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協力 - 瑞沃 聯營
Concentric – Hong Kong River
Joint Venture





Contract No. CV/2020/09
Construction of Lei Yue Mun Public Landing Facility

Noise Management Plan

Control Copy No.

Issued to

Status	Prepared By: Environmental Officer	Approved By: Site Agent
Issued for Construction	 C Y WONG	 Ze Yu WANG
	Date: 30-Apr-2021	Date: 30-Apr-2021

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Revision Status Sheet

Revision	Date	Status / Summary of Revision
0	13-Apr-2021	First submission
1	30-Apr-2021	Revised submission as per EPD's comments

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1.0 OBJECTIVE

- 1.1 Concentric – Hong Kong River Joint Venture (the Contractor) is commissioned by Civil Engineering and Development Department (CEDD) in December 2020 to execute the Contract No. CV/2020/09 “Construction of Lei Yue Mun Public Landing Facility” (the Contract).
- 1.2 The works of the Contract comprises, *inter alia*, construction of a new public landing facility and breakwater as well as structural improvement works to an existing viewing platform and lookout point at Lei Yue Mun waterfront.
- 1.3 The Contract is part of the Lei Yue Mun Waterfront Enhancement Project (“the Project”) which is a designated project governed by the Environmental Permit No. EP-564/2018 issued by EPD on 10 December 2018.
- 1.4 Under Condition 2.13 of the Environmental Permit, a Noise Management Plan (NMP) shall be prepared and submitted by the Permit Holder to the Director of Environmental Protection for approval no later than one month before the commencement of construction of the Project.
- 1.5 The purpose of this NMP is to provide the schedule of the piling and rock excavation works as well as details of the associated mitigation measures and monitoring programme, with a view to demonstrating the minimization of the construction noise arising from the aforesaid works.

2.0 Environmental Legislation, Guidelines, Standards and Criteria

- 2.1 The Noise Control Ordinance (NCO) provides the statutory framework for the control of noise from construction works, other than percussive piling, using powered mechanical equipment (PME) between the hours of 1900 and 0700 hours or at any time on Sundays and general holidays (i.e. restricted hours).
- 2.2 Noise from construction activities taking place at other times is subject to the Noise Standards for Daytime Construction Activities in Table 1B of Annex 5 of the Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM). The criteria are summarized in the table below: -

Uses	Daytime Noise Criteria in L_{eq} (30 min)
Domestic Premises	75 dB(A)
Educational Institution	70 dB(A)
Educational Institution (during examination)	65 dB(A)

Note: The above standards apply to uses which rely on opened windows for ventilation.

- 2.3 Construction noise impact is assessed in accordance with the procedure and methodology given in the EIAO-TM and the Technical Memorandum on Noise from Construction Work other than Percussive Piling (GW-TM).

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3.0 NOISE SENSITIVE RECIEVERS

- 3.1 The construction site is located at the waterfront of Lei Yue Mun area. Currently, the land uses in the neighbourhood of the site are mainly residential uses and restaurants in village houses and squatters. The existing noise climate is dominated by noise from business activities and passing marine vessels.
- 3.2 In accordance with Annex 13 of the Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM), domestic premises including temporary housing, educational institutions (including kindergartens and nurseries), hospitals, medical clinics, homes for the aged, convalescent homes, places of worship, libraries, courts of law, performing arts centres, auditoria and amphitheatres are noise sensitive receivers (NSRs).
- 3.3 Based on the approved EIA Report (Register No. AEIAR-219/2018), the identified NSRs within 300 m study boundary from the Project include below: -

NSR	Land Use
Lei Yue Mun Village	Residential
Jockey Club Lei Yue Mun Plus (LYMP)	Performing Arts Centre & Educational Institution
Ma Wan Tsuen	Residential
Tin Hau Temple	Place of Worship
Ma Pui Tsuen	Residential
Che Ting Tsuen	Residential
Canaryside	Residential

- 3.4 The layout plan of the Contract showing the location of the proposed piling and rock excavation works and the relevant NSRs is shown in **Appendix A**.
- 3.5 As the first layer of NSRs would represent the worst-case scenario, a number of Noise Assessment Points (NAPs) at these NSRs are selected in the EIA Report for construction noise impact assessment. A summary of identified representative NAPs is presented in the table below with their locations shown in **Appendix B**.

NAP ID <i>(see note)</i>	Description	Land Use
HPRC43	No. 43, Lei Yue Mun Hoi Pong Road Central	Residential
LYMP	Jockey Club Lei Yue Mun Plus	Performing Arts Centre & Educational Institution
HPRCV1	Village house in Lei Yue Mun Hoi Pong Road Central	Residential
HPRCV2	Village house in Lei Yue Mun Hoi Pong Road Central	Residential
HPRE21C	No. 21C, Lei Yue Mun Hoi Pong Road East	Residential

Note: Only those NAPs relevant to the location of piling and rock excavation works as identified in the approved EIA Report are listed above.

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4.0 PLANT INVENTORY AND CONSTRUCTION SCHEDULE

Description of Piling and Rock Excavation Works

4.1 The piling works to be carried out under the Contract shall include:

- Construction of 273 mm diameter pipe piles at both the lookout point and viewing platform;
- Construction of 610 mm diameter pipe piles and pre-bored socketed H-piles at the landing facility / breakwater.

4.2 Since the proposed landing facility is located at existing ground which mainly comprises of natural rock formation, rock excavation by mechanical method will be carried out in order to form the required slope profile and berthing basin at the landing facility. It is expected that part of the rock excavation work is required to be carried out underwater.

Plant Inventory

4.3 The proposed piling and rock excavation works will involve the deployment of various powered mechanical equipment (PME) on site. The type, quantity, sound power level (SWL) and utilization rate of the proposed PME are identified and listed in the plant inventory in *Appendix C*. The feasibility and practicability of the proposed plant inventory has been confirmed by CEDD who acts as the Project Office and Supervising Engineer. The actual list of PME deployed for the works is subject to minor change and update during the construction stage.

Construction Schedule

4.4 The currently envisaged construction schedule of the proposed piling and rock excavation works is presented in *Appendix D*.

4.5 The current construction programme would not involve any work using PME or prescribed construction work during restricted hours (i.e. the hours from 1900 to 0700 hours or at any time on a general holiday) or percussive piling works. Therefore, only the impacts from daytime general construction activities are to be considered in this submission.

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5.0 CONSTRUCTION NOISE ASSESSMENT

Assessment Methodology and Assumptions

- 5.1 Construction noise assessment is carried out in accordance with the methodology used in the approved EIA Report (Register No. AEIAR-219/2018). The noise criterion, distance from notional noise source and façade correction adopted for each individual NAP are the same as those adopted in the EIA Report.
- 5.2 For the purpose of this submission, construction noise assessment is carried out for the five (5) nos. NAPs which are located relatively close to the proposed piling and rock excavation works. These NAPs include HPRC43, LYMP, HPRCV1, HPRCV2 and HPRE21C as identified in Section 3.5 above. For each NAP, the construction noise level arising from the relevant construction activities in the vicinity will be calculated based on the plant inventory.
- 5.3 Except those proposed QPME / quiet PME to be described in Section 6.4, the Sound Power Levels (SWLs) of the PME are taken from Table 3 of GW-TM and "Sound power levels of other commonly used PME" published by EPD. The percentage on-time for each PME is also estimated individually for each construction activity to ensure practicality.
- 5.4 Practicable mitigation measures as recommended in the EIA Report, including the use of temporary noise barriers and quiet plant, have been considered as shown in *Appendix C*.

Predicted Noise Level at NSRs

- 5.5 The detailed assessment of construction noise level arising from the proposed piling and rock excavation works is presented in *Appendix E*. The proposed mitigation measures, which will be further described in Section 6, are included in the assessment.
- 5.6 The predicted construction noise level at each of the relevant NAPs (as compared to the predicted level in EIA Report) and the corresponding daytime construction noise criteria are summarized in the following table.

NAP ID	Daytime Noise Criteria L_{eq} (30 min), dB(A)	Predicted Mitigated Construction Noise Level L_{eq} (30 min), dB(A)
HPRC43	75	63 (55 – 62) <i>(see note)</i>
LYMP	70 (65 during examinations)	70 (60 – 67)
HPRCV1	75	62 – 72 (66 – 75)
HPRCV2	75	61 – 70 (61 – 72)
HPRE21C	75	67 – 75 (65 – 75)

Note: The figures in bracket represent the predicted mitigated construction noise levels in the approved EIA Report (Table 4.6).

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- 5.7 As shown in the above table, the predicted mitigated construction noise level at LYMP would exceed the daytime noise criterion of 65 dB(A), which applies to educational institutions during examinations. Since the exceedance is related to the proposed piling works at the lookout point and, noting that such works have not been considered in the EIA, pile installation works at this area will not be carried out during the time when LYMP is used for any noise sensitive purposes, such as holding courses or workshops. In this connection, we have established contact with the operator of LYMP to obtain the updated schedule of noise sensitive activities before and during the course of the relevant construction works.

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6.0 NOISE MITIGATION MEASURES

6.1 Noise mitigation measures in line with the recommendations in the approved EIA Report as well as the noise assessment in Section 5.0 above, will be implemented during the piling and rock excavation works, wherever appropriate: -

Good Site Practice

6.2 The site practices listed below will be implemented to minimize noise impact: -

- All PME employed on site will be well-maintained and serviced regularly to ensure they are in good working condition;
- Sound attenuation attachment is to be wrapped around the hydraulic breaker to reduce the hammer noise.
- Silencers or mufflers will be fitted on noisy machines as appropriate.
- All the hoods, cover panels and inspection hatches of PME are closed during operation.
- Idling equipment should be switched off. Machines in intermittent use should be shut down between work periods or throttled down to a minimum.
- Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs.
- Dropping materials or debris from a height should be avoided.

Use of Quiet Powered Mechanical Equipment

6.3 To reduce the noise impacts at the affected NSRs during normal daytime working hours, PME with valid Quality Powered Mechanical Equipment (QPME) Labels or alternative silenced type plant will be adopted for the construction works as far as practicable.

6.4 According to the construction noise assessment in Section 5.0 above, the following QPME / quiet PME will be adopted:

Construction Activity (Works Area)	QPME / Quiet PME	QPME Reference No.	Model No.	SWL, dB(A)
Surface rock excavation (landing facility)	Breaker, excavator mounted (hydraulic)	n/a	Epiroc MB 1000	120 <i>(see note)</i>

Note: Guaranteed SWL from manufacturer's specification:

<https://www.epiroc.com/en-uk/products/excavator-attachments/hydraulic-breaker/hydraulic-breakers/hydraulic-breaker-mb-1000>

6.5 In the event that the above QPME / quiet PME cannot be procured, alternative models will be adopted as long as their sound power levels (SWLs) with reference to the manufacturer's specification do not exceed those assumed in the construction noise assessment.

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Temporary Noise Barriers

- 6.6 To alleviate the construction noise impact on the affected NSRs, temporary noise barriers will be adopted for both mobile and stationary plants, when and where feasible, to provide acoustic screening from the PME.
- 6.7 Temporary noise barriers using proprietary sound reduction fabrics or panels will be erected immediately adjacent to the working area of lookout point, viewing platform and landing facility, in order to shield the public and NSRs from the noise generated by the various construction equipment. The indicative location of the proposed noise barriers is shown in *Appendix F*.
- 6.8 The temporary noise barriers should have no openings or gaps, and be capable of intercepting the line of sight between the NSRs and PME. They will be constructed of thick plywood board of surface density not less than 10 kg/m² or proprietary sound reduction fabrics with proven acoustic performance. Technical particulars of the proposed sound reduction fabrics are provided in *Appendix G*.
- 6.9 Since the proposed piling and rock excavation works at the landing facility are scattered around a relatively large area, movable noise barriers will be erected close to noisy plant such as drilling rig, mobile crane and hydraulic breaker and be moved concurrently with the plant along the construction site. The movable noise barriers shall be of at least 3 m in height with skid footing and located in close proximity to mobile plant such that the line of sight to the NSR is blocked by the barriers. Proprietary system 'SilentUP STC18' made of modular acoustic panels is proposed to be used. Technical particulars of the proposed movable noise barrier system are provided in *Appendix H*.

Scheduling of Noisy Construction Works

- 6.10 As the proposed lookout point is located in close proximity to Jockey Club Lei Yue Mun Plus (LYMP), pile installation works at this area will not be carried out during the time when LYMP is used for any noise sensitive purposes, such as holding courses or workshops. The Contractor will maintain liaison with the operator of LYMP to obtain the updated schedule of noise sensitive activities before and during the course of the relevant construction works.
- 6.11 To minimize nuisance to nearby seafood restaurants, the Contractor will closely liaise with the operators of the affected restaurants and avoid the carrying out of noisy construction works during the peak business hours as far as practicable.

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7.0 NOISE MONITORING PROGRAMME

- 7.1 In accordance with the Environmental Monitoring and Audit (EM&A) Manual, noise monitoring will be conducted by the Environmental Team (ET) during the construction works in order to assess the effectiveness of the mitigation measures and to identify the need of remedial measures, if any.

Monitoring Parameters

- 7.2 The construction noise level will be measured in terms of the 30-minute A-weighted equivalent continuous sound pressure level (L_{eq}). L_{eq} (30 min) is to be used as the monitoring parameter for the time period between 0700 and 1900 hours on normal weekdays.
- 7.3 Supplementary information for data auditing and statistical results such as L_{10} and L_{90} will also be obtained for reference.

Monitoring Locations

- 7.4 The noise monitoring stations for baseline and impact monitoring are summarized in the table below. The location plan of these stations is enclosed in *Appendix I*.

Station	Noise Monitoring Station
NM1	Village house in Lei Yue Mun Hoi Pong Road Central
NM2-A	No.79B, Lei Yue Mun Hoi Pong Road East
NM3	Jockey Club Lei Yue Mun Plus
NM4	No. 21C, Lei Yue Mun Hoi Pong Road East

- 7.5 The noise monitoring stations shall normally be at a point 1 m from the exterior of the sensitive receivers building façade and be a position 1.2 m above the ground. If there is a problem with access to the normal monitoring position, an alternative position shall be chosen, and a correction to the measurements made as agreed between the ET and IEC.

Baseline Monitoring

- 7.6 Baseline noise monitoring was carried out between 27 January 2021 and 10 February 2021 daily at the identified monitoring stations. During the baseline monitoring, there was not any construction activity in the vicinity of the monitoring stations. The baseline noise levels were measured for a continuous period of 2 weeks at a minimum logging interval of 30 minutes for daytime (between 0700 and 1900 hours of normal weekdays) and 15 minutes (as three consecutive L_{eq} , (5 min) readings) for evening time (between 1900 and 2300 hours on normal weekdays), general holidays including Sundays (between 0700 and 2300 hours) and night-time (between 2300 and 0700 on all days).
- 7.7 The data collected were reviewed and analyzed to establish the background noise levels at the monitoring locations. The results of the baseline monitoring are summarized in the table below: -

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Location	Noise in dB(A)							
	Average ^{NOTE1}				Range			
	Leq 30min Daytime (7:00-19:00 on normal weekdays)	Leq 5min Daytime (7:00-19:00 on Sunday and general holidays)	Leq 5min Evening time (19:00-23:00)	Leq 5min Night time (23:00-07:00)	Leq 30min Daytime (7:00-19:00 on normal weekdays)	Leq 5min Daytime (7:00-19:00 on Sunday and general holidays)	Leq 5min Evening time (19:00-23:00)	Leq 5min Night time (23:00-07:00)
NM1	62.4	63.4	56.3	53.9	37.2-72.9	46.4-78.1	30.5-70	33.5-70.1
NM2-A	60.2	61.3	56.3	52.9	42.3-76.6	41.2-71.8	41.1-73.3	34.4-71.9
NM3	65.3	60.9	58.4	56.5	55.8-78.2	55-66.5	53.4-69.1	51.8-67.4
NM4	57.5	56.6	54.6	50.6	47.9-69	46.7-70.3	43.3-61.8	33.8-66

NOTE 1: The calculated logarithm average of all Leq 5min from field measurement during the baseline period

Impact Monitoring

- 7.8 Construction noise monitoring will be carried out at the designated monitoring stations when construction activities are being undertaken within a radius of 300 m from the monitoring stations. The monitoring frequency will depend on the scale of the construction activities. As a minimum, one set of 30-minute measurement will be obtained at each station between 0700 and 1900 hours on normal weekdays at a frequency of once a week when construction activities are underway.
- 7.9 If construction works are extended to include works during the hours of 1900 to 0700, additional weekly impact monitoring will be carried out during evening and night-time works. Before carrying out the construction works during the restricted hours, construction noise permits as required under the NCO will be obtained from the EPD.
- 7.10 The action and limit levels for construction noise are as follows: -

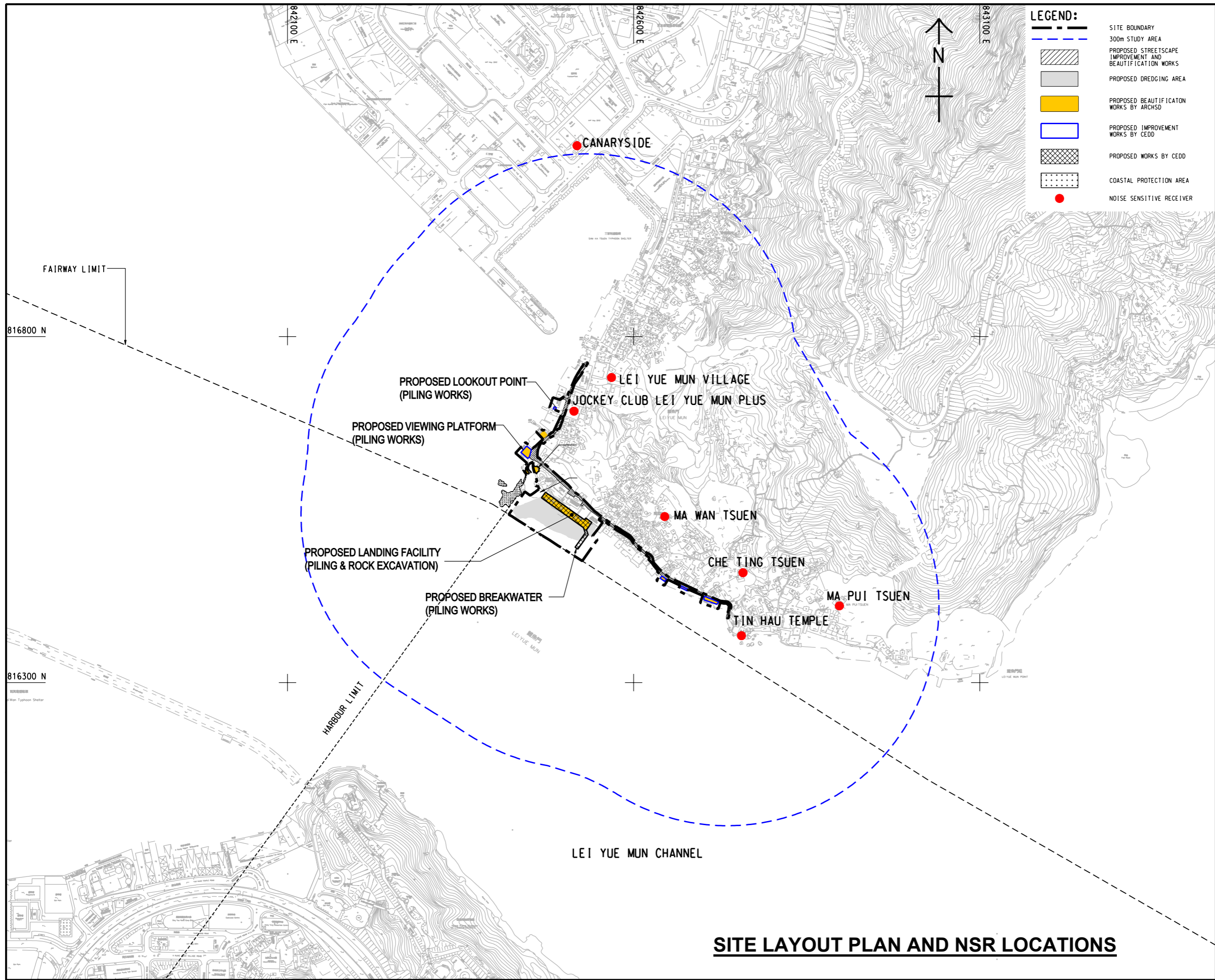
Time Period	Action Level	Limit Level
0700 - 1900 on normal weekdays	When one documented complaint is received	75 dB(A) for residential premises and places of public worship
		70 dB(A) for schools and 65 dB(A) during examination period

- 7.11 In case of non-compliance with the action and limit levels for construction noise, monitoring frequency will be increased until the recorded noise levels are rectified or proved to be irrelevant to the construction activities, pursuant to the Action Plan in the EM&A Manual.

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Appendix A



SITE LAYOUT PLAN AND NSR LOCATIONS

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Appendix B

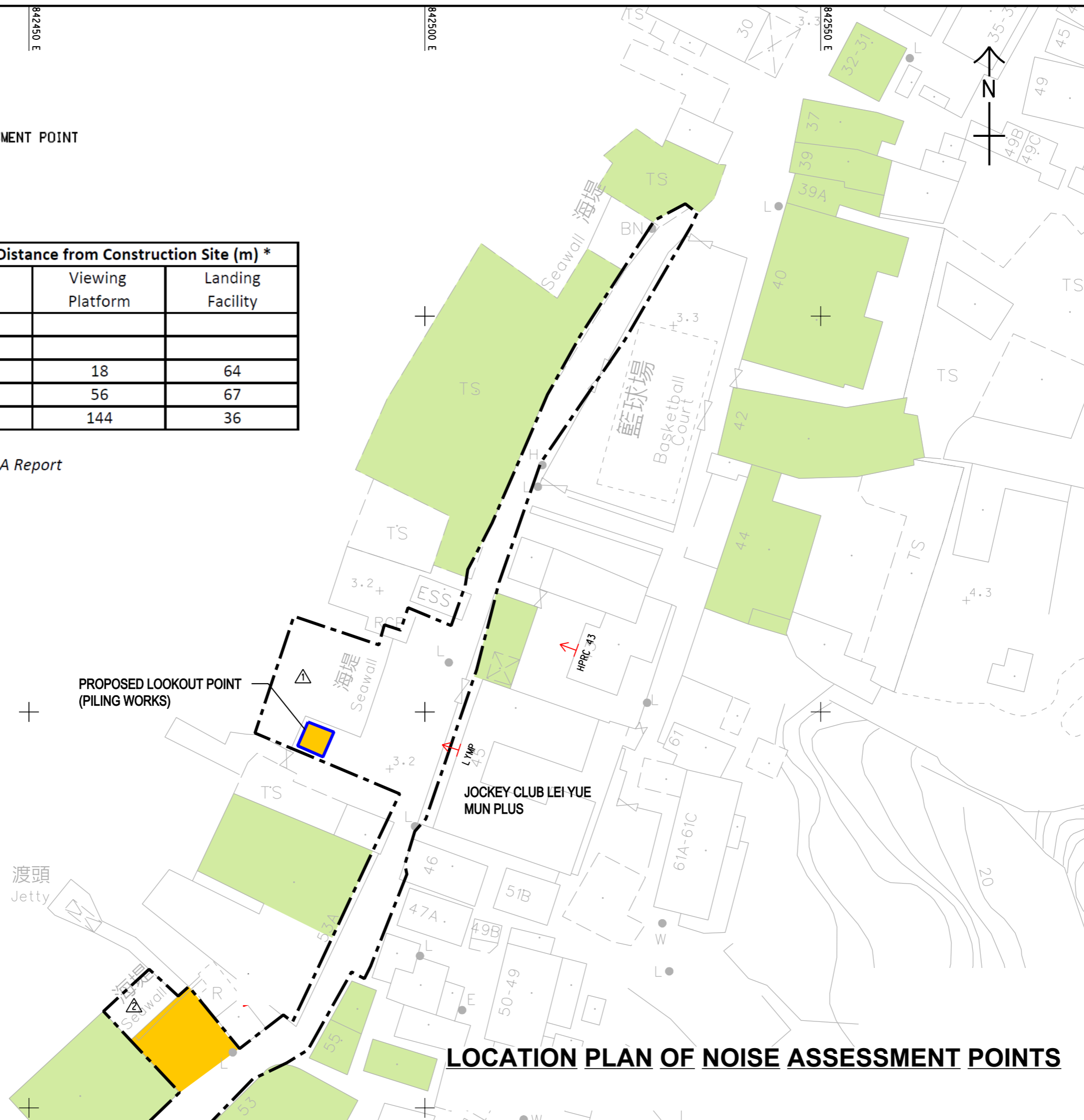
LEGEND:



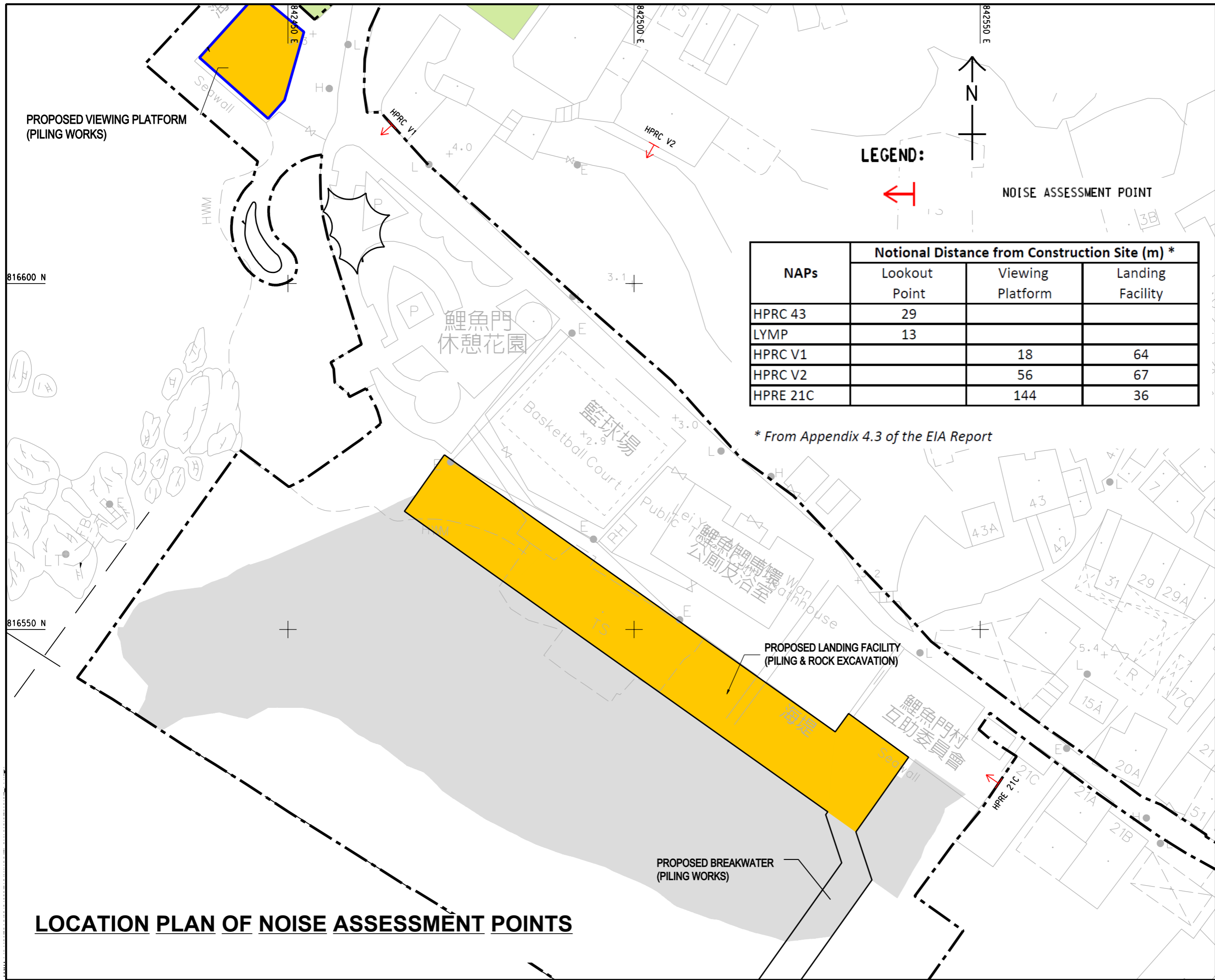
NOISE ASSESSMENT POINT

NAPs	Notional Distance from Construction Site (m) *		
	Lookout Point	Viewing Platform	Landing Facility
HPRC 43	29		
LYMP	13		
HPRC V1		18	64
HPRC V2		56	67
HPRE 21C		144	36

* From Appendix 4.3 of the EIA Report



LOCATION PLAN OF NOISE ASSESSMENT POINTS



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Appendix C

Construction Plant Inventory (Mitigated Scenario)

Powered Mechanical Equipment (PME)	Identification Code	Quantity (nr)	On-time (%)	Type of noise control	Noise reduction dB(A)	Unit SWL dB(A)	Time Factor dB(A)	Adjusted SWL dB(A)	Total SWL dB(A)	Total SWL for each group dB(A)
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LOOKOUT POINT 1

Piling Works

<i>Group A [1]</i>										
Drilling rig	OCUPME-012	1	50%	Noise barrier	-10	110	-3	97.0	97.0	97.6
Air compressor	CNP 002	1	50%	Noise barrier	-10	102	-3	89.0	89.0	
<i>Group B [1]</i>										
Generator, silenced	CNP 102	1	100%	Noise barrier	-10	100	0	90.0	90.0	90.0
<i>Group C [1]</i>										
Grout mixer	OCUPME-014	1	100%	Noise barrier	-10	90	0	80.0	80.0	95.1
Grout pump	OCUPME-015	1	100%	Noise barrier	-10	105	0	95.0	95.0	

VIEWING PLATFORM

Piling Works

<i>Group A [1]</i>										
Drilling rig	OCUPME-012	1	100%	Noise barrier	-10	110	0	100.0	100.0	101.0
Air compressor	CNP 002	1	100%	Noise barrier	-10	102	0	92.0	92.0	
Generator, silenced	CNP 102	1	100%	Noise barrier	-10	100	0	90.0	90.0	
<i>Group B [1]</i>										
Grout mixer	OCUPME-014	1	100%	Noise barrier	-10	90	0	80.0	80.0	95.1
Grout pump	OCUPME-015	1	100%	Noise barrier	-10	105	0	95.0	95.0	

LANDING FACILITY & BREAKWATER

Piling Works

<i>Group A [1]</i>										
Drilling rig	OCUPME-012	1	100%	Movable noise barrier	-5	110	0	105.0	105.0	106.0
Air compressor	CNP 002	1	100%	Movable noise barrier	-5	102	0	97.0	97.0	
Generator, silenced	CNP 102	1	100%	Movable noise barrier	-5	100	0	95.0	95.0	
<i>Group B [1]</i>										
Crane, mobile (diesel)	CNP 048	1	50%	Movable noise barrier	-5	112	-3	104.0	104.0	104.0
<i>Group C [1]</i>										
Grout mixer	OCUPME-014	1	100%	Noise barrier	-10	90	0	80.0	80.0	95.1
Grout pump	OCUPME-015	1	100%	Noise barrier	-10	105	0	95.0	95.0	

Powered Mechanical Equipment (PME)	Identification Code	Quantity (nr)	On-time (%)	Type of noise control	Noise reduction dB(A)	Unit SWL dB(A)	Time Factor dB(A)	Adjusted SWL dB(A)	Total SWL dB(A)	Total SWL for each group dB(A)
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LANDING FACILITY & BREAKWATER

Surface Rock Excavation

<i>Group A [1]</i>										
Hydraulic breaker, excavator mounted	MB1000 [3]	1	40%	Movable noise barrier	-5	120	-4	111.0	111.0	111.0
<i>Group B [1]</i>										
Rock drill, hand-held (pneumatic)	CNP 183	1	70%	Movable noise barrier	-5	116	-2	109.5	109.5	109.6
Air compressor	CNP 002	1	70%	Movable noise barrier	-5	102	-2	95.5	95.5	
<i>Group C [1]</i>										
Derrick lighter	CNP 061	1	80%			104	-1	103.0	103.0	103.0
<i>Group D [1]</i>										
Tug boat	CNP 221	1	20%			110	-7	103.0	103.0	103.0

Underwater Rock Excavation

<i>Group A [1]</i>										
Derrick lighter	CNP 061	1	80%			104	-1	103.0	103.0	103.0
<i>Group B [1]</i>										
Tug boat	CNP 221	1	20%			110	-7	103.0	103.0	103.0

Notes:

[1] Only one group of the PME will be operated at any time.

[2] Unless otherwise stated, the SWLs of the PME are adopted from Table 3 of the GW-TM or "Sound power levels of other commonly used PME" published by EPD.

[3] Detail of noise emission and guaranteed SWL is available on the manufacturer's website:

<https://www.epiroc.com/en-uk/products/excavator-attachments/hydraulic-breaker/hydraulic-breakers/hydraulic-breaker-mb-1000>

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Appendix E

Construction Noise Assessment (Mitigated Scenario)

NSR: HPRC 43

Construction Activity	SWL dB(A)	Distance (m)	Distance correction dB(A)	Façade correction dB(A)	Year 2021							Year 2022											
					May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	
LOOKOUT POINT																							
Piling	97.6	29	-37.2	3	63	63																	
VIEWING PLATFORM																							
Piling	101	n/a	n/a	3																			
LANDING FACILITY & BREAKWATER																							
Piling	106	n/a	n/a	3																			
Surface rock excavation	111	n/a	n/a	3																			
Underwater rock excavation	103	n/a	n/a	3																			

Predicted noise level, Leq (30 mins), dB(A) 63 63

Notes:

- [1] n/a: not applicable (as the noise from the construction activity is not critical)
- [2] All predicted noise levels in dB(A) are rounded to the nearest integer

Construction Noise Assessment (Mitigated Scenario)

NSR: LYMP

Construction Activity	SWL dB(A)	Distance (m)	Distance correction dB(A)	Façade correction dB(A)	Year 2021							Year 2022											
					May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	
LOOKOUT POINT																							
Piling	97.6	13	-30.3	3	70	70																	
VIEWING PLATFORM																							
Piling	101.0	n/a	n/a	3																			
LANDING FACILITY & BREAKWATER																							
Piling	106.0	n/a	n/a	3																			
Surface rock excavation	111.0	n/a	n/a	3																			
Underwater rock excavation	103.0	n/a	n/a	3																			

Predicted noise level, Leq (30 mins), dB(A) 70 70

Notes:

- [1] Due to the exceedance of noise criterion, piling works at this area will not be carried out during the time when LYMP is used for any noise sensitive purposes, such as holding courses or workshop:
- [2] n/a: not applicable (as the noise from the construction activity is not critical)
- [3] All predicted noise levels in dB(A) are rounded to the nearest integer

Construction Noise Assessment (Mitigated Scenario)

NSR: HPRC V1

Construction Activity	SWL dB(A)	Distance (m)	Distance correction dB(A)	Façade correction dB(A)	Year 2021							Year 2022										
					May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
LOOKOUT POINT																						
Piling	97.6	n/a	n/a	3																		
VIEWING PLATFORM																						
Piling	101.0	18	-33.1	3			71	71														
LANDING FACILITY & BREAKWATER																						
Piling	106.0	64	-44.1	3		65	65	65	65	65	65	65					65	65	65	65	65	65
Surface rock excavation	111.0	64	-44.1	3									70	70								
Underwater rock excavation	103.0	64	-44.1	3											62							
Predicted noise level, Leq (30 mins), dB(A)						65	72	72	65	65	65	65	70	70	62		65	65	65	65	65	65

Notes:

- [1] n/a: not applicable (as the noise from the construction activity is not critical)
- [2] All predicted noise levels in dB(A) are rounded to the nearest integer

Construction Noise Assessment (Mitigated Scenario)

NSR: HPRC V2

Construction Activity	SWL dB(A)	Distance (m)	Distance correction dB(A)	Façade correction dB(A)	Year 2021							Year 2022										
					May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
LOOKOUT POINT																						
Piling	97.6	n/a	n/a	3																		
VIEWING PLATFORM																						
Piling	101.0	56	-43.0	3			61	61														
LANDING FACILITY & BREAKWATER																						
Piling	106.0	67	-44.5	3		64	64	64	64	64	64	64					64	64	64	64	64	64
Surface rock excavation	111.0	67	-44.5	3									69	69								
Underwater rock excavation	103.0	67	-44.5	3											61							
Predicted noise level, Leq (30 mins), dB(A)						64	66	66	64	64	64	64	69	69	61		64	64	64	64	64	64

Notes:

- [1] n/a: not applicable (as the noise from the construction activity is not critical)
- [2] All predicted noise levels in dB(A) are rounded to the nearest integer

Construction Noise Assessment (Mitigated Scenario)

NSR: HPRE 21C

Construction Activity	SWL dB(A)	Distance (m)	Distance correction dB(A)	Façade correction dB(A)	Year 2021							Year 2022										
					May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
LOOKOUT POINT																						
Piling	97.6	n/a	n/a	3																		
VIEWING PLATFORM																						
Piling	101.0	144	-51.2	3			53	53														
LANDING FACILITY & BREAKWATER																						
Piling	106.0	36	-39.1	3		70	70	70	70	70	70	70					70	70	70	70	70	70
Surface rock excavation	111.0	36	-39.1	3									75	75								
Underwater rock excavation	103.0	36	-39.1	3											67							
Predicted noise level, Leq (30 mins), dB(A)						70	70	70	70	70	70	70	75	75	67		70	70	70	70	70	70

Notes:

- [1] n/a: not applicable (as the noise from the construction activity is not critical)
- [2] All predicted noise levels in dB(A) are rounded to the nearest integer

Contract No. CV/2020/09 – Construction of Lei Yue Mun Public Landing Facility	Ref: LYML/CC2003/NMP	
	Revision: 1	Date: Apr-2020
NOISE MANAGEMENT PLAN		

Appendix F



PROPOSED LOOKOUT POINT

NM3

鯉魚門
LEI YUE MUN

NM1

PROPOSED VIEWING PLATFORM

馬環村
MA WANTSUEN

NM4

PROPOSED LANDING STEPS

PROPOSED LANDING FACILITY

PROPOSED BREAKWATER

峇頂村
CHE TING TSUEN

NM2-A

LEGEND

— TEMPORARY NOISE BARRIER (SOUND PROOF CANVAS).

● NOISE MONITORING STATION

NOTE

1. THE EXACT LOCATION OF NOISE BARRIERS WILL BE SUBJECT TO SITE AND OPERATING CONDITIONS.

LOCATION OF TEMPORARY NOISE BARRIERS

Contract No. CV/2020/09 – Construction of Lei Yue Mun Public Landing Facility	Ref: LYML/CC2003/NMP	
	Revision: 1	Date: Apr-2020
NOISE MANAGEMENT PLAN		

Appendix G



TYL®-Sound Proof

Sound Reduction Canvas

201909

DESCRIPTION

TYL®-Sound Proof is made of flame retarded PVC material which has the ability of material to reduce reflection of the sound waves. In other words, it is the opposite of sound reflection.



USAGE

- To protect any occupied premises outside the construction site used as dwelling, place of worship, educational establishment, hospital, aging home or similar noise sensitive institution, or any other property likely to be adversely affected by an increase in noise level.
- To improve construction worker safety since exposure to high noise levels for unprotected ears can be a serious hazard to worker health, causing permanent hearing loss and stress.

SPECIFICATION COMPLIANCE

- ISO 1040-2:2010
- ISO 717-1:2013
- BS 5867-2:2018 TypeB
- BSEN ISO 15025:2002

ADVANTAGE

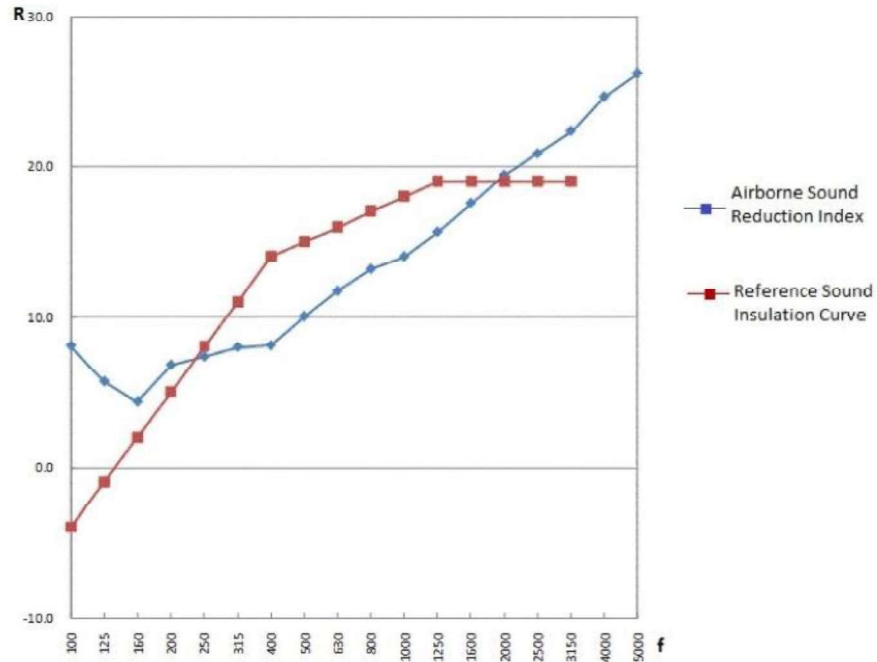
- Soundproof partitions when used as cover can reduce sound exposure level to surrounding environment minimum 12 db. Each sheet fitted with extra seams prevents gap-to-gap noise escape from two adjacent sheets.
- Light weight
- Easy to handle
- Reduce reflection of the sound waves
- UV Resistance
- Flame retarded

PHYSICAL & MECHANICAL PROPERTIES

Property	Typical Results
Color:	Grey
Thickness:	1mm
Mass:	1.1 kg/m ²
Reduce Sound Level:	15 dB
Grade	Fire Retardant

Test results

f Hz	R dB
100	8.1
125	5.7
160	4.3
200	6.8
250	7.3
315	8.0
400	8.1
500	10.0
630	11.7
800	13.2
1000	14.0
1250	15.6
1600	17.5
2000	19.4
2500	20.8
3150	22.4
4000	24.6
5000	26.2
Rw (C;Ctr)	15(-1;-3)



Key
R-- sound reduction index, in dB
f--frequency, in Hz

APPLICATION INSTRUCTIONS

Four sheet sides are fitted with concealed copper eyelets for easy installation as acoustic shed and enclosure for noisy plant process.



PACKAGING

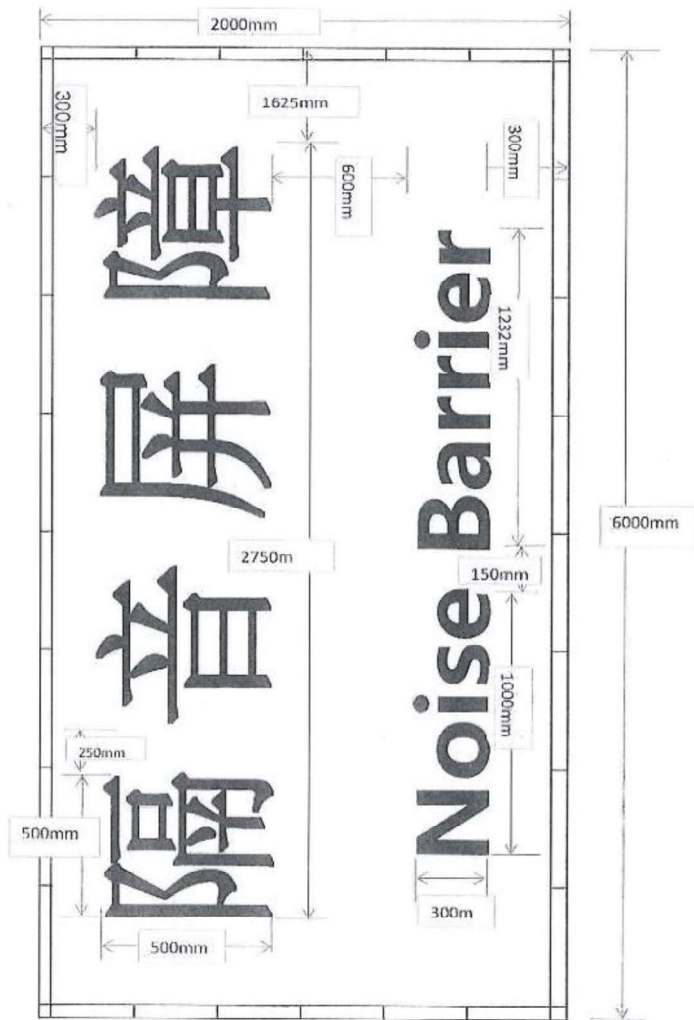
Thickness:	1mm
Size:	2m x 6m roll

HEALTH & SAFETY

There are no health hazards associated with it in normal use.

STORAGE

It should be stored in the dry and not left exposed to the elements for extended periods, especially in hot climates.



Please enquire about our range of construction product

The information and the recommendations relating to the application and end use if this product are given in good faith and are based on the information provided by the manufacturer of the product and/or the Company's current knowledge and experience in connection with the product when properly stored, handled and applied under normal conditions and no liability is assumed. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability of or fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written and/ or oral recommendations, or from any other advice offered by the Company. No responsibility or Liability by the Company will be accepted for misuse, misreading or derivation from the recommended guidelines in respect of this product and the user shall determine the suitability of the product for his intended use and all risks and liability in connection therewith. The information contained in this brochure may change at any time without notice.



TAT YIN (HK) CO., LTD.

TYL[®]-Sound Proof

Sound Reduction Fabric

Certificate

Product	:TYL [®] -SoundProof
Manufacture/ Factory	:Tracki Building Technology Ltd
Manufacture/ Factory Place	:Tai Wan Industrial Zone, Chang Ping Town, Dong Guan City, China
Supplier	:Tat Yin (HK)Co Ltd
Date	:June 2017

CERTIFICATE

Test Report

No. SDHG1409015217RP

Date: Oct.15, 2014

Page 1 of 3

TRACKI BUILDING TECHNOLOGY LTD
 RM 2501, 25/F, TECHNOLOGY PARK, ON LAI STREET, SHATIN, HONG KONG

The following sample(s) was / were submitted and identified on behalf of the client as:

Sample Description : SOUND REDUCTION / SOUNDPROOF SHEET
 Style / Item No. : SOUND REDUCTION / SOUNDPROOF SHEET
 Other Info : 1MM THICK, WEIGHT 1100G/M²
 Sample Receiving Date : Sep.19, 2014
 Test Performing Date : Sep.19, 2014 to Oct.15, 2014
 Test Required : In accordance with ISO 10140-2-2010 Acoustics -- Laboratory
 measurement of sound insulation of building elements -- Part 2:
 Measurement of airborne sound insulation
 Test Result(s) : For further details, please refer to the following page(s)

Signed for and on behalf of
 SGS-CSTC Co., Ltd.



Irvette Zhang
 Approved signatory



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Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

I. Test conducted

The test is performed in accordance with ISO 10140-2-2010 Acoustics -- Laboratory measurement of sound insulation of building elements -- Part 2: Measurement of airborne sound insulation

The evaluation of the single-number rating from the results in one-third octave bands is done in accordance with ISO 717-1:1996 Acoustics - Rating of sound insulation in buildings and of building elements - Part 1: Airborne sound insulation

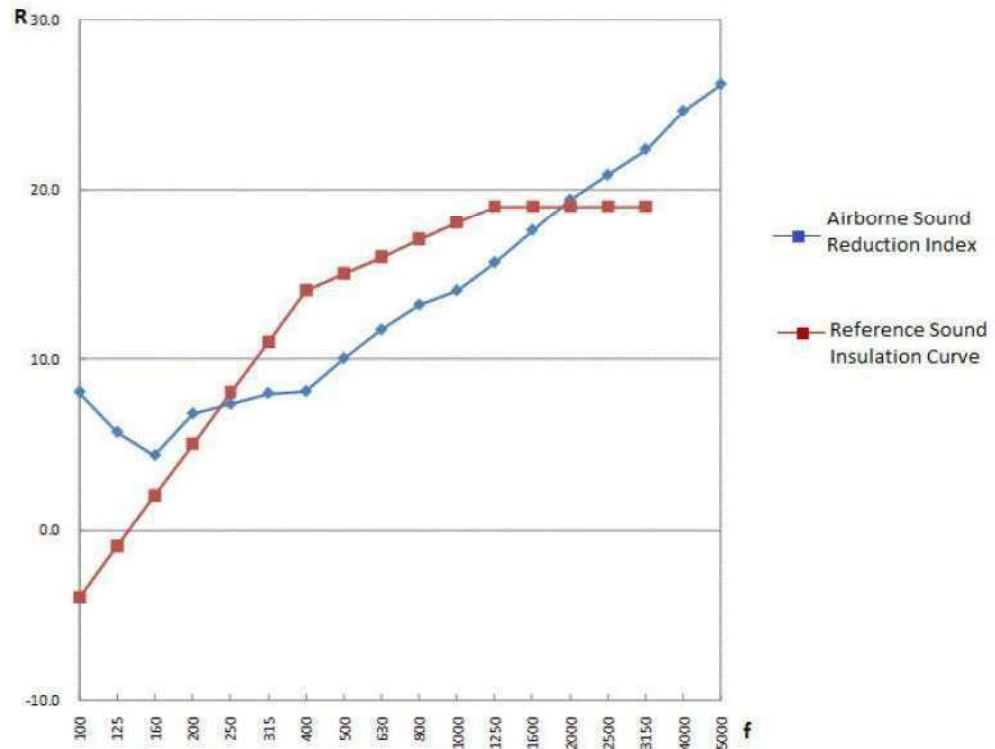
II. Sample Description and Conditioning

Sample name(provided by sponsor): Sound reduction/Soundproof sheet

Color: Gray
 Mass per unit area : 1020 g/m²
 Thickness: 0.8 mm
 Area, S, of test element : 2.1 m²
 Air temp. in the test rooms : 24°C
 Relative humidity in the test rooms : 56%
 Sourcing room volume : 88.6 m³
 Receiving room volume : 67.9 m³

III. Test results

f Hz	R dB
100	8.1
125	5.7
160	4.3
200	6.8
250	7.3
315	8.0
400	8.1
500	10.0
630	11.7
800	13.2
1000	14.0
1250	15.6
1600	17.5
2000	19.4
2500	20.8
3150	22.4
4000	24.6
5000	26.2
Rw (C;Ctr)	15(-1;-3)



Key
 R-- sound reduction index, in dB
 f--frequency, in Hz



STATEMENTS:

For laboratory measurements using sound pressure, the sound reduction index is calculated using:

$$R = L_1 - L_2 + 10 \lg \frac{S}{A} (dB)$$

where

L_1 is the energy average sound pressure level in the source room, in decibels;

L_2 is the energy average sound pressure level in the receiving room, in decibels;

S is the area of the free test opening in which the test element is installed, in square metres;

A is the equivalent sound absorption area in the receiving room, in square metres.

Photo Appendix:



Remark: This test was subcontracted to qualified subcontractor.

End of Report



**CMA Testing
and Certification
Laboratories**

廠商會檢定中心

TEST REPORT

Report No : AU0014118(4)

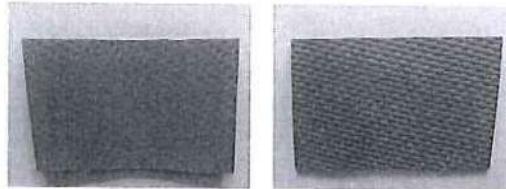
Date: 10 Mar 2016

Application No : LU006710(3)

Applicant : TRACKI BUILDING TECHNOLOGY LTD
2501, 25/F, TECHNOLOGY PARK,
18 ON LAI STREET, SHATIN,
HONG KONG

Sample Description : One (1) submitted sample of fabric stated to be 'Sound Reduction / Soundproof sheet 1.8m wide x 3.4m long'.

Sample Photo :



Face

Back

Date Received : 01 Mar 2016.

Test Period : 01 Mar 2016 to 10 Mar 2016.

Test Requested : Test in compliance with BS 5867-2: 2008 Type B : Flammability Requirements of Fabrics for curtains and drapes and window blinds.

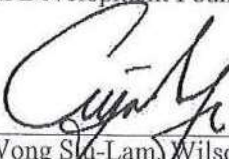
Test Method : As stated in above specification : the test was determined in accordance with BS EN ISO 15025: 2002 Procedure A (Surface ignition)

Test Result : Refer to the results on page 2.

Conclusion : The submitted sample was found to comply with the requirements of BS 5867-2: 2008 Type B.

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____


Wong Siu-Lam, Wilson
Manager - Hardlines Division

Page 1 of 2



TEST REPORT

Report No : AU0014118(4)

Date: 10 Mar 2016

Application No : LU006710(3)

Test Result :

Flame application time : 15 seconds

(i) Before Cleansing/ Wetting Procedure

Test condition: Temperature: 23°C

Relative Humidity: 71 %

Item	Observation					
	Length direction			Width direction		
	1	2	3	1	2	3
Direction of test	↑	↓	↑	→	←	→
Any hole formed	No	No	No	No	No	No
Any hole reached the upper edge	No	No	No	No	No	No
Any hole reached either vertical edge	No	No	No	No	No	No
Any lowest boundary of flame reached the upper edge	No	No	No	No	No	No
Any lowest boundary of flame reached either vertical edge	No	No	No	No	No	No
Any separation of any flaming debris	No	No	No	No	No	No

(ii) After Cleansing/ Wetting Procedure (Water soaking according to BS EN 1021-1: 2006 Annex D)

Test condition: Temperature: 23°C

Relative Humidity: 71 %

Item	Observation					
	Length direction			Width direction		
	1	2	3	1	2	3
Direction of test	↑	↓	↑	→	←	→
Any hole formed	No	No	No	No	No	No
Any hole reached the upper edge	No	No	No	No	No	No
Any hole reached either vertical edge	No	No	No	No	No	No
Any lowest boundary of flame reached the upper edge	No	No	No	No	No	No
Any lowest boundary of flame reached either vertical edge	No	No	No	No	No	No
Any separation of any flaming debris	No	No	No	No	No	No

Performance requirement: No part of any hole nor any part of the lowest boundary of any flame shall reach the upper edge or either vertical edge of specimen
No separation of any flaming debris

- Note: 1) Sample was declared to be "not washable".
2) The results may not apply to situations where there is restricted air supply or prolonged exposure to large sources of intense heat as in a conflagration.

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



TYL® -Sound Proof

Sound Reduction Fabric

Job Reference

<u>Project Name</u>	<u>Main Contractor/ Subcontractor</u>
Contract No. 11/WSD/11 Replacement and rehabilitation of water Tsuen Wan and Kwai Tsing	Pollard-CNCEC JV
Contract No. 13/HY/2009 九龍西道路(快速公路除外) 之管理及維修(2010-2014)	Welcome Construction Co Ltd
Contract No. DC/2009/04 Drainage maintenance and construction in HK Island District 2010-2013	Welcome Construction Co Ltd
MTR706. Access shaft KET Praya and diamond Hill Road	Paul Y. Construction Co Ltd
將軍澳 86 區日出康城第三期	Lanon Construction Ltd
SS W26 大欖女子監獄屯門大欖涌道 110 號	Able Contractors Limited
Contract No. DC/2010/01 屯門鄉村污水收集系統及望后石主幹污水渠	China Road and Bridge Corporation
Contract No. HY/2008/11 Reconstruction and improvement of Tuen Mun Road-Sam Shing Hui Section	China Harbour Engineering Co Ltd
Contract No. CV/2011/01 Site Formation and infrastructural Works Near Tsing Lun road and Tsz tin road of Area 54, Tuen Mun	China Road and Bridge Corporation
Contract No. DC/2010/10 丙崗、虎地排及太和污水收集系統	Richwell Construction Engineering Ltd
Contract No. HY/2009/15 中環灣仔繞道銅鑼灣避風塘隧道	China State Construction Eng (HK) Ltd



TYL® -Sound Proof

Sound Reduction Fabric

Contract No. CV/2012/07 Development at Anderson Road Footbridge D and Associated Works	Lam-Po Wing JV
Contract No. CEDDNL/2012/01 Site Formation at Tung Chung Areas 53 & 54	Ming Shing Construction Eng Co Ltd
TMTL 423 Area 48 Castle Peak Road So Kwun Wat, Tuen Mun	Tysan Foundation Ltd
Tuen Mun Area 54 Site 2, Phase 1 & 2	Tysan Foundation Ltd
Redevelopment of 陳樹渠中學, 12 Tat Chee Avenue, Yat Cheung	Tysan Foundation Ltd
Site Formation, Foundationd & Pile Cap Work at IL 5749RP, 44 Stubbs Road	Kin Wing Foundations Ltd
MTR 908, 南港島線黃竹坑站(Wong Chuk Hang Depot Site) 香港仔黃竹坑南朗山道	Hsin Chong Construction Co., Ltd
Ocean Terminal Extension at TST, KLN	Tysan Foundation Ltd
Proposed Residential Development at 38 Wong Chuk Hang Road	Kin Wing Foundations Ltd
Contract No. 20130597 房堅委員會-居者有其屋計劃 沙田第 4C 區 美滿里	Paul Y. General Contractors Ltd.
Foundation for Public Rental Housing Development at Sheung Foo Street, Hamantin	Tysan Foundation Ltd
Contract No. DC/2012/11 沙頭角公路軍地北村渠務署地盤	Welcome Construction Co., Ltd.
Contract No. 沙中線 MTRC 1106 Diamond Hill Station Extension	偉通工程有限公司



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Contract No. 15/HY/2012

路政署定期合約(新界東及香港島快速公路之
管理及維修 2013-2019)

Welcome Construction Co., Ltd.

Contract No. 20140224

Foundation for Public Housing Development at
Cheung Sha Wan Wholesale Food Market Site 3
and Site 5 Phase 1 and 2 Eastern Harbour
Crossing Site Phase 7

Tysan Foundation Ltd

Redevelopment of Asia House at
1 Hennessy Road

Kin Wing Foundations Ltd

Contract No.20130833

Foundation Work for Choi Yuen Road Sau Ming
Road for HKHA

Vibro (H.K.) Ltd

Contract No. 20140322

Foundation for Publi Rental Housing
Redevelopment at Pak Tin Estate Phase 7 & 8

Tysan Foundation Ltd

Contract No. Construction of Home Ownership
Scheme Development at Sheung Lok Street,
Homantin

Sun Fook Kong Foundation Ltd

S.K.H Lui Ming Choi School

Law Chi Yip Construction Co Ltd

Contract No. CV/2015/03

Tong Hang Road and Tsz Tin Road in Area 54,
Tuen Man

Tsun Yip Civil Construction Co Ltd

Contract No. CV/2020/09 – Construction of Lei Yue Mun Public Landing Facility	Ref: LYML/CC2003/NMP	
	Revision: 1	Date: Apr-2020
NOISE MANAGEMENT PLAN		

Appendix H



Acoustics Innovation

SilentUP[®] Retractable Noise Barrier

PATENTED

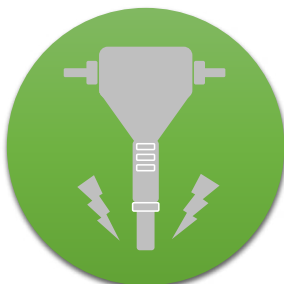


Product of Hong Kong
**THE WORLD'S FIRST
RETRACTABLE NOISE BARRIER**
27dB(A) NOISE REDUCTION*

* Tested with white noise source with SilentUP[®] STC24



Roadworks



Breaking
Drilling



Piling



Loading
Unloading



Concreting

aihk.hk

info@aihk.hk

(852) 2702-2007

R&D Division of





Product Description

SilentUP® is a patented retractable noise barrier for construction works and outdoor music events. It can be easily installed and mobilized by people without using any machines. No concrete foundation is required and the installation process is quiet enough to be conducted even at night time. The panels are installed upwards from ground level and connected by magnetic gap sealing.

Our product has been widely used in Hong Kong. Visit our website for the job references aihk.hk/SilentUP/reference.

Benefits

- ▶ Minimize noise complaints
- ▶ Quiet and manual installation
- ▶ No concrete foundation required
- ▶ Flexible construction site planning
- ▶ Facilitate Construction Noise Permit (CNP) application process

Technical Information

SilentUP® noise barrier material conforms to the flammability requirement specifications.

BS5867-2:2008 TYPE B
GB8624

Product Specification

STC	18	24
Insertion Loss*	22 dB(A)	27 dB(A)
Modular Weight	5kg	8kg
Maximum Height	7m	5m
Modular Size	1m(H) x 1.35m(W)	
Standard Colour	Grey	
Panel Thickness	100mm on edges	

* Tested with white noise source



CITF Pre-approved Product
citf.cic.hk

Installation videos available at

aihk.hk/youtube



Client Feedback

“Some of our contractors have used the retractable noise barriers to facilitate CNP application. They have found this innovative product useful - lightweight, easy to manoeuvre, and fit for purpose.”

Richard Kwan
Environment Manager
MTR Corporation Ltd

“We are impressed by SilentUP’s quick installation and relocation, it is definitely one of the best innovations and practicable approaches for the noise mitigation measures for the construction activities.”

Lighting Chan
Environmental Compliance Support Manager,
Leighton Asia Ltd

“We are happy with Acoustics Innovation’s professional service (SilentUP Noise Barrier) in helping us achieve our noise mitigation goals.”

Ronald Fung
Project QA & Environmental Manager
Kier - Laing O’Rourke - Kaden Joint Venture

“SilentUP is definitely a useful tool to minimize the noise pollution. We successfully obtained a CNP and most importantly no complaint has been received from the NSRs.”

Clarence Yeung
Environmental Officer
Chun Wo Construction and Engineering Co. Ltd

REPORT TO: Acoustics Innovation Limited

ADDRESS: Unit 106, 1/F, Block A, Shatin Industrial Centre
5-7 Yuen Shun Circuit
Shatin, N.T., H.K.

ATTN.: Mr. Max Yiu

REPORT NO.: APJ16-034-RP001(STC)

ISSUE DATE: 3 February 2017

**HOKLAS Accredited Laboratory
Sound Transmission Loss Measurement
Test Report
for
SilentUP[®] Retractable Noise Barrier**

(PROJECT NO.: APJ16-034)

HKAS has accredited this Laboratory (Reg. No. HOKLAS 122) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.

The report shall only be reproduced in FULL unless prior written approval is obtained from Acoustics and Air Testing Laboratory Co. Ltd.

APJ16-034-RP001(STC)

Page 1 of 9

1. Method of Measurement

- 1.1 The measurement was carried out in accordance with ASTM E90-09 "Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions" in the reverberation room of Acoustics and Air Testing Laboratory Co. Ltd. And the single number rating of airborne sound transmission loss is given as Sound Transmission Class (STC) by evaluated in accordance with ASTM E413-10 "Classification for Rating Sound Insulation".

2. Details of Measurement**2.1 Principle of Measurement**

The sound transmission loss is usually measured in a laboratory by placing the element in an opening between two adjacent reverberant rooms designed for such tests. Noise is introduced into one of the rooms, referred to as the source room, and part of the sound energy is transmitted through the test element into the second room, referred to as the receiving room. The resulting mean space-average sound pressure levels in the source and receiving rooms are denoted by L_1 and L_2 respectively.

The sound transmission loss is given by

$$TL = L_1 - L_2 + 10 \log(S/A)$$

Where

- L_1 is the average sound pressure level in the source room, in dB;
 L_2 is the average sound pressure level in the receiving room, in dB;
 S is the area of the test specimen, in m^2 ;
 A is the equivalent absorption area in the receiving room, in meters sabins.

$$A = (0.9210Vd/c)$$

Where

- V is the receiving room volume, in m^3 ;
 d is the rate of decay of sound pressure level in receiving room, dB/s;
 c is the speed of sound in the medium, m/s.

The speed of sound changes with temperature and is shall be calculated for the conditions existing at the time of test from the equation:

$$c = 20.047 \sqrt{273.15 + t}$$

Where

- t is the receiving room temperature, measured to nearest degree.

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The Sound Transmission Class (STC) of test specimen is calculated by comparing the sixteen values of Sound Transmission Loss from 125 Hz to 4000 Hz with a defined reference curve which is incremented until the requirements of ASTM E 413-10 are met.

2.2 Laboratory Location

Fo Tan Main Laboratory -
Room 422, Leader Industrial Centre, 57-59 Au Pui Wan Street,
Fo Tan, Shatin, N.T., Hong Kong.

2.3 Test Condition

Conditions	Source room	Receiving room
Volume	84m ³	203m ³
Air Temperature	22.0°C	21.6°C
Relative Humidity	51.0%	52.5%

2.4 Test Date

Date of receipt of test item: 25 January 2017

Dates of commencement and completion of test

Commencement date: 2 February 2017

Completion date: 2 February 2017

2.5 Instrumentation

2.5.1 For sound production

Type	Serial No.
One Real Time Frequency Analyzer – LAN-XI 3160A	3160-100361
One Equalizer – Marantz EQ20D	56E040097
One Amplifier – B&K 2716 Power Amplifier	2571771
One OmniPower Sound Source – Bruel & Kjaer 4296	2128136
One Loudspeaker – JBL EON 515 Loudspeaker	VTP0890-14112

2.5.2 For sound measurement

One Real Time Frequency Analyzer – LAN-XI 3160A	3160-100361
Two Free-field ½" Microphone – Bruel & Kjaer 4190	2731708 & 2731709
Two ½" Microphone Preamplifier – Bruel & Kjaer 2669	2081972 & 2081971
One Sound Level Calibrator – Bruel & Kjaer 4231	1914426

2.5.3 For reverberation time measurement

One Real Time Frequency Analyzer – LAN-XI 3160A	3160-100361
One Free-field ½" Microphone – Bruel & Kjaer 4190	2731708
One ½" Microphone Preamplifier – Bruel & Kjaer 2669	2081972

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3. Results Application

- 3.1 The results obtained can be used to design building elements with appropriate acoustic properties, to compare the sound insulation properties of building elements and to classify such elements according to their sound insulation capabilities.
- 3.2 The measurements are performed in laboratory test facilities in which transmission of sound on flanking paths is suppressed. Results of measurements shall not be applied directly in the field without accounting for other factors affecting sound insulation, especially flanking transmission and loss factor.
- 3.3 The obtained test results relate only to the tested specimen.

4. Description of the Test Construction

- 4.1 Specimen description: The test specimen composed of 2 layers of 40mm thick acoustics absorptive infill (0.5kg/m^2) sandwiched by 2 layers of 0.55kg/m^2 acoustic mat (0.9mm thick) with ~100mm separation.
- 4.2 The system was essentially as detailed in the client supplied drawing reproduced as in Appendix 1. Only the physical dimensions of the system were verified by the laboratory.
- 4.3 Overall specimen size: 3000 mm (wide) X 3450 mm (high) X ~100 mm (thick).
- 4.4 The tested noise barrier system was supplied and installed by Acoustics Innovation Limited
- 4.5 Photographic records showing the test specimen and measurement setup are given in Appendix 2.

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5. Measurement Results

5.1 The results of measurement for the tested specimen are given in the following table:

Frequency f, Hz	Sound Transmission loss, dB	Sound Transmission loss, dB	Uncertainty, dB
100	2	5	± 1.64
125	6		± 1.20
160	8		± 0.90
200	7	7	± 1.21
250	7		± 1.07
315	7		± 0.74
400	9	11	± 0.68
500	12		± 0.56
630	15		± 0.45
800	20	22	± 0.41
1000	23		± 0.36
1250	26		± 0.32
1600	28	30	± 0.29
2000	31		± 0.34
2500	32		± 0.27
3150	33	34	± 0.29
4000	34		± 0.31
5000	35		± 0.33

5.2 The measured sound transmission loss of the tested specimen against 1/3-octave band center frequencies is plotted on Figure 1.

5.3 The 95% confidence interval is calculated according to the method stated in the Standard ASTM E90-09 A2.

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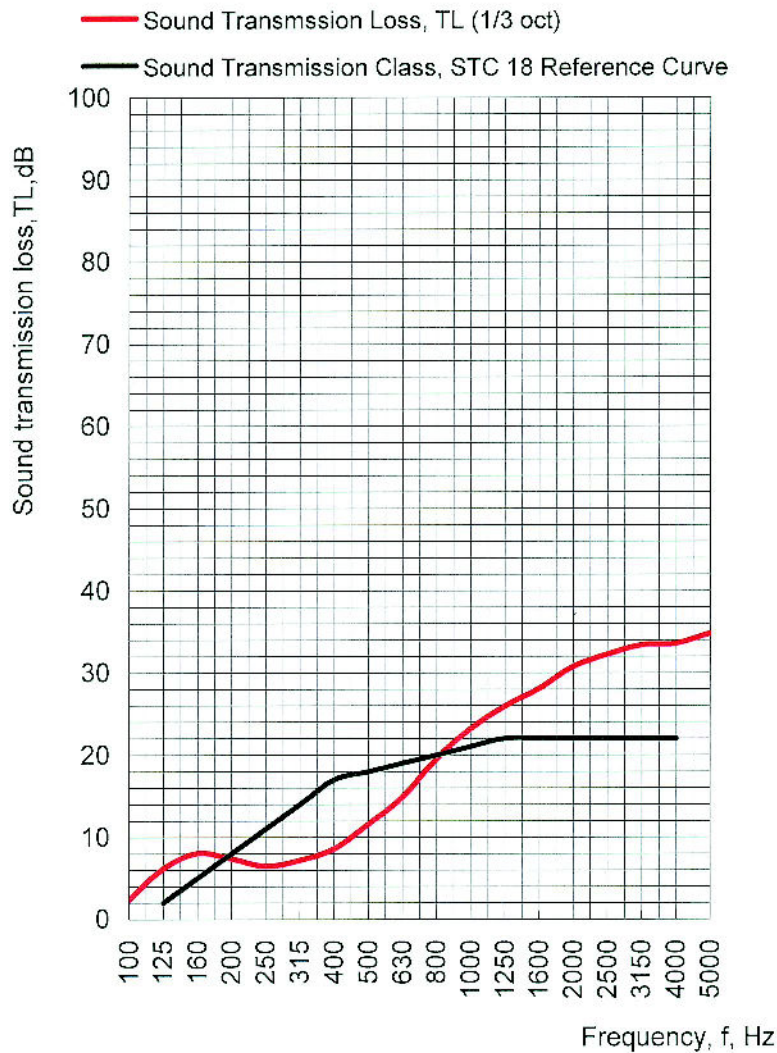


Figure 1. Sound transmission loss against Frequency

5.4 The single number rating of sound transmission class (STC) In accordance with ASTM E413-10 of the tested specimen is given below:

Description	Sound Transmission Class, STC
SilentUP® Retractable Noise Barrier	STC 18

Prepared by:
Tang Cheuk Hang
 Quality Manager
 WN / MT / KW / JL

Endorsed by:
Ng Yan Wa
 Laboratory Manager
 (Approved Signatory)

- END -

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Appendix List

- | | |
|-------------------|--|
| Appendix 1 | Details of Test Specimen
(Drawing supplied by the Client) |
| Appendix 2 | Photographic Records |

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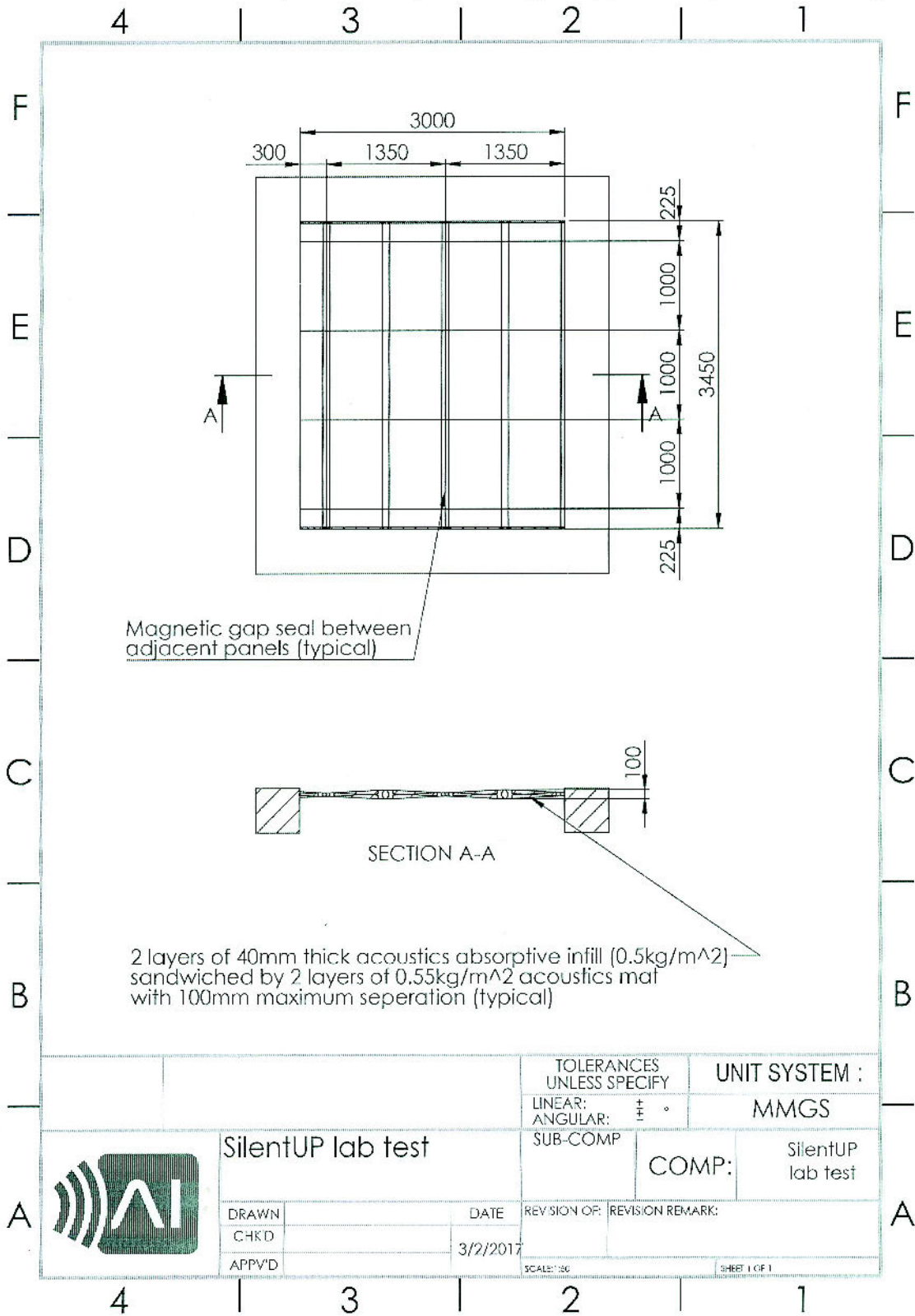
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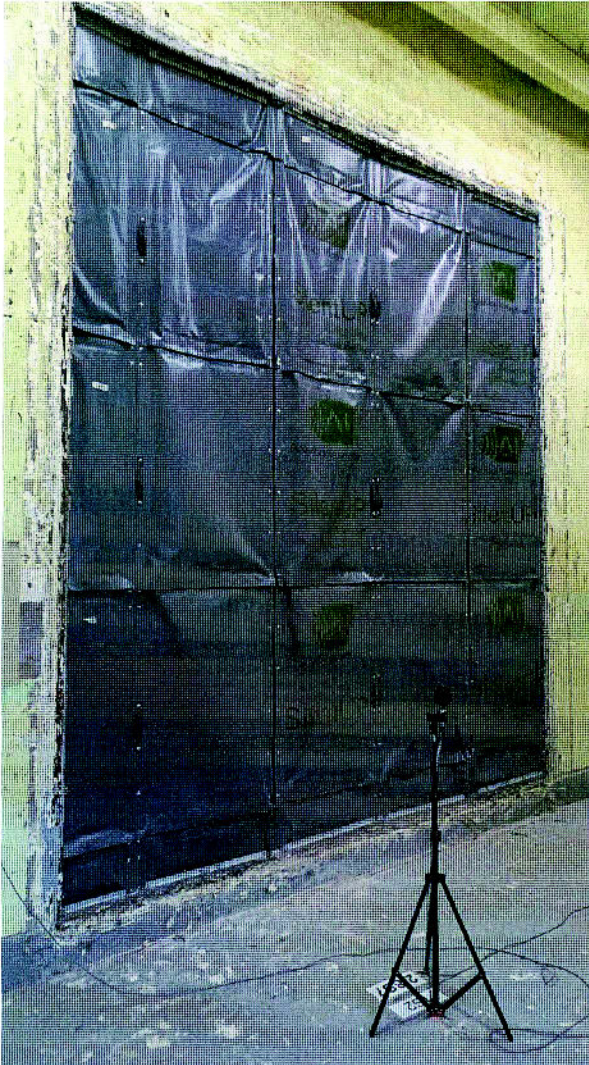
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Appendix 1

Details of Test Specimen (Drawing supplied by the Client)



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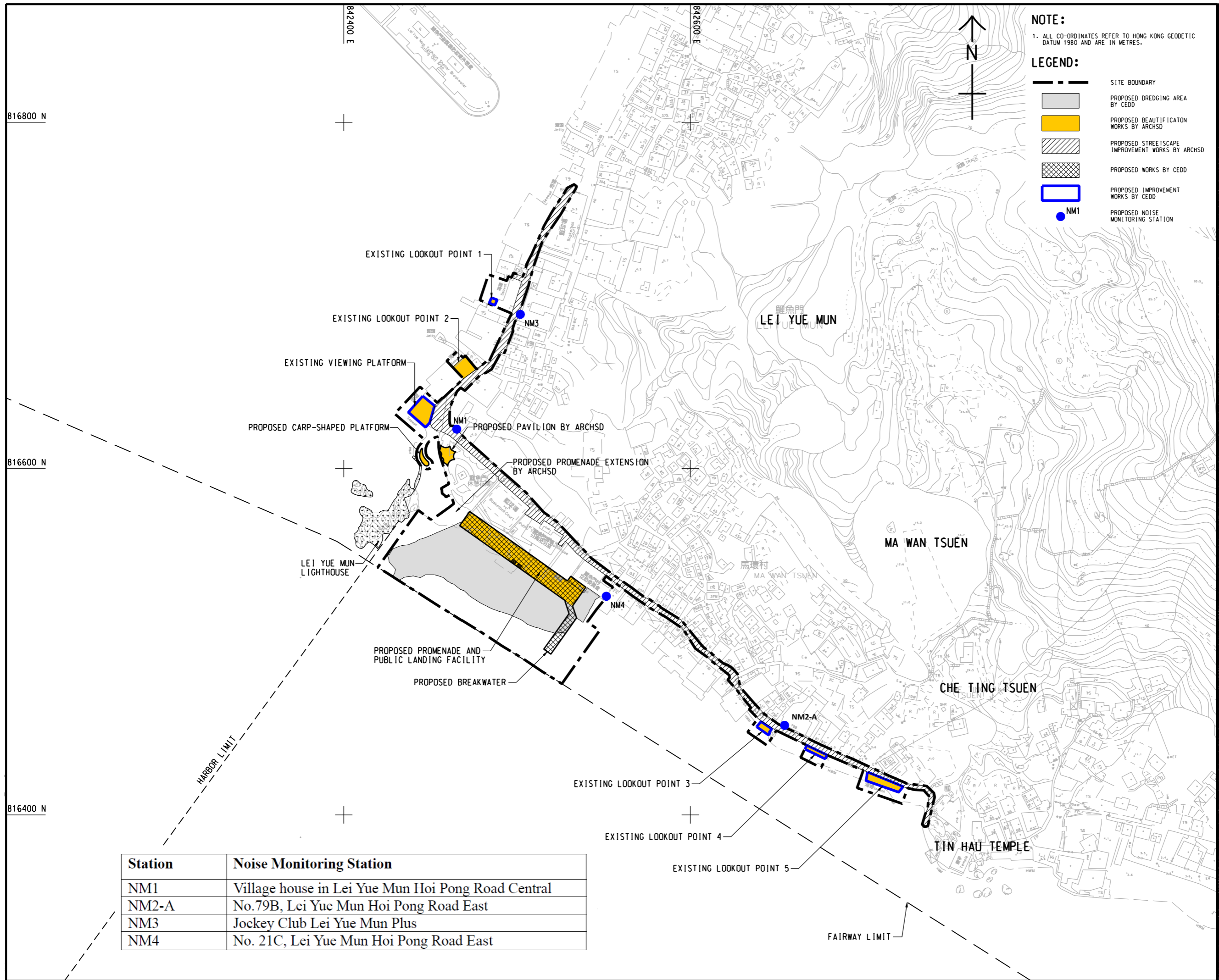
Appendix 2**Photographic Records****Measurement set-up (Source room)****Measurement set-up (Receiving room)**

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Contract No. CV/2020/09 – Construction of Lei Yue Mun Public Landing Facility	Ref: LYML/CC2003/NMP	
	Revision: 1	Date: Apr-2020
NOISE MANAGEMENT PLAN		

Appendix I



NOTE:
 1. ALL CO-ORDINATES REFER TO HONG KONG GEODETIC DATUM 1980 AND ARE IN METRES.

- LEGEND:**
-  SITE BOUNDARY
 -  PROPOSED DREDGING AREA BY CEDD
 -  PROPOSED BEAUTIFICATION WORKS BY ARCHSD
 -  PROPOSED STREETSCAPE IMPROVEMENT WORKS BY ARCHSD
 -  PROPOSED WORKS BY CEDD
 -  PROPOSED IMPROVEMENT WORKS BY CEDD
 -  NM1
PROPOSED NOISE MONITORING STATION

Station	Noise Monitoring Station
NM1	Village house in Lei Yue Mun Hoi Pong Road Central
NM2-A	No.79B, Lei Yue Mun Hoi Pong Road East
NM3	Jockey Club Lei Yue Mun Plus
NM4	No. 21C, Lei Yue Mun Hoi Pong Road East