar Bender and Cutter	CNP021	90	70	-2	88	1	88	110	-49	3	0	43
Concrete Lorry Mixer				CNP044	109	60	-2	107	1	107	110	-49	3	-5	56	
Concrete pump				CNP047	109	80	-1	108	1	108	110	-49	3	-10	52	
Generator				CNP103	95	100	0	95	2	98	110	-49	3	-10	42	
Lorry				CNP142	105	70	-2	103	1	103	110	-49	3	-5	53	
Construct Southern Dwell & Traffic Deck - Temporary Traffic Deck			Feb-19	Excavator/Loader, Wheeled/Tracked	CNP069	105	70	-2	103	1	103	110	-49	3	-5	53
	Generator			CNP103	95	100	0	95	2	98	110	-49	3	-10	42	
	Crane Mobile			BS D7-114	101	70	-2	99	1	99	110	-49	3	-5	49	
	Piling, Diaphragm Wall, Bentonite Filtering			CNP162	105	90	0	105	1	105	110	-49	3	-10	49	
	Excavator/Loader, Wheeled/Tracked			EPP-01145	99	60	-2	97	1	97	110	-49	3	-5	46	
	Construction of Methodone Clinic		Mar-19	Dump Truck with Grab	CNP069	105	70	-2	103	1	103	110	-49	3	-5	53
		Generator		CNP103	95	100	0	95	2	98	110	-49	3	-10	39	
		Lorry		CNP142	105	70	-2	103	1	103	110	-49	3	-5	53	
		Crane Mobile		BS D7-114	101	70	-2	99	1	99	110	-49	3	-5	49	
		Piling, Diaphragm Wall, Bentonite Filtering		CNP162	105	90	0	105	1	105	110	-49	3	-10	49	
		Decant and demolish existing Jade Market	Apr 2018 - Jan 2019	Excavator/Loader, Wheeled/Tracked	EPP-01145	99	60	-2	97	1	97	110	-49	3	-5	46
Bar Bender and Cutter				CNP021	90	70	-2	88	1	88	110	-49	3	0	43	
Concrete Lorry Mixer				CNP044	109	60	-2	107	1	107	110	-49	3	-5	56	
Concrete pump				CNP047	109	80	-1	108	1	108	110	-49	3	-10	52	
Generator				CNP103	95	100	0	95	2	98	110	-49	3	-10	38	
Decant and demolish existing Jade Market			Sep-18	Lorry	CNP142	105	90	0	105	1	105	110	-49	3	-5	54
	Excavator/Loader, Wheeled/Tracked			EPP-01145	99	70	-2	97	1	97	110	-49	3	-5	47	
	Crane Mobile			BS D7-114	101	70	-2	99	1	99	110	-49	3	-5	49	
	Bar Bender and Cutter			CNP021	90	60	-2	88	1	88	120	-50	3	0	41	
	Concrete Lorry Mixer			CNP044	109	50	-3	106	3	111	120	-50	3	-5	59	
	Construction of Temporary Library & Temporary Jade Market		Apr 2018 - Sep 2018	Concrete pump	CNP047	109	70	-2	107	1	107	120	-50	3	-10	51
		Generator		CNP103	95	100	0	95	1	95	120	-50	3	-10	38	
		Crane Mobile		BS D7-114	101	50	-3	98	1	98	120	-50	3	-5	46	
		Poker, Vibratory, Hand Held		CNP173	102	50	-3	99	3	104	120	-50	3	-5	52	
		Saw, Circular Wood		BS D7-79	103	50	-3	100	2	103	120	-50	3	-5	51	
		Construction of Western Access Shaft - Excavation of Diaphragm Walls	Sep-18	Excavator/Loader, Wheeled/Tracked	EPP-01145	99	70	-2	97	1	97	120	-50	3	-5	46
Breaker, Excavator Mounted (Hydraulic)				BS D8-13	110	60	-2	108	1	108	135	-51	3	-5	55	
Dump Truck with Grab				CNP069	105	50	-3	102	2	105	135	-51	3	-5	52	
Concrete crusher, excavator mounted				CNP055	103	70	-2	101	1	101	135	-51	3	-5	49	
Crane Mobile				BS D7-114	101	100	0	101	1	101	135	-51	3	-5	48	
Construct Western Access Shaft - Concreting of Diaphragm Wall			Apr 2018 - Sep 2018	Saw, Wire	CNP205	101	50	-3	98	2	101	135	-51	3	-5	48
	Breaker, Excavator Mounted (Hydraulic)			BS D8-13	110	80	-1	109	1	109	170	-53	3	-5	54	
	Dump Truck with Grab			CNP069	105	70	-2	103	2	106	170	-53	3	-5	52	
	Concrete crusher, excavator mounted			CNP055	103	90	0	103	1	103	170	-53	3	-5	48	
	Crane Mobile			BS D7-114	101	70	-2	99	3	99	170	-53	3	-5	49	
	Construct Western Access Shaft - Soil Excavation of Access Shaft (covered by traffic deck with opening)		May-18	Saw, Wire	CNP205	101	50	-3	98	2	101	170	-53	3	-5	46
		Breaker, Excavator Mounted (Hydraulic)		BS D8-13	110	60	-2	108	1	108	170	-53	3	-5	55	
		Dump Truck with Grab		CNP069	105	70	-2	103	1	103	205	-54	3	-10	47	
		Concrete Lorry Mixer		CNP044	109	50	-3	106	3	111	180	-53	3	-5	56	
		Concrete pump		CNP047	109	70	-2	107	1	107	180	-53	3	-10	47	
		Construct Western Access Shaft - Rock Excavation of Access Shaft (covered by traffic deck with opening)	Jun 2018 - Aug 2018	Generator	CNP103	95	100	0	95	2	98	180	-53	3	-10	38
Crane Mobile				BS D7-114	101	50	-3	98	2	101	180	-53	3	-5	46	
Poker, Vibratory, Hand Held				CNP173	102	50	-3	99	3	104	180	-53	3	-5	49	
Saw, Circular Wood				BS D7-79	103	50	-3	100	2	103	180	-53	3	-5	48	
Excavator/Loader, Wheeled/Tracked				EPP-01145	99	70	-2	97	1	97	180	-53	3	-5	42	
Construct Western Access Shaft - Cast Bottom Slab (covered by traffic deck with opening)			Sep 2018 - Oct 2018	Dump Truck with Grab	CNP069	105	50	-3	102	2	105	205	-54	3	-5	49
	Generator			CNP103	95	100	0	95	3	100	205	-54	3	-10	39	
	Lorry			CNP142	105	70	-2	103	1	103	205	-54	3	-5	47	
	Tracked crane			BS D7-114	101	70	-2	99	1	99	205	-54	3	-5	43	
	Excavator/Loader, Wheeled/Tracked			EPP-01145	99	60	-2	97	2	100	205	-54	3	-5	44	
	Remove of Excavated Material through West End Portal		Nov 2018 - Dec 2018	Water Pump, Submersible (Electric)	CNP283	85	100	0	85	4	91	205	-54	3	0	40
		Ventilation Fan		CNP241	108	90	0	108	2	111	205	-54	3	-15	44	
		Breaker, Excavator Mounted (Hydraulic)		BS D8-13	110	60	-2	108	2	111	205	-54	3	-5	55	
		Dump Truck with Grab		CNP069	105	70	-2	103	3	108	205	-54	3	-5	52	
		Generator		CNP103	95	100	0	95	3	100	205	-54	3	-10	39	
		Remove of Excavated Material through West End Portal	Apr 2019 - Mar 2020	Lorry	CNP142	105	70	-2	103	1	103	205	-54	3	-5	47
Tracked crane				BS D7-114	101	70	-2	99	1	99	205	-54	3	-5	43	
Ventilation Fan				CNP241	108	90	0	108	2	111	205	-54	3	-15	44	
Bar Bender and Cutter				CNP021	90	60	-2	88	1	88	205	-54	3	0	37	
Concrete Lorry Mixer				CNP044	109	50	-3	106	3	111	205	-54	3	-5	55	
Concrete pump				CNP047	109	70	-2	107	1	107	205	-54	3	-10	46	

Build King - SKEC Joint Venture

Construction Noise Assessment
Period: 0700 to 1900 (except general holidays)

Noise Sensitive Receiver: W-N25A Prosperous Garden Block 1

Mitigation Measures Scenario

Noise Criteria: 75dB(A)

Worksite	Activity	Period	PME	TM Ref. / other Ref.	Unit Quiet Plant SWL	On-time, %	Time Factor	Quiet Plant SWL with on-time %	No. of plants	Total SWL	Distance from Notional Sources, m	Distance Attenuation	Facade Correction, dB(A)	Barrier Correction, dB(A)	Predicted Noise Level, dB(A)	Total Predicted Noise Level for each group, dB(A)				
16a	Construct Dwall and Traffic Deck - Piling for King Post	Jul-18	Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	80	-46	3	-5	59	62				
			Concrete pump	CNP047	109	80	-1	108	1	108	80	-46	3	-10	55					
			Dump Truck with Grab	CNP069	105	70	-2	103	1	103	80	-46	3	-5	55					
			Generator	CNP103	95	100	0	95	2	98	80	-46	3	-10	45					
			Lorry	CNP142	105	60	-2	103	1	103	80	-46	3	-5	55					
			Construct Middle Dwall and Traffic Deck - Diaphragm Walls	Oct 2018 - Jan 2019	Generator	CNP103	95	100	0	95	2	98	80	-46	3		-10	45	62.1	
					Lorry	CNP142	105	60	-2	103	1	103	80	-46	3		-5	55		
					Crane Mobile	BS D7-114	101	70	-2	99	1	99	80	-46	3		-5	51		
					Bored Piling Crane mounted auger	BS D4-37	111	70	-2	109	2	112	80	-46	3		-10	59		
					Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	80	-46	3		-5	49		
					Bar Bender and Cutter	CNP021	90	70	-2	88	1	88	80	-46	3		0	45		
					Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	80	-46	3		-5	59		
					Concrete pump	CNP047	109	80	-1	108	1	108	80	-46	3		-10	55		
	Generator	CNP103			95	100	0	95	2	98	80	-46	3	-10	45					
	Lorry	CNP142			105	70	-2	103	1	103	80	-46	3	-5	55					
	Poker, Vibratory, Hand Held	CNP173			102	60	-2	100	1	100	80	-46	3	-5	52					
	Construct Middle Dwall and Traffic Deck - Temporary Traffic Deck	Feb 2019			Dump Truck with Grab	CNP069	105	70	-2	103	1	103	80	-46	3	-5	55	58.6		
			Generator	CNP103	95	100	0	95	2	98	80	-46	3	-10	45					
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	80	-46	3	-5	51					
			Piling, Diaphragm Wall, Bentonite Filtering Plant	CNP162	105	90	0	105	1	105	80	-46	3	-10	51					
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	60	-2	97	1	97	80	-46	3	-5	49					
			Generator	CNP103	95	70	-2	93	1	93	80	-46	3	-10	40					
			Lorry	CNP142	105	90	0	105	1	105	80	-46	3	-5	56					
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	80	-46	3	-5	49					
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	80	-46	3	-5	51					
			16b	Construct Middle Dwall and Traffic Deck - Diaphragm Walls	Oct 2018 - Jan 2019	Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	160	-52	3	-5		53	56.1
	Concrete pump	CNP047				109	80	-1	108	1	108	160	-52	3	-10	49				
	Dump Truck with Grab	CNP069				105	70	-2	103	1	103	160	-52	3	-5	49				
	Generator	CNP103				95	100	0	95	2	98	160	-52	3	-10	39				
	Lorry	CNP142				105	70	-2	103	1	103	160	-52	3	-5	49				
	Poker, Vibratory, Hand Held	CNP173				102	60	-2	100	1	100	160	-52	3	-5	46				
	Construct Middle Dwall and Traffic Deck - Temporary Traffic Deck	Feb 2019				Dump Truck with Grab	CNP069	105	70	-2	103	1	103	160	-52	3	-5	49	52.6	
						Generator	CNP103	95	100	0	95	2	98	160	-52	3	-10	39		
						Crane Mobile	BS D7-114	101	70	-2	99	1	99	160	-52	3	-5	45		
Piling, Diaphragm Wall, Bentonite Filtering Plant						CNP162	105	90	0	105	1	105	160	-52	3	-10	45			
Excavator/Loader, Wheeled/Tracked						EPD-01145	99	60	-2	97	1	97	160	-52	3	-5	43			
Generator						CNP103	95	70	-2	93	1	93	160	-52	3	-10	34			
Lorry						CNP142	105	90	0	105	1	105	160	-52	3	-5	50			
Excavator/Loader, Wheeled/Tracked				EPD-01145	99	70	-2	97	1	97	160	-52	3	-5	43					
Crane Mobile				BS D7-114	101	70	-2	99	1	99	160	-52	3	-5	45					
S18				Demolish Multi-storey Carpark Building (partially)	Dec 2019 - Apr 2019	Breaker, Excavator Mounted (Hydraulic)	BS D8-13	110	60	-2	108	1	108	245	-56	3	-5	50		53.9
	Dump Truck with Grab	CNP069				105	70	-2	103	2	106	245	-56	3	-5	49				
	Concrete crusher, excavator mounted	CNP055				103	70	-2	101	2	104	245	-56	3	-5	47				
	Crane Mobile	BS D7-114				101	70	-2	99	1	99	245	-56	3	-5	42				
	Saw, Wire	CNP205				101	60	-2	99	1	99	245	-56	3	-5	41				
	Construct Middle Dwall and Traffic Deck (cross road sections) - Diaphragm Walls	Apr-19				Bar Bender and Cutter	CNP021	90	70	-2	88	1	88	120	-50	3	0	42	60.1	
				Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	120	-50	3	-5	55				
				Concrete pump	CNP047	109	80	-1	108	1	108	120	-50	3	-10	51				
				Dump Truck with Grab	CNP069	105	70	-2	103	1	103	120	-50	3	-5	52				
				Generator	CNP103	95	100	0	95	1	95	120	-50	3	-10	38				
				Lorry	CNP142	105	70	-2	103	1	103	120	-50	3	-5	52				
				Crane Mobile	BS D7-114	101	70	-2	99	1	99	120	-50	3	-5	48				
				Piling, Diaphragm Wall, Bentonite Filtering Plant	CNP162	105	90	0	105	1	105	120	-50	3	-10	48				
				Poker, Vibratory, Hand Held	CNP173	102	60	-2	100	1	100	120	-50	3	-5	48				
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	60	-2	97	1	97	120	-50	3	-5	45					
	S25	Construction Middle Dwall and Traffic Deck (cross road sections) - Temporary Traffic Deck	May 2019 - Jun 2019	Generator	CNP103	95	70	-2	93	1	93	120	-50	3	-10	37	54.8			
Lorry				CNP142	105	90	0	105	1	105	120	-50	3	-5	53					
Excavator/Loader, Wheeled/Tracked		EPD-01145	99	70	-2	97	1	97	120	-50	3	-5	43							
Crane Mobile		BS D7-114	101	70	-2	99	1	99	120	-50	3	-5	48							
S26	Construct Middle Dwall and Traffic Deck (cross road sections) - Diaphragm Walls	Apr-19	Bar Bender and Cutter	CNP021	90	70	-2	88	1	88	165	-52	3	0	39	57.3				
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	165	-52	3	-5	57					
			Concrete pump	CNP047	109	80	-1	108	1	108	165	-52	3	-10	49					
			Dump Truck with Grab	CNP069	105	70	-2	103	1	103	165	-52	3	-5	49					
			Generator	CNP103	95	100	0	95	1	95	165	-52	3	-10	36					
			Lorry	CNP142	105	70	-2	103	1	103	165	-52	3	-5	49					
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	165	-52	3	-5	45					
			Piling, Diaphragm Wall, Bentonite Filtering Plant	CNP162	105	90	0	105	1	105	165	-52	3	-10	45					
			Poker, Vibratory, Hand Held	CNP173	102	60	-2	100	1	100	165	-52	3	-5	45					
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	60	-2	97	1	97	165	-52	3	-5	42					
	Construct Middle Dwall and Traffic Deck (cross road sections) - Temporary Traffic Deck	May 2019 - Jun 2019	Generator	CNP103	95	70	-2	93	1	93	165	-52	3	-10	34	52.0				
			Lorry	CNP142	105	90	0	105	1	105	165	-52	3	-5	50					
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	165	-52	3	-5	43					
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	165	-52	3	-5	45					
S27a	Construct Proposed GRF Flyover (two lanes) on Northern Side and the Temporary Deck (From Reclamation Street to Ferry Street) - Foundation and pier	Jul-19	Concrete Lorry Mixer	CNP044	109	60	-2	107	2	110	80	-46	3	-5	62	66.2				
			Dump Truck with Grab	CNP069	105	60	-2	103	2	106	80	-46	3	-5	58					
			Generator	CNP103	95	100	0	95	3	100	80	-46	3	-10	47					
	Construct Proposed GRF Flyover (two lanes) on Northern Side and the Temporary Deck (From Reclamation Street to Ferry Street) - Bridge Deck	Aug 2019 - Sep 2019	Excavator/Loader, Wheeled/Tracked	EPD-01145	99	50	-3	96	2	99	80	-46	3	-5	51	59.8				
			Crane Mobile	BS D7-114	101	60	-2	99	2	102	80	-46	3	-5	54					
			Bar Bender and Cutter	CNP021	90	70	-2	88	1	88	80	-46	3	0	45					
			Concrete pump	CNP047	109	70	-2	107	1	107	80	-46	3	-10	54					
			Bored Piling Crane mounted auger	BS D4-37	111	80	-1	110	2	113	80	-46	3	-10	60					
			Poker, Vibratory, Hand Held	CNP173	102	50	-3	99	3	104	80	-46	3	-5	56					
			Crane Mobile	BS D7-114	101	60	-2	99	2	102	80	-46	3	-5	54					
			Generator	CNP103	95	100	0	95	3	100	80	-46	3	-10	47					
			Bar Bender and Cutter	CNP021	90	70	-2	88	1	88	80	-46	3	0	45					
			Concrete pump	CNP047	109	70	-2	107	1	107	80	-46	3	-10	54					
			S27b	Construct Proposed GRF Flyover (two lanes) on Northern Side and the Temporary Deck (From Reclamation Street to Ferry Street) - Foundation and pier	Jun-19	Asphalt Paver	EPD-01126	104	50	-3	101	1	101	210	-54		3	-5	53	57.4
						Road Roller	EPD-01183	97	60	-2	95	1	95	210	-54		3	-5	47	
Crane Mobile	BS D7-114	101				60	-2	99	2	102	210	-54	3	-5	54					
Construct Proposed GRF Flyover (two lanes) on Northern Side and the Temporary Deck (From Temple Street to Reclamation Street) - Bridge Deck	Jul 2019 - Aug 2019	Concrete Lorry Mixer		CNP044	109	60	-2	107	2	110	210	-54	3	-5	53	51.5				
		Dump Truck with Grab		CNP069	105	60	-2	103	2	106	210	-54	3	-5	49					
		Generator		CNP103	95	100	0	95	3	100	210	-54	3	-10	38					
		Excavator/Loader, Wheeled/Tracked		EPD-01145	99	50	-3	96	2	99	210	-54	3	-5	43					
Construct Proposed GRF Flyover (two lanes) on Northern Side and the Temporary Deck (From Temple Street to Reclamation Street) - Bridge Deck	Aug 2019	Crane Mobile	BS D7-114	101	60	-2	99	2	102	210	-54	3	-5	45	48.4					
		Bar Bender and Cutter	CNP021	90	70	-2	88	1	88	210	-54	3	-5	37						

Build King - SKEC Joint Venture

Construction Noise Assessment

Period: 0700 to 1900 (except general holidays)

Noise Sensitive Receiver: W-425A Prosperous Garden Block 1

Mitigation Measures Scenario

Noise Criteria: 75dB(A)

Worksite	Activity	Period	PME	TM Ref. / other Ref.	Unit Quiet Plant SWL	On-time, %	Time Factor	Quiet Plant SWL with on-time %	No. of plants	Total SWL	Distance from Notional Sources, m	Distance Attenuation	Façade Correction, dB(A)	Barrier Correction, dB(A)	Predicted Noise Level, dB(A)	Total Predicted Noise Level for each group, dB(A)				
																	EPD-01126	104	80	-1
S28	Diversion of Ferry Street Junction	Jul 2019 - Sep 2019	Asphalt Paver	EPD-01126	104	80	-1	103	1	103	85	-47	3	-5	54	65.3				
			Concrete Lorry Mixer	CNP044	109	60	-2	107	2	110	85	-47	3	-5	61					
			Dump Truck with Grab	CNP069	105	70	-2	103	2	106	85	-47	3	-5	58					
			Generator	CNP103	95	100	0	95	3	100	85	-47	3	-10	46					
			Poker, Vibratory, Hand Held	CNP173	102	70	-2	100	3	105	85	-47	3	-5	57					
			Road Roller	EPD-01183	97	70	-2	95	2	98	85	-47	3	-5	50					
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	2	100	85	-47	3	-5	52					
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	85	-47	3	-5	51					
			Bar Bender and Cutter	CNP021	90	70	-2	88	1	88	85	-47	3	0	45					
			Concrete pump	CNP047	109	80	-1	108	1	108	85	-47	3	-10	54					
			Generator	CNP103	95	100	0	95	1	95	45	-41	3	-10	47					
			Lorry	CNP142	105	60	-2	103	1	103	45	-41	3	-5	60					
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	45	-41	3	-5	56					
			Bored Piling Crane mounted auger	BS D4-37	111	70	-2	109	1	109	45	-41	3	-10	61					
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	45	-41	3	-5	54					
S29	Construct Southern Dwall & Dwall Crossing Ferry Street - Piling for King Post	Jul-19	Generator	CNP103	95	100	0	95	1	95	45	-41	3	-10	47	64.9				
			Lorry	CNP142	105	60	-2	103	1	103	45	-41	3	-5	60					
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	45	-41	3	-5	56					
			Bored Piling Crane mounted auger	BS D4-37	111	70	-2	109	1	109	45	-41	3	-10	61					
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	45	-41	3	-5	54					
			Aug-19	Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	45	-41	3	-5		64	65.2		
				Concrete pump	CNP047	109	80	-1	108	1	108	45	-41	3	-10		60			
				Generator	CNP103	95	100	0	95	1	95	45	-41	3	-10		47			
			S29	Construct Southern Dwall & Dwall Crossing Ferry Street - Excavation for Diaphragm Walls	Sep 2019 - Nov 2019	Dump Truck with Grab	CNP069	105	70	-2	103	1	103	45	-41		3	-5	60	65.3
						Generator	CNP103	95	100	0	95	1	95	45	-41		3	-10	47	
						Lorry	CNP142	105	60	-2	103	1	103	45	-41		3	-5	60	
						Crane Mobile	BS D7-114	101	70	-2	99	1	99	45	-41		3	-5	56	
						Piling, Diaphragm Wall, Bentonite Filtering Plant	CNP162	105	90	0	105	1	105	45	-41		3	-10	56	
						Excavator/Loader, Wheeled/Tracked	EPD-01145	99	60	-2	97	1	97	45	-41		3	-5	54	
						Bar Bender and Cutter	CNP021	90	70	-2	88	1	88	45	-41		3	0	50	
Concrete Lorry Mixer	CNP044	109				60	-2	107	1	107	45	-41	3	-5	64					
Concrete pump	CNP047	109				80	-1	108	1	108	45	-41	3	-10	60					
Generator	CNP103	95				70	-2	93	1	93	45	-41	3	-10	45					
Lorry	CNP142	105				60	-2	103	1	103	45	-41	3	-5	61					
Excavator/Loader, Wheeled/Tracked	EPD-01145	99				70	-2	97	1	97	45	-41	3	-5	54					
Crane Mobile	BS D7-114	101				70	-2	99	1	99	45	-41	3	-5	56					
Bar Bender and Cutter	CNP021	90				70	-2	88	1	88	70	-45	3	-5	47					
Concrete Lorry Mixer	CNP044	109				60	-2	107	2	110	70	-45	3	-5	63					
S30	Underpinning Works for YMT Police Station - Diaphragm Wall and Transfer Beams	Jun 2019 - Sep 2019	Concrete pump	CNP047	109	80	-1	108	1	108	70	-45	3	-10	56	67.2				
			Dump Truck with Grab	CNP069	105	60	-2	103	2	106	70	-45	3	-5	59					
			Generator	CNP103	95	100	0	95	2	98	70	-45	3	-10	46					
			Lorry	CNP142	105	70	-2	103	2	106	70	-45	3	-5	60					
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	70	-45	3	-5	53					
			Piling, Diaphragm Wall, Bentonite Filtering Plant	CNP162	105	90	0	105	1	105	70	-45	3	-10	53					
			Poker, Vibratory, Hand Held	CNP173	102	70	-2	100	3	105	70	-45	3	-5	58					
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	60	-2	97	1	97	70	-45	3	-5	50					
			Water Pump, Submersible (Electric)	CNP283	85	100	0	85	2	88	70	-45	3	0	46					
			Dump Truck with Grab	CNP069	105	60	-2	103	2	106	70	-45	3	-5	59					
			Generator	CNP103	95	100	0	95	2	98	70	-45	3	-10	46					
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	60	-2	97	1	98	70	-45	3	-5	51					
			Water Pump, Submersible (Electric)	CNP283	85	100	0	85	2	88	70	-45	3	0	46					
			Generator	CNP103	95	100	0	95	1	95	95	-48	3	-10	40					
			Lorry	CNP142	105	60	-2	103	1	103	95	-48	3	-5	53					
Crane Mobile	BS D7-114	101	70	-2	99	1	99	95	-48	3	-5	50								
Bored Piling Crane mounted auger	BS D4-37	111	70	-2	109	1	109	95	-48	3	-10	55								
S32	Construct Southern Dwall & Dwall Crossing Ferry Street - Piling for King Post	Jul-19	Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	95	-48	3	-5	48	58.4				
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	95	-48	3	-5	57					
			Concrete pump	CNP047	109	80	-1	108	1	108	95	-48	3	-10	53					
			Dump Truck with Grab	CNP069	105	70	-2	103	1	103	95	-48	3	-5	54					
			Generator	CNP103	95	100	0	95	1	95	95	-48	3	-10	40					
			Lorry	CNP142	105	60	-2	103	1	103	95	-48	3	-5	54					
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	95	-48	3	-5	50					
			Piling, Diaphragm Wall, Bentonite Filtering Plant	CNP162	105	90	0	105	1	105	95	-48	3	-10	50					
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	60	-2	97	1	97	95	-48	3	-5	47					
			Bar Bender and Cutter	CNP021	90	70	-2	88	1	88	95	-48	3	0	44					
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	95	-48	3	-5	53					
			Concrete pump	CNP047	109	80	-1	108	1	108	95	-48	3	-10	53					
			Generator	CNP103	95	70	-2	93	1	93	95	-48	3	-10	39					
			Lorry	CNP142	105	60	-2	103	1	103	95	-48	3	-5	55					
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	95	-48	3	-5	48					
S33	Construct Southern Dwall & Dwall Crossing Ferry Street - Excavation for Diaphragm Walls	Sep 2019 - Nov 2019	Crane Mobile	BS D7-114	101	70	-2	99	1	99	150	-52	3	-10	36	54.4				
			Generator	CNP103	95	100	0	95	1	95	150	-52	3	-10	30					
			Lorry	CNP142	105	60	-2	103	1	103	150	-52	3	-5	49					
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	150	-52	3	-5	49					
			Bored Piling Crane mounted auger	BS D4-37	111	70	-2	109	1	109	150	-52	3	-10	51					
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	150	-52	3	-5	44					
			Concrete Lorry Mixer	CNP044	109	50	-3	106	1	106	150	-52	3	-5	52					
			Concrete pump	CNP047	109	50	-3	106	1	106	150	-52	3	-10	47					
			Dump Truck with Grab	CNP069	105	70	-2	103	1	103	150	-52	3	-5	50					
			Generator	CNP103	95	100	0	95	1	95	150	-52	3	-10	36					
			Lorry	CNP142	105	60	-2	103	1	103	150	-52	3	-5	50					
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	150	-52	3	-5	46					
			Piling, Diaphragm Wall, Bentonite Filtering Plant	CNP162	105	90	0	105	1	105	150	-52	3	-10	46					
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	60	-2	97	1	97	150	-52	3	-5	43					
			Bar Bender and Cutter	CNP021	90	70	-2	88	1	88	150	-52	3	0	40					
Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	150	-52	3	-5	53								
Concrete pump	CNP047	109	80	-1	108	1	108	150	-52	3	-10	50								
Generator	CNP103	95	70	-2	93	1	93	150	-52	3	-10	35								
Lorry	CNP142	105	60	-2	103	1	103	150	-52	3	-5	51								
Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	150	-52	3	-5	44								
S34	Construct Southern Dwall & Dwall Crossing Ferry Street - Piling for King Post	Jul-19	Crane Mobile	BS D7-114	101	70	-2	99	1	99	190	-54	3	-5	46	52.4				
			Generator	CNP103	95	100	0	95	1	95	190	-54	3	-10	34					
			Lorry	CNP142	105	60	-2	103	1	103	190	-54	3	-5	47					
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	190	-54	3	-5	44					
			Bored Piling Crane mounted auger	BS D4-37	111	70	-2	109	1	109	190	-54	3	-10	49					
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	190	-54	3	-5	42					
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	190	-54	3	-5	51					
			Concrete pump	CNP047	109															

Worksite	Activity	Period	PME	TM Ref. / other Ref.	Unit Quiet Plant SWL	On-time, %	Time Factor	Quiet Plant SWL with on-time %	No. of plants	Total SWL	Distance from Notional Sources, m	Distance Attenuation	Facade Correction, dB(A)	Barrier Correction, dB(A)	Predicted Noise Level, dB(A)	Total Predicted Noise Level for each group, dB(A)	
S37a	Construct Proposed GRF Flyover (the remain Part from Reclamation Street to Ferry Street) - Foundation and pier	Jun 2020	Concrete Lorry Mixer	CNP044	109	60	-2	107	2	110	80	-46	3	-5	62	65.8	
			Dump Truck with Grab	CNP069	105	60	-2	103	2	106	80	-46	3	-5	58		
			Generator	CNP103	95	100	0	95	3	100	80	-46	3	-10	47		
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	50	-3	96	2	99	80	-46	3	-5	51		
			Crane Mobile	BS D7-114	101	60	-2	99	2	102	80	-46	3	-5	54		
			Bar Bender and Cutter	CNP021	90	70	-2	88	1	88	80	-46	3	0	45		
			Concrete pump	CNP047	109	70	-2	107	1	107	80	-46	3	-10	54		
			Bored Piling Crane mounted auger	BS D4-37	111	80	-1	110	2	113	80	-46	3	-10	60		
			Poker, Vibratory, Hand Held	CNP173	102	60	-2	99	3	104	80	-46	3	-5	56		
			Crane Mobile	BS D7-114	101	60	-2	99	2	102	80	-46	3	-5	54		
	Construct Proposed GRF Flyover (the remain Part from Reclamation Street to Ferry Street) - Bridge Deck	Jul 2020 - Aug 2020	Generator	CNP103	95	100	0	95	3	100	80	-46	3	-10	47		59.8
			Bar Bender and Cutter	CNP021	90	70	-2	88	1	88	80	-46	3	0	45		
			Concrete pump	CNP047	109	70	-2	107	1	107	80	-46	3	-10	54		
			Asphalt Paver	EPD-01126	104	50	-3	101	1	101	80	-46	3	-5	53		
			Road Roller	EPD-01183	97	60	-2	95	1	95	80	-46	3	-5	47		
			Crane Mobile	BS D7-114	101	60	-2	99	2	102	80	-46	3	-5	54		
			Concrete Lorry Mixer	CNP044	109	60	-2	107	2	110	230	-55	3	-5	53		
			Dump Truck with Grab	CNP069	105	60	-2	103	2	106	230	-55	3	-5	49		
			Generator	CNP103	95	100	0	95	3	100	230	-55	3	-10	38		
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	50	-3	96	2	99	230	-55	3	-5	42		
S37b	Construct Proposed GRF Flyover (the remain Part from Reclamation Street to Ferry Street) - Bridge Deck	Apr 2020 - May 2020	Crane Mobile	BS D7-114	101	60	-2	99	3	100	230	-55	3	-5	45	50.7	
			Generator	CNP103	95	100	0	95	3	100	230	-55	3	-10	38		
			Bar Bender and Cutter	CNP021	90	70	-2	88	1	88	230	-55	3	0	36		
			Concrete pump	CNP047	109	70	-2	107	1	107	230	-55	3	-10	45		
			Asphalt Paver	EPD-01126	104	50	-3	101	1	101	230	-55	3	-5	44		
			Road Roller	EPD-01183	97	60	-2	95	1	95	230	-55	3	-5	38		
	Construct Proposed GRF Flyover (the remain Part from Reclamation Street to Ferry Street) - Surfacing, MJ, noise barriers	Jun 2020	Crane Mobile	BS D7-114	101	60	-2	99	2	102	230	-55	3	-5	45		47.6
			Concrete Lorry Mixer	CNP044	109	60	-2	107	2	110	230	-55	3	-5	53		
			Dump Truck with Grab	CNP069	105	60	-2	103	2	106	230	-55	3	-5	49		
			Generator	CNP103	95	100	0	95	3	100	230	-55	3	-10	38		
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	50	-3	96	2	99	230	-55	3	-5	42		
			Crane Mobile	BS D7-114	101	60	-2	99	2	102	230	-55	3	-5	45		
S39	Construct Southern Dwall and Traffic Deck (cross road sections) - Diaphragm Walls	Mar 2020 - Apr 2020	Bar Bender and Cutter	CNP021	90	70	-2	88	1	88	75	-46	3	0	46	64.2	
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	75	-46	3	-5	59		
			Concrete pump	CNP047	109	80	-1	108	1	108	75	-46	3	-10	56		
			Dump Truck with Grab	CNP069	105	70	-2	103	1	103	75	-46	3	-5	56		
			Generator	CNP103	95	100	0	95	1	95	75	-46	3	-10	47		
			Lorry	CNP142	105	70	-2	103	1	103	75	-46	3	-5	56		
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	75	-46	3	-5	52		
			Piling, Diaphragm Wall, Bentonite Filtering Plant	CNP162	105	90	0	105	1	105	75	-46	3	-10	52		
			Poker, Vibratory, Hand Held	CNP173	102	60	-2	100	1	100	75	-46	3	-5	52		
	Construct Southern Dwall and Traffic Deck (cross road sections) - Temporary Traffic Deck	May 2020	Excavator/Loader, Wheeled/Tracked	EPD-01145	99	60	-2	97	1	97	75	-46	3	-5	49		58.9
			Generator	CNP103	95	70	-2	93	1	93	75	-46	3	-10	41		
			Lorry	CNP142	105	90	0	105	1	105	75	-46	3	-5	57		
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	75	-46	3	-5	50		
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	75	-46	3	-5	52		
			Bar Bender and Cutter	CNP021	90	70	-2	88	1	88	130	-50	3	0	41		
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	130	-50	3	-5	55		
			Concrete pump	CNP047	109	80	-1	108	1	108	130	-50	3	-10	51		
			Dump Truck with Grab	CNP069	105	70	-2	103	1	103	130	-50	3	-5	51		
S40	Construct Southern Dwall and Traffic Deck (cross road sections) - Diaphragm Walls	Mar 2020 - Apr 2020	Generator	CNP103	95	100	0	95	1	95	130	-50	3	-10	38	59.4	
			Lorry	CNP142	105	70	-2	103	1	103	130	-50	3	-5	51		
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	130	-50	3	-5	47		
			Piling, Diaphragm Wall, Bentonite Filtering Plant	CNP162	105	90	0	105	1	105	130	-50	3	-10	47		
			Poker, Vibratory, Hand Held	CNP173	102	60	-2	100	1	100	130	-50	3	-5	48		
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	60	-2	97	1	97	130	-50	3	-5	45		
			Generator	CNP103	95	70	-2	93	1	93	130	-50	3	-10	36		
			Lorry	CNP142	105	90	0	105	1	105	130	-50	3	-5	52		
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	130	-50	3	-5	45		
	Construct Southern Dwall and Traffic Deck (cross road sections) - Temporary Traffic Deck	May 2020	Crane Mobile	BS D7-114	101	70	-2	99	1	99	130	-50	3	-5	47	54.1	
			Bar Bender and Cutter	CNP021	90	70	-2	88	1	88	165	-52	3	0	39		
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	165	-52	3	-5	52		
			Concrete pump	CNP047	109	80	-1	108	1	108	165	-52	3	-10	49		
			Dump Truck with Grab	CNP069	105	70	-2	103	1	103	165	-52	3	-5	49		
			Generator	CNP103	95	100	0	95	1	95	165	-52	3	-10	38		
			Lorry	CNP142	105	70	-2	103	1	103	165	-52	3	-5	49		
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	165	-52	3	-5	45		
			Piling, Diaphragm Wall, Bentonite Filtering Plant	CNP162	105	90	0	105	1	105	165	-52	3	-10	45		
S41	Construct Southern Dwall and Traffic Deck (cross road sections) - Diaphragm Walls	Mar 2020 - Apr 2020	Poker, Vibratory, Hand Held	CNP173	102	60	-2	100	1	100	165	-52	3	-5	45	57.3	
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	60	-2	97	1	97	165	-52	3	-5	42		
			Generator	CNP103	95	70	-2	93	1	93	165	-52	3	-10	34		
			Lorry	CNP142	105	90	0	105	1	105	165	-52	3	-5	50		
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	165	-52	3	-5	43		
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	165	-52	3	-5	45		
			Bar Bender and Cutter	CNP021	90	70	-2	88	1	88	165	-52	3	0	39		
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	165	-52	3	-5	52		
			Concrete pump	CNP047	109	80	-1	108	1	108	165	-52	3	-10	49		
	Construct Southern Dwall and Traffic Deck (cross road sections) - Temporary Traffic Deck	May 2020	Dump Truck with Grab	CNP069	105	70	-2	103	1	103	165	-52	3	-5	49		52.0
			Generator	CNP103	95	100	0	95	1	95	165	-52	3	-10	38		
			Lorry	CNP142	105	90	0	105	1	105	165	-52	3	-5	49		
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	165	-52	3	-5	45		
			Bar Bender and Cutter	CNP021	90	70	-2	88	1	88	165	-52	3	0	39		
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	165	-52	3	-5	52		
			Concrete pump	CNP047	109	80	-1	108	1	108	165	-52	3	-10	49		
			Dump Truck with Grab	CNP069	105	70	-2	103	1	103	165	-52	3	-5	49		
			Generator	CNP103	95	100	0	95	1	95	165	-52	3	-10	38		
S42	Excavation of Tunnel Tubes (under cover of traffic deck)	Sep 2020 - Apr 2022	Lorry	CNP142	105	70	-2	103	1	103	165	-52	3	-5	49	65.2	
			Crane Mobile	BS D7-114	101	70	-2	99	2	102	130	-50	3	-5	50		
			Generator	CNP103	95	100	0	95	2	98	130	-50	3	-10	41		
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	80	-1	98	5	105	45	-41	3	-20	47		
			Rock drill, crawler mounted (pneumatic)	SIL E1A	108	80	-1	107	5	114	45	-41	3	-20	56		
			Ventilation Fan	CNP241	108	90	0	108	10	118	45	-41	3	-15	64		
			Water Pump, Submersible (Electric)	CNP283	85	100	0	85	12	96	45	-41	3	-20	38		
			Concrete Lorry Mixer	CNP044	109	60	-2	107	3	112	45	-41	3	-20	53		
			Concrete pump	CNP047	109	80	-1	108	1	108	45	-41	3	-20	50		
	Piling Works for Cut and Cover Tunnel (under cover of traffic deck)	Dec 2020 - Jul 2022	Generator	CNP103	95	100	0	95	6	103	45	-41	3	-20	45		61.7
			Lorry	CNP142	105	90	0	105	6	111	45	-41	3	-20	45		
			Crane Mobile</														

Worksite	Activity	Period	PME	TM Ref. / other Ref.	Unit Quiet Plant SWL	On-time, %	Time Factor	Quiet Plant SWL with on-time %	No. of plants	Total SWL	Distance from Notional Sources, m	Distance Attenuation	Facade Correction, dB(A)	Barrier Correction, dB(A)	Predicted Noise Level, dB(A)	Total Predicted Noise Level for each group, dB(A)
S45	Construct Southern Dwall & Dwall Crossing Ferry Street - Piling for King Post	Jun-20	Generator	CNP103	95	100	0	95	3	100	130	-50	3	-10	42	58.5
			Lorry	CNP142	105	60	-2	103	1	103	130	-50	3	-5	51	
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	130	-50	3	-5	47	
			Bored Piling Crane mounted auger	BS D4-37	111	70	-2	109	3	114	130	-50	3	-10	57	
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	130	-50	3	-5	45	
	Construct Southern Dwall & Dwall Crossing Ferry Street - Grouting	Jul-20	Concrete Lorry Mixer	CNP044	109	60	-2	107	2	110	130	-50	3	-5	58	58.3
			Concrete pump	CNP047	109	80	-1	108	1	108	130	-50	3	-10	51	
			Dump Truck with Grab	CNP069	105	70	-2	103	1	103	130	-50	3	-5	51	
			Generator	CNP103	95	100	0	95	4	101	130	-50	3	-10	44	
	Construct Southern Dwall & Traffic Deck - Excavation for Diaphragm Walls	Jul 2020 - Aug 2020	Lorry	CNP142	105	70	-2	103	1	103	130	-50	3	-5	51	56.7
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	130	-50	3	-5	47	
			Piling, Diaphragm Wall, Bentonite Filtering Plant	CNP162	105	90	0	105	2	108	130	-50	3	-10	50	
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	60	-2	97	1	97	130	-50	3	-5	45	
			Bar Bender and Cutter	CNP021	90	70	-2	88	1	88	130	-50	3	0	41	
	Construct Southern Dwall & Traffic Deck - Concreting for Diaphragm Walls	Aug 2020	Concrete Lorry Mixer	CNP044	109	60	-2	107	2	110	130	-50	3	-5	58	58.4
			Concrete pump	CNP047	109	80	-1	108	1	108	130	-50	3	-10	51	
			Generator	CNP103	95	70	-2	93	1	93	130	-50	3	-10	36	
	Construct Southern Dwall & Traffic Deck - Temporary Traffic Deck	Sep 2020	Lorry	CNP142	105	90	0	105	2	108	130	-50	3	-5	55	56.8
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	130	-50	3	-5	45	
			Crane Mobile	BS D7-114	101	70	-2	99	2	102	130	-50	3	-5	50	
			Generator	CNP103	95	100	0	95	4	101	65	-44	3	-20	40	
	S46a	Excavation of Tunnel Tubes (under cover of traffic deck)	Sep 2020 - Apr 2022	Excavator/Loader, Wheeled/Tracked	EPD-01145	99	80	-1	98	2	101	65	-44	3	-20	40
Rock drill, crawler mounted (pneumatic)				SIL EIA	108	80	-1	107	2	110	65	-44	3	-20	49	
Ventilation Fan				CNP241	108	90	0	108	4	114	65	-44	3	-15	57	
Water Pump, Submersible (Electric)				CNP283	85	100	0	85	4	91	65	-44	3	-20	30	
Concrete Lorry Mixer				CNP044	109	60	-2	107	1	107	65	-44	3	-20	46	
Piling Works for Cut and Cover Tunnel (under cover of traffic deck)		Dec 2020 - Jul 2022	Concrete pump	CNP047	109	80	-1	108	1	108	65	-44	3	-20	47	54.4
			Generator	CNP103	95	100	0	95	2	98	65	-44	3	-20	37	
			Crane Mobile	BS D7-114	101	70	-2	99	2	102	65	-44	3	-20	41	
			Bored Piling Crane mounted auger	BS D4-37	111	90	0	111	2	114	65	-44	3	-20	49	
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	65	-44	3	-20	36	
S46b	Excavation of Tunnel Tubes (under cover of traffic deck)	Sep 2020 - Apr 2022	Excavator/Loader, Wheeled/Tracked	EPD-01145	99	80	-1	98	2	101	80	-46	3	-20	38	55.2
			Rock drill, crawler mounted (pneumatic)	SIL EIA	108	80	-1	107	2	110	80	-46	3	-20	47	
			Ventilation Fan	CNP241	108	90	0	108	3	112	80	-46	3	-15	54	
			Water Pump, Submersible (Electric)	CNP283	85	100	0	85	4	91	80	-46	3	-20	28	
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	80	-46	3	-20	44	
	Piling Works for Cut and Cover Tunnel (under cover of traffic deck)	Dec 2020 - Jul 2022	Concrete pump	CNP047	109	80	-1	108	1	108	80	-46	3	-20	45	52.5
			Generator	CNP103	95	100	0	95	2	98	80	-46	3	-20	35	
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	80	-46	3	-20	36	
			Bored Piling Crane mounted auger	BS D4-37	111	90	0	111	2	114	80	-46	3	-20	50	
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	80	-46	3	-20	34	
S46c	Excavation of Tunnel Tubes (under cover of traffic deck)	Sep 2020 - Apr 2022	Excavator/Loader, Wheeled/Tracked	EPD-01145	99	100	0	95	3	100	155	-52	3	-20	31	49.1
			Rock drill, crawler mounted (pneumatic)	SIL EIA	108	80	-1	107	2	107	155	-52	3	-20	38	
			Ventilation Fan	CNP241	108	90	0	108	3	112	155	-52	3	-15	49	
			Water Pump, Submersible (Electric)	CNP283	85	100	0	85	4	91	155	-52	3	-20	22	
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	155	-52	3	-20	38	
	Piling Works for Cut and Cover Tunnel (under cover of traffic deck)	Dec 2020 - Jul 2022	Concrete pump	CNP047	109	80	-1	108	1	108	155	-52	3	-20	39	46.7
			Generator	CNP103	95	100	0	95	2	98	155	-52	3	-20	29	
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	155	-52	3	-20	31	
			Bored Piling Crane mounted auger	BS D4-37	111	90	0	111	2	114	155	-52	3	-20	38	
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	155	-52	3	-20	29	
S47a	Underpinning of Existing Bridges (under cover of traffic deck)	Nov 2020 - Apr 2021	Generator	CNP103	95	100	0	95	1	95	45	-41	3	-20	37	56.8
			Bar Bender and Cutter	CNP021	90	70	-2	88	1	88	45	-41	3	-20	30	
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	45	-41	3	-20	49	
			Concrete pump	CNP047	109	80	-1	108	1	108	45	-41	3	-20	50	
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	45	-41	3	-20	41	
	Construction of the Cut and Cover Tunnel (under cover of traffic deck)	Aug 2020 - Nov 2022	Excavator/Loader, Wheeled/Tracked	EPD-01145	99	60	-2	97	1	97	45	-41	3	-20	30	61.3
			Ventilation Fan	CNP241	108	90	0	108	1	108	45	-41	3	-15	54	
			Water Pump, Submersible (Electric)	CNP283	85	100	0	85	4	91	45	-41	3	-20	27	
			Bar Bender and Cutter	CNP021	90	60	-2	88	1	88	45	-41	3	-20	30	
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	45	-41	3	-20	49	
S47b	Underpinning of Existing Bridges (under cover of traffic deck)	Aug 2020 - Nov 2022	Concrete pump	CNP047	109	80	-1	108	1	108	45	-41	3	-20	50	50.3
			Generator	CNP103	95	100	0	95	2	98	45	-41	3	-20	41	
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	45	-41	3	-20	42	
			Poker, Vibratory, Hand Held	CNP173	102	70	-2	100	1	100	45	-41	3	-20	39	
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	45	-41	3	-15	60	
	Construction of the Cut and Cover Tunnel (under cover of traffic deck)	Aug 2020 - Nov 2022	Water Pump, Submersible (Electric)	CNP283	85	100	0	85	4	91	45	-41	3	-20	33	54.8
			Generator	CNP103	95	100	0	95	1	95	95	-48	3	-20	30	
			Bar Bender and Cutter	CNP021	90	70	-2	88	1	88	95	-48	3	-20	24	
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	95	-48	3	-20	42	
			Concrete pump	CNP047	109	80	-1	108	1	108	95	-48	3	-20	43	
S47c	Underpinning of Existing Bridges (under cover of traffic deck)	Nov 2020 - Apr 2021	Crane Mobile	BS D7-114	101	70	-2	99	1	99	45	-41	3	-20	43	46.1
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	60	-2	97	1	97	45	-41	3	-20	30	
			Ventilation Fan	CNP241	108	90	0	108	1	108	45	-41	3	-15	44	
			Water Pump, Submersible (Electric)	CNP283	85	100	0	85	1	85	155	-52	3	-20	16	
			Bar Bender and Cutter	CNP021	90	60	-2	88	1	88	155	-52	3	-20	19	
	Construction of the Cut and Cover Tunnel (under cover of traffic deck)	Aug 2020 - Nov 2022	Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	155	-52	3	-20	38	50.6
			Concrete pump	CNP047	109	80	-1	108	1	108	155	-52	3	-20	39	
			Generator	CNP103	95	100	0	95	2	98	155	-52	3	-20	29	
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	155	-52	3	-20	31	
			Poker, Vibratory, Hand Held	CNP173	102	70	-2	100	1	100	155	-52	3	-20	32	
S49	Underpinning of Existing Bridges (under cover of traffic deck)	Nov 2020 - Apr 2021	Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	40	-40	3	-20	29	57.9
			Ventilation Fan	CNP241	108	90	0	108	4	114	40	-40	3	-15	50	
			Water Pump, Submersible (Electric)	CNP283	85	100	0	85	4	91	155	-52	3	-20	22	
			Generator	CNP103	95	100	0	95	1	95	40	-40	3	-20	38	
			Bar Bender and Cutter	CNP021	90	70	-2	88	1	88	40	-40	3	-20	31	
	Construction of the Cut and Cover Tunnel (under cover of traffic deck)	Aug 2020 - Nov 2022	Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	40	-40	3	-20	50	67.9
			Concrete pump	CNP047	109	80	-1	108	1	108	40	-40	3	-20	51	
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	40	-40	3	-20	42	
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	60	-2	97	1	97	40	-40	3	-20	40	
			Ventilation Fan	CNP241	108	90	0	108	1	108	40	-40	3	-20	56	
S50a	Foundation (west side) for noise enclosure on GRF Flyover (Ferry Street Section)	Jan 2022 - Mar 2022	Water Pump, Submersible (Electric)	CNP283	85	100	0	85	4	91	75	-46	3	-20	22	57.5
			Generator	CNP103	95	100	0	95	1	95	75	-46				

Build King - SKEC Joint Venture

Construction Noise Assessment

Period: 0700 to 1900 (except general holidays)

Noise Sensitive Receiver: W-N25A Prosperous Garden Block 1

Mitigation Measures Scenario

Noise Criteria: 75dB(A)

Worksite	Activity	Period	PME	TM Ref. / other Ref.	Unit	Quiet Plant SWL	On-time, %	Time Factor	Quiet Plant SWL with on-time %	No. of plants	Total SWL	Distance from Notional Sources, m	Distance Attenuation	Facade Correction, dB(A)	Barrier Correction, dB(A)	Predicted Noise Level, dB(A)	Total Predicted Noise Level for each group, dB(A)
S50b	Foundation (west side) for noise enclosure on GRF Flyover (Ferry Street Section)	Apr 2022 - Jun 2022	Concrete Lorry Mixer	CNP044	109	60	-2	107	2	110	55	-43	3	-5	65	70.6	
			Concrete pump	CNP047	109	80	-1	108	1	108	55	-43	3	-10	58		
			Generator	CNP103	95	100	0	95	3	100	55	-43	3	-10	50		
			Lorry	CNP142	105	70	-2	103	2	106	55	-43	3	-5	62		
			Crane Mobile	BS D7-114	101	60	-2	99	3	104	55	-43	3	-5	59		
			Bored Piling Crane mounted auger	BS D4-37	111	80	-1	110	2	113	55	-43	3	-10	63		
		Oct 2022 - Apr 2023	Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	2	100	55	-43	3	-5	56		
			Compactor, vibratory	CNP050	105	70	-2	103	3	108	55	-43	3	-5	63		
			Dump Truck with Grab	CNP069	105	70	-2	103	1	103	55	-43	3	-5	59		
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	55	-43	3	-5	55		
			Generator	CNP103	95	100	0	95	1	95	55	-43	3	-10	45		
			Lorry	CNP142	105	70	-2	103	1	103	55	-43	3	-5	59		
S50c	Foundation (west side) for noise enclosure on GRF Flyover (Ferry Street Section)	Jul 2022 - Sep 2022	Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	16	-32	3	-5	72	79.4	
			Concrete pump	CNP047	109	80	-1	108	1	108	16	-32	3	-10	69		
			Generator	CNP103	95	100	0	95	3	100	16	-32	3	-10	60		
			Lorry	CNP142	105	70	-2	103	1	103	16	-32	3	-5	69		
			Crane Mobile	BS D7-114	101	60	-2	99	2	102	16	-32	3	-5	67		
			Bored Piling Crane mounted auger	BS D4-37	111	80	-1	110	2	113	16	-32	3	-10	74		
		Oct 2022 - Apr 2023	Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	2	100	16	-32	3	-5	66		
			Compactor, vibratory	CNP050	105	50	-3	102	2	105	16	-32	3	-5	71		
			Dump Truck with Grab	CNP069	105	70	-2	103	1	103	16	-32	3	-5	69		
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	16	-32	3	-5	65		
			Generator	CNP103	95	100	0	95	1	95	16	-32	3	-10	56		
			Lorry	CNP142	105	70	-2	103	1	103	16	-32	3	-5	69		
S50d	Road works for re-align Ferry Street at-grade road	Jan 2022 - Jun 2022	Asphalt Paver	EPD-01126	104	80	-1	103	1	103	25	-36	3	-5	65	74.3	
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	25	-36	3	-5	69		
			Concrete pump	CNP047	109	80	-1	108	1	108	25	-36	3	-10	65		
			Dump Truck with Grab	CNP069	105	70	-2	103	1	103	25	-36	3	-5	65		
			Generator	CNP103	95	100	0	103	1	103	25	-36	3	-10	60		
			Poker, Vibratory, Hand Held	CNP173	102	70	-2	100	1	100	25	-36	3	-10	57		
		Oct 2022 - Apr 2023	Road Roller	EPD-01183	97	80	-1	96	1	96	25	-36	3	-5	58		
			Bored Piling Crane mounted auger	BS D4-37	111	80	-1	110	1	110	25	-36	3	-10	67		
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	25	-36	3	-5	59		
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	25	-36	3	-5	61		
			Breaker, Excavator Mounted (Hydraulic)	BS D8-13	110	50	-3	107	1	107	65	-44	3	-5	61		
			Dump Truck with Grab	CNP069	105	70	-2	103	2	106	65	-44	3	-5	60		
S51	Demolish the Existing Ferr Street Subway	Jul 2022 - Aug 2022	Concrete crusher, excavator mounted	CNP055	103	80	-1	102	1	102	65	-44	3	-5	56	64.8	
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	65	-44	3	-5	53		
			Saw, Wire	CNP205	101	70	-2	99	1	99	65	-44	3	-5	53		
			Dump Truck with Grab	CNP069	105	70	-2	103	1	103	65	-44	3	-5	57		
			Generator	CNP103	95	100	0	95	1	95	65	-44	3	-10	44		
			Lorry	CNP142	105	70	-2	103	1	103	65	-44	3	-5	57		
		Oct 2020	Crane Mobile	BS D7-114	101	70	-2	99	1	99	65	-44	3	-5	53		
			Piling, Diaphragm Wall, Bentonite Filtering Plant	CNP162	105	90	0	105	1	105	65	-44	3	-10	53		
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	60	-2	97	1	97	65	-44	3	-5	51		
			Bar Bender and Cutter	CNP021	90	70	-2	88	1	88	65	-44	3	0	47		
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	65	-44	3	-5	61		
			Concrete pump	CNP047	109	80	-1	108	1	108	65	-44	3	-10	57		
S52	Construct Northern Dwall & Traffic Deck (cross road sections) - Excavation for Diaphragm Walls	Nov 2020	Generator	CNP103	95	70	-2	93	1	93	65	-44	3	-10	42	62.2	
			Lorry	CNP142	105	90	0	105	1	105	65	-44	3	-5	58		
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	65	-44	3	-5	51		
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	65	-44	3	-5	56		
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	65	-44	3	-5	63		
			Concrete pump	CNP047	109	80	-1	108	1	108	65	-44	3	-10	57		
		Dec 2020	Generator	CNP103	95	70	-2	93	1	93	65	-44	3	-10	42		
			Lorry	CNP142	105	90	0	105	1	105	65	-44	3	-5	58		
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	65	-44	3	-5	51		
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	65	-44	3	-5	56		
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	65	-44	3	-5	63		
			Concrete pump	CNP047	109	80	-1	108	1	108	65	-44	3	-10	57		
S53	Construct Northern Dwall & Traffic Deck (cross road sections) - Excavation for Diaphragm Walls	Oct 2020	Generator	CNP103	95	100	0	95	1	95	115	-49	3	-10	39	57.1	
			Lorry	CNP142	105	70	-2	103	1	103	115	-49	3	-5	52		
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	115	-49	3	-5	48		
			Piling, Diaphragm Wall, Bentonite Filtering Plant	CNP162	105	90	0	105	1	105	115	-49	3	-10	48		
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	60	-2	97	1	97	115	-49	3	-5	46		
			Bar Bender and Cutter	CNP021	90	70	-2	88	1	88	115	-49	3	0	42		
		Nov 2020	Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	115	-49	3	-5	56		
			Concrete pump	CNP047	109	80	-1	108	1	108	115	-49	3	-10	52		
			Generator	CNP103	95	70	-2	93	1	93	115	-49	3	-10	37		
			Lorry	CNP142	105	90	0	105	1	105	115	-49	3	-5	53		
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	115	-49	3	-5	46		
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	115	-49	3	-5	48		
S55a	Reinstate the affected roads and footpaths	Jan 2020 - Feb 2020	Asphalt Paver	EPD-01126	104	80	-1	103	1	103	75	-46	3	-5	56	62.2	
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	75	-46	3	-5	59		
			Concrete pump	CNP047	109	80	-1	108	1	108	75	-46	3	-10	55		
			Generator	CNP103	95	100	0	95	1	95	75	-46	3	-10	42		
			Poker, Vibratory, Hand Held	CNP173	102	60	-2	100	2	103	75	-46	3	-10	50		
			Road Roller	EPD-01183	97	70	-2	95	1	95	75	-46	3	-5	48		
		Apr 2023 - Sep 2023	Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	75	-46	3	-5	50		
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	75	-46	3	-5	52		
			Asphalt Paver	EPD-01126	104	80	-1	103	1	103	75	-46	3	-5	56		
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	75	-46	3	-5	62		
			Concrete pump	CNP047	109	80	-1	108	1	108	75	-46	3	-10	56		
			Generator	CNP103	95	100	0	95	2	98	75	-46	3	-10	46		
S55b	Road works for Section between Ferry Street and Nathan Road	Apr 2023 - Sep 2023	Poker, Vibratory, Hand Held	CNP173	102	70	-2	100	2	103	75	-46	3	-10	51	64.6	
			Road Roller	EPD-01183	97	80	-1	96	1	96	75	-46	3	-5	49		
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	75	-46	3	-5	49		
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	75	-46	3	-5	50		
			Asphalt Paver	EPD-01126	104	80	-1	103	1	103	75	-46	3	-5	52		
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	75	-46	3	-5	63		
		Jan 2020 - Feb 2020	Concrete pump	CNP047	109	80	-1	108	1	108	75	-46	3	-10	56		
			Generator	CNP103	95	100	0	95	1	95	75	-46	3	-10	35		
			Poker, Vibratory, Hand Held	CNP173	102	60	-2	100	1	100	175	-53	3	-10	40		
			Road Roller	EPD-01183	97	70	-2	95	1	95	175	-53	3	-5	41		
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	175	-53	3	-5	43		
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	175	-53	3	-5	43		
S56a	Construction of the Cut and Cover Tunnel (under cover of traffic deck)	Apr 2020 - Nov 2022	Bar Bender and Cutter	CNP021	90	60	-2	88	1								

Build King - SKEC Joint Venture

Construction Noise Assessment
 Period: 0700 to 1900 (except general holidays)
 Noise Sensitive Receiver: W-N25A Prosperous Garden Block 1
 Mitigation Measures Scenario

Noise Criteria: 75dB(A)

Worksite	Activity	Period	PME	TM Ref. / other Ref.	Unit Quiet Plant SWL	On-time, %	Time Factor	Quiet Plant SWL with on-time %	No. of plants	Total SWL	Distance from Notional Sources, m	Distance Attenuation	Façade Correction, dB(A)	Barrier Correction, dB(A)	Predicted Noise Level, dB(A)	Total Predicted Noise Level for each group, dB(A)
S57	Site Establishment, Utility Diversion and Mobilization of Plant	Apr 2018 - Oct 2018	Air Compressor	CNP003	104	70	-2	102	1	102	205	-54	3	-10	41	58.4
			Breaker, Excavator Mounted (Hydraulic)	BS D8-13	110	70	-2	108	3	113	205	-54	3	-5	57	
			Dump Truck with Grab	CNP069	105	50	-3	102	2	105	205	-54	3	-5	49	
			Lorry	CNP142	105	50	-3	102	1	102	205	-54	3	-5	46	
			Saw, Wire	CNP205	101	70	-2	99	2	102	205	-54	3	-5	46	
	Diaphragm Walls Construction and Shaft Excavation - Bored Piling Works (underground)	Apr 2018 - Jul 2018	Excavator/Loader, Wheeled/Tracked	EPD-01145	99	100	0	99	1	99	205	-54	3	-5	43	
			Bar Bender and Cutter	CNP021	90	50	-3	87	2	90	205	-54	3	-20	19	
			Concrete Lorry Mixer	CNP044	109	70	-2	107	1	107	205	-54	3	-20	36	
			Concrete pump	CNP047	109	70	-2	107	1	107	205	-54	3	-20	36	
			Dump Truck with Grab	CNP069	105	50	-3	102	1	102	205	-54	3	-15	36	
			Generator	CNP103	95	100	0	95	3	100	205	-54	3	-20	29	
			Lorry	CNP142	105	50	-3	102	1	102	205	-54	3	-15	36	
			Crane Mobile	BS D7-114	101	50	-3	98	1	98	205	-54	3	-20	27	
			Poker, Vibratory, Hand Held	CNP173	102	70	-2	100	2	108	205	-54	3	-20	37	
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	50	-3	96	1	96	205	-54	3	-20	25	
Diaphragm Walls Construction and Shaft Excavation - Diaphragm Walls (underground)	Apr 2018 - Jul 2019	Water Pump, Submersible (Electric)	CNP283	85	100	0	85	4	91	205	-54	3	-20	20		
		Bar Bender and Cutter	CNP021	90	70	-2	88	2	91	205	-54	3	-20	20		
		Concrete Lorry Mixer	CNP044	109	50	-3	106	2	109	205	-54	3	-20	38		
		Concrete pump	CNP047	109	50	-3	106	2	109	205	-54	3	-20	38		
		Dump Truck with Grab	CNP069	105	50	-3	102	1	102	205	-54	3	-15	36		
		Generator	CNP103	95	100	0	95	4	101	205	-54	3	-20	30		
		Lorry	CNP142	105	50	-3	102	1	102	205	-54	3	-15	36		
		Crane Mobile	BS D7-114	101	70	-2	99	1	99	205	-54	3	-20	28		
		Piling, Diaphragm Wall, Bentonite Filtering Plant	CNP162	105	100	0	105	1	105	205	-54	3	-20	34		
		Poker, Vibratory, Hand Held	CNP173	102	50	-3	99	2	102	205	-54	3	-20	31		
Diaphragm Walls Construction and Shaft Excavation - Excavation of Access Shaft (underground)	Apr 2018 - Jul 2019	Excavator/Loader, Wheeled/Tracked	EPD-01145	99	100	0	99	3	104	205	-54	3	-20	33		
		Water Pump, Submersible (Electric)	CNP283	85	100	0	85	8	94	205	-54	3	-20	23		
		Breaker, Excavator Mounted (Hydraulic)	BS D8-13	110	70	-2	108	1	108	205	-54	3	-20	37		
		Dump Truck with Grab	CNP069	105	50	-3	102	4	108	205	-54	3	-15	42		
		Generator	CNP103	95	100	0	95	3	100	205	-54	3	-20	29		
		Lorry	CNP142	105	50	-3	102	1	102	205	-54	3	-15	36		
		Tracked crane	BS D7-114	101	70	-2	99	1	99	205	-54	3	-20	28		
		Excavator/Loader, Wheeled/Tracked	EPD-01145	99	100	0	99	3	104	205	-54	3	-20	33		
		Water Pump, Submersible (Electric)	CNP283	85	100	0	85	8	94	205	-54	3	-20	23		
		Breaker, Excavator Mounted (Hydraulic)	BS D8-13	110	50	-3	107	2	110	205	-54	3	-20	39		
Non-blast Tunnelling - Drilling Charge Hole, Mucking Out and Scaling (underground)	Jul 2019 - Apr 2022	Dump Truck with Grab	CNP069	105	70	-2	103	4	109	205	-54	3	-15	43		
		Lorry	CNP142	105	70	-2	103	4	109	205	-54	3	-15	43		
		Rock Drill	SIL EIA	108	70	-2	106	4	112	205	-54	3	-20	41		
		Tracked crane	BS D7-114	101	70	-2	99	3	104	205	-54	3	-20	33		
		Ventilation Fan	CNP241	108	100	0	108	4	114	205	-54	3	-15	48		
		Water Pump, Submersible (Electric)	CNP283	85	100	0	85	4	91	205	-54	3	-20	20		
		Rock Crusher	Reference to approved West Island Line EIA report	118	40	-4	114	1	114	205	-54	3	-20	43		
		Grout mixer	CNP105	90	70	-2	88	2	91	205	-54	3	-20	20		
		Grout pump	CNP106	105	70	-2	103	2	106	205	-54	3	-20	35		
		Rock Drill	SIL EIA	108	70	-2	106	4	112	205	-54	3	-20	41		
Non-blast Tunnelling - Rock Bolting & Shotcreting (underground)	Jul 2019 - Apr 2022	Ventilation Fan	CNP241	108	100	0	108	4	114	205	-54	3	-15	48		
		Water Pump, Submersible (Electric)	CNP283	85	100	0	85	4	91	205	-54	3	-20	20		
		Rock Crusher	Reference to approved West Island Line EIA report	118	40	-4	114	1	114	205	-54	3	-20	43		
		Bar Bender and Cutter	CNP021	90	100	0	90	2	93	205	-54	3	-20	22		
		Concrete Lorry Mixer	CNP044	109	70	-2	107	2	110	205	-54	3	-20	39		
		Concrete pump	CNP047	109	70	-2	107	2	110	205	-54	3	-20	39		
		Generator	CNP103	95	100	0	95	2	98	205	-54	3	-20	27		
		Crane Mobile	BS D7-114	101	100	0	101	1	101	205	-54	3	-20	30		
		Poker, Vibratory, Hand Held	CNP173	102	100	0	102	2	105	205	-54	3	-20	34		
		Saw, Circular Wood	BS D7-79	103	50	-3	100	2	103	205	-54	3	-20	32		
S58	Construction of Temporary Maternal and Child Health Centre	Apr 2018 - Jun 2018	Water Pump, Submersible (Electric)	CNP283	85	100	0	85	4	91	205	-54	3	-20	20	47.2
			Poker, Vibratory, Hand Held	CNP173	102	50	-3	99	1	99	160	-52	3	-5	45	
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	160	-52	3	-5	43	
			Bar Bender and Cutter	CNP021	90	60	-2	88	2	91	160	-52	3	0	42	
			Concrete Lorry Mixer	CNP044	109	50	-3	106	2	109	160	-52	3	-5	55	
	Construction of Temporary Maternal and Child Health Centre - Superstructure	Jul 2018 - Dec 2018	Concrete pump	CNP047	109	70	-2	107	1	107	160	-52	3	-10	48	57.2
			Generator	CNP103	95	100	0	95	2	98	160	-52	3	-10	39	
			Crane Mobile	BS D7-114	101	50	-3	98	1	98	160	-52	3	-5	44	
			Saw, Circular Wood	BS D7-79	103	50	-3	100	2	103	160	-52	3	-5	49	
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	160	-52	3	-5	43	

Build King - SKEC Joint Venture

Construction Noise Assessment

Period: 0700 to 1900 (except general holidays)

Noise Sensitive Receiver: W-P11 The Coronation (West Façade)

Mitigation Measures Scenario

Noise Criteria: 75dB(A)

Worksite	Activity	Period	PME	TM Ref. / other Ref.	Unit Quiet Plant SWL	On-time, %	Time Factor	Quiet Plant SWL with on- time %	No. of plants	Total SWL	Distance from Notional Sources, m	Distance Attenuation	Façade Correction, dB(A)	Barrier Correction, dB(A)	Predicted Noise Level, dB(A)	Total Predicted Noise Level for each group, dB(A)		
S3	Construct Dwell and Traffic Deck - Piling for King Post	Jul-18	Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	165	-52	3	-5	52	56		
			Concrete pump	CNP047	109	80	-1	108	1	108	165	-52	3	-10	49			
			Dump Truck with Grab	CNP069	105	70	-2	103	1	103	165	-52	3	-5	49			
			Generator	CNP103	95	100	0	95	2	98	165	-52	3	-10	39			
			Lorry	CNP142	105	60	-2	103	1	103	165	-52	3	-5	48			
			or															
			Generator	CNP103	95	100	0	95	2	98	165	-52	3	-10	39			
			Lorry	CNP142	105	60	-2	103	1	103	165	-52	3	-5	48			
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	165	-52	3	-5	45			
			Bored Piling Crane mounted auger	BS D4-37	111	70	-2	109	2	112	165	-52	3	-10	53			
	Construct Dwell and Traffic Deck - Diaphragm Walls	Aug 2018 Nov 2018	Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	165	-52	3	-5	43	56		
			Bar Bender and Cutter	CNP021	90	70	-2	88	1	88	165	-52	3	0	39			
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	165	-52	3	-5	52			
			Concrete pump	CNP047	109	80	-1	108	1	108	165	-52	3	-10	49			
			Generator	CNP103	95	100	0	95	2	98	165	-52	3	-10	39			
			Lorry	CNP142	105	70	-2	103	1	103	165	-52	3	-5	49			
			Poker, Vibratory, Hand Held	CNP173	102	60	-2	100	1	100	165	-52	3	-5	45			
			or															
			Dump Truck with Grab	CNP069	105	70	-2	103	1	103	165	-52	3	-5	49			
			Generator	CNP103	95	100	0	95	2	98	165	-52	3	-10	39			
	Construct Southern Dwell & Traffic Deck - Excavation for Diaphragm Walls	Nov 2018 Jan 2019	Crane Mobile	BS D7-114	101	70	-2	99	1	99	165	-52	3	-5	45	52		
			Piling, Diaphragm Wall, Bentonite Filtering	CNP162	105	90	0	105	1	105	165	-52	3	-10	45			
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	60	-2	97	1	97	165	-52	3	-5	42			
			Dump Truck with Grab	CNP069	105	70	-2	103	1	103	165	-52	3	-5	49			
			Generator	CNP103	95	100	0	95	1	95	165	-52	3	-10	36			
			Lorry	CNP142	105	70	-2	103	1	103	165	-52	3	-5	49			
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	165	-52	3	-5	45			
			Piling, Diaphragm Wall, Bentonite Filtering	CNP162	105	90	0	105	1	105	165	-52	3	-10	45			
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	60	-2	97	1	97	165	-52	3	-5	42			
			Bar Bender and Cutter	CNP021	90	70	-2	88	1	88	165	-52	3	0	39			
Construct Southern Dwell & Traffic Deck - Concreting for Diaphragm Walls	Feb-19	Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	165	-52	3	-5	52	54			
		Concrete pump	CNP047	109	80	-1	108	1	108	165	-52	3	-10	49				
		Generator	CNP103	95	70	-2	93	1	93	165	-52	3	-10	34				
		Lorry	CNP142	105	90	0	105	1	105	165	-52	3	-5	50				
		Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	165	-52	3	-5	43				
		Crane Mobile	BS D7-114	101	70	-2	99	1	99	165	-52	3	-5	45				
		or																
		Dump Truck with Grab	CNP069	105	70	-2	103	1	103	165	-52	3	-5	49				
		Generator	CNP103	95	100	0	95	1	95	165	-52	3	-10	36				
		Lorry	CNP142	105	70	-2	103	1	103	165	-52	3	-5	49				
Construct Southern Dwell & Traffic Deck - Temporary Traffic Deck	Mar-19	Crane Mobile	BS D7-114	101	70	-2	99	1	99	165	-52	3	-5	45	52			
		Piling, Diaphragm Wall, Bentonite Filtering	CNP162	105	90	0	105	1	105	165	-52	3	-10	45				
		Excavator/Loader, Wheeled/Tracked	EPD-01145	99	60	-2	97	1	97	165	-52	3	-5	42				
		Dump Truck with Grab	CNP069	105	70	-2	103	1	103	165	-52	3	-5	49				
		Generator	CNP103	95	100	0	95	1	95	165	-52	3	-10	36				
		Lorry	CNP142	105	70	-2	103	1	103	165	-52	3	-5	49				
		Crane Mobile	BS D7-114	101	70	-2	99	1	99	165	-52	3	-5	45				
		Piling, Diaphragm Wall, Bentonite Filtering	CNP162	105	90	0	105	1	105	165	-52	3	-10	45				
		Excavator/Loader, Wheeled/Tracked	EPD-01145	99	60	-2	97	1	97	165	-52	3	-5	42				
		Bar Bender and Cutter	CNP021	90	70	-2	88	1	88	165	-52	3	0	39				
S13a	Removal of Excavated Material through West End Portal	Apr 2019 - Mar 2020	Dump Truck with Grab	CNP069	105	70	-2	103	10	113	165	-52	3	-5	59	59		
			or															
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	285	-57	3	-5	48			
			Concrete pump	CNP047	109	80	-1	108	1	108	285	-57	3	-10	44			
			Dump Truck with Grab	CNP069	105	70	-2	103	1	103	285	-57	3	-5	44			
			Generator	CNP103	95	100	0	95	2	98	285	-57	3	-10	34			
			Lorry	CNP142	105	60	-2	103	1	103	285	-57	3	-5	44			
			or															
			Generator	CNP103	95	100	0	95	2	98	285	-57	3	-10	34			
			Lorry	CNP142	105	60	-2	103	1	103	285	-57	3	-5	44			
16a	Construct Dwell and Traffic Deck - Piling for King Post	Jul-18	Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	285	-57	3	-5	48	51		
			Concrete pump	CNP047	109	80	-1	108	1	108	285	-57	3	-10	44			
			Dump Truck with Grab	CNP069	105	70	-2	103	1	103	285	-57	3	-5	44			
			Generator	CNP103	95	100	0	95	2	98	285	-57	3	-10	34			
			Lorry	CNP142	105	60	-2	103	1	103	285	-57	3	-5	44			
			or															
			Generator	CNP103	95	100	0	95	2	98	285	-57	3	-10	34			
			Lorry	CNP142	105	60	-2	103	1	103	285	-57	3	-5	44			
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	285	-57	3	-5	40			
			Bored Piling Crane mounted auger	BS D4-37	111	70	-2	109	2	112	285	-57	3	-10	48			
	Construct Middle Dwell and Traffic Deck - Diaphragm Walls	Oct 2018 - Jan 2019	Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	285	-57	3	-5	41	51		
			Bar Bender and Cutter	CNP021	90	70	-2	88	1	88	285	-57	3	0	34			
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	285	-57	3	-5	48			
			Concrete pump	CNP047	109	80	-1	108	1	108	285	-57	3	-10	44			
			Generator	CNP103	95	100	0	95	2	98	285	-57	3	-10	34			
			Lorry	CNP142	105	70	-2	103	1	103	285	-57	3	-5	44			
			Poker, Vibratory, Hand Held	CNP173	102	60	-2	100	1	100	285	-57	3	-5	41			
			or															
			Dump Truck with Grab	CNP069	105	70	-2	103	1	103	285	-57	3	-5	44			
			Generator	CNP103	95	100	0	95	2	98	285	-57	3	-10	34			
	Construct Middle Dwell and Traffic Deck - Temporary Traffic Deck	Feb 2019	Crane Mobile	BS D7-114	101	70	-2	99	1	99	285	-57	3	-5	40	47		
			Piling, Diaphragm Wall, Bentonite Filtering Plant	CNP162	105	90	0	105	1	105	285	-57	3	-10	40			
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	60	-2	97	1	97	285	-57	3	-5	38			
			Generator	CNP103	95	70	-2	93	1	93	285	-57	3	-10	29			
			Lorry	CNP142	105	90	0	105	1	105	285	-57	3	-5	45			
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	285	-57	3	-5	38			
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	285	-57	3	-5	40			
			or															
			Dump Truck with Grab	CNP069	105	70	-2	103	2	106	150	-52	3	-5	53			
			Generator	CNP103	95	100	0	95	3	105	150	-52	3	-10	41			
S28	Diversion of Ferry Street Junction	Jul 2019 - Sep 2019	Poker, Vibratory, Hand Held	CNP173	102	60	-2	100	3	105	150	-52	3	-5	52	60		
			Road Roller	EPD-01183	97	70	-2	95	2	98	150	-52	3	-5	45			
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	2	100	150	-52	3	-5	47			
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	150	-52	3	-5	46			
			Bar Bender and Cutter	CNP021	90	70	-2	88	1	88	150	-52	3	0	40			
			Concrete pump	CNP047	109	80	-1	108	1	108	150	-52	3	-10	50			
			Generator	CNP103	95	100	0	95	1	95	215	-55	3	-10	33			
			Lorry	CNP142	105	60	-2	103	1	103	215	-55	3	-5	46			
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	215	-55	3	-5	43			
			Bored Piling Crane mounted auger	BS D4-37	111	70	-2	109	1	109	215	-55	3	-10	48			
S29	Construct Southern Dwell & Dwall Crossing Ferry Street - Piling for King Post	Jul-19	Excavator															

Build King - SKEC Joint Venture

Construction Noise Assessment

Period: 0700 to 1900 (except general holidays)

Noise Sensitive Receiver: W-P11 The Coronation (West Façade)

Mitigation Measures Scenario

Noise Criteria: 75dB(A)

Worksite	Activity	Period	PME	TM Ref. / other Ref.	Unit Quiet Plant SWL	On-time, %	Time Factor	Quiet Plant SWL with on-time %	No. of plants	Total SWL	Distance from Notional Sources, m	Distance Attenuation	Façade Correction, dB(A)	Barrier Correction, dB(A)	Predicted Noise Level, dB(A)	Total Predicted Noise Level for each group, dB(A)
S39	Construct Southern Dwall and Traffic Deck (cross road sections) - Diaphragm Walls	Mar 2020 - Apr 2020	Bar Bender and Cutter	CNP021	90	70	-2	88	1	88	260	-56	3	0	35	53
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	260	-56	3	-5	48	
			Concrete pump	CNP047	109	80	-1	108	1	108	260	-56	3	-10	45	
			Dump Truck with Grab	CNP069	105	70	-2	103	1	103	260	-56	3	-5	45	
			Generator	CNP103	95	100	0	95	1	95	260	-56	3	-10	32	
			Lorry	CNP142	105	70	-2	103	1	103	260	-56	3	-5	45	
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	260	-56	3	-5	41	
			Piling, Diaphragm Wall, Bentonite Filtering Plant	CNP162	105	90	0	105	1	105	260	-56	3	-10	41	
			Poker, Vibratory, Hand Held	CNP173	102	60	-2	100	1	100	260	-56	3	-5	41	
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	60	-2	97	1	97	260	-56	3	-5	38	
			Generator	CNP103	95	70	-2	93	1	93	260	-56	3	-10	30	
S43	Excavation of Tunnel Tubes (under cover of traffic deck)	Sep 2020 - Apr 2022	Excavator/Loader, Wheeled/Tracked	CNP142	105	90	0	105	1	105	260	-56	3	-5	46	48
			Generator	EPD-01145	99	70	-2	97	1	97	260	-56	3	-5	39	
S43	Piling Works for Cut and Cover Tunnel (under cover of traffic deck)	Sep 2020 - Jul 2022	Crane Mobile	BS D7-114	101	70	-2	99	1	99	260	-56	3	-5	41	52
			Generator	CNP103	95	100	0	95	10	105	210	-54	3	-20	34	
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	80	-1	98	5	105	210	-54	3	-20	34	
			Rock drill, crawler mounted (pneumatic)	SIL EIA	108	80	-1	107	5	114	210	-54	3	-20	43	
			Ventilation Fan	CNP241	108	90	0	108	10	118	210	-54	3	-15	51	
			Water Pump, Submersible (Electric)	CNP283	85	100	0	85	12	96	210	-54	3	-20	24	
			Concrete Lorry Mixer	CNP044	109	60	-2	107	3	112	210	-54	3	-20	40	
			Concrete pump	CNP047	109	80	-1	108	1	108	210	-54	3	-20	37	
			Generator	CNP103	95	100	0	95	6	103	210	-54	3	-20	31	
			Crane Mobile	BS D7-114	101	70	-2	99	4	105	210	-54	3	-20	34	
			Bored Piling Crane mounted auger	BS D4-37	111	90	0	111	6	118	210	-54	3	-20	47	
S46a	Excavation of Tunnel Tubes (under cover of traffic deck)	Sep 2020 - Apr 2022	Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	2	100	210	-54	3	-20	29	48
			Generator	CNP103	95	100	0	95	4	101	195	-54	3	-20	30	
S46a	Piling Works for Cut and Cover Tunnel (under cover of traffic deck)	Sep 2020 - Jul 2022	Excavator/Loader, Wheeled/Tracked	EPD-01145	99	80	-1	98	2	101	195	-54	3	-20	30	45
			Rock drill, crawler mounted (pneumatic)	SIL EIA	108	80	-1	107	2	110	195	-54	3	-20	39	
			Ventilation Fan	CNP241	108	90	0	108	4	114	195	-54	3	-15	48	
			Water Pump, Submersible (Electric)	CNP283	85	100	0	85	4	91	195	-54	3	-20	20	
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	195	-54	3	-20	26	
			Concrete pump	CNP047	109	80	-1	108	1	108	195	-54	3	-20	37	
			Generator	CNP103	95	100	0	95	2	98	195	-54	3	-20	27	
			Crane Mobile	BS D7-114	101	70	-2	99	2	102	195	-54	3	-20	32	
			Bored Piling Crane mounted auger	BS D4-37	111	90	0	111	2	114	195	-54	3	-20	43	
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	195	-54	3	-20	27	
			Generator	CNP103	95	100	0	95	3	100	275	-57	3	-20	26	
S46b	Excavation of Tunnel Tubes (under cover of traffic deck)	Sep 2020 - Apr 2022	Excavator/Loader, Wheeled/Tracked	EPD-01145	99	80	-1	98	2	101	275	-57	3	-20	27	44
			Rock drill, crawler mounted (pneumatic)	SIL EIA	108	80	-1	107	2	110	275	-57	3	-20	36	
			Ventilation Fan	CNP241	108	90	0	108	3	112	275	-57	3	-15	44	
			Water Pump, Submersible (Electric)	CNP283	85	100	0	85	4	91	275	-57	3	-20	17	
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	275	-57	3	-20	33	
			Concrete pump	CNP047	109	80	-1	108	1	108	275	-57	3	-20	34	
			Generator	CNP103	95	100	0	95	2	98	275	-57	3	-20	24	
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	275	-57	3	-20	26	
			Bored Piling Crane mounted auger	BS D4-37	111	90	0	111	2	114	275	-57	3	-20	40	
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	275	-57	3	-20	24	
			Generator	CNP103	95	100	0	95	1	95	225	-55	3	-20	23	
S47a	Underpinning of Existing Bridges (under cover of traffic deck)	Nov 2020 - Apr 2021	Bar Bender and Cutter	CNP021	90	70	-2	88	1	88	225	-55	3	-20	16	43
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	225	-55	3	-20	35	
			Concrete pump	CNP047	109	80	-1	108	1	108	225	-55	3	-20	36	
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	225	-55	3	-20	27	
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	60	-2	97	1	97	225	-55	3	-20	25	
			Ventilation Fan	CNP241	108	90	0	108	1	108	225	-55	3	-15	40	
			Water Pump, Submersible (Electric)	CNP283	85	100	0	85	1	85	225	-55	3	-20	13	
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	225	-55	3	-20	16	
			Concrete pump	CNP047	109	80	-1	108	1	108	225	-55	3	-20	36	
			Generator	CNP103	95	100	0	95	2	98	225	-55	3	-20	26	
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	225	-55	3	-20	27	
S47a	Construction of the Cut and Cover Tunnel (under cover of traffic deck)	Aug 2020 - Nov 2022	Poker, Vibratory, Hand Held	CNP173	102	70	-2	100	1	100	225	-55	3	-20	28	47
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	225	-55	3	-20	25	
			Ventilation Fan	CNP241	108	90	0	108	4	114	225	-55	3	-15	47	
			Water Pump, Submersible (Electric)	CNP283	85	100	0	85	4	91	225	-55	3	-20	19	
			Concrete Lorry Mixer	CNP044	109	60	-2	107	2	110	180	-53	3	-5	55	
			Concrete pump	CNP047	109	80	-1	108	1	108	180	-53	3	-10	48	
			Generator	CNP103	95	100	0	95	3	100	180	-53	3	-10	40	
			Lorry	CNP142	105	70	-2	103	2	106	180	-53	3	-5	51	
			Crane Mobile	BS D7-114	101	70	-2	99	3	104	180	-53	3	-5	48	
			Bored Piling Crane mounted auger	BS D4-37	111	80	-1	110	2	113	180	-53	3	-10	53	
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	2	100	180	-53	3	-5	45	
S50a	Foundation (west side) for noise enclosure on GRF Flyover (Ferry Street Section)	Jan 2022 - Mar 2022	Compactor, vibratory	CNP050	105	70	-2	103	3	108	180	-53	3	-5	53	60
			Dump Truck with Grab	CNP069	105	70	-2	103	1	103	180	-53	3	-5	48	
S50b	Construct noise barriers and noise enclosure on GRF Flyover (Ferry Street Section) and along Ting Ping Street	Oct 2022 - Apr 2023	Crane Mobile	BS D7-114	101	70	-2	99	1	99	180	-53	3	-5	44	50
			Generator	CNP103	95	100	0	95	1	95	180	-53	3	-10	35	
			Lorry	CNP142	105	70	-2	103	1	103	180	-53	3	-5	48	
			Concrete Lorry Mixer	CNP044	109	60	-2	107	2	110	215	-55	3	-5	53	
			Concrete pump	CNP047	109	80	-1	108	1	108	215	-55	3	-10	46	
			Generator	CNP103	95	100	0	95	3	100	215	-55	3	-10	38	
			Lorry	CNP142	105	70	-2	103	2	106	215	-55	3	-5	50	
			Crane Mobile	BS D7-114	101	70	-2	99	3	104	215	-55	3	-5	47	
			Bored Piling Crane mounted auger	BS D4-37	111	80	-1	110	2	113	215	-55	3	-10	51	
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	2	100	215	-55	3	-5	44	
			Compactor, vibratory	CNP050	105	70	-2	103	3	108	215	-55	3	-5	52	
S50c	Foundation (west side) for noise enclosure on GRF Flyover (Ferry Street Section)	Oct 2022 - Apr 2023	Dump Truck with Grab	CNP069	105	70	-2	103	1	103	215	-55	3	-5	47	48
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	215	-55	3	-5	43	
			Generator	CNP103	95	100	0	95	1	95	215	-55	3	-10	33	
			Lorry	CNP142	105	70	-2	103	1	103	215	-55	3	-5	47	
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	250	-56	3	-5	49	
			Concrete pump	CNP047	109	80	-1	108	1	108	250	-56	3	-10	45	
			Generator	CNP103	95	100	0	95	3	100	250	-56	3	-10	37	
			Lorry	CNP142	105	70	-2	103	1	103	250	-56	3	-5	45	
			Crane Mobile	BS D7-114	101	70	-2	99	2	102	250	-56	3	-5	44	
			Bored Piling Crane mounted auger	BS D4-37	111	80	-1	110	2	113	250	-56	3	-10	50	
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	2	100	250	-56	3	-5	43	
S50c	Construct noise barriers and noise enclosure on GRF Flyover (Ferry Street Section) and along Ting Ping Street	Oct 2022 - Apr 2023	Compactor, vibratory	CNP050	105	70	-2	103	2	106	250	-56	3	-5	49	56

Build King - SKEC Joint Venture

Construction Noise Assessment

Period: 0700 to 1900 (except general holidays)

Noise Sensitive Receiver: W-P11 The Coronation (West Façade)

Mitigation Measures Scenario

Noise Criteria: 75dB(A)

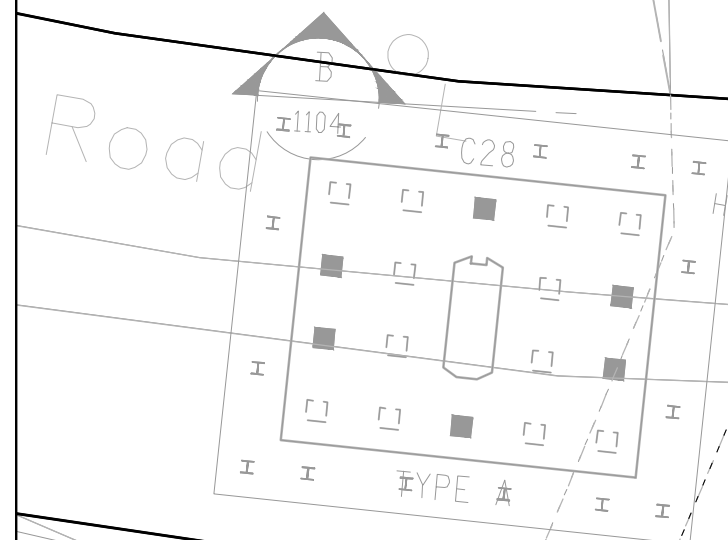
Worksite	Activity	Period	PME	TM Ref. / other Ref.	Unit Quiet Plant SWL	On-time, %	Time Factor	Quiet Plant SWL with on-time %	No. of plants	Total SWL	Distance from Notional Sources, m	Distance Attenuation	Façade Correction, dB(A)	Barrier Correction, dB(A)	Predicted Noise Level, dB(A)	Total Predicted Noise Level for each group, dB(A)
S50d	Road works for re-align Ferry Street at-grade road	Jan 2022 - Jun 2022	Asphalt Paver	EPD-01126	104	80	-1	103	1	103	245	-56	3	-5	45	55
			Concrete Lorry Mixer	CNP044	109	60	-2	107	1	107	245	-56	3	-5	49	
			Concrete pump	CNP047	109	80	-1	108	1	108	245	-56	3	-10	45	
			Dump Truck with Grab	CNP069	105	70	-2	103	1	103	245	-56	3	-5	46	
			Generator	CNP103	103	100	0	103	1	103	245	-56	3	-10	40	
			Poker, Vibratory, Hand Held	CNP173	102	70	-2	100	1	100	245	-56	3	-10	38	
			Road Roller	EPD-01183	97	80	-1	96	1	96	245	-56	3	-5	38	
			Bored Piling Crane mounted auger	BS D4-37	111	80	-1	110	1	110	245	-56	3	-10	47	
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	245	-56	3	-5	40	
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	245	-56	3	-5	42	
S51	Demolish the Existing Ferr Street Subway	Jul 2022 - Aug 2022	Breaker, Excavator Mounted (Hydraulic)	BS D8-13	110	50	-3	107	1	107	200	-54	3	-5	51	55
			Dump Truck with Grab	CNP069	105	70	-2	103	2	106	200	-54	3	-5	50	
			Concrete crusher, excavator mounted	CNP055	103	80	-1	102	1	102	200	-54	3	-5	46	
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	200	-54	3	-5	43	
			Saw, Wire	CNP205	101	70	-2	99	1	99	200	-54	3	-5	43	
S56a	Construction of the Cut and Cover Tunnel (under cover of traffic deck)	Apr 2020 - Nov 2022	Bar Bender and Cutter	CNP021	90	60	-2	88	1	88	235	-55	3	-20	15	49
			Concrete Lorry Mixer	CNP044	109	60	-2	107	2	110	235	-55	3	-20	37	
			Concrete pump	CNP047	109	80	-1	108	1	108	235	-55	3	-20	36	
			Generator	CNP103	95	100	0	95	3	100	235	-55	3	-20	27	
			Crane Mobile	BS D7-114	101	70	-2	99	1	99	235	-55	3	-20	27	
			Poker, Vibratory, Hand Held	CNP173	102	70	-2	100	1	100	235	-55	3	-20	28	
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	235	-55	3	-20	25	
			Ventilation Fan	CNP241	108	90	0	108	6	115	235	-55	3	-15	48	
			Water Pump, Submersible (Electric)	CNP283	85	100	0	85	6	93	235	-55	3	-20	20	
			Compactor, vibratory	CNP050	105	70	-2	103	1	103	235	-55	3	-20	31	
			Generator	CNP103	95	100	0	95	2	98	235	-55	3	-20	26	
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	2	100	235	-55	3	-20	28	
			Road Roller	EPD-01183	97	80	-1	96	1	96	235	-55	3	-20	24	
S58	Construction of Temporary Maternal and Child Health Centre - Superstructure	Apr 2018 - Jun 2018	Poker, Vibratory, Hand Held	CNP173	102	50	-3	99	1	99	160	-52	3	-5	45	47
			Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	160	-52	3	0	42	
			Bar Bender and Cutter	CNP021	90	60	-2	88	2	91	160	-52	3	-5	55	
		Jul 2018 - Dec 2018	Concrete Lorry Mixer	CNP044	109	50	-3	106	2	109	160	-52	3	-5	48	
			Concrete pump	CNP047	109	70	-2	107	1	107	160	-52	3	-10	48	
			Generator	CNP103	95	100	0	95	2	98	160	-52	3	-10	39	
Jul 2018 - Dec 2018	Crane Mobile	BS D7-114	101	50	-3	98	1	98	160	-52	3	-5	44			
	Saw, Circular Wood	BS D7-79	103	50	-3	100	2	103	160	-52	3	-5	49			
	Excavator/Loader, Wheeled/Tracked	EPD-01145	99	70	-2	97	1	97	160	-52	3	-5	43			

Appendix D

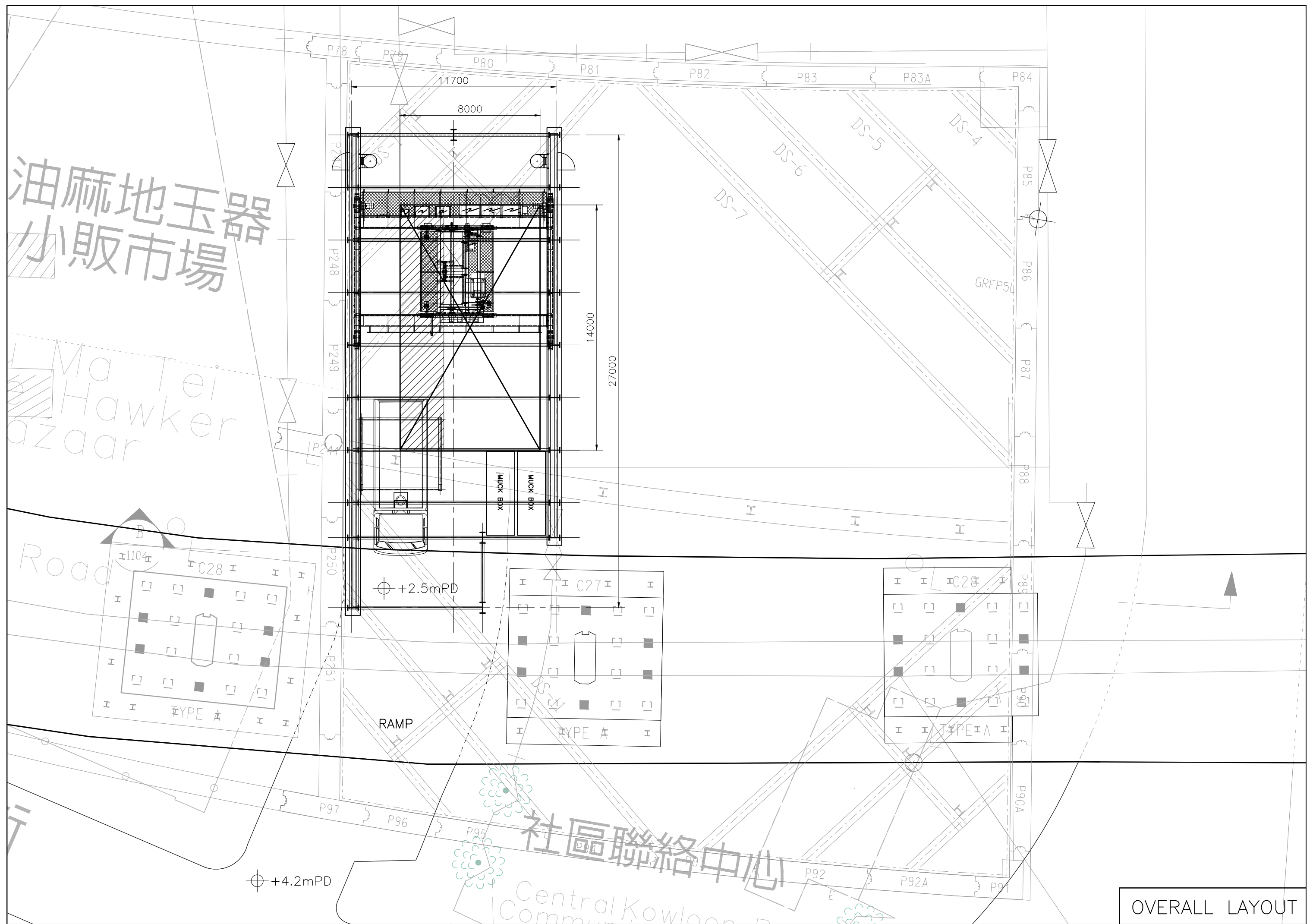
Details of Temporary Noise Enclosure at Mucking Out Point

油麻地玉器
小販市場

Ma Tei
Hawker
Market

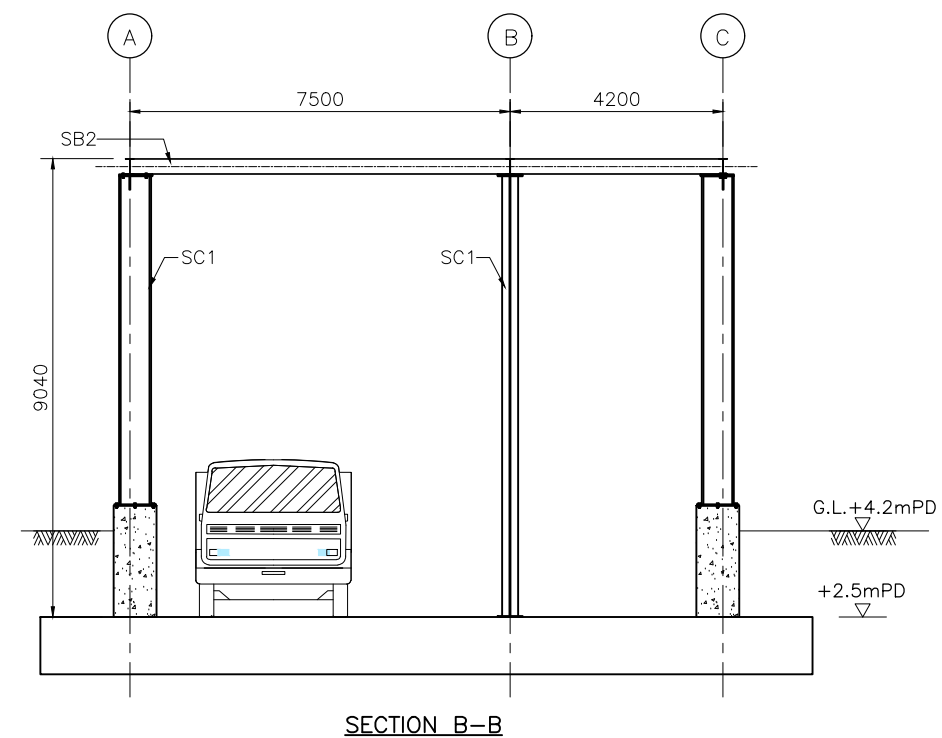
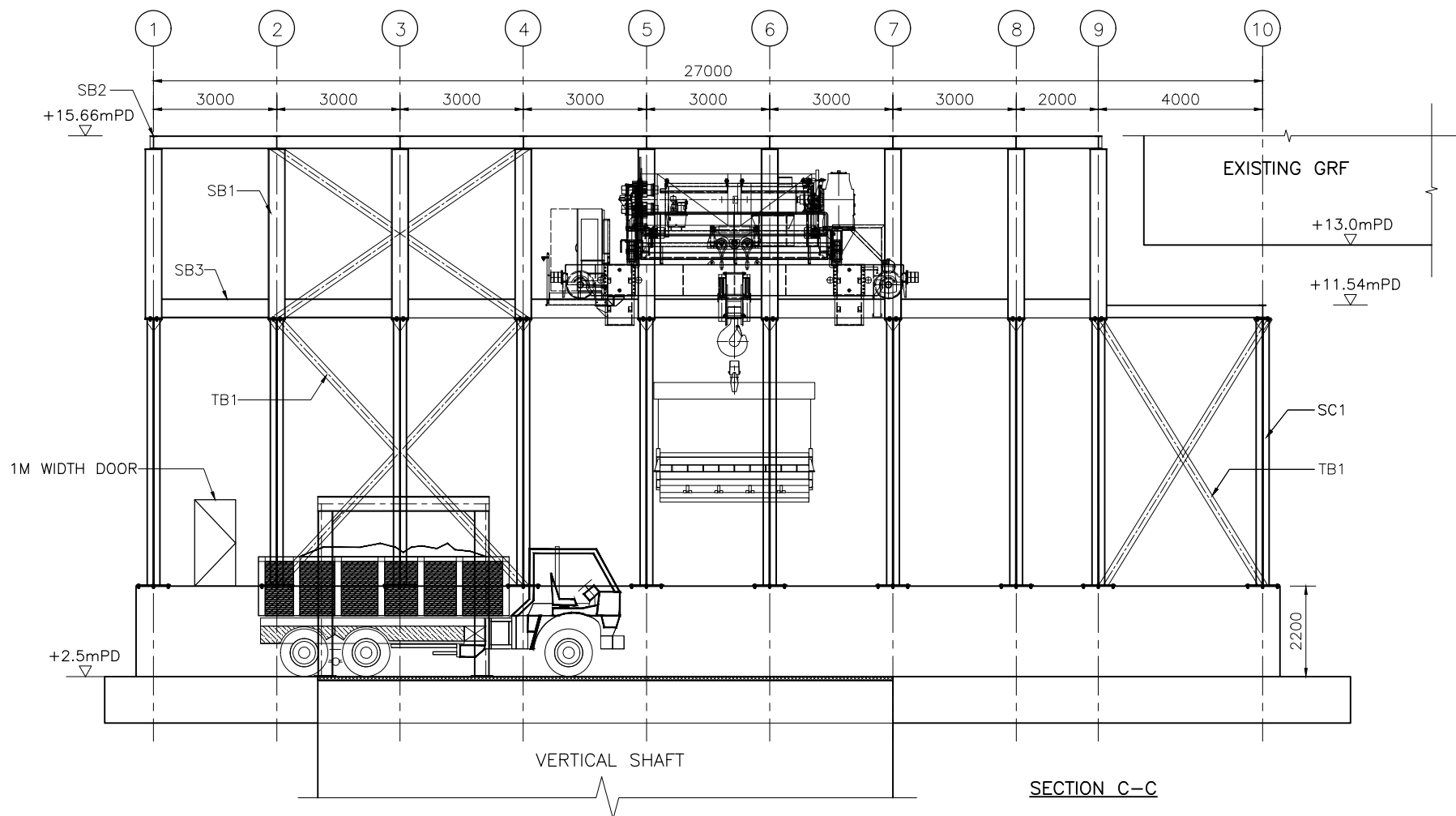
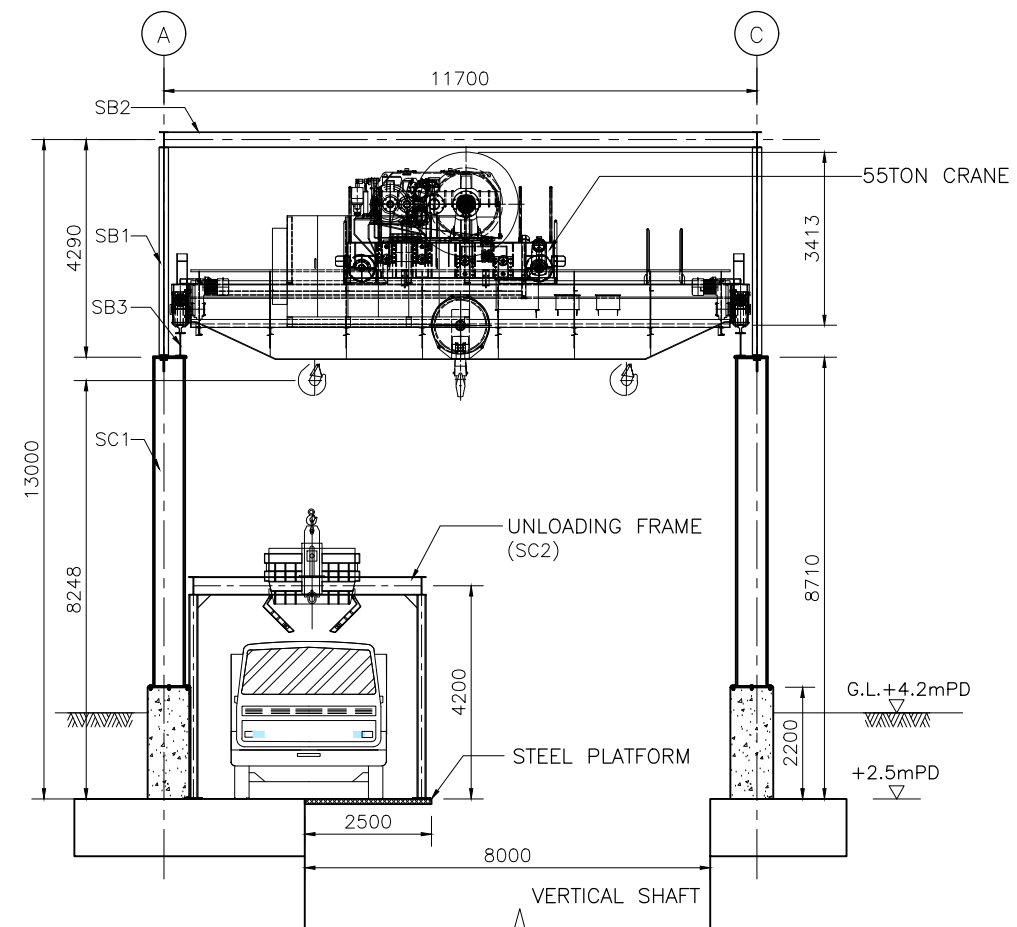
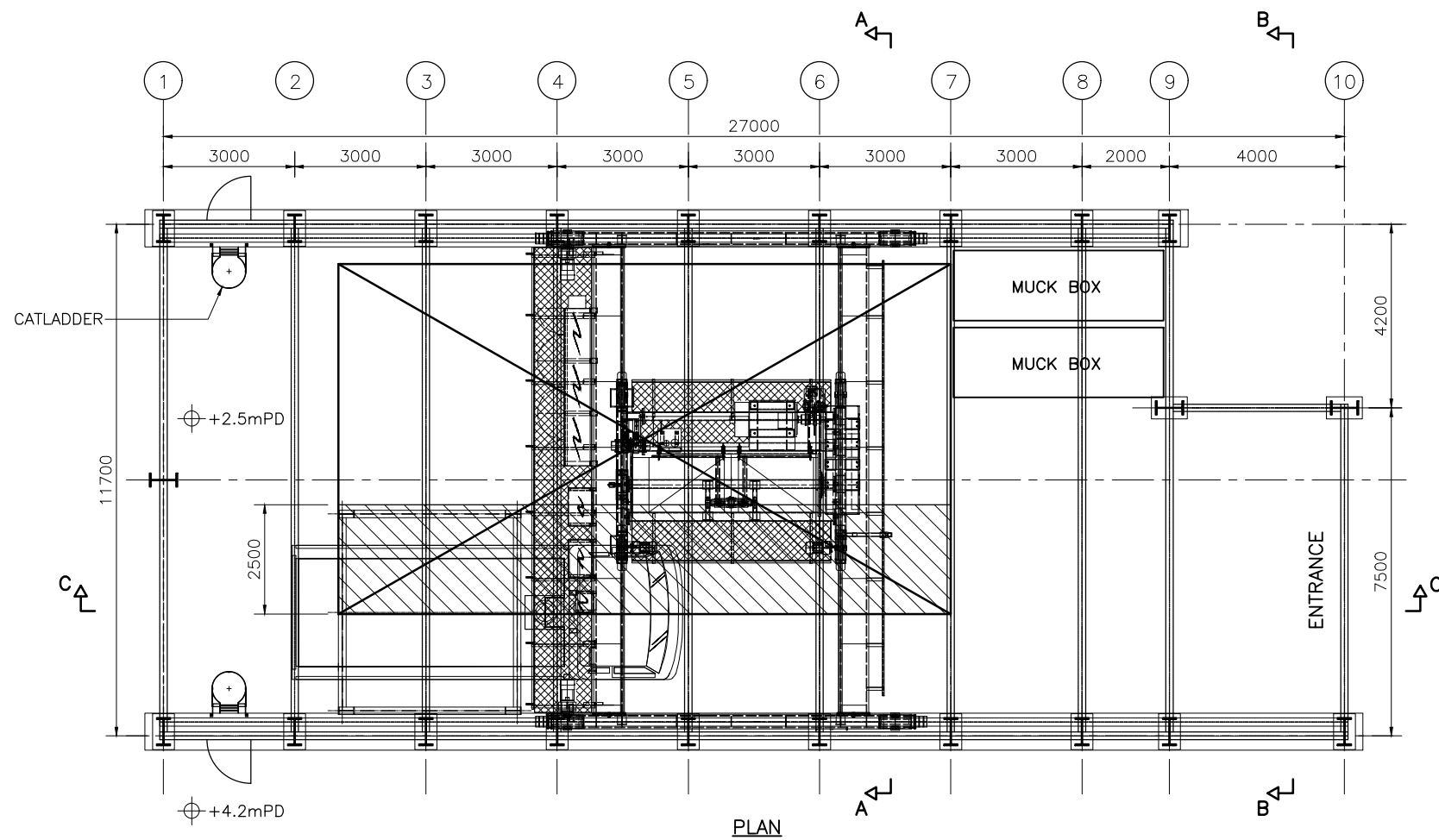


社區聯絡中心
Central Kowloon
Community Centre



OVERALL LAYOUT

CRANE SPECIFICATION:
 LIFTING CAPACITY: 55000KG
 LIFTING SPEED: 30m/min
 LIFTING HEIGHT: 45M



MEMBER SCHEDULE

ITEM	DESCRIPTION
SB1	406X178X74 UB
SB2	305X165X54 UB
SB3	457X191X98 UB
SC1	610X305X238 UB
TB1	200X200X16 EA
SC2	356x171x67 UB

Supreme Acoustics

盈达声学科研有限公司
Supreme Acoustics Research Limited



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声学工程(远东)有限公司

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REPRESENTATIVES

Indonesia • Japan • Korea • Malaysia • Philippines • Taiwan • Thailand

ACOUSTIC ENCLOSURE SYSTEM



Supreme Acoustics

NAP Acoustics

Supreme NAP is an international acoustics company established in Australia in the 1970's. With the tremendous growth of business, expansion to Far East and South East Asia regions took place in the early 1980's and became our base. Our principal activities are in building acoustics, noise and vibration control. Supreme NAP is a leading designer and manufacturer of noise control equipment in the Asia Pacific region. We provide proven engineered and technically advanced solutions for noise problems relating to architectural, transportation, commercial and industrial applications.

盈达社群
普惠宁静

AFTER SALES
SERVICE
售后服务

The Company's standard range of products are listed as follows:

Sound Attenuation:

Rectangular Duct Silencers
Tunnel Ventilation Splitters
Elbow Duct Silencers
Circular Duct Silencers
Cross Talk Silencers
Resonator Silencers
Devil Industrial Silencers
Vent Silencers
Gas Turbine Exhaust Silencers
Acoustic Louvres

Sound Insulation:

Noise Barriers
QRD Noise Reducers
Acoustic Enclosures
Audiometric Rooms
Acoustic Doors
Acoustic Windows
Door & Window Seals, Hinges
Floating Floors / Floor Underlayment
Isolated Ceilings
Isolated Walls / Partitions

Sound Absorption:

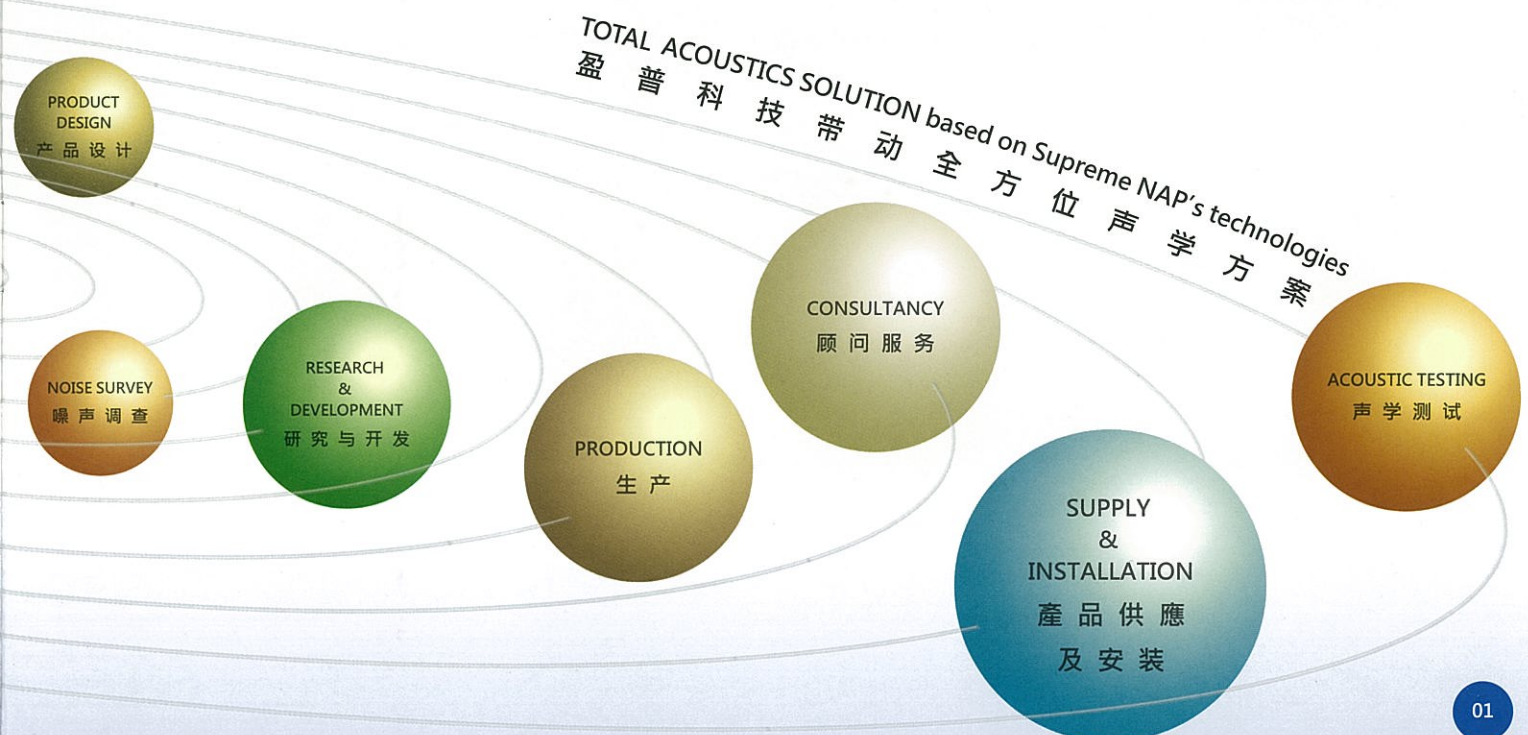
Ripple Acoustic Linings
Conventional Acoustic Linings
Acoustic Metal Ceilings
Timber Acoustic Panels
Cocktail Panels
Soundfield Improvers
Space Functional Absorbers

Vibration Isolation:

Spring Mounts
Rubber Mounts

In this catalogue, we are pleased to introduce one of our many remarkable products - Acoustic Enclosures for Sound Insulation and the following information will be covered:

Chapter 1 : NAP Acoustic Enclosures with Modular Panel System	02-07
Chapter 2 : Supreme-NAP "Mini-Booth"	08
Chapter 3 : Laboratory Testing of Acoustic Enclosures	09



CHAPTER 1

NAP ACOUSTIC ENCLOSURES WITH MODULAR PANEL SYSTEM

INTRODUCTION

As legislation and local standards are introduced to control noise, there is an upward tendency for the need of modular acoustic panel system. In response to this demand, NAP provides the unique Sound Snap system. Its practical design and wide range of application are illustrated in this catalogue.

Following many years of development, the Sound Snap panel system is now widely used in hundreds of installation. This is because it is proven, developed, tested and economical, for all applications in noise and vibration control involving acoustic enclosures, plenums, noise barriers, sound booths, isolated walls or ceilings.



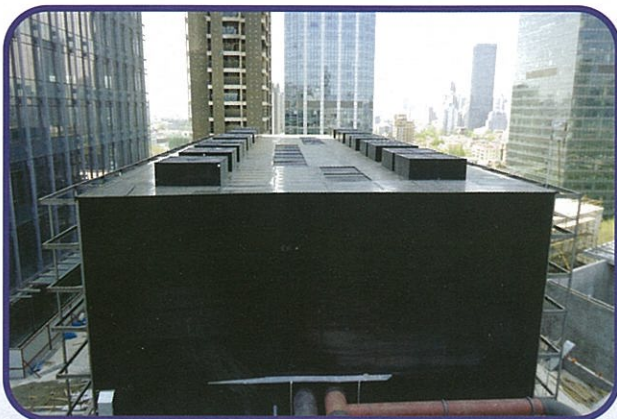
Wylie Road Ancillary Building, Hong Kong

APPLICATIONS

The wide range of panels enables enclosures and structures of any size to be assembled. This catalogue refers to the most common uses of Sound Snap Panels including:

- Air-cooled Chiller enclosures
- Cooling Tower enclosures
- Enclosures to reduce construction noise
- Machine acoustic enclosures
- Fan enclosures
- Enclosures to reduce transportation noise

Sound Snap panels are recognized by consultants and engineers alike and selected for their functionality, low cost, ease of installation, attractive appearance, high noise absorption and high noise insulation performance.



Shanghai IAPM Mall, Huaihai Road Central, China



Dyson, Singapore

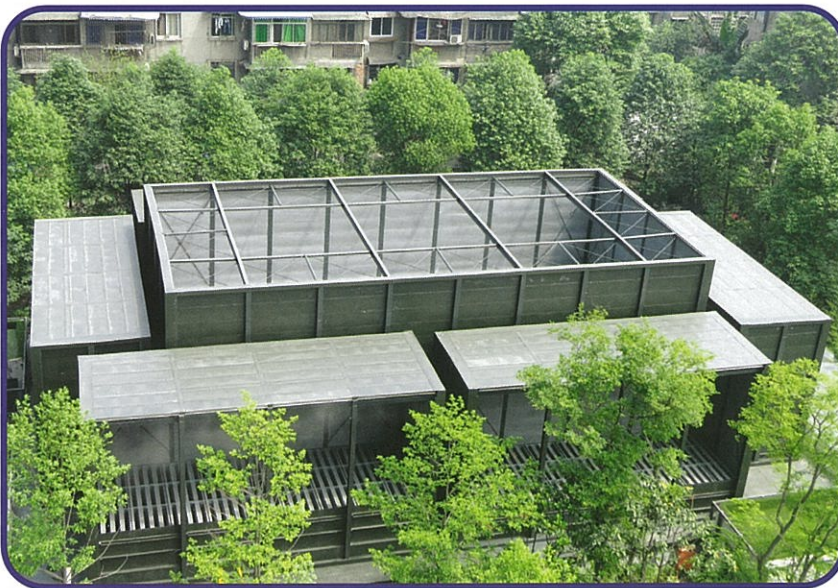
— PRODUCT FEATURES —

Integrated System

Integrated with the Sound Snap panels are complementary components; corner panels, glazed panels, doors, windows, access hatch, ventilation silencer, inlet and outlet feed chutes, cable and pipe penetrations and locating channels.

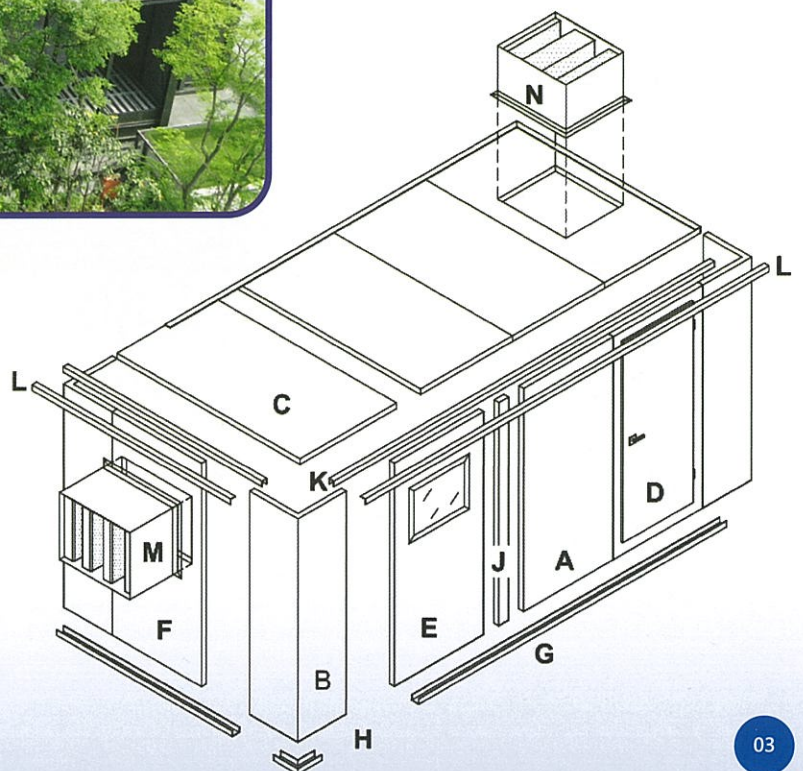
Roof panels are similar to wall panels. Standard corner panels, joiner panels, H-joiners and L-angles provide integral connections without degrading the performance.

NAP has profound experience in many noise control applications. Use our experience to help solving your problems. We offer a comprehensive design services based upon proven experience and the understanding of the requirements of your particular plant or machinery.



Chengdu Raffle City Cooling Tower, China

Total solution by using NAP's acoustic enclosures and duct silencers to achieve noise reduction of 35 dB(A) and bring a quiet life to the nearby residents



Acoustic Enclosure System:

- | | |
|---------------------------------|-------------------------|
| A. Standard panel | G. Floor channel |
| B. Corner panel | H. Floor insert channel |
| C. Roof panel | J. Joiner piece |
| D. Acoustic door | K. Wall capping channel |
| E. Window panel | L. Flashing strip |
| F. Special panel (with cut out) | M. Inlet silencer |
| | N. Discharge silencer |

— PRODUCT FEATURES —

Standard Modular Panel – Sound Snap enclosures can be erected using standard sized panels to suit most requirements, the panels can be installed and disassembled as required, to suit production or machine changes and alterations in plant layout. The use of modular panels makes installation fast and simple even for inexperienced teams.

Materials and Finishes – Materials available include galvanized steel, stainless steel, aluminum and colourbond steel sheet. Optional surface finishes are polyester powder coating, PVDF coating and paint coating.

Surface Densities – The surface weight of 50 mm thick panel is 15 kg/m² to 30kg/m² and that for the 100 mm thick panel is 30 kg/m² to 50 kg/m². Selection of panel size shall depend on factors such as ease of erection, transportation, space limitation at site, etc. in order to optimize the cost.



Shanghai IAPM Mall,
Huaihai Road Central, China



Festival Walk Shopping Mall,
Hong Kong

— MATERIAL AND PANEL CONSTRUCTION —

Sound Snap panels are factory produced in variety of thicknesses and lengths. All standard acoustic panels are manufactured from heavy gauge metal on external faces and internal perforated metal sheet retaining inert, fire resistant acoustic infill.

These products are laboratory tested. Non-combustible rockwool or glass fibre insulating material is specially selected to achieve maximum performance. Fibreglass tissue and water resistant polyester membrane are available to further protect the acoustic infill.

Panel size and Material Thickness	Thickness : 50 mm, 75 mm, 100 mm, 125 mm, up to 300 mm Width : Maximum 1200 mm Length : Maximum 4000 mm Outer Skin (solid) : 0.8 mm, 1.0 mm, 1.2 mm, 1.5 mm Inner Skin (Perforated) : 0.5 mm, 0.8 mm, 1.0 mm, 1.2 mm
Infill Material	The sound absorptive infill is inert, non-hygroscopic, moisture proof, non-capillary, verim proof, non-combustible and laboratory tested according to BS 476: Part 4.1970.
Doors	Normally size for single leaf door is 800 x 2000 mm, with stainless steel hinges, tubular latch and lever handles. Cabin latch and D pulls are optional. Noise leakage is minimized by installation of acoustic seal closure. Hinged door can be selected for clockwise or anticlockwise opening. Double leaf doors and sliding doors are also available. Sliding doors can be operated by manual or motor drive.
Windows	Windows or vision panels in safety, laminated or double layers glass as options.
Ventilation, Inlet and Discharge	Using NAP Duct Silencers or NAP Flowline Acoustic Louvres sized to suit acoustics and airflow requirements.
Structural Strength	For modular panel length of 3600 mm, deflection is less than 8 mm by applying panel thickness of 0.8 kN/M (50 mm panel) or 1.2 kN/M (100 mm panel) to leverage the imposed load.

ACOUSTIC PERFORMANCE

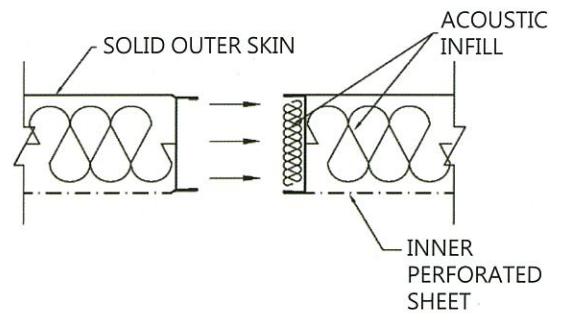
Airborne Sound Insulation

Supreme NAP Sound Snap Panels have been tested in accordance with International Standard ISO 10140-2, ISO 140-3 or American Standard ASTM E90 to determine **Sound Reduction Index** or **Sound Transmission Loss**.

The **Weighted Sound Reduction Index, R_w** , or **Sound Transmission Class, STC**, which gives a single number rating of the airborne sound insulation of a panel system are as follows:

PANEL THICKNESS	R_w / STC
50 mm	25 – 40 dB
75 mm	30 – 45 dB
100 mm	35 – 50 dB
125 mm	40 – 55 dB
300 mm	50 – 60 dB

TYPICAL PANEL SNAPLOCK JOINT SYSTEM



Note: The airborne sound insulation performance shall depend on the material construction, e.g. steel or aluminium, thickness of the panel, types of damping material and acoustic infill. Furthermore, a good jointing system to prevent noise leakage shall play an important role to maintain the overall performance of the acoustic enclosure.

Sound Absorption

Supreme NAP Sound Snap Panels have been tested by N.A.T.A, CNAS or HOLAS accredited laboratories in accordance with International Standard ISO 354 or American Standard ASTM C423 to determine **Sound Absorption Coefficients**.

Weighted Sound Absorption Coefficient α_w , **Sound Absorption Average SAA**, or **Noise Reduction Coefficient NRC** which gives a single number rating of the average of the **sound absorption coefficients** of a panel system, are in the range of 0.8 to 1.05.

Note: The sound absorption performance shall depend on the density and thickness of acoustic infill, type of acoustic infill, e.g. fibreglass or rockwool, the panel facing (e.g. perforation percentage) and infill facing (e.g. fibreglass scrim or Melinex polyester membrane). NAP engineers are pleased to provide assistance in selecting the appropriate materials according to the project requirements.



Fat Kwong Street, Hong Kong



Gascoigne Road Garden, Hong Kong

MORE APPLICATION EXAMPLES

Construction Site

NAP Acoustic panels were supplied for erection of acoustic enclosures at construction sites:

- MTR Hong Kong (West Island Line) - KET Praya & Hill Road
- MTR Hong Kong (Kwun Tong Line Extension) - Yau Ma Tei Whampoa Tunnels
- MTR Hong Kong (Kwun Tong Line Extension) - Ho Man Tin Station
- MTR Hong Kong (Shatin to Central Link) - To Kwa Wan Station

The design of the panel was carefully engineered providing optimal noise attenuation to improve people's quality of life and minimizing disturbance of the construction progress.

A remarkable result was achieved for the project of Shatin to Central Link To Kwa Wan Station where the construction work was extremely closed to the nearby residential buildings. NAP's unique design of enclosures were able to reach an insertion loss of 60 dB(A), which is considered as an extremely high standard.

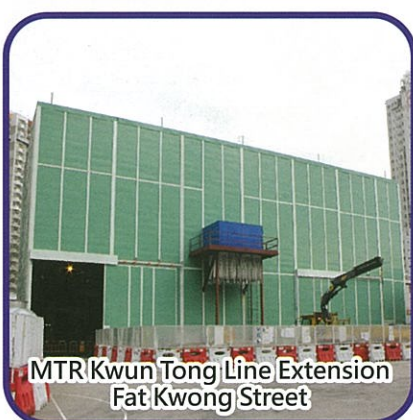
Similar acoustic enclosures were erected using NAP acoustic panels throughout Hong Kong for construction noise mitigation and achieved prestigious performance.



MTR Shatin to Central Link
(To Kwa Wan Station)



MTR Access Shafts at KET Praya



MTR Kwun Tong Line Extension
Fat Kwong Street



MTR Kwun Tong Line extension
Gascoigne Road Garden



MTR West Island Line
HKU Station
Hill Road, Hong Kong

Train Noise

To meet Hong Kong MTR Corporation's stringent requirements, NAP is fully capable of designing acoustic panels to provide high performance enclosure systems. At MTRC Tai Wai Station, NAP acoustic panels were employed to construct noise enclosures to shield train noise from the residents. These panels are made in aluminium with powder coating finishes with an acoustic performance design life of 20 years.



MTR
Tai Wai Station,
Hong Kong

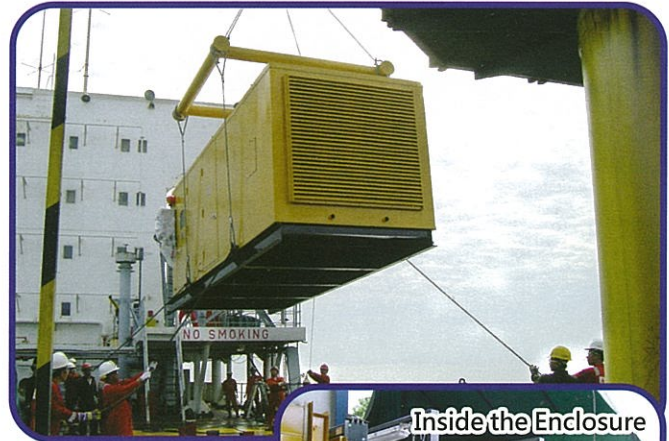


Power Generators

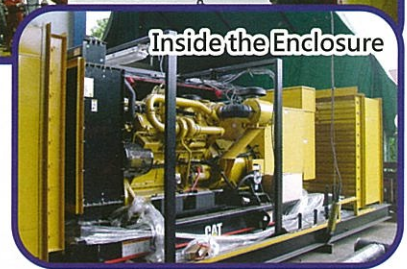
Acoustic enclosures should not impede the operation, maintenance or efficiency of the enclosed equipment. Careful integration of the design with the machinery is essential for a useful and effective enclosure.

The example here illustrates the advantages of all-in-one NAP Acoustic Enclosure erected from Sound Snap panel system including silencers, weatherproof louvres, access doors, vision panels and steel supporting frame.

The enclosure with all necessary components is assembled in the factory to save labour cost at site and ensure guaranteed acoustic performance. The enclosure can be lifted and delivered to the customer as a one stop acoustic solution. Typical applications are for diesel powered generators and ventilation fans.



Genset Enclosure for Star Energy



Balancing Machines

NAP often works with various partners to supply and install different types of noise enclosures to suit special machineries. Special acoustic enclosures are designed to suit Schenck Balancing Machines, which are equipped with control functions to cater for the operation of the Balancing Machine.



Rolls Royce Seletar, Singapore - Acoustic Enclosure for Balancing Machine



TEXL Acoustic Enclosure, Xiamen, China

Chillers & Cooling Towers

Air cooled chiller and cooling towers are commonly equipped with acoustic enclosures to reduce noise generated from the fans, compressors, water sprinkling and associated equipment. NAP has over 30 years' experience in providing one-stop service in the design, supply and installation of noise control measures to achieve environmental noise requirements while minimizing the influence of cooling loads.



Diocesan Girl's Junior School and Diocesan Girl's School, Hong Kong



Acoustic enclosures for chillers, City Plaza, Hong Kong

CHAPTER 2

Supreme NAP "MINI-BOOTH"

INTRODUCTION

Supreme NAP Mini-booth is specifically designed for precision noise measurement of small equipment in which the influence from ambient noise must be suppressed. It is particularly suitable for product quality testing in industrial environments.



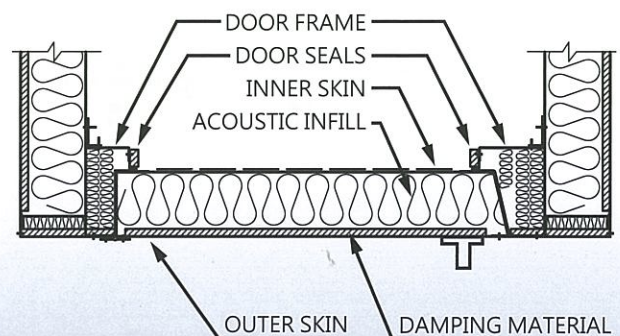
PRODUCT FEATURES



- Galvanized steel construction with powder coating for long service life.
- Fire resistant material.
- Typical outer dimensions: 0.9 m x 0.9 m x 0.9 m. Size and colour can be selected to suit your requirements.
- Acoustic panel thickness 100 mm, constructed with perforated or solid inner skin and fibrous infill.
- Acoustic panel door access with door seal to avoid noise leakage.
- Mounted on vibration isolators to suppress structure borne noise.
- A small opening is fitted for cable trimming and covered by a flexible noise barrier to maintain the acoustic performance.
- Acoustic wedges can be installed inside the booth to enhance the sound absorption.

ACOUSTIC PERFORMANCE

High noise insulation up to 35 dB(A) under International test standard ISO 11957 (test performance based on typical outer dimension of 0.9 m x 0.9 m x 0.9 m, panel thickness 100 mm.)

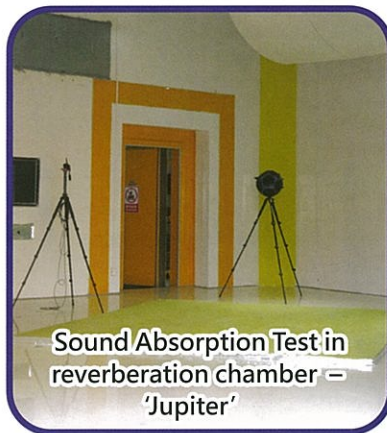


CHAPTER 3

LABORATORY TESTING OF ACOUSTIC ENCLOSURES

Laboratory testing is required to ensure the sound insulation performance of the acoustic enclosures. NAP's Sound Snap Panels and mini-booth have been tested at a laboratory accredited by CNAS (China National Accreditation Service). Field testing can also be conducted after installation of the enclosures to validate the required noise reduction is achieved. Common standards are listed as below:

Testing	Common Standards
Airborne Sound Insulation (Walls, Partitions)	<ul style="list-style-type: none"> ● ISO 140-3 (BS 2750-3), ISO 10140-2, ISO 16283-1 ● ASTM E90, ASTM E336 ● GB/T 8485, GB/T 19889.3, GB/T 16730, GB/T 19889.4
Sound Insulation - Enclosures	<ul style="list-style-type: none"> ● ISO 11546-1, ISO 11957, ISO 11546-2 ● ASTM E596 ● GB/T 18699-1
Sound Absorption	<ul style="list-style-type: none"> ● ISO 354, BS EN 1793-1 ● ASTM C423 ● GB/T 20247



Appendix E

Details of Acoustic Noise Barriers



Acoustics Innovation

SilentCUBE

Movable Noise Enclosure

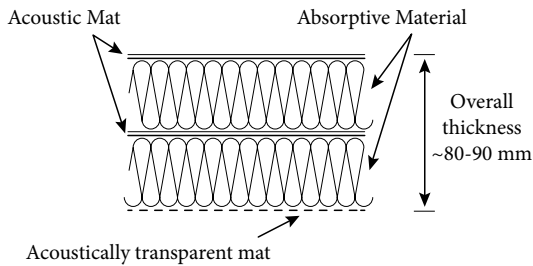
SilentCUBE is a movable noise enclosure for both indoor and outdoor use.

The lightweight design and user friendly installation mechanism enables contractors to quickly deploy and relocate SilentCUBE without using any specialized tools. Each CUBE can be seamlessly connected with another CUBE to accommodate larger machines.

SilentCUBE has been implemented in various construction sites, including:

- Night works conducted inside several MTR stations
- Road works at Tsuen Wan, Hoi Shing Road
- Concreting works for new office and education centre of Hong Kong Water Supplies Department in Tin Shui Wai

Section of Acoustic Panel



Product Specification

Modular Size (W) x (L)x (H)	1.5m x 1.5m x 2.2m
	2m x 2m x 2.2m
	2.5m x 2.5m x 2.2m
Modular Weight	~80kg
Insertion Loss*	18 dB(A)
Surface Density	3kg/m ²
Setup Time	10 mins by 4 people
Standard Colour	Grey
Ideal Solution for	
• Hand-held Breaker	
• Vibratory Poker	
• Concrete Saw / Circular Saw, etc	
• Hammering and other PCW	

* Tested with white noise source

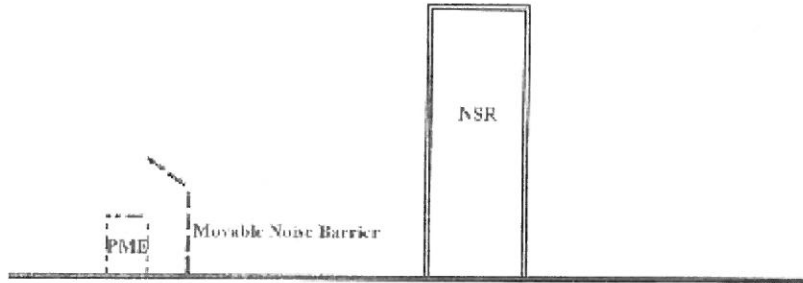


SilentCUBEs seamlessly connected with good gap sealing

Shatin to Central Link

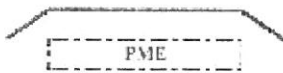
Works Contract 1108 – Kai Tak Station and Associated Tunnel

Section View of Movable Noise Barrier



Movable noise barrier composed of minimum 50mm thick sound absorbing lining and 10mm thick plywood (or 1mm thick steel) backing with a cantilevered upper portion located within 5m from any static or mobile plant. PME will be totally screened when viewed from the NSR.

Plan View of Movable Noise Barrier



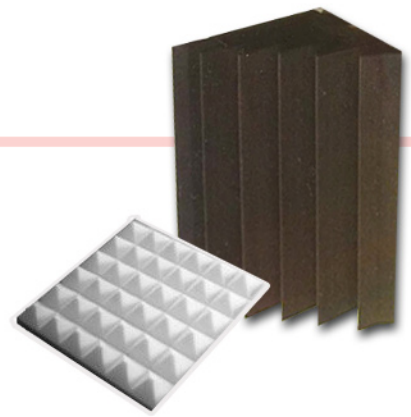
Static or mobile PME will be totally screened when viewed from the NSR.

吸音棉 SOUNDPROOF FOAM

吸音棉,學名為阻燃聚氨酯聲學泡沫是一種新型吸聲材料,具有重量輕,耐潮,可切割成形,施工安裝方便等優點。在泡沫塑料的背面塗上萬能膠,可將泡沫塑料吸音棉直接需要吸聲的地方,施工十分方便。

吸音棉被廣泛應用於建築聲學和噪聲控制工程中,例如:隔聲屏吸聲層,空調消聲器,廠房車間吸聲降噪以及影劇院、禮堂、廣播電視錄音播音室等工程中控制混響時間,音箱內的吸音及改善室內音質等等。

吸音棉具有獨特的構造,細微多孔隙能有效吸收衰減聲波的能量,波浪型和金字塔型吸音棉在中頻與高頻音(500Hz~2000Hz)之吸音效果甚佳。若是低頻音的處理,則可選用三角柱體型,可將低頻做最大的降噪處理。



波浪型H25,H40,H50,H75 (經濟之選)

size: 1.5m x 2m

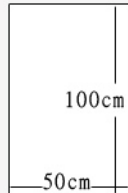
●厚度
2.5cm, 4.0cm, 5.0cm, 7.5cm



●規格
200cm X 100cm

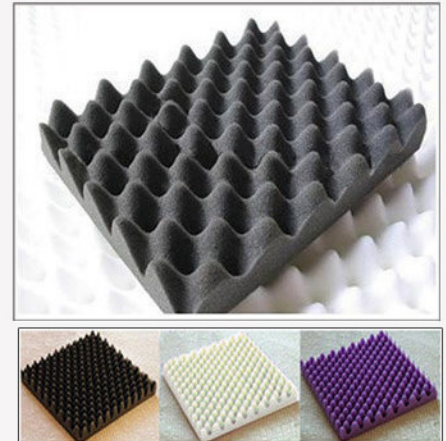
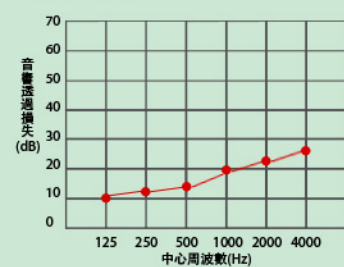
●密度
16kg/m²

●顏色
黑色, 白色和紫色



中心周波數 (Hz)	125	250	500	1000	2000	4000
音響透過損失 (dB)	10	12	15	20	25	28

●音響透過損失



金字塔型T50,T75 (質量之選)

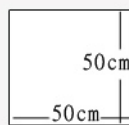
●厚度
5.0cm, 7.5cm



●規格
50cm X 50cm

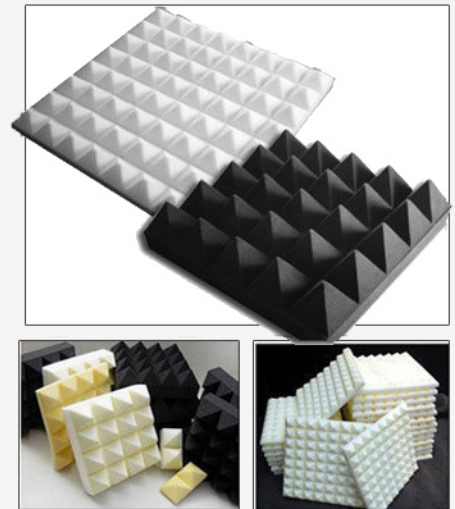
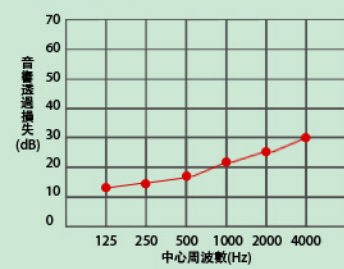
●密度
18kg/m²

●顏色
黑色和白色



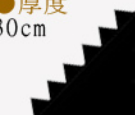
中心周波數 (Hz)	125	250	500	1000	2000	4000
音響透過損失 (dB)	12	15	18	22	27	30

●音響透過損失



三角柱體型TR50 (重低音之選)

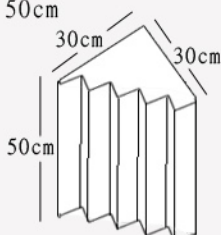
●厚度
30cm



●規格
30cm x 30cm x 50cm

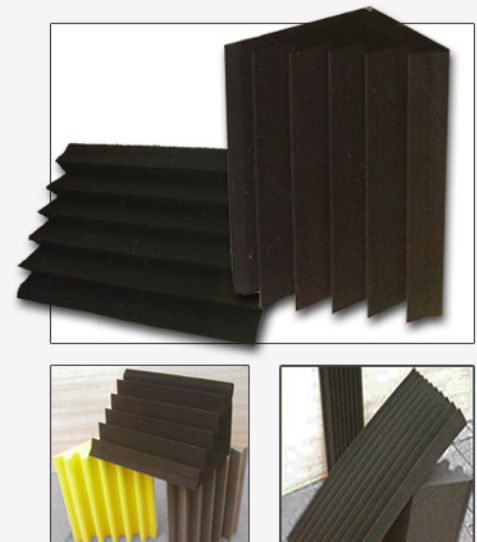
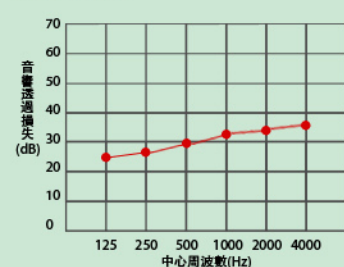
●密度
20kg/m²

●顏色
灰黑色



中心周波數 (Hz)	125	250	500	1000	2000	4000
音響透過損失 (dB)	25	28	30	32	34	36

●音響透過損失



Soundproof Testing
of
Foam



2008000188Z



(2008)国认监认字(047)号



检测
CNAS L0846

检验报告

玻纤质检 (WSW) 字 第 (1111875) 号

副本

产品名称

波浪海棉

委托单位



检验类别

委托检验

国家玻璃纤维产品质量监督检验中心


二〇一一年五月五日

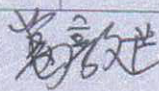


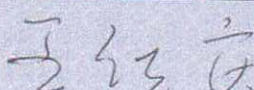
国家玻璃纤维产品质量监督检验中心

检 验 报 告

玻纤质检 (WSW) 字 第 (1111875) 号 共 2 页 第 1 页

产品名称	隔音毡	规格型号	Vinco-2.0
商 标	坤耐	样品状态	海棉制品
委托单位	██████████	检验类别	委托检验
生产单位	██████████	样品等级	——
抽样地点	——	送样日期	2011年11月29日
样品数量	约 (300×300) mm, 2块	送 样 者	██████████
抽样基数	——	生产日期	——
检验依据	试验方法详见附页	检验项目	隔声量
检 验 结 论	<p>样品经检验, 隔声量测定值详见附页 (第2页)。</p> <p>声明: 本检验结论仅对来样负技术责任。</p>		
备 注	 <p>(检验报告专用章 2011年12月05日)</p>		

批准: 

审核: 

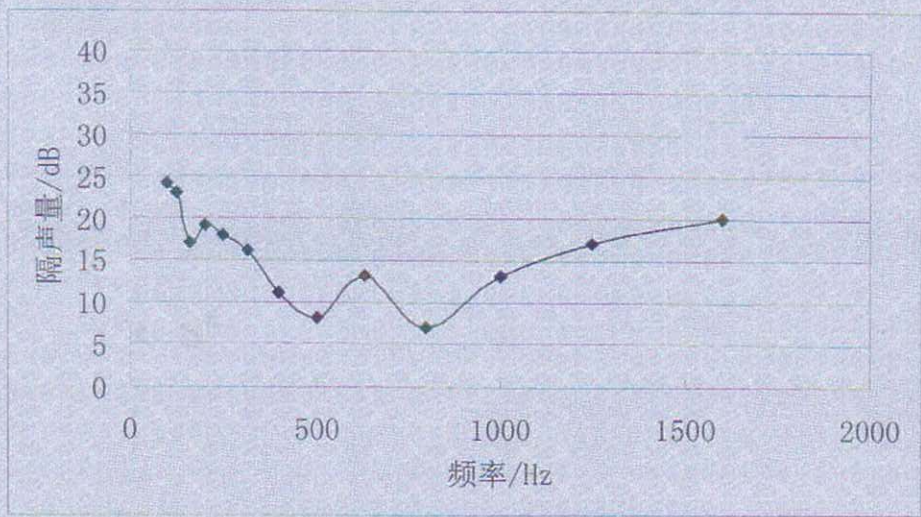


国家玻璃纤维产品质量监督检验中心

检验报告附页

玻纤质检 (WSW) 字 第 (1111875) 号 共 2 页 第 2 页

检验项目		试验方法	测定值
隔声量	100Hz	阻抗管法	24
	125Hz		23
	160Hz		17
	200Hz		19
	250Hz		18
	315Hz		16
	400 Hz		11
	500 Hz		8
	630 Hz		13
	800 Hz		6
	1000 Hz		13
	1250 Hz		16
	1600 Hz		20



编制: 张金红

Smouldering &
Flammability Test
of
Foam



STC Test Report

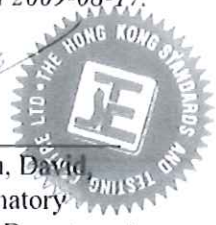
Date: 2009-09-16

Page 1 of 3
(DUPLICATE)

No: HT196402

- Description of Sample(s)** : Two (2) groups submitted sample in black colour said to be
(A) SPONGE
Size: 12 inch x 3 inch x ½ inch (20pcs)
(B) SPONGE
Size: 8 inch x 7 ½ inch x 2 inch (6pcs)
8 inch x 4 inch x 2 inch (6pcs)
Country of Destination: U.S.A
- Date sample(s) Received** : (A) 2009-08-11
(B) 2009-09-11
- Date Tested** : (A) 2009-08-11 to 2009-08-17
(B) 2009-09-11 to 2009-09-16
- Investigation Requested** : Selected test(s) as detailed herein.
- Conclusion(s)** : 1. The submitted sample A complied with CAL TB 117:2000
Section D Part II.
2. The submitted sample B complied with CAL TB 117: 2000
Section A Part I.

This Test Result of Sample A refers to our previous Test Report, HT196092 issued on 2009-08-17.


CHENG Chun-yiu, David
Authorized Signatory
Textile and Materials Department
For and on behalf of
The Hong Kong Standards and Testing Centre Ltd.

SATRA Accredited Laboratory
International Safe Transit Association (ISTA) Certified Laboratory
Members of
Hong Kong Apparel Society Limited
Hong Kong Footwear Association

Approved Laboratory of The Woolmark Company
The Govmark Fire Laboratories Certified Laboratory

Hong Kong Association for Testing, Inspection and Certification Limited
Knitwear Innovation and Design Society (KIDS)

The Hong Kong Standards and Testing Centre Ltd.

10, Dai Wang Street, Tai Po Industrial Estate, N. T., Hong Kong
Tel: (852) 2656 1835 Fax: (852) 2654 4353 E-mail: hkstc@hkstc.org Homepage: www.stcgroup.org

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STC Test Report

Date: 2009-09-16

Page 2 of 3
(DUPLICATE)

No: HT196402

TEST RESULTS:

1. Smouldering Screening Test

Ref. California Technical Bulletin No. 117-2000, Section D, Part II, Resilient Cellular Materials

Test Method

The apparatus and methods of testing were those described in California Technical Bulletin No. 117, Section D, Part II, for testing the smouldering tendency of resilient cellular materials used in upholstered furniture.

Test Results: Sample A

Trial	Percentage (%) of non-smouldered residue	Comment
1	99.9	Pass
2	99.9	
3	99.9	
Average	99.9	
Requirement: All test specimens greater than 80% non-smouldered residue.		

2. Flammability Test

Ref. California Technical Bulletin No. 117-2000, Section A, Part I, Resilient Cellular Materials

Test Method

The apparatus and methods of testing were those described in California Technical Bulletin No. 117, Section A, Part I, for testing the flame retardancy of resilient cellular materials used in upholstered furniture.

Test Results: Sample B

Before Aging			
Specimen	After flame time (nearest 0.1 second)	Char length (nearest 0.1 inch)	After glow time (nearest 0.1 second)
1	Nil	1.6	Nil
2	Nil	2.1	Nil
3	Nil	2.6	Nil
4	Nil	1.7	Nil
5	Nil	2.1	Nil
Average	Nil	2.0	Nil
Requirement			
Individual	≤ 10 seconds	≤ 8 inches	/
Average	≤ 5 seconds	≤ 6 inches	≤ 15 seconds

The Hong Kong Standards and Testing Centre Ltd.

10 Da Wang Street, Tai Po Industrial Estate, N. T., Hong Kong
Tel: (852) 2666 1633 Fax: (852) 2664 4353 E-mail: hkstc@hkstc.org Homepage: www.hkgroup.org

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STC Test Report

Date: 2009-09-16

Page 3 of 3
(DUPLICATE)

No: HT196402

TEST RESULTS:

After Aging			
<u>Specimen</u>	<u>After flame time</u> (nearest 0.1 second)	<u>Char length</u> (nearest 0.1 inch)	<u>After glow time</u> (nearest 0.1 second)
1	Nil	1.5	Nil
2	Nil	2.3	Nil
3	Nil	1.6	Nil
4	Nil	1.9	Nil
5	Nil	2.3	Nil
Average	Nil	1.9	Nil
Requirement			
Individual	≤ 10 seconds	≤ 8 inches	/
Average	≤ 5 seconds	≤ 6 inches	≤ 15 seconds

Comment : Pass

***** End of Test Report *****

The Hong Kong Standards and Testing Centre Ltd.

10 Da Wang Street, Tai Po Industrial Estate, N.T., Hong Kong

Tel: (852) 2656 1828 Fax: (852) 2654 4103 E-mail: hks@hks.org.hk Homepage: www.stcgroup.org

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Hong Kong Job Reference
of
Foam



綽基建築科技有限公司

Tracki Building Technology Ltd

Job Reference

Soundproof Foam

Liantang/Heung Yuen Wai
Boundary Control Point
site formation and infrastructure works
- Contract 5 CV/2012/09

Chun wo C&E Company Ltd

Residential Development
RBL 1190, No v 8-12
Deep Water Bay Drive

K. H. Foundations Ltd



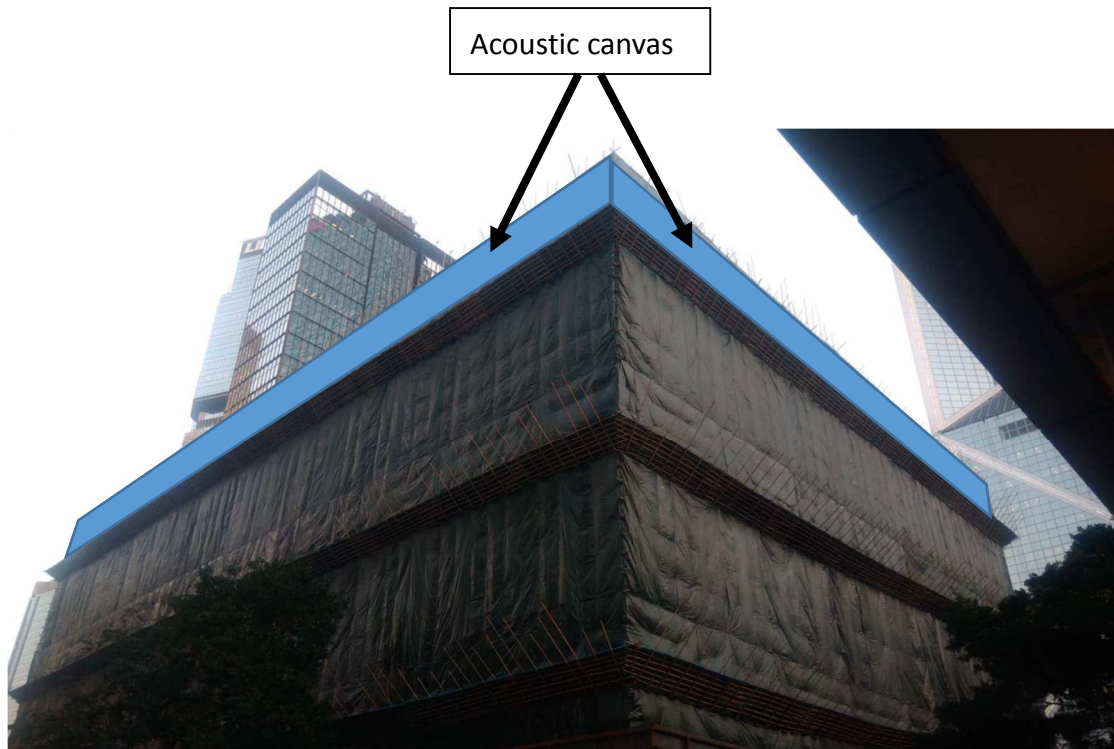
Appendix F

Distance between NSRs and Worksites

Appendix G

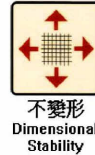
Details of Acoustic Noise Barriers for Demolition Works of YMT Yau Ma Tei Multistorey Carpark Building

Temporary noise barrier will be erected at the floor to be demolished surrounding the 4 sides of the building



Model No. CK2009	High Tenacity Polyester PVC Laminated Fabrics
General Applications:	Construction, Marine (Field) covers, Storage covers and many other applications
Colors:	Yellow, Sky Blue, Green, Orange, Dark Green, White, Grey
Available Grades:	Fire-Retardant, Ultra-Violet, Anti-Mildew, Anti-Cold, Sound Insulated
Type of Products:	Roll Type
Raw Material Origin:	From Japan
Flammability Test Method:	BS 5867-2 2008
Sizes:	2M x 6M, 2M x 30M(roll type)

Sample name(provided by sponsor): PVC Tarpaulin
 Color: Gray
 Mass per unit area : 958 g/m²
 Area, S, of test element : 3.8 m²
 Air temp. in the test rooms : 27°C
 Relative humidity in the test rooms : 58%
 Receiving room volume : 67.9 m³

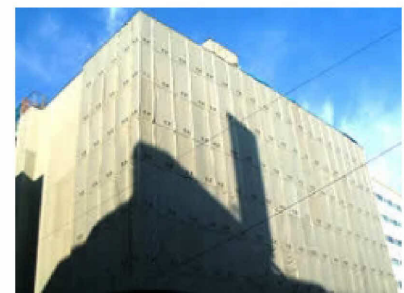
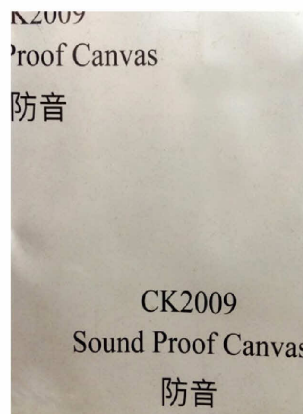
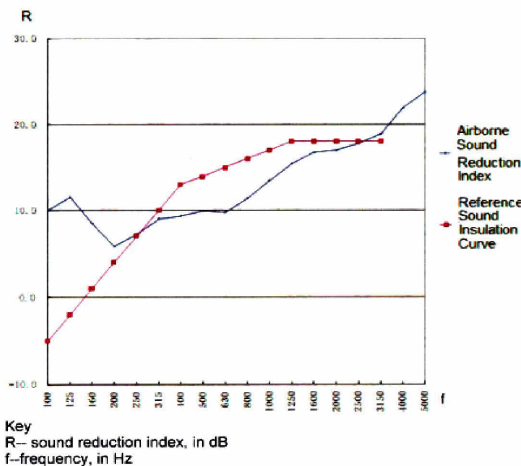


Physical Properties:

III. Test results

f Hz	R dB
100	10.1
125	11.6
160	8.6
200	5.9
250	7.3
315	9.1
400	9.4
500	10.0
630	9.9
800	11.5
1000	13.5
1250	15.5
1600	16.7
2000	17.0
2500	17.8
3150	18.9
4000	21.9
5000	23.9
Rw (C;Ctr)	14(-1;-2)

Fabric Detail 網布規格	1000D x 1000D x 20 x22			
Item 項目名稱	Test Method 執行標準	Unit 單位	Value 數據	
Thickness 厚度	DIN53353	mm	1.0	
Total Weight 總重量	DIN53352	g/m ²	1132.2	
Tensile Strength 拉伸強度	DIN53354	N/5cm	經 Warp	3040
			緯 Weft	2549
Elongation at Break 斷裂伸長率	DIN53354	%	經 Warp	17.3
			緯 Weft	23.3
Tear Strength 撕裂強度	DIN53363	N	經 Warp	448
			緯 Weft	374
Adhesion of Coating Strength 剝離負荷	DIN53357	N/5cm	經 Warp	123
			緯 Weft	108
Remarks 備註				



This technical data is offered as helpful suggestion only. It's accurate to the best of our knowledge at time of printing.

祥記帆布工程有限公司
Cheung Kee Canvas Ltd.

G/F, 352 Reclamation St., Kowloon, Hong Kong.
 香港九龍新填地街 352 號地下
 Tel: 2385 2644, 2780 7505 Fax: 2771 4599
 url: <http://www.ckcanvasltd.com> email: contact@ckcanvasltd.com