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Civil Engineering and Development Department
West Development Office

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Site Formation and Infrastructure Works for Ngau Tam Mei New Development Area – Design and Construction

Construction Noise Management Plan for Contract 1

June 2026

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1. INTRODUCTION

1.1 Background

- 1.1.1 The Civil Engineering and Development Department (CEDD) and the Planning Department (PlanD) jointly commissioned the Ngau Tam Mei (NTM) Land Use Review Study (the Study) in November 2021 to capitalise on the development opportunities to be brought about by the NTM Station on the proposed Northern Link (hereinafter referred to as “NOL Main Line”). The Study aims to examine the comprehensive development of the brownfield clusters in NTM, which was subsequently extended to cover a nearby site as identified under the “Green Belt” Review announced in the 2022 Policy Address for holistic planning (hereinafter referred to as “the Project”); to ascertain the feasibility and acceptability of the Project with technical assessments including the statutory Environmental Impact Assessment (EIA); to formulate a Recommended Outline Development Plan (RODP); and to conduct public engagement (PE) for increasing awareness and engagement among stakeholders.
- 1.1.2 The Northern Metropolis Action Agenda (NMAA) promulgated in October 2023 outlines the development positioning of four major zones in the Northern Metropolis (NM). Amongst them, the Innovation and Technology (I&T) Zone covers San Tin Technopole (STT) and NTM. STT will be a hub for clustered I&T development, creating synergy with the Shenzhen I&T Zone. Upon completion of the proposed NOL Main Line in 2034, NTM will only be one station away from STT. It is stated in NMAA that land will be reserved in NTM for use of post-secondary education institutions, with a focus on scientific research to complement the I&T development in STT, promoting “research, academic and industry” collaboration.
- 1.1.3 The 2024 Policy Address announced to reserve land in the NM for the “Northern Metropolis University Town (NMUT)”, and encourage local post-secondary education institutions to introduce more branded programmes, research collaboration and exchange projects with renowned Mainland and overseas institutions in a flexible and innovative manner. It is also stated in the 2024 Policy Address that, land will be reserved in NTM for developing the third medical school and an integrated medical teaching and research hospital (hereinafter referred to as “Integrated Hospital”). As announced in the 2025 Policy Address, a Working Group on Planning and Construction of the University Town (WG) will be set up under the Committee on Development of the NM, to study the development mode for the NMUT and make recommendations on the positioning and vision regarding the development of NMUT sites to devise a clear, industry-led approach. The land in NTM can dovetail with the overall I&T development of the STT and the Hong Kong-Shenzhen Innovation and Technology Park (HSITP) at the Loop, among others, life and health technology industries, and to be used for joint development with the third medical school and an Integrated Hospital. The design and implementation of the UniTown will be duly considered by the Education Bureau under the steer of the WG.
- 1.1.4 Locations of the Project including the Development Area are shown in **Figure 1.1**. Located to the south of STT and to the northeast of Yuen Long New Town, the total area of Development Area covers about 130 ha and is currently occupied by Yau Tam Mei Tsuen, scattered brownfield operations, farmland/fishponds, chicken farm, permitted burial grounds, etc. The Project comprises mainly educational institutions, hospital, other government, institution and community (GIC) facilities, housing, as well as the associated infrastructure works (e.g. road networks, sewage pumping station (SPS), etc.).
- 1.1.5 The Project constitutes designated projects (DPs) under the Environmental Impact Assessment Ordinance (Cap. 499) (EIAO). The Environmental Impact Assessment (EIA) Report for the Project (Register No.: AEIAR-271/2025) (hereinafter referred to as “the approved EIA Report”) was approved under EIAO on 18 December 2025 and an Environmental Permit (EP) (EP No. EP-680/2025) for the designated projects was granted on 19 December 2025.

1.2 Purpose of this Plan

- 1.2.1 The Project will be implemented in phases, and the construction works under the Project are

planned to be undertaken through a number of works contracts. This CNMP is prepared for the first stage of works, namely Contract 1, which comprise the following construction activities:

DP

- Construction of a section of Road D1 at the south of Site G.8, G.9 & G.11.

Non-DP

- Site clearance and site formation works for Sites G.1, G.2, G.6, G.8, G.7, G.9, G.10, G.11, A.1, A.2, O.5, O.6, part of E.1 and RSc.1;
- Site clearance works and initial site formation works for Road L3;
- Construction of other haul roads (Ngau Tam Mei Road and Road L2), Community Liaison Centre (CLC), and temporary bridge; and
- Decontamination works where necessary.

1.2.2 Location of construction site of Contract 1 is shown in **Figure 1.1**.

1.2.3 According to the Condition 2.16 of the EP-680/2025, the Permit Holder shall, no later than 2 months before the issuance of the tender invitation of the Project, if any, and before the commencement of corresponding parts of the Project, deposit with the Director 2 hard copies and 2 electronic copies of a Construction Noise Management Plan (CNMP) for the corresponding parts of the Project. Any CNMP deposited before the issuance of the tender invitation shall be included in the tender document unless otherwise agreed by the Director.

1.2.4 This CNMP is prepared at the pre-tender stage for Contract 1 in accordance with the requirements of the EP and the recommendation in the approved EIA Report.

1.2.5 The purposes of this CNMP are to:

- provide a quantitative construction noise impact assessment based on the latest available construction programme and preliminary plant inventory at the pre-tender stage;
- identify and specify the quieter construction methods and equipment, together with other practicable noise mitigation measures, to minimise construction noise impacts;
- assess the effectiveness of the recommended mitigation measures and confirm compliance with the noise criteria stipulated under the EIAO-TM;
- establish a construction noise monitoring and audit framework for Contract 1 with reference to the approved Environmental Monitoring and Audit (EM&A) Manual; and
- provide an implementation schedule in table form to list out the construction noise mitigation measures to be implemented as well as the responsible party(ies), location(s), timing(s) and environmental performance(s) required for the implementation of the mitigation measures.

1.2.6 This CNMP covers only the construction works under Contract 1, including both the DP component governed by the EP and the non-DP components of the Project. This CNMP does not cover works under other future contracts or phases of the Project. Separate CNMP(s) will be prepared, where required under the EP, for subsequent contracts or Project's phases.

1.2.7 In accordance with the requirements of the EP, prior to the commencement of the construction works under Contract 1, the responsible Contractor shall deposit the CNMP for the corresponding parts of the Project. If there is any change to the recommended construction noise mitigation measures, plant inventory and /or construction noise impact monitoring and audit programme, the responsible Contractor shall conduct a review of the CNMP and deposit an updated CNMP.

2. METHODOLOGY OF CONSTRUCTION NOISE IMPACT ASSESSMENT

2.1 Construction Noise Criteria

- 2.1.1 Noise from construction activities taking place at 0700 – 1900 hours on any day not being a Sunday or general holiday is subject to the Noise Standards for Daytime Construction Activities stated in Table 1B of Annex 5 in the EIAO-TM. The noise limit is Leq(30 minutes) 75 dB(A) at all domestic premises, temporary housing accommodation, hostels, convalescent homes and homes for the aged; and Leq(30 minutes) 70 dB(A) at places of public worship, courts of law, hospitals and medical clinics and educational institutions (including kindergartens and nurseries) (with criterion of Leq(30 minutes) 65 dB(A) during examinations). The above standards apply to uses which rely on opened windows for ventilation and are assessed at 1 m from the external façade.
- 2.1.2 In the case which construction works would be carried out during restricted hours (all days between 1900 and 0700 hours and at any time on Sundays and general holidays), the noise standards should be referenced to relevant technical memoranda issued under the Noise Control Ordinance (NCO). For carrying out such construction work, a Construction Noise Permit (CNP) shall be applied by the Contractor separately.

2.2 Assessment Methodology

- 2.2.1 The construction noise impact assessment was undertaken based on standard acoustic principles. Reference was made to the *Technical Memorandum on Noise from Construction Work other than Percussive Piling* (GW-TM), *Preparation of Construction Noise Impact Assessment Under the Environmental Impact Assessment Ordinance* (EIAO Guidance Note No. 9/2023) and Professional Persons Environmental Consultative Committee Practice Notes 1/24 “*Minimizing Noise from Construction Activities*” (ProPECC PN 1/24). The sound pressure level of each construction activity was calculated, depending on the type and number of plant items and the distance from NSR. The general approach is summarized below:
- Determine 300m from the boundary of the construction works;
 - Locate the Noise Sensitive Receivers (NSRs) which would most likely be affected by noise from the construction work;
 - Obtain the construction methods and work sequences during the construction period;
 - Obtain the construction plant inventory, and categorize the items for each corresponding construction work sequence;
 - Determine the items of Powered Mechanical Equipment (PME) for each discrete construction activity, based on available information or plant inventories;
 - Assign sound power levels (SWLs) to the proposed PME according to the GW-TM or other recognized sources of reference, where appropriate;
 - Calculate distance attenuation and screening effects to NSRs from notional noise source;
 - Apply corrections in the calculations such as potential screening effects and acoustic reflection, if any;
 - Predict construction noise levels at NSRs in the absence of any mitigation measures;
 - Consider cumulative impact from concurrent projects within 300m of the NSRs, if any; and
 - Compare the cumulative construction noise level against the corresponding noise criterion and propose suitable mitigation measures where necessary.
- 2.2.2 The assessment was undertaken based on the assumption that all items of PME are located at a notional source position for each construction activity and that all PME are operating simultaneously. Noise reduction of 10 dB(A) for the direct line of sight totally screened or 5 dB(A) for partially screened by substantial barriers (buildings, terrain and other structures) was taken into account in the construction noise calculation in accordance with GW-TM.
- 2.2.3 The construction programme and plant inventory of Contract 1 are presented in **Appendix 2.1**

and **Appendix 2.2**, respectively. By categorizing the PME in the plant inventory for each construction activity and its associated work zone, the maximum sound power levels for each construction activity group were predicted and are presented in **Appendix 2.3**. The type and quantity of the PME used as well as percentage on time utilization were confirmed by the Project Engineer to be practical and suitable for the proposed works, is presented in **Appendix 2.3**. The SWL of PME was selected with reference to Table 3 of GW-TM and "Sound power levels of other commonly used PME" (Other PME) published by EPD. The SWL of each construction activity was calculated based on types and quantity of the plant, SWL of plant and percentage on-time utilization. The SWL of each plant are shown in **Appendix 2.4**, and the locations of different construction zones is presented in **Figure 2.1**. Separation distances between NSRs and notional source positions was measured in Web-CNMP platform and are presented in **Appendix 2.5**.

- 2.2.4 The predicted construction noise level at each representative NSR during each month of the construction programme is compared against the criteria of construction noise level as mentioned in **Section 2.1**. If the predicted noise level exceeds the criteria, appropriate mitigation measures would be recommended, including but not limited to adoption of quieter construction methods, use of Quality PME (QPME), grouping of PMEs, use of moveable noise barriers and full enclosures and good site practices. The mitigated scenario of construction noise impact would then be assessed, if applicable.
- 2.2.5 Subject to the availability of the detailed design information at the time of preparation of this CNMP, the cumulative construction noise impact due to construction activities of the concurrent projects, were considered in this CNMP as appropriate.

2.3 Representative Noise Sensitive Receivers

- 2.3.1 The assessment area for the construction noise impact assessment was set as 300m from the site boundary of Contract 1. Representative NSRs that would be affected by the construction noise are summarised in **Table 2.1** below. The locations of Noise Assessment Points (NAPs) are shown in **Figure 2.1**.

Table 2.1 Representative NAPs for Construction Noise

NAP ID	Description	Land Use ⁽¹⁾	Existing/Planned	Number of Storey	Noise Criterion, $L_{eq(30min)}$, dB(A)
THP-C1	Block 1, Transitional Housing Project at Ngau Tam Mei South (Chun Shin Road), Yuen Long	R	Existing	4	75
THP-C2a	Block 3, Transitional Housing Project at Ngau Tam Mei South (Chun Shin Road), Yuen Long	R	Existing	4	75
THP-C2b	Block 3, Transitional Housing Project at Ngau Tam Mei South (Chun Shin Road), Yuen Long	R	Existing	4	75
THP-C3	Block 3, Transitional Housing Project at Ngau Tam Mei South (Chun Shin Road), Yuen Long	R	Existing	4	75
LMV-C1	1 La Maison Vineyard	R	Existing	2	75
LMV-C2	23 La Maison Vineyard	R	Existing	2	75

NAP ID	Description	Land Use ⁽¹⁾	Existing/ Planned	Number of Storey	Noise Criterion, L _{eq} (30min), dB(A)
WTT-C1	Temporary Structure in Wai Tsai Tsuen	R	Existing	1	75
WTT-C2	107 Wai Tsai Tsuen	R	Existing	3	75
WTT-C3	115 Wai Tsai Tsuen	R	Existing	3	75
EP-C1	Elegant Park Block D	R	Existing	3	75
TV-C1	10 The Vineyard	R	Existing	3	75
TV-C2	1 The Vineyard	R	Existing	3	75
GV-C1	Greenacres Villa House A	R	Existing	3	75
CYR-C1	Village House near Chuk Yau Road	R	Existing	1	75
CYR-C2	Temporary Structure near Chuk Yau Road	R	Existing	1	75
CYR-C3	Village House near Chuk Yau Road	R	Existing	2	75
CYR-C4	Village House near Chuk Yau Road	R	Existing	1	75
CSR-C1	Temporary Structure near Chun Shin Road	R	Existing	1	75
CSR-C2	Temporary Structure near Chun Shin Road	R	Existing	1	75
WB-C1	Wat Buddhadhamaram	W	Existing	1	70
L3-C1	Temporary Structure to the east of Proposed Road L3	R	Existing	1	75
L3-C2	Village House to the east of Proposed Road L3	R	Existing	2	75
L3-C3	Village House to the east of Proposed Road L3	R	Existing	2	75
D1-C1a	Village House to the south of proposed Road D1	R	Existing	2	75
D1-C1b	Village House to the south of proposed Road D1	R	Existing	2	75
D1-C2	Village House to the south of proposed Road D1	R	Existing	1	75
D1-C3	Village House to the south of proposed Road D1	R	Existing	1	75
D1-C4	Village House to the south of proposed Road D1	R	Existing	2	75
D1-C5	Temporary Structure to the south of Proposed Road D1	R	Existing	1	75
D1-C6	Village House to the south of Proposed Road D1	R	Existing	2	75
YTMT-C1	Village House in Yau Tam Mei Tsuen	R	Existing	2	75
YTMT-C2	Village House in Yau Tam Mei Tsuen	R	Existing	2	75

NAP ID	Description	Land Use ⁽¹⁾	Existing/ Planned	Number of Storey	Noise Criterion, $L_{eq(30min)}$, dB(A)
YTMT-C3	Village House in Yau Tam Mei Tsuen	R	Existing	3	75
YTMT-C4	Village House in Yau Tam Mei Tsuen	R	Existing	1	75
TMB-C1	Tam Mei Barracks	O	Existing	1	75
TMB-C2	Tam Mei Barracks	O	Existing	1	75

Note:

(1) R – Residential, W – Places for public worship, O – Others.

2.4 Concurrent Projects

Northern Link Main Line

- 2.4.1 According to Section 4.5 of the approved EIA report for NOL Main Line, the key construction works in the vicinity of the Project Site during the overlapping period would be construction of railway tunnel, Ngau Tam Mei Station and Ngau Tam Mei Depot. Considering that the associated works site of NOL Main Line (**Figure 2.1** refers) would be relatively close to NSRs in Sheung Chuk Yuen, potential cumulative construction noise impact to these NSRs would be expected. Reference was made to the latest relevant CNMP of NOL Main Line for assessing the cumulative construction noise impact.

Northern Metropolis Highway – San Tin Section

- 2.4.2 According to the Project Profile (Application No.: PP-683/2025) for Northern Metropolis (NM) Highway – San Tin Section, the project is required to be commissioned in 2036, and therefore cumulative construction noise impact is expected. Key construction works in the vicinity of Contract 1 during the overlapping period may include site clearance, site formation, construction of viaduct, etc. The nearest existing NSRs are the village houses located at the south of work sites C1-W11 to C1-W13 and C1-W20 to C1-W22, which are also very close to NM Highway – San Tin Section. This concurrent project is currently under EIA study, without a confirmed construction programme or plant inventory for quantitative construction noise impact assessment. Therefore, cumulative construction noise impact from this concurrent project is not included in this CNMP. Nevertheless, cumulative construction noise impact will be reviewed in the subsequent CNMP(s) when more information becomes available for the concurrent project to ensure that no adverse cumulative construction noise impact would result.

Ngau Tam Mei Water Treatment Works Extension

- 2.4.3 For Ngau Tam Mei Water Treatment Works Extension (NTMWTW) Extension, the key construction works would involve provision of additional treatment facilities, construction of an extension of NTM Fresh Water Primary Service Reservoir, modification of an existing raw water tunnel junction and laying of water trunk mains. The modification of an existing chamber would be located at more than 300 m from representative NSRs near Contract 1. Hence, the cumulative construction noise impact is expected to be minimal. Nevertheless, potential cumulative construction noise impact is still expected from the trunk mains laying works along Ching Yau Road. Given that the trunk mains laying works would be carried out in sections and in small scale, the noise impact to the NSRs in the vicinity of the Contract 1 is considered minor and adverse cumulative construction noise impact is not expected. In addition, further review on the cumulative construction noise impact will be assessed by the contractor of NTMWTW Extension and the Project in the respective CNMP(s) to ensure no adverse cumulative impact will be resulted. Therefore, no adverse cumulative construction noise impact would be anticipated.

Retrofitting of Noise Barriers on San Tin Highway

- 2.4.4 This concurrent project, which is located on San Tin Highway, is currently under study without a confirmed implementation programme. As such, detailed information on the construction activities, timeline, and use of PME is not available at the time of this assessment. Therefore, cumulative construction noise impact with this concurrent project is not included in this CNMP.

Other Concurrent Projects

- 2.4.5 Other concurrent projects, including, Site Formation and Infrastructure Works for Public Housing Development at Sha Po, Yuen Long, First Phase Development of the New Territories North of San Tin/Lok Ma Chau Development Node (STLMC DN), Proposed Residential Development at Various Lots in D.D. 104 and the adjoining government land in Yuen Long, N.T. and Proposed Low-rise and Low-density Residential Development at Various Lots and their Adjoining Government Land in D.D. 104, East of Kam Pok Road, Mai Po, Yuen Long, N.T. are located at more than 300m from the Contract 1 or the representative NSRs, therefore, no adverse cumulative construction noise impact would be anticipated.

3. PREDICTION OF CONSTRUCTION NOISE IMPACT (UNMITIGATED SCENARIO)

- 3.1.1 Based on the construction programme and construction plant inventory for the Project presented in **Appendices 2.1** and **2.2**, exceedances of the construction noise criteria were predicted at all representative NAPs with no mitigation measures in place. Details of the unmitigated construction noise assessment are presented in **Appendix 3.1**, with the results summarised in **Table 3.1**. The predicted maximum construction noise levels at the representative NAPs due to the Project would range from 76 to 88 dB(A).
- 3.1.2 The predicted cumulative construction noise levels at the representative NAPs, due to the construction activities (unmitigated scenario) under Contract 1 and concurrent project, i.e., Northern Link Main Line (taking into account the mitigation measures recommended in its pre-tender CNMP¹), would range from 77 to 90 dB(A), exceeding EIAO-TM criterion of 75 dB(A) and 70 dB(A) for residential buildings and places for public worship, respectively.

Table 3.1 Predicted Maximum Construction Noise Levels (Unmitigated Scenario)

NAP ID	Max. Predicted Construction Noise Level, L _{eq(30min)} dB(A) ⁽¹⁾ ⁽²⁾		Noise Criterion, L _{eq(30min)} , dB(A)
	Contract 1	Cumulative	
THP-C1	78	78	75
THP-C2a	82	82	75
THP-C2b	85	85	75
THP-C3	84	84	75
LMV-C1	84	84	75
LMV-C2	87	87	75
WTT-C1	81	81	75
WTT-C2	83	83	75
WTT-C3	80	80	75
EP-C1	84	84	75
TV-C1	80	80	75
TV-C2	80	80	75
GV-C1	84	84	75
CYR-C1	83	83	75
CYR-C2	88	88	75
CYR-C3	82	82	75
CYR-C4	76	77	75
CSR-C1	85	85	75
CSR-C2	87	87	75
WB-C1	80	80	70
L3-C1	83	83	75
L3-C2	78	78	75
L3-C3	78	78	75
D1-C1a	89	89	75

¹ Northern Link Construction Noise Management Plan (December 2024)(https://www.epd.gov.hk/eia/files/applications/en/pp_346/aep_3316/progress/action_174106/NOL_CNMP_v3_combined.pdf)

NAP ID	Max. Predicted Construction Noise Level, L _{eq(30min)} dB(A) ⁽¹⁾ ⁽²⁾		Noise Criterion, L _{eq(30min)} , dB(A)
	Contract 1	Cumulative	
D1-C1b	84	84	75
D1-C2	85	85	75
D1-C3	82	82	75
D1-C4	84	84	75
D1-C5	80	80	75
D1-C6	85	85	75
YTMT-C1	90	90	75
YTMT-C2	90	90	75
YTMT-C3	84	84	75
YTMT-C4	81	81	75
TMB-C1	81	81	75
TMB-C2	78	78	75

Notes:

(1) Predicted construction noise level is rounded to nearest integer for comparison with the noise criterion.

(2) **Boldfaced** values indicate exceedance to the noise criterion.

- 3.1.3 With the noise exceedances predicted, direct noise mitigation measures, as recommended in **Section 4**, are required to alleviate the adverse construction noise impact on the affected NSRs.

4. MITIGATION OF ADVERSE CONSTRUCTION NOISE IMPACTS

4.1 Use of Quieter Construction Method

- 4.1.1 Site clearance works under Contract 1 will involve demolition of existing structures and hard pavement. The preliminary construction methodology originally proposed the use of breakers, excavator mounted (hydraulic). However, the construction noise impact assessment indicates that extensive use of hydraulic breakers (e.g. 2 nos. in Activity SC and 4 nos. in Activity SC_2) would result in exceedance of the relevant construction noise criteria at nearby NSRs.
- 4.1.2 To reduce noise generation at source, the Contractor should, wherever practicable, adopt alternative non-percussive or quieter demolition methods for site clearance, including:
- use of hydraulic crushers for demolition of existing structures; and
 - use of high-pressure water jetting or diamond saw cutting for breaking of existing ground pavement.
- 4.1.3 These methods are inherently quieter than hydraulic breakers and can substantially reduce noise emissions associated with percussive breaking. Other relevant quieter construction methods recommended in *EIAO Guidance Note No. 9/2023 or ProPECC PN 1/24 - Minimizing Noise from Construction Activities* should be fully explored before using hydraulic breakers for site clearance works.

4.2 Use of Quieter Model of PME

- 4.2.1 With reference to the approved CNMP for Construction and Operation of Carriageway Bridge for Development of Tseung Kwan O Area 132² (TKO 132 CNMP), a quieter model of PME will be adopted instead of the hydraulic breakers to minimize the construction noise impact. Details of this quieter model of PME are presented in the brochure and test report attached in **Appendix 4.2**, which is extracted from the TKO 132 CNMP, and summarized in **Table 4.1**.

Table 4.1 Summary of Quieter PME to be Adopted

PME to be Replaced	Quieter Model of PME to be Adopted	SWL, dB(A)
Breaker, excavator mounted (hydraulic)	Kubota U55-4 excavator rig, with HushTec Construction Barrier	103

- 4.2.2 Hydraulic breakers should only be used where the above proposed quieter model of PME is demonstrated to be impracticable or ineffective, due to site constraints, structural conditions or engineering requirements, etc. Such justification should be reviewed and agreed by the Engineer prior to adoption of hydraulic breakers.

4.3 Use of Quality Powered Mechanical Equipment (QPME)

- 4.3.1 The quantities of QPME used for Contract 1 are presented in the plant inventory (mitigated scenario) in **Appendix 4.1**, while their utilisation in each construction activity are detailed in **Appendix 4.2**. A summary of the QPME to be adopted is provided in **Table 4.2**. The Contractor should adopt QPME or PME with the same or lower SWL whenever the specified equipment model is not available to the Contractor at specific time periods.

² CNMP for Construction and Operation of Carriageway Bridge for Development of Tseung Kwan O Area 132 submitted under EP-667/2025
(https://www.epd.gov.hk/eia/files/applications/en/pp_360/aep_6142/progress/action_178957/C7%20CNMP_DP_combine%20w%20sign.pdf)

Table 4.2 Summary of SWL of Recommended QPME

QPME	QPME Reference Number	Brand	Model Number	SWL, dB(A)
Crane, mobile	EPD-16208	ZOOMLION	ZCT1000V532	100
Excavator, wheeled/tracked	EPD-16597	SANY	SY155U	101
Road Roller	EPD-15988	HITACHI	ZC220P-6	94
Excavator, wheeled/tracked	EPD-16432	ZOOMLION	ZE135G	98
Bulldozer, tracked	EPD-15909	KOMATSU	D65EX-16	108

4.4 Provision of Temporary Noise Barrier

- 4.4.1 With the adoption of quieter construction methods and use of Quieter PME and QPME mentioned above, construction noise exceedances are still predicted at few representative NAPs, namely NAP CYR-C3, D1-C1a, D1-C4, D1-C6, YTMT-C1 and YTMT-C2, during site formation works at C1-W5, C1-W8, C1-W13, C1-W22, C1-W32 and C1-W36, and land decontamination works at C1-W11. In order to further mitigate the exceedances, fixed temporary noise barriers are recommended to be installed at those work areas.
- 4.4.2 The extent and indicative locations of the proposed fixed temporary noise barriers are shown in **Appendix 4.3**. Given that the nearby NSRs in the vicinity of these work areas are predominantly low-rise buildings of approximately 1- to 2-storey, a barrier height of approximately 6 m is considered sufficient to effectively screen the direct noise transmission path.
- 4.4.3 The Contractor should be responsible for the detailed design, installation and maintenance of the fixed temporary noise barriers, taking into account site constraints, construction sequence and safety considerations, while ensuring that the performance of the barriers is consistent with the assumptions adopted in the quantitative construction noise assessment (i.e. noise reduction of 10 dB(A)). The fixed noise barriers should be designed and erected to effectively intercept the line of sight between the NSRs and the relevant construction activities and provide continuous screening with no gaps or openings. The surface density of barrier should be at least 10 kg/m² or equivalent performance to provide sufficient attenuation to the nearby NSRs.
- 4.4.4 Notwithstanding the above, the provision of fixed temporary noise barriers may not be required if the affected NSRs have been resumed, vacated, or are no longer in use due to this Project or other concurrent projects, subject to verification of the prevailing site conditions and agreement by the Engineer.

4.5 Provision of Enhanced Hoarding

- 4.5.1 Enhanced hoarding with a minimum height of 2.4 m above ground level and adequate surface density (at least 10 kg/m² or equivalent performance) will be provided to protect NSRs nearby, particularly those relatively dense residential estates and villages such as La Maison Vineyard, Vineyard, and Greenacres Villa House. Gaps and openings at joints should be avoided to ensure acoustic performance. The enhanced hoarding is expected to achieve a maximum noise reduction of up to 10 dB(A). However, as the detailed implementation, including the exact locations and design, of the enhanced hoarding will be further determined by the contractor during the pre-construction stage, the associated noise reduction has not been included in this assessment as a conservative approach.

4.6 Good Site Practice

- 4.6.1 To further minimize construction noise impacts, the following good site practice and noise

management technique presented in Section 4.5.20 of the approved EIA Report should be properly implemented:

- Only well-maintained PME to be operated on-site and should be serviced regularly during construction works;
- Silencers or mufflers on construction equipment should be utilised (if appropriate) and should be properly maintained during construction;
- Mobile plant, if any, should be sited as far away from NSRs as possible;
- Machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum;
- Plant known to emit noise strongly in one direction should, wherever possible, be orientated to direct noise away from the nearby NSRs; and
- Material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities.

4.7 Effectiveness of Recommended Mitigation Measures

4.7.1 Mitigation measures, including the use of quieter construction method, use of QPME and good site practices have been proven to be effective and widely adopted in Hong Kong for the purpose of reducing construction noise impact to NSRs. These mitigation measures are also documented in EPD website as part of the construction noise mitigation measures. The noise reduction effectiveness of using quieter model of PME was demonstrated in an on-site noise measurement and adopted in a CNMP of other project (**Section 4.2** refers). Provision of fixed temporary noise barriers was considered in this CNMP under the mitigated scenario, which demonstrated that the construction noise levels would be in compliance with relevant noise criteria as presented in **Section 2.1**. Implementation of enhanced hoarding will be further determined during pre-construction stage to provide additional noise reduction benefits by screening off the line-of-sight of the adjacent noise sensitive receivers, such as La Maison Vineyard, Vineyard, and Greenacres Villa House, NSRs to the north of NTM Drainage Channel etc.

4.8 Prediction and Evaluation of Environmental Impact (Mitigated Scenario)

4.8.1 With the implementation of mitigation measures as recommended in **Sections 4.1** to **4.3**, the predicted construction noise assessment results are summarized in **Table 4.3** and detailed in **Appendix 4.4**.

Table 4.3 Predicted Maximum Construction Noise Level (Mitigated Scenario)

NAP ID	Max. Predicted Construction Noise Level, $L_{eq(30min)}$, dB(A) ⁽¹⁾		Noise Criterion, $L_{eq(30min)}$, dB(A)
	Contract 1	Cumulative	
THP-C1	63	63	75
THP-C2a	72	72	75
THP-C2b	75	75	75
THP-C3	75	75	75
LMV-C1	71	71	75
LMV-C2	73	73	75
WTT-C1	68	68	75
WTT-C2	69	69	75
WTT-C3	65	65	75

NAP ID	Max. Predicted Construction Noise Level, L _{eq} (30min), dB(A) ⁽¹⁾		Noise Criterion, L _{eq} (30min), dB(A)
	Contract 1	Cumulative	
EP-C1	69	69	75
TV-C1	65	65	75
TV-C2	65	65	75
GV-C1	70	70	75
CYR-C1	74	74	75
CYR-C2	75	75	75
CYR-C3	66	75	75
CYR-C4	64	73	75
CSR-C1	72	72	75
CSR-C2	74	74	75
WB-C1	69	69	70
L3-C1	73	73	75
L3-C2	69	69	75
L3-C3	69	69	75
D1-C1a	75	75	75
D1-C1b	74	74	75
D1-C2	75	75	75
D1-C3	72	72	75
D1-C4	74	74	75
D1-C5	73	73	75
D1-C6	74	74	75
YTMT-C1	74	74	75
YTMT-C2	74	74	75
YTMT-C3	71	71	75
YTMT-C4	68	68	75
TMB-C1	68	68	75
TMB-C2	64	64	75

Note:

(1) Predicted construction noise level is rounded to nearest integer for comparison with the noise criterion.

4.9 Implementation Schedule of the Construction Noise Mitigation Measures

4.9.1 The implementation schedule of noise mitigation measures recommended in the approved EIA Report, EM&A manual and this CNMP are summarized in **Table 4.4**.

Table 4.4 Implementation Schedule of the Construction Noise Mitigation Measures

EIA Ref.	EP Condition	Recommended Mitigation Measures	Construction Zone	Timing	Implementation Party	Overall Environmental Performance Target
S.4.5.21 – S.4.5.25	-	Use of quieter construction method and QPME as necessary (See Section 4.1 and Section 4.3)	All	Throughout construction phase	Contractor	EIAO-TM
-	-	Use of quieter model of PME (See Section 4.2)	All	Throughout construction phase	Contractor	EIAO-TM
S.4.5.26	-	Use of fixed noise barriers (See Section 4.4)	C1-W5, C1-W8, C1-W11, C1-W13, C1-W22, C1-W32 and C1-W36	Site formation works at C1-W5, C1-W8, C1-W13, C1-W22, C1-W32 and C1-W36, land decontamination works at C1-W11, until the NSRs nearby being resumed	Contractor	EIAO-TM
S.4.5.6	-	Provision of Enhanced Hoarding	Site boundary close to NSRs	Throughout construction phase until the NSRs nearby being resumed	Contractor	EIAO-TM
S.4.5.20	-	Good site practice and noise management techniques should be practised during each phase of construction: - Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme; - Machines and plants (such as trucks, cranes, etc.) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum;	All	Throughout construction phase	Contractor	EIAO-TM

EIA Ref.	EP Condition	Recommended Mitigation Measures	Construction Zone	Timing	Implementation Party	Overall Environmental Performance Target
		- Plants known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs; - Silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works; - Mobile plants should be located as far away from NSRs as possible and practicable; and - Material stockpiles, site office and other structures should be effectively utilized, where practicable, to screen noise from on-site construction activities.				
S.4.5.27	2.16	Pre-construction Construction Noise Mitigation Plan (CNMP) should be submitted to EPD before commencement of construction works, according to requirements in EP Condition 2.16. If there is any change to the recommended construction noise mitigation measures, plant inventory and/or construction noise impact monitoring and audit programme in the CNMP, updated CNMP should be submitted to EPD before the implementation of any such change.	All	2 months before construction or 1 month before the implementation of any such change	Contractor	EIAO-TM

5. CONSTRUCTION NOISE IMPACT MONITORING AND AUDIT PROGRAMME

5.1 Monitoring Locations for Construction Noise

- 5.1.1 Construction noise monitoring stations for Contract 1 have been identified according to the assessment results and are proposed in **Table 5.1**. Their locations are presented in **Figure 5.1**.

Table 5.1 Construction Noise Monitoring Stations for Contract 1

Noise Monitoring Station No.	Corresponding Construction Zone	Nearest Representative NSRs
CM1	C1-W2	23 La Maison Vineyard
CM2	C1-W3	Elegant Park Block D
CM3	C1-W1	Block 3, Transitional Housing Project at Ngau Tam Mei South (Chun Shin Road), Yuen Long
CM4	C1-W8	Temporary Structure near Chuk Yau Road
CM5	C1-W11	Wat Buddhahamaram
CM6	C1-W13	Village House to the south of proposed Road D1
CM7	C1-W16	Temporary Structure to the east of Proposed Road L3
CM8	C1-W32	Village House in Yau Tam Mei Tsuen
CM9	C1-W27	Village House in Yau Tam Mei Tsuen

- 5.1.2 To allow easy accessibility to the monitoring equipment for routine maintenance and calibration, and more effective evaluation of the construction noise performance, the construction noise monitoring stations are proposed to be set up within the construction site along the site boundary, i.e., immediately inside and 1 m from the site hoarding. Locations of the monitoring stations may be adjusted, subject to the site conditions. In such cases, the Environmental Team (ET) should propose the updated monitoring locations and seek approval from the Engineer's Representative (ER) and Independent Environmental Checker (IEC), and agreement from EPD.
- 5.1.3 When alternative monitoring locations are proposed, the monitoring locations should be chosen based on the following criteria:
- (i) at locations close to the major site activities which are likely to have noise impacts;
 - (ii) close to the NSRs; and
 - (iii) at locations that allow safe access for operation, maintenance and calibration of the monitoring equipment.
- 5.1.4 The construction noise monitoring station should normally be at a point 1m from the hoarding and be a position of at least 1.2 m above the ground. If there is a problem with access to the normal monitoring position, an alternative position should be chosen, and a correction to the measurements should be made. For reference, a correction of +3dB(A) should be made to the free field measurements. The ET should agree with the ER and IEC on the monitoring position and the corrections adopted.
- ### 5.2 Noise Parameter
- 5.2.1 The construction noise level should be measured in terms of 5-minute A-weighted equivalent

continuous sound pressure level (i.e. L_{Aeq} 5 mins)³, in successive intervals, for the construction period as deemed necessary. Supplementary information for data auditing and statistical results including L_{max} , L_{10} and L_{90} should also be obtained for reference.

5.3 Monitoring Equipment and System

- 5.3.1 A real-time noise monitoring will be adopted to enhance the effectiveness of construction noise management. The real-time monitoring system aims to provide continuous, high-resolution noise data, enabling proactive identification and timely mitigation of potential noise exceedances during construction works.
- 5.3.2 The real-time noise monitoring system to be deployed under Contract 1 should comprise an integrated set of noise monitoring, data acquisition, transmission and analysis components.
- 5.3.3 The monitoring system should include sound level meters complying at least Class 2 conforming to the specifications of relevant International Electrotechnical Commission standards, i.e. IEC 61672-1, National Standards of the People's Republic of China, i.e. GB/T3785.1 or other equivalent updated standards, with a measurement frequency range of approximately 20 Hz to 20 kHz. The system should be capable of measuring and recording key noise parameters including instantaneous sound pressure level (L_p), equivalent continuous sound pressure level (L_{eq}), statistical noise levels (L_n), maximum sound pressure level (L_{max}) and minimum sound pressure level (L_{min}).
- 5.3.4 The monitoring system should support high temporal resolution data logging, with a minimum recording interval of up to 1-second resolution, allowing detailed tracking of noise fluctuations associated with construction activities. The system should also allow flexible aggregation of data into longer intervals (e.g. 1-minute, 5-minute and 30-minute L_{eq}) for compliance assessment and reporting purposes.
- 5.3.5 Each monitoring station should be equipped with a real-time data acquisition and communication unit, capable of:
- continuous data collection and storage (minimum storage capacity of 60 days of raw monitoring data and operational logs);
 - automatic real-time and scheduled data transmission; and
 - remote configuration and control of monitoring parameters.
- 5.3.6 Data transmission should be achieved primarily through 4G or 5G wireless communication, with provision for wired communication as backup. To enhance operational resilience, the system shall be capable of:
- automatic data buffering during temporary communication failures and subsequent data recovery;
 - automatic system restart in case of system interruption; and
 - maintaining a data capture rate of not less than 95%.
- 5.3.7 Each monitoring station should be equipped with an all-weather outdoor microphone system, designed for long-term deployment under site conditions, including:
- weatherproofing against rain, dust and wind;
 - windshields capable of withstanding high wind speeds;
 - shock-resistance to withstand shocks from construction activities, and;
 - protection against other environmental interferences and physical disturbances.
- 5.3.8 Meteorological sensors (including wind speed, wind direction, temperature, humidity and atmospheric pressure) should also be provided to support data validation and interpretation of

³ In order to compare the measured noise level with the noise limits for daytime construction activities, the noise measurement results obtained in 6 consecutive sampling time periods (STP) of 5 minutes should be processed for computing a L_{Aeq} (30 mins).

monitoring results.

- 5.3.9 The system should include a trigger-based audio recording function, whereby sound recordings are automatically activated when noise levels exceed a pre-defined threshold. The recorded audio data, in the form of compressed audio (e.g., MP3, WAV) with minimum 16-bit resolution and 16 kHz sampling rate, should be stored locally and made available for remote playback. This function facilitates identification of dominant noise sources and verification of construction-related noise events.
- 5.3.10 Monitoring data should be transmitted to a centralised cloud-based platform with a minimum storage capacity of 180 days of raw monitoring data, providing:
- real-time visualisation of noise levels from all monitoring stations; and
 - historical data analysis and trend evaluation.
- 5.3.11 The platform should support remote access by the ET, ER, IEC and EPD.
- 5.3.12 Monitoring stations should be powered by the site power or solar panel to enable continuous operation. The power supply should be properly maintained to ensure stable operation of the monitoring stations under typical site conditions.
- 5.3.13 If temporary suspension of noise monitoring is found/required, the ET should report to the Engineer's Representative and IEC within 24 hours and provide reason for the suspension.

5.4 Calibration and Data Quality Assurance

- 5.4.1 Remote self-check should be performed daily. Monitoring data over the immediate 24-hours period before checking may be accepted as valid if the calibration levels agree within 1.0 dB(A). Otherwise, those monitoring data should be marked, and the noise monitoring equipment should be checked on-site using an acoustic calibrator generating a known sound pressure level at a known frequency.
- 5.4.2 The monitoring system should support standard acoustic calibration procedures, including the use of external acoustic calibrators. Calibration should be carried out prior to and after deployment, and at a frequency not less than once a month during monitoring period. Measurements data over the immediate 24-hours period should be accepted as valid if the calibration drift is within ± 1.0 dB(A). Otherwise, the noise monitoring equipment should be inspected and calibrated by a competent calibration body; the monitoring data over the immediate 24-hours period should be marked, and the frequency of on-site checking using acoustic calibrator shall be increased as necessary.
- 5.4.3 The noise monitoring equipment should be calibrated traceable to the International System of Units (SI), and be performed by a competent calibration body, i.e. a national metrology institute (e.g., NIM, NPL, NIST), or a calibration laboratory accredited by HOKLAS, or other calibration laboratories accredited by Mutual Recognition Arrangements Partners of HOKLAS. The validity period of the calibration should align with the manufacturer's recommendations and/or the period specified by the accredited calibration laboratory. A valid calibration certificate should be maintained at all times.
- 5.4.4 Noise measurements should be subject to data quality control procedures, including validation against meteorological conditions and exclusion of invalid data affected by adverse weather conditions.

5.5 Baseline and Monitoring

- 5.5.1 Baseline noise monitoring should be conducted prior to the commencement of construction works using the real-time monitoring system for a period of at least two weeks, where practicable. During the baseline monitoring, there should not be any construction activities as far as practicable in the vicinity of the designated monitoring stations and baseline noise levels

should be established for subsequent comparison with impact monitoring results.

5.6 Action and Limit Levels

5.6.1 The action and limit levels for construction noise are defined in **Table 5.2**.

Table 5.2 Action and Limit Levels for Construction Noise Impact Monitoring

Station No.	Nearest Representative NSR (NAP)	Time Period	Action Level	Limit Level Adjustment			
				Noise Criterion at NSR, $L_{eq(30min)}$, dB(A)	Distance Correction Factor, dB(A) ($20\log(R/r)^{(3)}$)	Barrier Correction Factor, dB(A) ⁽⁴⁾	Adjusted Limit Level, $L_{eq(30min)}$, dB(A) ⁽⁵⁾
				(A)	(B)	(C)	(A)+(B)+(C)
CM1	23 La Maison Vineyard (LMV-C2)	0700 - 1900 hours on normal weekdays ⁽¹⁾	3 consecutive triggering alert(s) ⁽²⁾ of the measured L_{Aeq} (5 mins) with an increasing trend of noise levels	75	4 (i.e. $20\log(76/49)$)	Not Applicable (N/A) ⁽⁶⁾	79
CM2	Elegant Park Block D (EP-C1)			75	- ⁽⁷⁾	N/A ⁽⁶⁾	75
CM3	Block 3, Transitional Housing Project at Ngau Tam Mei South (Chun Shin Road), Yuen Long (THP-C3)			75	4 (i.e. $20\log(46/30)$)	N/A ⁽⁶⁾	79
CM4	Temporary Structure near Chuk Yau Road (CYR-C2)			75	- ⁽⁷⁾	10	85
CM5	Wat Buddhahamaram (WB-C1)			70	8 (i.e. $20\log(119/49)$)	N/A ⁽⁶⁾	78
CM6	Village House to the south of proposed Road D1 (D1-C4)			75	5 (i.e. $20\log(87/49)$)	10	90
CM7	Temporary Structure to the east of Proposed Road L3 (L3-C1)			75	5 (i.e. $20\log(91/49)$)	N/A ⁽⁶⁾	80
CM8	Village House in Yau Tam Mei Tsuen (YTMT-C2)			75	- ⁽⁷⁾	10	85
CM9	Village House in Yau Tam Mei Tsuen (YTMT-C4)			75	4 (i.e. $20\log(79/49)$)	N/A ⁽⁶⁾	79

Notes:

- (1) If works are to be carried out during restricted hours, the limit levels should be corrected according to the conditions stipulated in the Construction Noise Permit issued by the Noise Control Authority.
- (2) The establishment of triggering alert aims to provide an indication of any potential exceedance of the adjusted limit level. Usually 3 dB(A) below the adjusted limit level would be suffice. The triggering alert established at a level with less than 2 dB(A) from the adjusted limit level should be reviewed and justified by the ETL with the consideration of baseline noise monitoring results, and agreed by the Engineer's Representative and IEC.
- (3) In the distance correction factor calculation:
 - "R" refers the distance in metres between the nearest NAP and the notional source position.
 - "r" refers to the distance in metres between the monitoring station and the notional source position.
 For CM1, CM5, CM6, CM7 and CM9, these monitoring stations will capture construction noise from various workfronts across a large site area. Therefore, the notional source was assumed to be 50m from the site boundary, and r is 49m (i.e. 50m – 1m from site boundary).

- (4) The location of the proposed fixed barriers is presented in **Appendix 4.3**.
- (5) No façade reflection correction is applied as the station is positioned at 1 m from the site hoarding, simulating the situation that setting up the monitoring station in front of the NSR façade.
- (6) No barrier correction is applied as no fixed barrier is proposed at the site boundary adjacent to the monitoring station. In addition, as the detailed implementation, including the exact locations and design, of the hoarding / enhanced hoarding will be further determined by the contractor during the pre-construction stage, the associated noise reduction has not been included in this assessment as a conservative approach.
- (7) Due to proximity of the monitoring station to the nearest NSR, no distance correction is applied.

5.7 Event and Action Plan

- 5.7.1 Should non-compliance of the noise criteria occur, actions in accordance with the Event and Action Plan in **Table 5.3** should be carried out.

Table 5.3 Event and Action Plan for Real Time Construction Noise Impact Monitoring

Event	Action			
	ET	Contractor	IEC	ER
Action level	1. Notify IEC, ER and Contractor on the exceedance. 2. Conduct investigation to review if the exceedance(s) are related to construction of the Project. 3. Review with the Contractor on the need to implement any additional measures, and if necessary, formulate the remedial additional measures with the Contractor. 4. Monitor the effectiveness of the Contractor's additional measures (if any). 5. Summarize the triggering alerts, their relevance to construction activities, actions taken by the Contractor, and the effectiveness of additional measures (if any) in monthly EM&A report.	1. Assist ET to conduct the investigation. 2. Discuss with the ET on the need to implement any additional measures, and if necessary, and formulate the additional measures with ET. 3. Implement the additional measures (if any).	1. Review the additional measures proposed by the Contractor and advise the ER accordingly. 2. Audit the effectiveness of the additional measures.	1. Acknowledge notification and report from the Contractor. 2. Review the additional measures proposed by the Contractor. 3. Conduct site check to ensure additional measures (if any) is properly implemented.
Limit level	1. Notify IEC, ER, Contractor and EPD on the exceedance. 2. Conduct investigation to review if the exceedance(s) are related to construction of the Project. 3. If the exceedance is related to construction activities of the Project, recommend the Contractor to take immediate actions and notify IEC and ER. 4. For exceedance related to construction activities, report the	1. Assist ET to conduct the investigation. 2. If the exceedance is related to construction activities of the Project, take immediate actions and follow instruction from ER to stop further exceedance. 3. Submit report for exceedance related to construction activities of the Project, immediate action	1. Audit the immediate actions taken by the Contractor. 2. If exceedance due to construction activities of the Project continues, liaise with ER and the Contractor to identify what portion of works is responsible and recommend on further immediate actions, which may include suspension of any	1. Acknowledge notification and report from the ET and Contractor. 2. Conduct site check to ensure immediate actions taken by the Contractor to stop further exceedance due to construction activities of the Project. 3. Review the remedial measures proposed by the Contractor.

Event	Action			
	ET	Contractor	IEC	ER
	investigation findings, immediate actions taken by the Contractor and their effectiveness in stopping the exceedance to IEC, ER and EPD within 2 working days. 5. Monitor the implementation of remedial measures and review their effectiveness to avoid recurrence of exceedance. 6. Summarize all exceedance records, their relevance to construction activities, immediate actions and remedial measures taken by the Contractor, and the effectiveness of remedial measures in monthly EM&A report.	taken and propose remedial measures to avoid recurrence of exceedance to ER, ETL and IEC for review within 2 working days for agreement. 4. Implement the remedial measures. 5. If required, resubmission of remedial measures proposal to ET, IEC and ER to improve effectiveness upon receipt instruction from the ER.	portion of works (if required) to stop further exceedance. 3. Audit the implementation of remedial measures.	4. Conduct site check to ensure remedial measures is properly implemented. 5. If exceedance related to the construction activities of the Project continues, taking IEC's recommendation to instruct the Contractor to implement further immediate actions to stop further exceedance. 6. If required, request the Contractor resubmission of remedial measures proposal to improve effectiveness.

5.8 Site Inspection

- 5.8.1 Regular site inspections should be conducted at least once per week, according to Section 3.6 of the EM&A Manual, to ensure that the effectiveness of implemented noise mitigation measures and compliance of the construction noise criteria.

5.9 Contingency Plan

- 5.9.1 While a real-time noise monitoring system is proposed to enhance the effectiveness of construction noise management, it is recognised that there may be circumstances, such as unexpected technical failures and power outage, which may cause the continuous real-time monitoring to be temporarily suspended. Under such circumstances, the ET should report the suspension to IEC within 24 hours and arrange resumption within 48 hours.
- 5.9.2 Conventional construction noise monitoring approach in accordance with the established EM&A practice, involving periodic manual measurements of Leq (30 minutes) using portable sound level meters, may be implemented as a contingency arrangement if the resumption of real-time monitoring is not feasible within 48 hours. The arrangement should be proposed by the ET with justification, subject to approval by the ER and the IEC, and agreement by EPD.

6. CLAUSES RECOMMENDED IN THE TENDER DOCUMENT AND CONTRACT SPECIFICATIONS

6.1 Tender Document

- 6.1.1 With reference to Clause 6.1 of the EIAO-GN 9/2023, and Annex A of ProPECC PN 1/24, the EPD's Recommended Pollution Control Clauses (RPCC) for Construction Contracts should be incorporated in the tender document. The noise-relevant clauses are listed in **Table 6.1**.

Table 6.1 Relevant Clauses Recommended for Tender Document

NOISE CONTROL		
Noise control - general requirements	(1)	The Contractor shall observe and comply with the Noise Control Ordinance and its subsidiary regulations.
	(2)	The Contractor shall ensure that all plants and equipment to be used on the Site are properly maintained in good operating condition and noisy construction activities shall be effectively sound-reduced by means of silencers, mufflers, acoustic linings or shields, acoustic sheds or screens or other means, to avoid disturbance to any nearby noise sensitive receivers.
	(3)	For carrying out any construction work other than percussive piling during the time period from 0700 to 1900 hours on any day not being a general holiday (including Sundays), the Contractor shall comply with the following requirements: (a) The noise level measured at 1m from the most affected external facade of the nearby residential noise sensitive receivers from the construction works alone during any 30-minute period shall not exceed an equivalent continuous sound level (Leq) of 75dB(A). (b) The noise level measured at 1m from the most affected external facade of the nearby schools from the construction works alone during any 30-minute period shall not exceed an equivalent sound level (Leq) of 70 dB(A) [65 dB(A) during school examination periods]. The Contractor shall liaise with the schools and/or the Hong Kong Examinations and Assessment Authority to ascertain the exact dates and times of all examination periods during the course of the contract. (c) Should the limits stated in the above sub-clause(a) and (b) be exceeded and be related to the works, the construction shall stop and shall not re-commence until appropriate measures acceptable to the Engineer that are necessary for compliance have been implemented. (d) The Contractor shall adopt, where necessary and practicable, the use of quieter construction equipment and/or methods when carrying out construction works, including the demolition works, site formation works, infrastructure works, etc. Examples of quieter construction methods and equipment can be found on the EPD's website https://www.epd.gov.hk/epd/misc/construction_noise/content/s/index.php/en/home2/quieter-construction-methods.html (e) No percussive piling shall be carried out, unless the Engineer considers other non-percussive means (such as bored piling, press-in piling, helical piling) not practical. (f) Rock excavation or fracture shall be carried out by non-explosive or non-percussive means (such as chemical expansion agent, hydraulic splitting, crushing) unless the Engineer considers them not practical. When blasting is to be carried out, less noisy technique (such as pulse plasma fragmentation) shall be considered unless the Engineer

		considers it not practical. Rock blasting using explosives should only be carried out as a last resort, and shall not be done during 7 p.m. to 7 a.m. and any time on a general holiday, including Sunday, to avoid noise impact at sensitive hours.
	(4)	Before the commencement of any work, the Engineer may require the methods of working, plant equipment and sound-reducing measures to be used on the Site to be made available for trial demonstration inspection and approval to ensure that they are suitable for the project.
	(5)	The Contractor shall devise, arrange methods of working and carry out the Works in such a manner so as to minimise noise impacts on the surrounding environment, and shall provide experienced personnel with suitable training to ensure that these methods are implemented.
	(6)	Notwithstanding the requirements and limitations set out in Clause (3) above and subject to compliance with Clauses (2) and (5) above, the Engineer may upon application in writing by the Contractor, allow the use of equipment and the carrying out of any construction activities for any duration provided that he is satisfied with the application which, in his opinion, is considered to be of absolute necessity and adequate noise insulation has been provided to the schools to be affected, or of emergency nature, and not in contravention with the Noise Control Ordinance in any respect.
	(7)	The Contractor shall, when necessary, apply for a construction noise permit in accordance with the Noise Control (General) Regulations prior to the commencement of the relevant part(s) of the works, display the permit as required and provide a copy to the Engineer.
	(8)	Measures that are to be taken to protect adjacent noise sensitive receivers, if necessary and practicable, shall include, but not be limited to, the use of quieter construction methods and equipment, and adequate noise barriers/enclosures. The barriers/enclosures shall be of substantial construction and designed to reduce transmission of noise (simple plywood hoarding will not be sufficient). The barriers/enclosures shall be designed to meet the requirements given on the EPD's website: https://www.epd.gov.hk/epd/misc/construction_noise/contents/index.php/en/index.html . The location and details of the barriers/enclosures shall be submitted to the Engineer for approval before works commence adjacent noise sensitive receivers.

6.2 Contract Specifications

- 6.2.1 According to Sections 4.5.19 – 4.5.26 of the approved EIA Report and Annex A of ProPECC PN 1/24, the recommended contract specifications for noise mitigation measures are listed in **Table 6.2**, based on Annex C of the ProPECC PN 1/24.

Table 6.2 Recommended Contract Specifications for Noise Mitigation Measures

Noise Mitigation Measures	(1)	The Contractor shall implement the following good site practices: i. Only well-maintained plant shall be operated on-site and plant shall be serviced regularly during the construction works. ii. Silencers or mufflers on construction equipment shall be utilized and shall be properly maintained during the construction works.
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		iii. Mobile plant, if any, shall be sited as far away from noise sensitive receivers as possible. iv. Machines and plant (such as trucks) that may be in intermittent use shall be shut down between works periods or shall be throttled down to a minimum. v. Plant known to emit noise strongly in one direction shall, wherever possible, be orientated so that the noise is directed away from the nearby noise sensitive receivers. vi. Material stockpiles and other structures shall be effectively utilized, wherever practicable, in screening noise from on-site construction activities.
	(2)	The Contractor shall adopt the following general noise mitigation practices: i. Use non-percussive pile driving methods such as hydraulic press-in method, vibration or jacking method for installing or extracting sheet piles; ii. Use non-percussive equipment such as hydraulic crusher, sawing, coring machines etc. for demolition and concrete breaking work; iii. Close all hoods, cover panels and inspection hatches of powered mechanical plant such as generators, air compressors etc. during operation; iv. Provide noise dampening materials inside and outside refuse chutes during building construction; v. Fit mufflers or silencers, and dampening layer with steel collars to hand held pneumatic breakers; vi. Use Quality Powered Mechanical Equipment (QPME) recognized by the Environmental Protection Department (EPD) as far as practicable. Details of QPME can be found in EPD website at http://www.epd.gov.hk/epd/english/environmentinhk/noise/qpme/index.html. Where a QPME is used, the plant shall be registered with EPD, and a valid label issued by EPD from such registration shall be affixed on the plant at all times and kept legible; and vii. Use of Quieter Construction Methods as far as practicable listed in the EPD website at https://www.epd.gov.hk/epd/misc/construction_noise/contents/index.php/en/home2/quieter-construction-methods.html.
	(3)	The appropriate measure may include provision of an acoustic screen or enclosure to shield the public or NSR from the noisy activity at source or adopt quiet process/plant, except for works under emergency or with the prior agreement of the Engineer that the provision of such is not necessary. The acoustic screen or enclosure shall be made of incombustible and sound insulating material, and securely fixed at the base to avoid overturning. It shall be provided and installed such that no powered mechanical equipment can be seen from the nearby noise sensitive receiver. No gap, hole nor leakage shall be found in the entire screening part of acoustic enclosure, and all joints of baffles or panels shall be well designed to prevent direct leakage of noise under the normal condition. The detailed information including the size and form of the screen or enclosure shall be proposed by the Contractor and submitted to the Engineer for approval before the work commences. The acoustic screen or enclosure shall be securely fixed at the base to avoid overturning. Notwithstanding any approval given, the Contractor shall be fully liable for its design in all respects.

Concrete Removal Works	(4)	For construction activities involving Concrete Removal works, the Contractor shall use the best practicable means to protect nearby noise sensitive receivers from noise nuisance. If the best practicable means cannot be achieved, the Contractor shall provide detailed justifications for any other construction methods used. The general principle in noise reduction of concrete removal works is the minimization of noise from in-situ removal of concrete by percussive breakers, reduction of noisy processes and adoption of quieter methods. These methods of best practicable means shall include but not limited to: i. Use of non-explosive chemical expansion agents instead of explosive chemicals or expansive compounds; ii. Use of high pressure water jetting instead of traditional jackhammers and drill hammers; iii. Use of quieter type wire saws or diamond wire saws for cutting large areas and heavily reinforced concrete; iv. Use of quieter type blade saws utilizing diamond blades with higher speeds and smoother blades reduces excitation of vibration; v. Use of hydraulic crushers for concrete breaking instead of traditional excavator-mounted breakers; vi. Use of handheld concrete crushers instead of traditional jackhammers; vii. Use of diamond coring tools instead of traditional drilling tool; and viii. Use of hydraulic splitters instead of traditional jackhammers and breakers
Demolition Works	(5)	For construction activities involving demolition works, the Contractor shall use the best practicable means to protect nearby noise sensitive receivers from noise nuisance. If the best practicable means cannot be achieved, the Contractor shall provide detailed justifications for any other demolition methods used. The general principle in noise reduction of demolition works is the minimization of noise from in-situ demolition of structures by percussive breakers, reduction of noisy processes and adoption of quieter methods. These methods of best practicable means shall include but not limited to: i. Use of high pressure water jetting instead of traditional jackhammers and drill hammers; ii. Use of hydraulic crushers for concrete breaking instead of traditional excavator-mounted breakers; iii. Use of quieter type wire saws or diamond wire saws for cutting large areas and heavily reinforced concrete; iv. Use of quieter type blade saws utilizing diamond blades with higher speeds and smoother blades reduces excitation of vibration; v. Use of penetrating cone fracture method instead of general chemical explosives; vi. Use of ex-situ demolition methods away from noise sensitive receivers; and vii. Use of diamond coring tools instead of traditional drilling tool.

Site Formation / Excavation and Lateral Support / Foundation Works	(6)	For construction activities involving site formation / excavation and lateral support / foundation works, the Contractor shall use the best practicable means to protect nearby noise sensitive receivers from noise nuisance. If the best practicable means cannot be achieved, the Contractor shall provide detailed justifications for any other construction methods used. The general principle in noise reduction of site formation / excavation and lateral support / foundation works is the minimization of fabrication of building elements in-situ, reduction of noisy processes and adoption of quieter methods. These methods of best practicable means shall include but not limited to: i. Use of silent piling by press-in method instead of traditional massive augering and piling machines or drop hammer for sheet piling / channel planking installation work; ii. Use of a bursting system to replace traditional handheld percussive breakers; iii. Use of non-explosive chemical expansion agents instead of explosive chemicals or expansive compounds; iv. Use of a sheet piling noise reducer such as a suitable shock absorber to reduce collisions between sheet pile / channel planking and holding parts; v. Use of pile driving impact cushions to reduce noise generated by piling impact; vi. Pre-augering/pre-trench/boring pile holes to remove underground obstruction for avoiding hard driving / soften the ground; and vii. Use of crack inducers instead of traditional percussive breakers.
Underground Utility and Piping Works	(7)	For construction activities involving installation of underground utility and piping works, the Contractor shall use the best practicable means to protect nearby noise sensitive receivers from noise nuisance. If the best practicable means cannot be achieved, the Contractor shall provide detailed justifications for any other construction methods used. The general principle in noise reduction of underground utility and piping works is the avoidance of using cut and cover methods, reduction of noisy processes and adoption of quieter methods. These methods of best practicable mean shall include but not limited to: i. Use of the spiral wound rehabilitation technology (SPRTMPE) instead of traditional cut and cover methods; ii. Use of Cured-In-Place-Pipe (CIPP) lining instead of “open, cut and replace” method; and iii. Use of pipe-jacking or micro-tunnelling technology.

6.2.2 According to Sections 4.5.27 – 4.5.28 and Table 4.15 of the approved EIA Report for Development at NTMA and with reference to Annex A of the ProPECC PN 1/24, Contract Specifications for Imposition of CNMP is recommended in below **Table 6.3**, based on Annex C of the ProPECC PN 1/24.

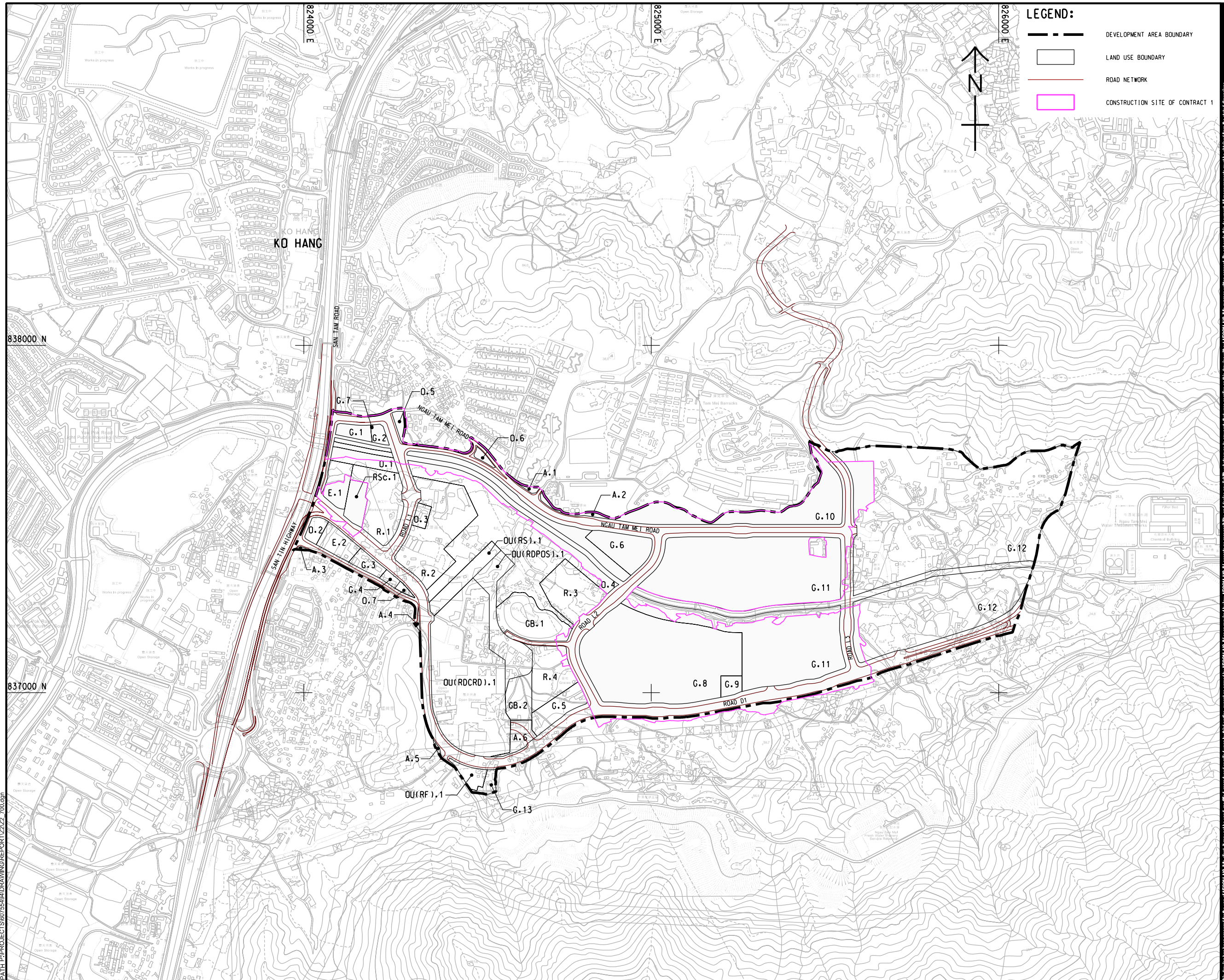
Table 6.3 Recommended Contract Specifications for Imposition of CNMP

NOISE CONTROL		
Noise control – general requirements	(1)	The Contractor shall submit a Pre-construction CNMP to ET, IEC and EPD, based on the latest project design, programme and construction methods according to Condition 2.16 of the Environmental Permit EP-680/2025. A CNMP shall contains the following information, but not limited to: • construction works programme and construction methodology; • powered Mechanical Equipment (PME) list for the construction work; • quantitative construction noise impact assessment including cumulative impact from concurrent projects; • construction noise impact monitoring and audit programme; • list of noise mitigation measures to be adopted; and • an implementation schedule clearly listing out the mitigation measures, the implementation party, location and timing of implementation. Under the circumstances that a CNMP has already been prepared before the construction contract is awarded to a contractor, the Contractor has to verify if there is any change (including the construction noise mitigation measures, monitoring program and/or plant inventory recommended in the previous CNMP, design parameters, etc.) in the course of project implementation. If there is any such change, an updated CNMP shall be submitted to the Client, no later than one month before the implementation of any of such change. The CNMP / updated CNMP shall be prepared and checked by Certified Noise Modelling Professional as recognized by the Hong Kong Institute of Qualified Environmental Professionals Limited or equivalent. The Contractor shall produce an updated CNMP no later than one month before the implementation of any change should there be any changes in project design, plant inventory for different construction phases, noise mitigation measures, etc. All mitigation measures recommended and requirements specified in the CNMP / updated CNMP shall be fully implemented.

7. CONCLUSION

- 7.1.1 This CNMP has identified the representative NAPs within the 300m assessment area of Contract 1. The construction activities of Contract 1 and the concurrent project, i.e., Northern Link Main Line, were identified and considered in the cumulative noise impact assessment under this CNMP.
- 7.1.2 The predicted maximum cumulative construction noise levels at the representative NAPs due to the Project and concurrent project would be up to 90 dB(A) and 80 dB(A), exceeding the noise criterion of 75 dB(A) and 70 dB(A) for residential premises and places for public worship, respectively. Therefore, noise mitigation measures would be required for the construction activities under Contract 1.
- 7.1.3 Based on the construction programme and plant inventory at the time of preparation of this CNMP, with proper implementation of the recommended noise mitigation measures including the use of quiet construction method, quieter model of PME and QPME, erection of noise barriers and good site practices for the Project, which are effective mitigation measures, and the noise mitigation measures for concurrent project as proposed in its CNMP, the predicted maximum cumulative construction noise levels at residential NSRs and Wat Buddhahamaram would be up to 75 dB(A) and 69 dB(A) respectively, complying with the stipulated noise criteria. No adverse construction noise impact would therefore be anticipated due to the construction works under Contract 1. Implementation of enhanced hoarding will be further determined during pre-construction stage to provide additional noise reduction benefits. Construction noise impact monitoring and audit programme requirements have been recommended to check the noise compliance.
- 7.1.4 Tender documents and contract specifications should include the recommended clauses and the recommended mitigation measures in this CNMP to ensure good engineering practice and to minimise inconvenience and environmental nuisance to nearby sensitive receivers.
- 7.1.5 In accordance with the EP requirement, the Contractor should deposit a pre-construction CNMP with EPD no later than 2 months before the commencement of construction works. The relevant parties should implement all the recommended noise mitigation measures in accordance with the implementation schedule in the pre-construction CNMP (or the latest version as agreed by EPD). If there is any change to the recommended construction noise mitigation measures, plant inventory and /or construction noise impact monitoring and audit programme, the Contractor shall conduct deposit an updated CNMP.

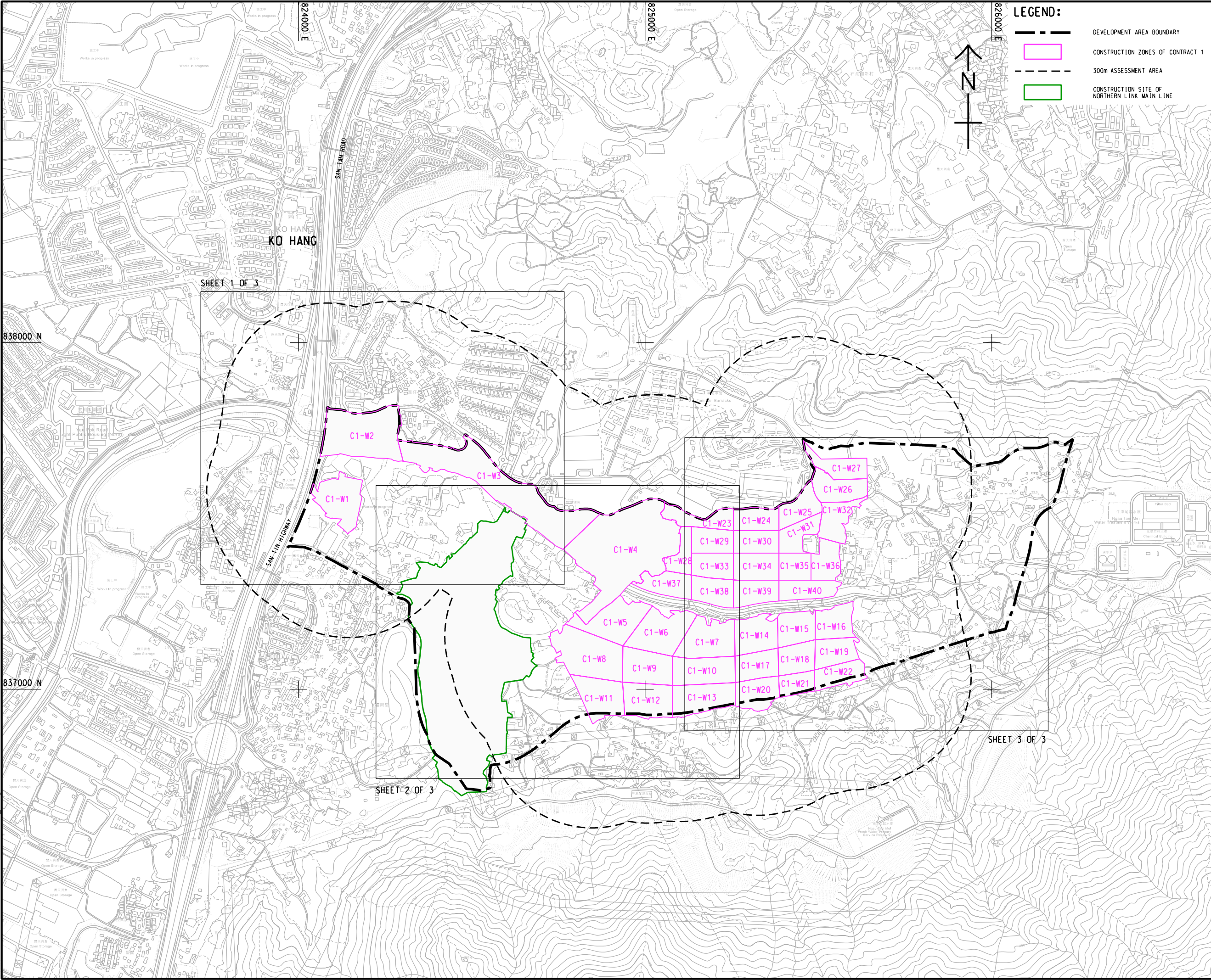
Figures



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Designer:
Project Management Initials:



AECOM



PROJECT
項目
SITE FORMATION AND
INFRASTRUCTURE WORKS
FOR NGAU TAM MEI
NEW DEVELOPMENT AREA –
DESIGN AND CONSTRUCTION

CLIENT
業主
CEDD 土木工程拓展署
Civil Engineering and
Development Department

CONSULTANT
工程顧問公司
AECOM - AIS Joint Venture

SUB-CONSULTANTS
分判工程顧問公司

ISSUE/REVISION			
修訂			
I/R	DATE	DESCRIPTION	CHK.
修訂	日期	內容摘要	校核

STATUS
階段

SCALE
比例
A1 1: 5000

DIMENSION UNIT
尺寸單位
METRES

KEY PLAN
索引圖

PROJECT NO.
項目編號
60755494

CONTRACT NO.
合約編號
CE 14/2025 (CE)

SHEET TITLE
圖紙名稱

LOCATIONS OF CONSTRUCTION
ZONES AND NOISE ASSESSMENT
POINTS (KEY PLAN)

SHEET NUMBER
圖紙編號
60755494/Z2/FIGURE 2.1

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ISO A1 594mm x 841mm

Approved:

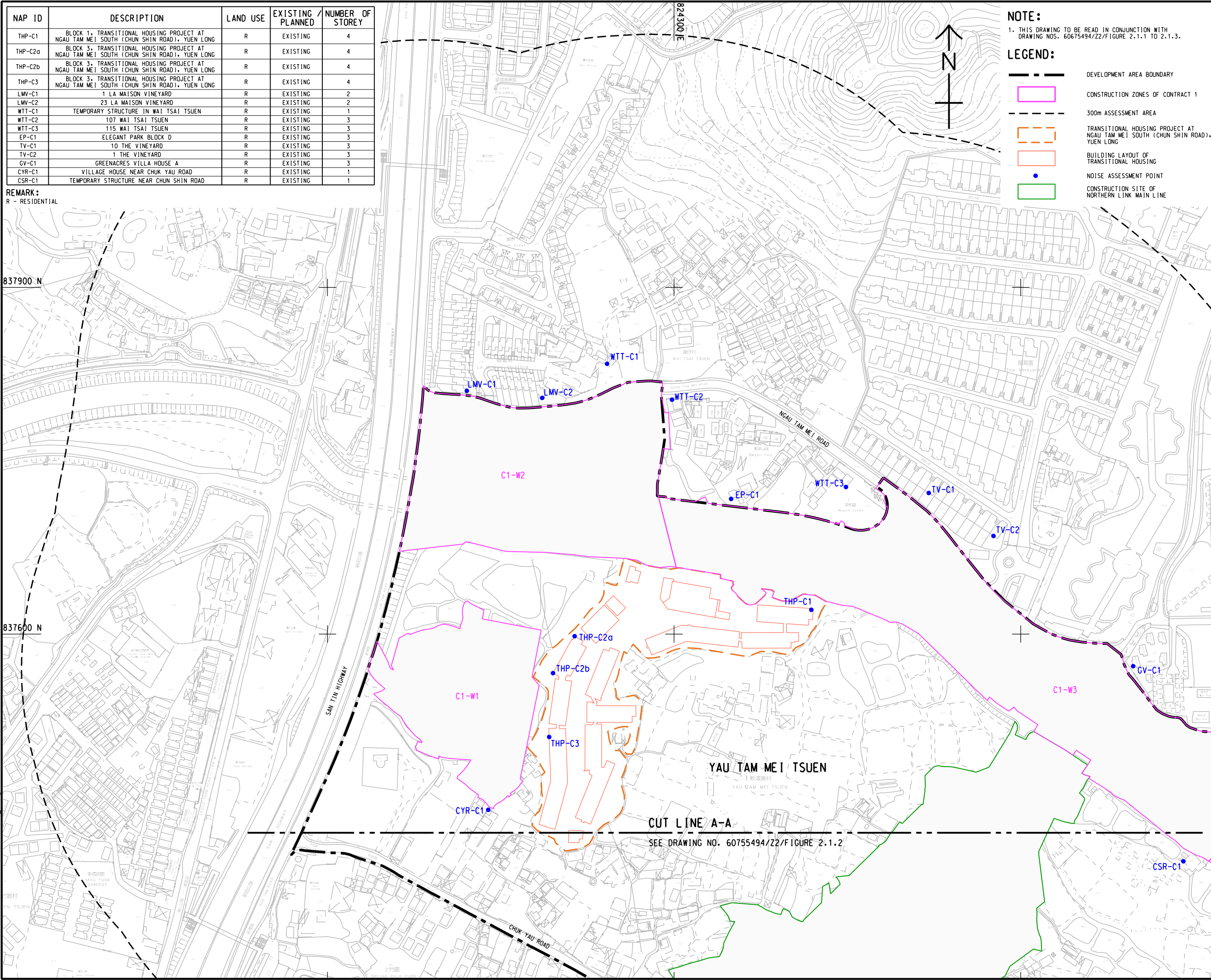
Checked:

Designer:

Project Management Initials:

NAP ID	DESCRIPTION	LAND USE	EXISTING PLANNED	NUMBER OF STOREY
THP-C1	BLOCK 1, TRANSITIONAL HOUSING PROJECT AT NGAU TAM MEI SOUTH (CHUN SHIN ROAD), YUEN LONG	R	EXISTING	4
THP-C2a	BLOCK 3, TRANSITIONAL HOUSING PROJECT AT NGAU TAM MEI SOUTH (CHUN SHIN ROAD), YUEN LONG	R	EXISTING	4
THP-C2b	BLOCK 3, TRANSITIONAL HOUSING PROJECT AT NGAU TAM MEI SOUTH (CHUN SHIN ROAD), YUEN LONG	R	EXISTING	4
THP-C3	BLOCK 3, TRANSITIONAL HOUSING PROJECT AT NGAU TAM MEI SOUTH (CHUN SHIN ROAD), YUEN LONG	R	EXISTING	4
LMV-C1	1 LA MAISON VINEYARD	R	EXISTING	2
LMV-C2	23 LA MAISON VINEYARD	R	EXISTING	2
WTT-C1	TEMPORARY STRUCTURE IN WAI TSAI TSUEN	R	EXISTING	1
WTT-C2	107 WAI TSAI TSUEN	R	EXISTING	3
WTT-C3	115 WAI TSAI TSUEN	R	EXISTING	3
EP-C1	ELEGANT PARK BLOCK D	R	EXISTING	3
TV-C1	10 THE VINEYARD	R	EXISTING	3
TV-C2	1 THE VINEYARD	R	EXISTING	3
GV-C1	GREENACRES VILLA HOUSE A	R	EXISTING	3
CYR-C1	VILLAGE HOUSE NEAR CHUK YAU ROAD	R	EXISTING	1
CSR-C1	TEMPORARY STRUCTURE NEAR CHUN SHIN ROAD	R	EXISTING	1

REMARK :
R - RESIDENTIAL



NOTE:
1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60675494/Z2/FIGURE 2.1.1 TO 2.1.3.

LEGEND:

- DEVELOPMENT AREA BOUNDARY
- CONSTRUCTION ZONES OF CONTRACT 1
- 300m ASSESSMENT AREA
- TRANSITIONAL HOUSING PROJECT AT NGAU TAM MEI SOUTH (CHUN SHIN ROAD), YUEN LONG
- BUILDING LAYOUT OF TRANSITIONAL HOUSING
- NOISE ASSESSMENT POINT
- CONSTRUCTION SITE OF NORTHERN LINK MAIN LINE

AECOM
asia infrastructure solutions

PROJECT
項目

SITE FORMATION AND INFRASTRUCTURE WORKS FOR NGAU TAM MEI NEW DEVELOPMENT AREA – DESIGN AND CONSTRUCTION

CLIENT
業主
CEDD 土木工程拓展署
Civil Engineering and Development Department

CONSULTANT
工程顧問公司
AECOM - AIS Joint Venture

SUB-CONSULTANTS
分判工程顧問公司

ISSUE/REVISION
修訂

I/R	DATE	DESCRIPTION	CHK.
修訂	日期	內容摘要	校核

STATUS
階段

SCALE
比例
A1 1: 1500

DIMENSION UNIT
尺寸單位
METRES

KEY PLAN
索引圖

PROJECT NO.
項目編號
60755494

CONTRACT NO.
合約編號
CE 14/2025 (CE)

SHEET TITLE
圖紙名稱
LOCATIONS OF CONSTRUCTION ZONES AND NOISE ASSESSMENT POINTS

SHEET NUMBER
圖紙編號
60755494/Z2/FIGURE 2.1.1

SHEET 1 OF 3

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項目

SITE FORMATION AND
INFRASTRUCTURE WORKS
FOR NGAU TAM MEI
NEW DEVELOPMENT AREA –
DESIGN AND CONSTRUCTION

業主



土木工程拓展署
Civil Engineering and
Development Department

工程顧問公司

AECOM - AIS Joint Venture

分判工程顧問公司

修訂

I/R 修訂	DATE 日期	DESCRIPTION 內容摘要	CHK. 複核
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階段

比例

A1 1 : 1500

尺寸單位

METRES

索引圖

NAP ID	DESCRIPTION	LAND USE	EXISTING PLANNED	NUMBER OF STOREY
GV-C1	GREENACRES VILLA HOUSE A	R	EXISTING	3
CYR-C2	TEMPORARY STRUCTURE NEAR CHUK YAU ROAD	R	EXISTING	1
CYR-C3	VILLAGE HOUSE NEAR CHUK YAU ROAD	R	EXISTING	2
CYR-C4	VILLAGE HOUSE NEAR CHUK YAU ROAD	R	EXISTING	1
CSR-C1	TEMPORARY STRUCTURE NEAR CHUN SHIN ROAD	R	EXISTING	1
CSR-C2	TEMPORARY STRUCTURE NEAR CHUN SHIN ROAD	R	EXISTING	1
WB-C1	WAT BUDDHADHAMARAM	W	EXISTING	1
D1-C1a	VILLAGE HOUSE TO THE SOUTH OF PROPOSED ROAD D1	R	EXISTING	2
D1-C1b	VILLAGE HOUSE TO THE SOUTH OF PROPOSED ROAD D1	R	EXISTING	2
D1-C2	VILLAGE HOUSE TO THE SOUTH OF PROPOSED ROAD D1	R	EXISTING	1
D1-C3	VILLAGE HOUSE TO THE SOUTH OF PROPOSED ROAD D1	R	EXISTING	1
D1-C4	VILLAGE HOUSE TO THE SOUTH OF PROPOSED ROAD D1	R	EXISTING	2

R - RESIDENTIAL
W - PLACE OF PUBLIC WORSHIP

60755494

合約編號

E 14/2025 (CE)

圖紙名

LOCATIONS OF CONSTRUCTION ZONES AND NOISE ASSESSMENT POINTS

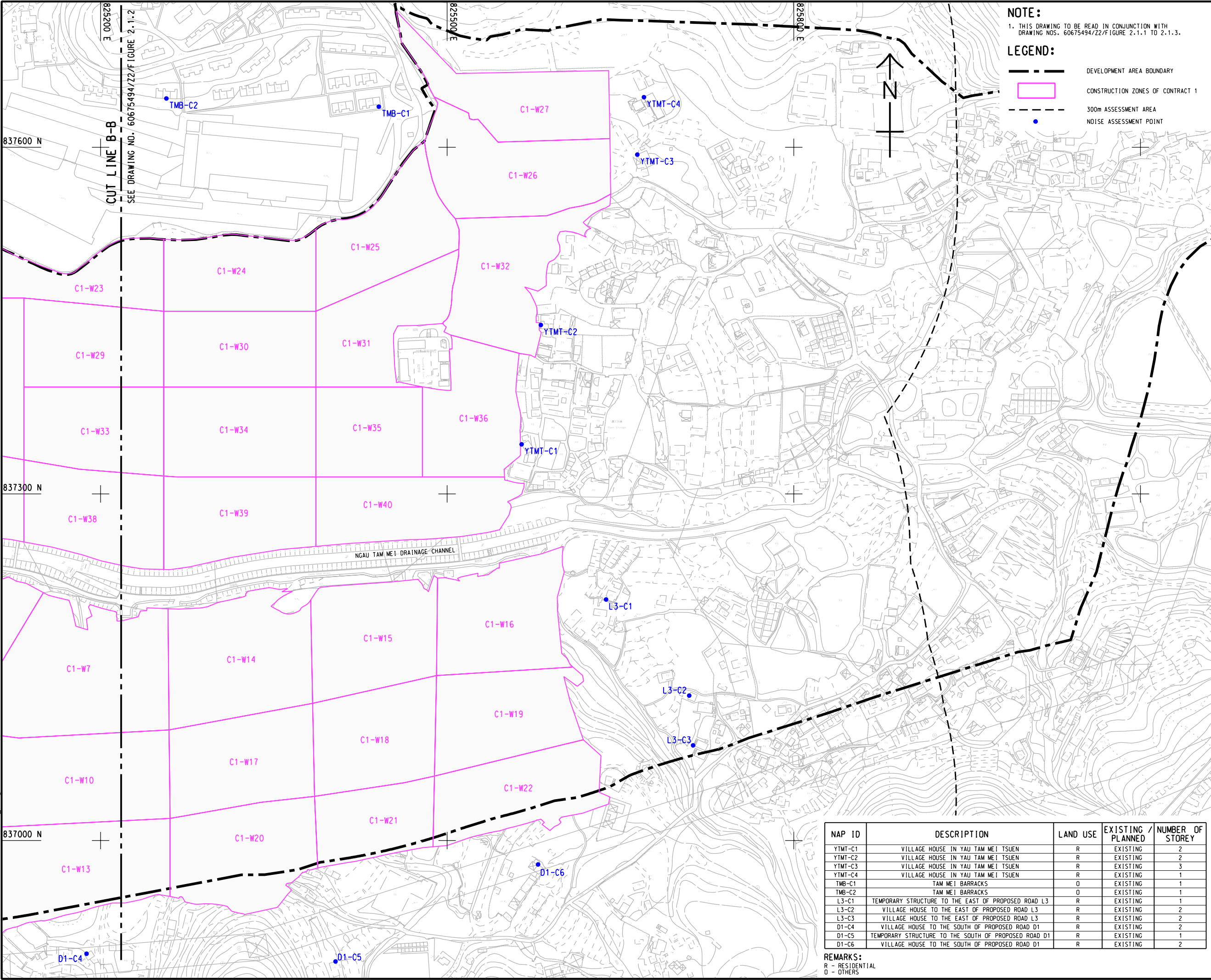
SHEET 2 OF 3

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60755494/72/FIGURE 2 1 2

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NOTE:
1. THIS DRAWING TO BE READ IN CONJUNCTION WITH
DRAWING NOS. 60675494/Z2/FIGURE 2.1.1 TO 2.1.3.

LEGEND:

- DEVELOPMENT AREA BOUNDARY
- Construction Zones of Contract 1
- 300m ASSESSMENT AREA
- NOISE ASSESSMENT POINT

PROJECT
項目

SITE FORMATION AND
INFRASTRUCTURE WORKS
FOR NGAU TAM MEI
NEW DEVELOPMENT AREA –
DESIGN AND CONSTRUCTION

CLIENT
業主

土木工程拓展署
Civil Engineering and
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ISSUE/REVISION
修訂

I/R	DATE	DESCRIPTION	CHK.

STATUS
階段

SCALE
比例

DIMENSION UNIT
尺寸單位

A1 1: 1500 METRES

KEY PLAN
索引圖

PROJECT NO.
項目編號

CONTRACT NO.
合約編號

60755494 CE 14/2025 (CE)

SHEET TITLE
圖紙名稱

LOCATIONS OF CONSTRUCTION
ZONES AND NOISE ASSESSMENT
POINTS

SHEET 3 OF 3

SHEET NUMBER
圖紙編號

60755494/Z2/FIGURE 2.1.3

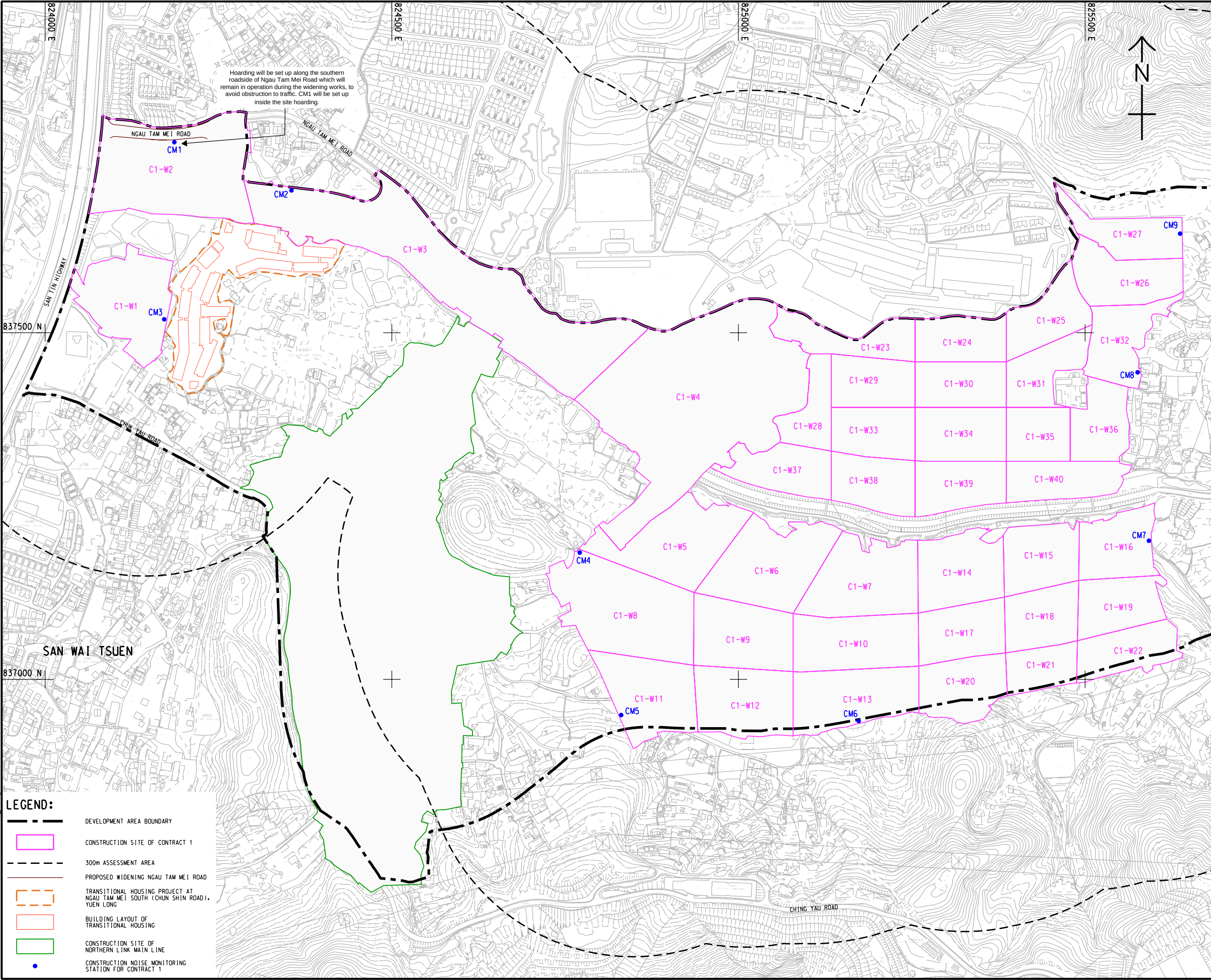
NAP ID	DESCRIPTION	LAND USE	EXISTING PLANNED	NUMBER OF STOREY
YTMT-C1	VILLAGE HOUSE IN YAU TAM MEI TSUEN	R	EXISTING	2
YTMT-C2	VILLAGE HOUSE IN YAU TAM MEI TSUEN	R	EXISTING	2
YTMT-C3	VILLAGE HOUSE IN YAU TAM MEI TSUEN	R	EXISTING	3
YTMT-C4	VILLAGE HOUSE IN YAU TAM MEI TSUEN	R	EXISTING	1
TMB-C1	TAM MEI BARRACKS	O	EXISTING	1
TMB-C2	TAM MEI BARRACKS	O	EXISTING	1
L3-C1	TEMPORARY STRUCTURE TO THE EAST OF PROPOSED ROAD L3	R	EXISTING	1
L3-C2	VILLAGE HOUSE TO THE EAST OF PROPOSED ROAD L3	R	EXISTING	2
L3-C3	VILLAGE HOUSE TO THE EAST OF PROPOSED ROAD L3	R	EXISTING	2
D1-C4	VILLAGE HOUSE TO THE SOUTH OF PROPOSED ROAD D1	R	EXISTING	2
D1-C5	TEMPORARY STRUCTURE TO THE SOUTH OF PROPOSED ROAD D1	R	EXISTING	1
D1-C6	VILLAGE HOUSE TO THE SOUTH OF PROPOSED ROAD D1	R	EXISTING	2

REMARKS:
R - RESIDENTIAL
O - OTHERS

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ISO A1 594mm x 841mm
Approved:
Checked:
Designer:
Project Management Initials:



LEGEND:

- DEVELOPMENT AREA BOUNDARY
- CONSTRUCTION SITE OF CONTRACT 1
- 300m ASSESSMENT AREA
- PROPOSED WIDENING NGAU TAM MEI ROAD
- TRANSITIONAL HOUSING PROJECT AT NGAU TAM MEI SOUTH (CHUN SHIN ROAD), YUEN LONG
- BUILDING LAYOUT OF TRANSITIONAL HOUSING
- CONSTRUCTION SITE OF NORTHERN LINK MAIN LINE
- CONSTRUCTION NOISE MONITORING STATION FOR CONTRACT 1

asia infrastructure solutions

PROJECT
項目

SITE FORMATION AND INFRASTRUCTURE WORKS FOR NGAU TAM MEI NEW DEVELOPMENT AREA – DESIGN AND CONSTRUCTION

CLIENT
業主

土木工程拓展署
Civil Engineering and Development Department

CONSULTANT
工程顧問公司

AECOM - AIS Joint Venture

SUB-CONSULTANTS
分判工程顧問公司

ISSUE/REVISION
修訂

I/R	DATE	DESCRIPTION	CHK.
修訂	日期	內容簡要	核對

STATUS
階段

SCALE
比例

DIMENSION UNIT
尺寸單位

A1 1: 2500 METRES

KEY PLAN
索引圖

A1 1: 100000

PROJECT NO.
項目編號

60755494

CONTRACT NO.
合約編號

CE 14/2025 (CE)

SHEET TITLE
圖紙名稱

LOCATIONS OF CONSTRUCTION NOISE MONITORING STATIONS FOR CONTRACT 1

SHEET NUMBER
圖紙編號

60755494/Z2/FIGURE 5.1

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Appendix 2.1

Construction Programme

Appendix 2.1 Construction Programme

Activity Name	Start	End	Work Zone	Activity Index	2027												2028												2029																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
					A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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Appendix 2.2

Plant Inventory (Unmitigated Scenario)

Appendix 2.2 Plant Inventory (Unmitigated Scenario)

Identification Code *	PME	Maximum Quantity
CNP 002	Air Compressor, air flow > 10m ³ /min and < =30m ³ /min	1
CNP 028	Breaker, excavator mounted (hydraulic)	21
CNP 030	Bulldozer	4
CNP 046	Concrete mixer (petrol)	2
CNP 047	Concrete pump, stationary/lorry mounted	2
CNP 048	Crane, mobile/barge mounted (diesel)	13
CNP 081	Excavator/loader, wheeled/tracked	40
CNP 103	Generator, super silenced, 70dB(A) at 7m	19
CNP 185	Road roller	11
CNP 186	Roller, vibratory	1
CNP 283	Water pump, submersible (electric)	24
OCUPME-009	Breaker, electric hand-held, 18kg ≤ mass ≤ 35kg	4
OCUPME-019	Concrete lorry mixer, gross vehicle weight ≤ 30 tonne, mixing drum rotation rate ≤ 10rpm	1
OCUPME-022	Drill rig, rotary type (diesel)	1
OCUPME-032	Grout mixer	4
OCUPME-040	Poker, vibratory, hand-held (electric)	1
OCUPME-071	Lorry, with crane/grab, 5.5 tonne < gross vehicle weight ≤ 38 tonne	3
OCUPME-073	Dump truck, 5.5 tonne < gross vehicle weight ≤ 38 tonne	37
Ref 1	Quieter Type Blade Saw	6

* Identification codes of PME are presented in Appendix 2.4.

Appendix 2.3

*Predicted Sound Power Levels for Construction Activity Groups
under Unmitigated Scenario*

Appendix 2.3 Predicted Sound Power Levels for Construction Activity Groups under Unmitigated Scenario

Activity Index	Reference Code	Activities	Unit SWL, dB(A)	No. of plant item	Utilisation rate	Type of Noise Control	Noise Reduction, dB(A)	Corrected SWL, dB(A)	Group SWL, dB(A)	Max Group SWL, dB(A)
SC-DRE		<u>Group A</u>								120
	CNP 048	Crane, mobile/barge mounted (diesel)	112	1	100%			112		
	CNP 081	Excavator/loader, wheeled/tracked	112	1	100%			112		
	CNP 028	Breaker, excavator mounted (hydraulic)	122	1	50%			119		
	CNP 103	Generator, super silenced, 70dB(A) at 7m	95	1	100%			95		
	CNP 283	Water pump, submersible (electric)	85	1	100%			85	120	
		<u>Group B</u>								
	OCUPME-073	Dump truck, 5.5 tonne < gross vehicle weight ≤ 38 tonne	105	1	60%			103		
	CNP 103	Generator, super silenced, 70dB(A) at 7m	95	1	100%			95		
	CNP 283	Water pump, submersible (electric)	85	1	100%			85	104	
SC		<u>Group A</u>								123
	CNP 048	Crane, mobile/barge mounted (diesel)	112	1	100%			112		
	CNP 081	Excavator/loader, wheeled/tracked	112	2	100%			115		
	CNP 028	Breaker, excavator mounted (hydraulic)	122	2	50%			122		
	CNP 103	Generator, super silenced, 70dB(A) at 7m	95	1	100%			95		
	CNP 283	Water pump, submersible (electric)	85	2	100%			88	123	
		<u>Group B</u>								
	OCUPME-073	Dump truck, 5.5 tonne < gross vehicle weight ≤ 38 tonne	105	2	60%			106		
	CNP 103	Generator, super silenced, 70dB(A) at 7m	95	1	100%			95		
	CNP 283	Water pump, submersible (electric)	85	2	100%			88	106	
SC_2		<u>Group A</u>								126
	CNP 048	Crane, mobile/barge mounted (diesel)	112	2	100%			115		
	CNP 081	Excavator/loader, wheeled/tracked	112	4	100%			118		
	CNP 028	Breaker, excavator mounted (hydraulic)	122	4	50%			125		
	CNP 103	Generator, super silenced, 70dB(A) at 7m	95	2	100%			98		
	CNP 283	Water pump, submersible (electric)	85	4	100%			91	126	
		<u>Group B</u>								
	OCUPME-073	Dump truck, 5.5 tonne < gross vehicle weight ≤ 38 tonne	105	4	60%			109		
	CNP 103	Generator, super silenced, 70dB(A) at 7m	95	2	100%			98		
	CNP 283	Water pump, submersible (electric)	85	4	100%			91	109	
SF-F	CNP 048	Crane, mobile/barge mounted (diesel)	112	1	100%			112		
	CNP 081	Excavator/loader, wheeled/tracked	112	2	100%			115		
	OCUPME-073	Dump truck, 5.5 tonne < gross vehicle weight ≤ 38 tonne	105	2	60%			106		
	CNP 185	Road roller	108	1	70%			106		
	CNP 103	Generator, super silenced, 70dB(A) at 7m	95	1	100%			95		
	CNP 283	Water pump, submersible (electric)	85	2	100%			88	117	
SF-F_2	CNP 048	Crane, mobile/barge mounted (diesel)	112	2	100%			115		
	CNP 081	Excavator/loader, wheeled/tracked	112	4	100%			118		
	OCUPME-073	Dump truck, 5.5 tonne < gross vehicle weight ≤ 38 tonne	105	4	60%			109		
	CNP 185	Road roller	108	2	70%			109		
	CNP 103	Generator, super silenced, 70dB(A) at 7m	95	2	100%			98		
	CNP 283	Water pump, submersible (electric)	85	4	100%			91	121	
SF-F_3	CNP 048	Crane, mobile/barge mounted (diesel)	112	3	100%			117		
	CNP 081	Excavator/loader, wheeled/tracked	112	6	100%			120		
	OCUPME-073	Dump truck, 5.5 tonne < gross vehicle weight ≤ 38 tonne	105	6	60%			111		
	CNP 185	Road roller	108	3	70%			111		
	CNP 103	Generator, super silenced, 70dB(A) at 7m	95	3	100%			100		
	CNP 283	Water pump, submersible (electric)	85	6	100%			93	122	
SF-C	CNP 048	Crane, mobile/barge mounted (diesel)	112	1	100%			112		
	CNP 081	Excavator/loader, wheeled/tracked	112	4	100%			118		
	OCUPME-073	Dump truck, 5.5 tonne < gross vehicle weight ≤ 38 tonne	105	4	60%			109		
	CNP 185	Road roller	108	1	20%			101		
	CNP 103	Generator, super silenced, 70dB(A) at 7m	95	1	100%			95		
	CNP 283	Water pump, submersible (electric)	85	2	100%			88	119	
SF-C_2	CNP 048	Crane, mobile/barge mounted (diesel)	112	2	100%			115		
	CNP 081	Excavator/loader, wheeled/tracked	112	8	100%			121		
	OCUPME-073	Dump truck, 5.5 tonne < gross vehicle weight ≤ 38 tonne	105	8	60%			112		
	CNP 185	Road roller	108	2	20%			104		
	CNP 103	Generator, super silenced, 70dB(A) at 7m	95	2	100%			98		
	CNP 283	Water pump, submersible (electric)	85	4	100%			91	122	
RC		<u>Group A</u>								119
	CNP 028	Breaker, excavator mounted (hydraulic)	122	1	50%			119	119	
		<u>Group B</u>								
	CNP 103	Generator, super silenced, 70dB(A) at 7m	95	1	100%			95		
	Ref 1	Quieter Type Blade Saw	106	2	70%			107	108	
		<u>Group C</u>								
	CNP 081	Excavator/loader, wheeled/tracked	112	2	70%			113		
	OCUPME-073	Dump truck, 5.5 tonne < gross vehicle weight ≤ 38 tonne	105	1	50%			102	114	
Decon-1		<u>Group D</u>								120
	OCUPME-071	Lorry, with crane/grab, 5.5 tonne < gross vehicle weight ≤ 38 tonne	105	1	50%			102	102	
	CNP 081	Excavator/loader, wheeled/tracked	112	4	80%			117		
	OCUPME-009	Breaker, electric hand-held, 18kg ≤ mass ≤ 35kg	108	1	80%			107		
	CNP 030	Bulldozer	115	1	80%			114		
	OCUPME-073	Dump truck, 5.5 tonne < gross vehicle weight ≤ 38 tonne	105	4	30%			106		
	CNP 103	Generator, super silenced, 70dB(A) at 7m	95	3	100%			100		
Decon-2	OCUPME-032	Grout mixer	90	1	80%			89		
	CNP 185	Road roller	108	1	80%			107		
	CNP 283	Water pump, submersible (electric)	85	2	100%			88	120	
	CNP 081	Excavator/loader, wheeled/tracked	112	3	80%			116		
	OCUPME-009	Breaker, electric hand-held, 18kg ≤ mass ≤ 35kg	108	1	80%			107		
	CNP 030	Bulldozer	115	1	80%			114		
	OCUPME-073	Dump truck, 5.5 tonne < gross vehicle weight ≤ 38 tonne	105	2	30%			103		
TB	CNP 103	Generator, super silenced, 70dB(A) at 7m	95	2	100%			98		
	OCUPME-032	Grout mixer	90	1	80%			89		
	CNP 186	Roller, vibratory	108	1	80%			107		
	CNP 283	Water pump, submersible (electric)	85	1	100%			85	119	
		<u>Group A</u>								116
	OCUPME-022	Drill rig, rotary type (diesel)	110	1	70%			108		
	CNP 081	Excavator/loader, wheeled/tracked	112	2	70%			113		
	CNP 002	Air Compressor, air flow > 10m3/min and < =30m3/min	102	1	70%			100		
	OCUPME-009	Breaker, electric hand-held, 18kg ≤ mass ≤ 35kg	108	2	50%			108		
CLC-F	OCUPME-073	Dump truck, 5.5 tonne < gross vehicle weight ≤ 38 tonne	105	2	50%			105		
	CNP 283	Water pump, submersible (electric)	85	2	100%			88		
	CNP 103	Generator, super silenced, 70dB(A) at 7m	95	1	100%			95	116	
		<u>Group B</u>								
	CNP 048	Crane, mobile/barge mounted (diesel)	112	2	70%			113		
	CNP 047	Concrete pump, stationary/lorry mounted	109	1	30%			104		
	CNP 046	Concrete mixer (petrol)	96	2	70%			97		
	CNP 186	Roller, vibratory	108	1	50%			105		
	OCUPME-073	Dump truck, 5.5 tonne < gross vehicle weight ≤ 38 tonne	105	1	50%			102		
	CNP 103	Generator, super silenced, 70dB(A) at 7m	95	1	100%			95	115	
CLC-S		<u>Group A</u>								123
	CNP 048	Crane, mobile/barge mounted (diesel)	112	1	60%			110		
	CNP 081	Excavator/loader, wheeled/tracked	112	2	60%			113		
	CNP 028	Breaker, excavator mounted (hydraulic)	122	2	50%			122		
	CNP 103	Generator, super silenced, 70dB(A) at 7m	95	1	100%			95		
	CNP 283	Water pump, submersible (electric)	85	2	100%			88	123	
		<u>Group B</u>								
	CNP 103	Generator, super silenced, 70dB(A) at 7m	95	1	100%			95		
	OCUPME-019	Concrete lorry mixer, gross vehicle weight ≤ 30 tonne, mixing drum rotation rate ≤ 10rpm	103	1	60%			101		
	OCUPME-040	Poker, vibratory, hand-held (electric)	102	1	60%			100		
CLC-S	CNP 047	Concrete pump, stationary/lorry mounted	109	1	60%			107	109	
		<u>Group C</u>								114
	CNP 048	Crane, mobile/barge mounted (diesel)	112	2	80%			114	114	
	OCUPME-071	Lorry, with crane/grab, 5.5 tonne < gross vehicle weight ≤ 38 tonne	105	1	60%			103	103	
		<u>Group B</u>								
	CNP 103	Generator, super silenced, 70dB(A) at 7m	95	1	100%			95		
	OCUPME-019	Concrete lorry mixer, gross vehicle weight ≤ 30 tonne, mixing drum rotation rate ≤ 10rpm	103	1	60%			101		
	OCUPME-040	Poker, vibratory, hand-held (electric)	102	1	60%			100		
	CNP 047	Concrete pump, stationary/lorry mounted	109	1	60%			107	109	

Appendix 2.4

Sound Power Levels of Items of PME

Appendix 2.4 Sound Power Levels of Items of PME

Reference	Identification Code	Description	Unit Power Level Power (kW)	Brand	Model	Serial No.
GB-736	CNP-001	Air Compressor, air flow < 100l/min	102			
	CNP-002	Air Compressor, air flow > 100l/min and < 300l/min	102			
	CNP-003	Air Compressor, air flow > 300l/min	104			
	CNP-004	Asphalt pump	109			
	CNP-005	Asphalt (electric)	90			
	CNP-006	Air blower (electric)	90			
	CNP-021	Bar bender and cutter (electric)	101			
	CNP-022	Batching plant	102			
	CNP-023	Breaker, hand-held, mass < 10kg	108			
	CNP-024	Breaker, hand-held, mass > 10kg and < 35kg	110			
	CNP-025	Breaker, hand-held, mass > 35kg and < 39kg	111			
	CNP-026	Breaker, hand-held, mass > 39kg	114			
	CNP-027	Breaker, excavator-mounted (pneumatic)	122			
	CNP-028	Breaker, excavator-mounted (hydraulic)	122			
	CNP-029	Bulldozer, hand-held (electric)	105			
	CNP-030	Bulldozer	115			
	CNP-031	Breaker, mini-robot mounted (electric)	115			
	CNP-041	Concrete ball	90			
	CNP-042	Concrete mixer	117			
	CNP-043	Chipper, hand-held (pneumatic)	112			
	CNP-044	Concrete tory mixer	109			
	CNP-045	Concrete mixer (electric)	94			
	CNP-046	Concrete mixer (petrol)	90			
	CNP-047	Concrete pump, stationary/mobile mounted	109			
	CNP-048	Crane, mobile, large mounted (electric)	112			
	CNP-049	Crane, tower (electric)	96			
	CNP-050	Compactor, vibratory	105			
	CNP-051	Concrete bunker	90			
	CNP-062	Concrete crusher, mini-robot mounted (electric)	94			
	CNP-063	Concrete crusher, hand-held	97			
	CNP-064	Concrete pump (electric)	109			
	CNP-065	Concrete crusher, excavator-mounted	103			
	CNP-066	Cutter, circular, sheet (electric)	112			
	CNP-061	Derrick barge	104			
	CNP-062	Dredger, chain bucket	118			
	CNP-063	Dredger, grab	112			
	CNP-064	Dred, mechanical, hand-held (electric)	105			
	CNP-065	Dredgeland, hand-held (electric)	98			
	CNP-066	Dumper	106			
	CNP-067	Dump truck	117			
	CNP-068	Dump truck, 5.5 tone < gross vehicle weight < 38 tone	105			
	CNP-069	Dump truck, with gear, 5.5 tone < gross vehicle weight < 38 tone	105			
	CNP-070	Dredger, suction	90			
	CNP-071	Drill, hand-held (oil well)	112			
	CNP-072	Drill rig, rotary type (electric)	110			
	CNP-081	Excavator, mini-robot-mounted	112			
	CNP-082	Excavator, mini-robot-mounted (electric)	94			
	CNP-101	Generator, standard	108			
	CNP-102	Generator, silent, 7500(A) at 7m	105			
	CNP-103	Generator, super silent, 7000(A) at 7m	105			
	CNP-104	Grader	113			
	CNP-105	Grout mixer	90			
	CNP-106	Grout pump	105			
	CNP-121	Hoist, passenger/material (pneumatic)	108			
	CNP-122	Hoist, passenger/material (electric)	94			
	CNP-123	Hoist, passenger/material (petrol)	104			
	CNP-131	Jet-saw, hand-held, wood (electric)	99			
	CNP-141	Lorry	112			
	CNP-142	Lorry, 5.5 tone < gross vehicle weight < 38 tone	105			
	CNP-143	Light goods vehicle, gross vehicle weight < 5.5 tone	96			
	CNP-144	Lorry, with crane, 5.5 tone < gross vehicle weight < 38 tone	112			
	CNP-161	Paint line machine	90			
	CNP-162	Pinch, dredging with, hydrostatic plant	105			
	CNP-163	Pinch, dredging with, hydraulic excavator	90			
	CNP-164	Pinch, large diameter bored, grab and chisel	110			
	CNP-165	Pinch, large diameter bored, excavator	112			
	CNP-166	Pinch, large diameter bored, reverse circulation drill	114			
	CNP-167	Pinch, with, super, digger	105			
	CNP-168	Power pack for hand-held items of PME	100			
	CNP-169	Power, control	100			
	CNP-170	Power, vibrator, hand-held	113			
	CNP-171	Power, wood, hand-held (electric)	117			
	CNP-172	Power, vibrating hammer	115			

(1) The identification code for "Other Commonly Used PMI" is assigned for cross referencing in various appendices for assessment purpose only. Reference is made to https://www.eod.gov.hk/eod/sites/default/files/eod/en/oh/application_for_licenses/evidence/files/Other%20PMI_sens.pdf

Appendix 2.5

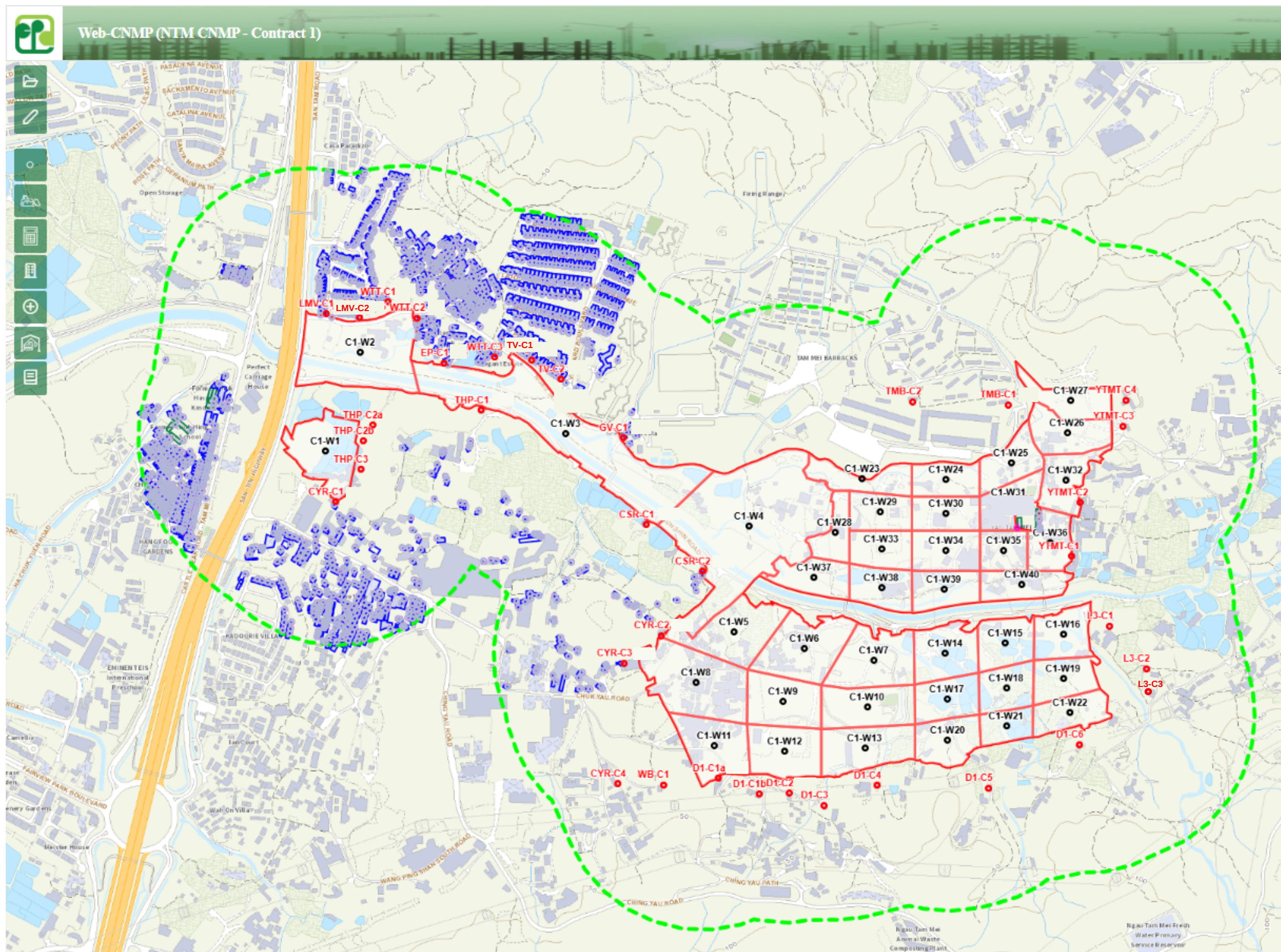
Distances to Notional Source Positions

Appendix 2.5 Distances to Notional Source Positions

NAP ID.	Distance to Notional Sources																																								
	C1-W1	C1-W2	C1-W3	C1-W4	C1-W5	C1-W6	C1-W7	C1-W8	C1-W9	C1-W10	C1-W11	C1-W12	C1-W13	C1-W14	C1-W15	C1-W16	C1-W17	C1-W18	C1-W19	C1-W20	C1-W21	C1-W22	C1-W23	C1-W24	C1-W25	C1-W26	C1-W27	C1-W28	C1-W29	C1-W30	C1-W31	C1-W32	C1-W33	C1-W34	C1-W35	C1-W36	C1-W37	C1-W38	C1-W39	C1-W40	
THP-C1	281	186	131																																						
THP-C2a	70	109																																							
THP-C2b	46	138																																							
THP-C3	46	193																																							
LMV-C1	224	53	260																																						
LMV-C2	232	37	236																																						
WTT-C1	277	73	269																																						
WTT-C2	275	54	217																																						
WTT-C3		208	89																																						
EP-C1	246	111	58																																						
TV-C1		280	82																																						
TV-C2			78																																						
GV-C1			53	217																																					
CYR-C1	50	260																																							
CYR-C2				185	49	240		50	229		206	290																										288			
CYR-C3				275	169			80	281		191																														
CYR-C4								210			174	294																													
CSR-C1			99	69	245			282																															299		
CSR-C2			176	56	109	215		185	264																														299		
WB-C1					297			175	243		97	208																237												159	
L3-C1														289	176	66		201	107		251	164																			
L3-C2															249	146		246	131		264	132									299	258				222	170		292	159	
L3-C3																162		248	132		256	119																		267	
D1-C1a					254	267		155	163	267	31	102	246																											299	
D1-C1b					283	263		207	160	236	90	70	177																												
D1-C2					291	250		228	154	198	130	57	118							289																					
D1-C3						273	269		190	187	202	99	107				278				234																				
D1-C4						262	215		205	133	289	153	56	256			186	280		126	247																				
D1-C5							299				250				250	259		171	174	229	96	108	185																		
D1-C6															279	219	192	238	150	114	223	120	51																		
YMT-C1															268	179	127		258	217			287																219	84	
YMT-C2																								253	198	218	282			222	152	114			210	109	25				
YMT-C3																									229	132	116	180			227	120	26		240	147	64			178	
YMT-C4																										197	65	73					226	108							
TMB-C1																										224	102	68					256	159							
TMB-C2				294																																					

Note:
(1) Cell in blank means the NAP is more than 300m from the notion source position
(2) The work zone is linear in shape with a length to width ratio exceeding 5 : 1. Only the dominant portion, which is the portion of the linear site closest to the NAP and having a length to width ration of 5:1, is considered for determination of the notional source position.

Construction Zones and NAPs Imported to Web-CNMP, together with the Auto-generated 300m Assessment Area



Distance to Notional Source Positions of each NAP
Measured in Web-CNMP

Notional Distance	
NSR Label:	THP-C1
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W3	131.4
C1-W2	186.4
C1-W1	280.8
C1-W4	475.4
C1-W8	606.1
C1-W5	625.3
C1-W23	681.6
C1-W37	694.2
C1-W28	717.3
C1-W6	743.2
C1-W11	754.4
C1-W29	764.3
C1-W9	766.2
C1-W33	785.7
C1-W38	811.9
C1-W12	847.9
C1-W7	868.1
C1-W24	874.5
C1-W30	885.8
C1-W34	903.4
C1-W10	910.4
C1-W39	925.3
C1-W13	958.7

Notional Distance	
NSR Label:	THP-C1
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W24	874.5
C1-W30	885.8
C1-W34	903.4
C1-W10	910.4
C1-W39	925.3
C1-W13	958.7
C1-W14	977.5
C1-W25	998.1
C1-W31	1006.1
C1-W35	1021.3
C1-W17	1030.1
C1-W40	1055.0
C1-W20	1074.7
C1-W15	1078.4
C1-W26	1097.3
C1-W27	1103.9
C1-W36	1106.1
C1-W32	1114.7
C1-W18	1117.6
C1-W21	1160.3
C1-W16	1174.9
C1-W19	1206.7
C1-W22	1255.4

Notional Distance	
NSR Label:	THP-C2a
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W1	70.1
C1-W2	109.0
C1-W3	345.6
C1-W4	654.2
C1-W8	743.4
C1-W5	779.3
C1-W37	859.8
C1-W11	860.6
C1-W23	883.9
C1-W6	906.2
C1-W28	910.8
C1-W9	914.1
C1-W29	964.0
C1-W12	973.4
C1-W33	979.9
C1-W38	999.4
C1-W7	1038.2
C1-W10	1060.1
C1-W24	1079.3
C1-W30	1087.1
C1-W34	1100.0
C1-W13	1103.4
C1-W39	1116.0

Notional Distance	
NSR Label:	THP-C2a
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W10	1060.1
C1-W24	1079.3
C1-W30	1087.1
C1-W34	1100.0
C1-W13	1103.4
C1-W39	1116.0
C1-W14	1157.9
C1-W17	1196.6
C1-W25	1204.9
C1-W31	1209.5
C1-W35	1219.4
C1-W20	1233.6
C1-W40	1249.8
C1-W15	1264.3
C1-W18	1296.7
C1-W36	1306.2
C1-W26	1306.4
C1-W27	1315.4
C1-W32	1320.4
C1-W21	1328.5
C1-W16	1364.7
C1-W19	1390.7
C1-W22	1431.3

Notional Distance	
NSR Label:	THP-C2b
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W1	45.5
C1-W2	138.3
C1-W3	366.2
C1-W4	660.7
C1-W8	738.5
C1-W5	780.6
C1-W11	849.7
C1-W37	869.3
C1-W23	902.1
C1-W6	909.1
C1-W9	914.1
C1-W28	922.4
C1-W12	967.4
C1-W29	977.8
C1-W33	991.4
C1-W38	1008.7
C1-W7	1042.5
C1-W10	1058.3
C1-W24	1095.4
C1-W13	1101.1
C1-W30	1101.3
C1-W34	1112.2
C1-W39	1126.2

Notional Distance	
NSR Label:	THP-C2b
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W10	1058.3
C1-W24	1095.4
C1-W13	1101.1
C1-W30	1101.3
C1-W34	1112.2
C1-W39	1126.2
C1-W14	1164.7
C1-W17	1199.4
C1-W25	1222.1
C1-W31	1224.7
C1-W35	1232.2
C1-W20	1234.5
C1-W40	1261.2
C1-W15	1272.6
C1-W18	1302.9
C1-W36	1319.7
C1-W26	1325.2
C1-W21	1331.6
C1-W27	1336.7
C1-W32	1336.8
C1-W16	1374.2
C1-W19	1398.2
C1-W22	1436.3

Notional Distance	
NSR Label:	THP-C3
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W1	45.5
C1-W2	193.4
C1-W3	379.2
C1-W4	647.3
C1-W8	691.3
C1-W5	760.5
C1-W11	809.6
C1-W37	860.3
C1-W6	890.7
C1-W9	891.3
C1-W23	907.8
C1-W28	917.7
C1-W12	939.7
C1-W29	976.5
C1-W33	986.4
C1-W38	999.9
C1-W7	1025.9
C1-W10	1028.6
C1-W13	1074.8
C1-W24	1097.7
C1-W30	1100.5
C1-W34	1108.0
C1-W39	1118.6

Notional Distance	
NSR Label:	THP-C3
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W10	1028.6
C1-W13	1074.8
C1-W24	1097.7
C1-W30	1100.5
C1-W34	1108.0
C1-W39	1118.6
C1-W14	1151.8
C1-W17	1182.4
C1-W20	1213.9
C1-W31	1225.3
C1-W25	1226.0
C1-W35	1228.7
C1-W40	1255.3
C1-W15	1261.9
C1-W18	1288.9
C1-W21	1314.1
C1-W36	1317.4
C1-W26	1331.7
C1-W32	1339.2
C1-W27	1347.7
C1-W16	1365.2
C1-W19	1386.2
C1-W22	1420.2

Notional Distance	
NSR Label:	LMV-C1
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W2	52.6
C1-W1	224.3
C1-W3	260.3
C1-W4	829.1
C1-W8	950.0
C1-W5	975.2
C1-W23	1022.4
C1-W37	1032.4
C1-W28	1064.7
C1-W11	1082.3
C1-W6	1095.6
C1-W29	1105.0
C1-W9	1112.7
C1-W33	1131.9
C1-W38	1161.9
C1-W12	1187.5
C1-W24	1205.7
C1-W7	1221.2
C1-W30	1223.5
C1-W34	1246.9
C1-W10	1260.9
C1-W39	1273.1
C1-W13	1307.0

Notional Distance	
NSR Label:	LMV-C1
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W7	1221.2
C1-W30	1223.5
C1-W34	1246.9
C1-W10	1260.9
C1-W39	1273.1
C1-W13	1307.0
C1-W25	1327.4
C1-W14	1329.5
C1-W31	1341.8
C1-W35	1362.5
C1-W17	1383.3
C1-W40	1406.0
C1-W27	1409.0
C1-W26	1413.2
C1-W20	1426.9
C1-W15	1428.5
C1-W32	1442.1
C1-W36	1444.4
C1-W18	1469.8
C1-W21	1513.5
C1-W16	1522.7
C1-W19	1557.3
C1-W22	1608.1

Notional Distance	
NSR Label:	LMV-C2
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W2	36.9
C1-W1	232.2
C1-W3	236.4
C1-W4	769.7
C1-W8	896.9
C1-W5	920.7
C1-W23	958.4
C1-W37	972.9
C1-W28	1002.9
C1-W11	1036.6
C1-W6	1039.1
C1-W29	1041.8
C1-W9	1058.3
C1-W33	1069.6
C1-W38	1100.8
C1-W12	1138.0
C1-W24	1141.5
C1-W30	1159.9
C1-W7	1163.2
C1-W34	1184.0
C1-W10	1206.3
C1-W39	1211.2
C1-W13	1253.6

Notional Distance	
NSR Label:	LMV-C2
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W30	1159.9
C1-W7	1163.2
C1-W34	1184.0
C1-W10	1206.3
C1-W39	1211.2
C1-W13	1253.6
C1-W25	1263.1
C1-W14	1269.4
C1-W31	1278.0
C1-W35	1299.3
C1-W17	1325.6
C1-W27	1344.1
C1-W40	1344.5
C1-W26	1348.4
C1-W15	1367.3
C1-W20	1370.7
C1-W32	1377.6
C1-W36	1380.7
C1-W18	1410.6
C1-W21	1455.4
C1-W16	1460.6
C1-W19	1496.2
C1-W22	1548.4

Notional Distance	
NSR Label:	WTT-C1
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W2	73.0
C1-W3	269.1
C1-W1	277.4
C1-W4	738.9
C1-W8	882.1
C1-W5	899.5
C1-W23	913.5
C1-W37	944.5
C1-W28	965.9
C1-W29	1000.8
C1-W6	1013.8
C1-W11	1028.2
C1-W33	1031.3
C1-W9	1042.7
C1-W38	1065.5
C1-W24	1096.4
C1-W30	1117.1
C1-W12	1123.8
C1-W7	1134.7
C1-W34	1143.8
C1-W39	1173.8
C1-W10	1183.9
C1-W25	1217.3

Notional Distance	
NSR Label:	WTT-C1
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W12	1123.8
C1-W7	1134.7
C1-W34	1143.8
C1-W39	1173.8
C1-W10	1183.9
C1-W25	1217.3
C1-W13	1233.3
C1-W31	1234.6
C1-W14	1236.2
C1-W35	1257.7
C1-W27	1292.3
C1-W17	1297.6
C1-W26	1298.5
C1-W40	1307.9
C1-W32	1330.8
C1-W15	1331.4
C1-W36	1337.7
C1-W20	1345.2
C1-W18	1379.4
C1-W16	1422.6
C1-W21	1426.3
C1-W19	1460.7
C1-W22	1516.1

Notional Distance	
NSR Label:	WTT-C2
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W2	54.0
C1-W3	217.0
C1-W1	274.6
C1-W4	675.6
C1-W8	822.8
C1-W5	838.3
C1-W23	851.1
C1-W37	881.5
C1-W28	902.4
C1-W29	937.7
C1-W6	951.5
C1-W33	967.9
C1-W11	971.8
C1-W9	983.0
C1-W38	1001.9
C1-W24	1034.3
C1-W30	1054.4
C1-W12	1064.8
C1-W7	1071.8
C1-W34	1080.6
C1-W39	1110.3
C1-W10	1122.2
C1-W25	1155.5

Notional Distance	
NSR Label:	WTT-C2
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W12	1064.8
C1-W7	1071.8
C1-W34	1080.6
C1-W39	1110.3
C1-W10	1122.2
C1-W25	1155.5
C1-W31	1172.0
C1-W13	1172.2
C1-W14	1172.7
C1-W35	1194.7
C1-W27	1233.4
C1-W17	1234.6
C1-W26	1238.5
C1-W40	1244.3
C1-W15	1267.9
C1-W32	1269.3
C1-W36	1275.0
C1-W20	1282.8
C1-W18	1316.1
C1-W16	1359.2
C1-W21	1363.2
C1-W19	1397.2
C1-W22	1452.6

Notional Distance	
NSR Label:	WTT-C3
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W3	88.8
C1-W2	208.1
C1-W1	339.9
C1-W4	508.7
C1-W5	680.1
C1-W23	685.5
C1-W8	688.7
C1-W37	726.5
C1-W28	733.8
C1-W29	769.8
C1-W6	788.5
C1-W33	799.3
C1-W9	829.6
C1-W11	830.0
C1-W38	833.4
C1-W24	868.9
C1-W30	887.3
C1-W7	906.1
C1-W34	912.4
C1-W12	913.8
C1-W39	941.7
C1-W10	960.9
C1-W25	990.4

Notional Distance	
NSR Label:	WTT-C3
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W7	906.1
C1-W34	912.4
C1-W12	913.8
C1-W39	941.7
C1-W10	960.9
C1-W25	990.4
C1-W14	1004.7
C1-W31	1005.3
C1-W13	1013.3
C1-W35	1027.1
C1-W17	1068.9
C1-W40	1075.4
C1-W27	1077.3
C1-W26	1078.7
C1-W15	1099.4
C1-W32	1105.5
C1-W36	1108.1
C1-W20	1118.9
C1-W18	1148.7
C1-W16	1190.6
C1-W21	1196.9
C1-W19	1228.7
C1-W22	1284.8

Notional Distance	
NSR Label:	EP-C1
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W3	57.6
C1-W2	110.8
C1-W1	246.3
C1-W4	583.9
C1-W8	722.1
C1-W5	739.9
C1-W23	776.7
C1-W37	787.3
C1-W28	817.7
C1-W6	855.7
C1-W29	858.6
C1-W11	870.0
C1-W9	882.5
C1-W33	884.8
C1-W38	915.2
C1-W24	961.8
C1-W12	964.0
C1-W30	977.8
C1-W7	978.4
C1-W34	1000.1
C1-W10	1024.7
C1-W39	1026.1
C1-W13	1073.7

Notional Distance	
NSR Label:	EP-C1
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W30	977.8
C1-W7	978.4
C1-W34	1000.1
C1-W10	1024.7
C1-W39	1026.1
C1-W13	1073.7
C1-W14	1083.6
C1-W25	1084.0
C1-W31	1096.3
C1-W35	1116.2
C1-W17	1140.9
C1-W40	1158.5
C1-W27	1175.0
C1-W26	1175.2
C1-W15	1181.7
C1-W20	1187.2
C1-W36	1198.7
C1-W32	1199.6
C1-W18	1225.1
C1-W21	1270.4
C1-W16	1275.6
C1-W19	1310.6
C1-W22	1362.7

Notional Distance	
NSR Label:	TV-C1
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W3	82.0
C1-W2	279.8
C1-W1	404.0
C1-W4	449.1
C1-W23	614.8
C1-W5	631.4
C1-W8	655.7
C1-W37	666.8
C1-W28	668.6
C1-W29	701.5
C1-W33	732.9
C1-W6	734.1
C1-W38	769.2
C1-W9	784.2
C1-W11	794.4
C1-W24	798.5
C1-W30	818.0
C1-W34	844.6
C1-W7	847.8
C1-W12	870.5
C1-W39	875.7
C1-W10	907.5
C1-W25	919.8

Notional Distance	
NSR Label:	TV-C1
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W34	844.6
C1-W7	847.8
C1-W12	870.5
C1-W39	875.7
C1-W10	907.5
C1-W25	919.8
C1-W31	935.7
C1-W14	941.9
C1-W35	958.5
C1-W13	962.8
C1-W27	1005.6
C1-W26	1007.1
C1-W40	1009.7
C1-W17	1010.4
C1-W15	1034.4
C1-W32	1034.5
C1-W36	1038.7
C1-W20	1062.8
C1-W18	1087.3
C1-W16	1124.1
C1-W21	1137.2
C1-W19	1163.9
C1-W22	1222.3

Notional Distance	
NSR Label:	TV-C2
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W3	78.1
C1-W2	339.2
C1-W4	381.6
C1-W1	446.2
C1-W23	550.5
C1-W5	568.0
C1-W37	599.4
C1-W8	599.7
C1-W28	600.9
C1-W29	635.0
C1-W33	665.5
C1-W6	668.0
C1-W38	701.3
C1-W9	722.0
C1-W24	734.3
C1-W11	738.0
C1-W30	752.3
C1-W34	777.8
C1-W7	780.6
C1-W39	808.2
C1-W12	809.4
C1-W10	841.7
C1-W25	856.0

Notional Distance	
NSR Label:	TV-C2
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W34	777.8
C1-W7	780.6
C1-W39	808.2
C1-W12	809.4
C1-W10	841.7
C1-W25	856.0
C1-W31	870.3
C1-W14	874.0
C1-W35	892.2
C1-W13	898.0
C1-W40	941.9
C1-W17	943.1
C1-W26	946.9
C1-W27	947.7
C1-W15	966.7
C1-W32	971.5
C1-W36	973.2
C1-W20	995.9
C1-W18	1019.5
C1-W16	1056.8
C1-W21	1069.6
C1-W19	1096.1
C1-W22	1154.4

Notional Distance	
NSR Label:	GV-C1
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W3	52.5
C1-W4	216.9
C1-W23	401.5
C1-W5	408.5
C1-W37	434.6
C1-W28	442.7
C1-W8	456.5
C1-W2	472.5
C1-W29	485.3
C1-W6	503.8
C1-W33	509.6
C1-W38	541.1
C1-W1	545.0
C1-W9	564.0
C1-W11	593.0
C1-W24	595.4
C1-W30	606.4
C1-W7	615.9
C1-W34	625.6
C1-W39	651.0
C1-W12	653.6
C1-W10	677.7
C1-W14	711.8

Notional Distance	
NSR Label:	GV-C1
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W7	615.9
C1-W34	625.6
C1-W39	651.0
C1-W12	653.6
C1-W10	677.7
C1-W14	711.8
C1-W25	720.3
C1-W31	726.7
C1-W13	735.4
C1-W35	742.7
C1-W17	778.5
C1-W40	782.4
C1-W15	807.4
C1-W26	822.6
C1-W36	826.9
C1-W20	831.2
C1-W32	836.1
C1-W27	836.4
C1-W18	856.1
C1-W16	900.5
C1-W21	905.4
C1-W19	936.6
C1-W22	992.0

Notional Distance	
NSR Label:	CYR-C1
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W1	49.5
C1-W2	259.8
C1-W3	442.8
C1-W4	677.5
C1-W8	703.2
C1-W5	782.6
C1-W11	818.3
C1-W37	900.8
C1-W9	908.5
C1-W6	914.6
C1-W12	951.0
C1-W28	959.8
C1-W23	973.5
C1-W29	1022.1
C1-W33	1027.6
C1-W38	1036.3
C1-W10	1051.3
C1-W7	1051.8
C1-W13	1084.1
C1-W30	1146.4
C1-W24	1147.0
C1-W34	1149.9
C1-W39	1156.2

Notional Distance	
NSR Label:	CYR-C1
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W7	1051.8
C1-W13	1084.1
C1-W30	1146.4
C1-W24	1147.0
C1-W34	1149.9
C1-W39	1156.2
C1-W14	1182.3
C1-W17	1208.0
C1-W20	1235.0
C1-W35	1271.1
C1-W31	1272.4
C1-W25	1276.9
C1-W40	1294.7
C1-W15	1295.0
C1-W18	1317.4
C1-W21	1338.9
C1-W36	1360.9
C1-W26	1385.2
C1-W32	1388.2
C1-W16	1400.4
C1-W27	1405.4
C1-W19	1417.2
C1-W22	1445.2

Notional Distance

Notional Distance

NSR Label:

CYR-C2

NSR Label:

CYR-C2

Building Name:

Building Name:

Zone ↑↓	Distance (m) ↑↓
C1-W5	49.3
C1-W8	50.4
C1-W4	185.1
C1-W11	206.1
C1-W9	228.7
C1-W6	240.4
C1-W37	288.0
C1-W12	289.8
C1-W28	362.5
C1-W10	373.6
C1-W7	379.9
C1-W3	394.1
C1-W38	404.6
C1-W13	412.0
C1-W33	424.6
C1-W29	451.9
C1-W23	474.3
C1-W14	520.2
C1-W39	522.9
C1-W17	534.0
C1-W34	540.2
C1-W20	556.1
C1-W30	563.2

Zone ↑↓	Distance (m) ↑↓
C1-W14	520.2
C1-W39	522.9
C1-W17	534.0
C1-W34	540.2
C1-W20	556.1
C1-W30	563.2
C1-W24	594.1
C1-W15	639.1
C1-W18	648.5
C1-W35	658.6
C1-W21	663.2
C1-W40	663.4
C1-W31	689.5
C1-W1	707.9
C1-W25	720.9
C1-W2	739.4
C1-W16	749.2
C1-W36	750.7
C1-W19	753.0
C1-W22	768.1
C1-W32	811.8
C1-W26	844.6
C1-W27	893.0

Notional Distance	
NSR Label:	CYR-C3
Building Name:	
Zone ↑↓	Distance (m) ↑_
C1-W8	79.7
C1-W5	168.9
C1-W11	191.0
C1-W4	274.8
C1-W9	280.5
C1-W6	307.0
C1-W12	313.1
C1-W37	377.0
C1-W10	432.6
C1-W3	434.2
C1-W7	446.4
C1-W13	449.0
C1-W28	451.5
C1-W38	486.8
C1-W33	511.0
C1-W29	540.4
C1-W23	563.8
C1-W14	591.2
C1-W17	596.7
C1-W39	603.3
C1-W20	610.5
C1-W34	624.5
C1-W30	650.1

Notional Distance	
NSR Label:	CYR-C3
Building Name:	
Zone ↑↓	Distance (m) ↑_
C1-W14	591.2
C1-W17	596.7
C1-W39	603.3
C1-W20	610.5
C1-W34	624.5
C1-W30	650.1
C1-W1	674.2
C1-W24	683.9
C1-W15	711.7
C1-W18	714.3
C1-W21	722.8
C1-W2	741.5
C1-W35	741.6
C1-W40	742.7
C1-W31	775.6
C1-W25	808.8
C1-W19	820.9
C1-W16	822.7
C1-W22	831.5
C1-W36	833.3
C1-W32	898.0
C1-W26	932.9
C1-W27	982.0

Notional Distance	
NSR Label:	CYR-C4
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W11	174.1
C1-W8	210.1
C1-W12	294.2
C1-W9	317.9
C1-W5	339.2
C1-W4	362.8
C1-W6	403.5
C1-W13	440.4
C1-W10	457.8
C1-W7	485.7
C1-W37	531.8
C1-W28	610.5
C1-W20	611.3
C1-W38	611.7
C1-W17	625.2
C1-W14	649.5
C1-W33	658.8
C1-W3	661.5
C1-W39	698.5
C1-W29	705.0
C1-W21	733.9
C1-W23	740.8
C1-W34	744.4

Notional Distance	
NSR Label:	CYR-C4
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W3	661.5
C1-W39	698.5
C1-W29	705.0
C1-W21	733.9
C1-W23	740.8
C1-W34	744.4
C1-W18	746.7
C1-W15	769.4
C1-W30	795.9
C1-W1	817.5
C1-W40	834.6
C1-W24	841.2
C1-W35	844.8
C1-W22	848.7
C1-W19	855.5
C1-W16	878.6
C1-W31	896.6
C1-W2	930.6
C1-W36	931.9
C1-W25	942.7
C1-W32	1015.5
C1-W26	1070.1
C1-W27	1127.7

Notional Distance	
NSR Label:	CSR-C1
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W4	69.0
C1-W3	99.1
C1-W5	244.6
C1-W8	282.3
C1-W37	299.3
C1-W6	356.1
C1-W28	358.6
C1-W23	392.4
C1-W9	396.2
C1-W11	419.1
C1-W29	423.1
C1-W33	426.5
C1-W38	439.1
C1-W7	481.3
C1-W12	484.0
C1-W10	525.4
C1-W30	547.0
C1-W34	548.7
C1-W24	552.8
C1-W39	557.5
C1-W2	560.8
C1-W13	577.4
C1-W14	596.2

Notional Distance	
NSR Label:	CSR-C1
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W34	548.7
C1-W24	552.8
C1-W39	557.5
C1-W2	560.8
C1-W13	577.4
C1-W14	596.2
C1-W1	605.0
C1-W17	642.6
C1-W35	670.0
C1-W31	674.1
C1-W25	684.9
C1-W20	687.4
C1-W40	694.6
C1-W15	702.8
C1-W18	735.4
C1-W36	759.9
C1-W21	773.2
C1-W32	792.2
C1-W26	799.2
C1-W16	804.7
C1-W19	828.9
C1-W27	831.9
C1-W22	871.1

Notional Distance	
NSR Label:	CSR-C2
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W4	56.3
C1-W5	108.6
C1-W37	158.7
C1-W3	176.2
C1-W8	184.7
C1-W6	214.8
C1-W28	237.3
C1-W9	263.9
C1-W11	312.5
C1-W38	316.3
C1-W33	317.4
C1-W29	330.2
C1-W23	333.5
C1-W7	342.0
C1-W12	355.3
C1-W10	384.0
C1-W39	436.9
C1-W13	437.8
C1-W34	439.0
C1-W30	449.5
C1-W14	463.0
C1-W24	467.3
C1-W17	502.0

Notional Distance	
NSR Label:	CSR-C2
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W13	437.8
C1-W34	439.0
C1-W30	449.5
C1-W14	463.0
C1-W24	467.3
C1-W17	502.0
C1-W20	546.0
C1-W35	560.3
C1-W15	573.9
C1-W40	577.1
C1-W31	577.6
C1-W25	600.0
C1-W18	600.7
C1-W21	633.3
C1-W36	652.1
C1-W16	679.2
C1-W2	697.4
C1-W19	697.4
C1-W32	698.7
C1-W26	720.4
C1-W1	734.0
C1-W22	734.1
C1-W27	761.7

Notional Distance	
NSR Label:	WB-C1
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W11	96.8
C1-W8	175.3
C1-W12	208.2
C1-W9	243.4
C1-W5	296.6
C1-W6	341.7
C1-W13	353.2
C1-W10	372.8
C1-W4	399.6
C1-W7	421.5
C1-W37	478.2
C1-W20	523.9
C1-W17	540.3
C1-W38	546.6
C1-W28	560.5
C1-W14	568.5
C1-W33	599.0
C1-W39	623.8
C1-W21	646.8
C1-W29	650.6
C1-W18	661.6
C1-W34	678.9
C1-W3	680.8

Notional Distance	
NSR Label:	WB-C1
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W39	623.8
C1-W21	646.8
C1-W29	650.6
C1-W18	661.6
C1-W34	678.9
C1-W3	680.8
C1-W15	687.4
C1-W23	692.0
C1-W30	733.7
C1-W22	761.7
C1-W40	761.7
C1-W19	770.1
C1-W35	770.8
C1-W24	782.2
C1-W16	795.6
C1-W31	826.3
C1-W36	856.3
C1-W25	875.5
C1-W1	882.0
C1-W32	940.6
C1-W2	978.8
C1-W26	1003.6
C1-W27	1063.4

Notional Distance

NSR Label:

L3-C1

Building Name:

Zone ↑↓	Distance (m) ↑↓
C1-W16	66.3
C1-W19	107.4
C1-W40	158.7
C1-W22	164.3
C1-W36	170.4
C1-W15	175.5
C1-W18	201.4
C1-W35	222.4
C1-W21	251.2
C1-W32	257.9
C1-W14	289.3
C1-W39	291.7
C1-W31	298.7
C1-W17	310.1
C1-W34	311.6
C1-W20	345.1
C1-W25	350.7
C1-W30	354.5
C1-W26	361.5
C1-W24	399.6
C1-W38	416.5
C1-W7	420.3
C1-W27	423.6

Notional Distance

NSR Label:

L3-C1

Building Name:

Zone ↑↓	Distance (m) ↑↓
C1-W30	354.5
C1-W26	361.5
C1-W24	399.6
C1-W38	416.5
C1-W7	420.3
C1-W27	423.6
C1-W33	433.5
C1-W10	443.1
C1-W29	460.7
C1-W13	473.1
C1-W23	526.3
C1-W37	543.8
C1-W28	545.5
C1-W6	551.9
C1-W9	609.8
C1-W12	634.5
C1-W4	653.6
C1-W5	685.2
C1-W8	752.3
C1-W11	764.2
C1-W3	880.1
C1-W2	1476.5
C1-W1	1521.5

Notional Distance	
NSR Label:	L3-C2
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W19	130.6
C1-W22	131.8
C1-W16	146.0
C1-W18	246.1
C1-W15	248.6
C1-W21	264.3
C1-W40	267.1
C1-W36	279.2
C1-W35	327.6
C1-W14	357.5
C1-W17	357.9
C1-W32	363.0
C1-W20	374.6
C1-W39	385.0
C1-W31	407.8
C1-W34	411.1
C1-W25	458.4
C1-W26	459.7
C1-W30	462.9
C1-W7	487.1
C1-W10	497.7
C1-W38	504.1
C1-W24	508.6

Notional Distance	
NSR Label:	L3-C2
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W26	459.7
C1-W30	462.9
C1-W7	487.1
C1-W10	497.7
C1-W38	504.1
C1-W24	508.6
C1-W13	510.5
C1-W27	519.6
C1-W33	528.9
C1-W29	562.0
C1-W6	625.6
C1-W37	630.4
C1-W23	633.6
C1-W28	641.4
C1-W9	667.9
C1-W12	680.2
C1-W4	736.2
C1-W5	762.2
C1-W11	814.8
C1-W8	817.4
C1-W3	981.9
C1-W2	1569.9
C1-W1	1610.2

Notional Distance	
NSR Label:	L3-C3
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W22	118.9
C1-W19	132.0
C1-W16	162.3
C1-W18	247.5
C1-W21	255.6
C1-W15	262.2
C1-W40	299.3
C1-W36	317.1
C1-W17	357.7
C1-W35	361.8
C1-W20	366.3
C1-W14	366.5
C1-W32	403.7
C1-W39	411.5
C1-W34	442.0
C1-W31	444.1
C1-W7	493.7
C1-W30	495.8
C1-W10	497.5
C1-W25	497.9
C1-W26	502.9
C1-W13	505.6
C1-W38	521.2

Notional Distance	
NSR Label:	L3-C3
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W30	495.8
C1-W10	497.5
C1-W25	497.9
C1-W26	502.9
C1-W13	505.6
C1-W38	521.2
C1-W24	543.5
C1-W33	550.6
C1-W27	563.2
C1-W29	591.6
C1-W6	634.4
C1-W37	646.2
C1-W28	663.1
C1-W23	664.3
C1-W9	669.1
C1-W12	675.7
C1-W4	750.5
C1-W5	772.0
C1-W11	811.9
C1-W8	820.9
C1-W3	1006.2
C1-W2	1588.2
C1-W1	1625.5

Notional Distance	
NSR Label:	D1-C1a
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W11	31.3
C1-W12	101.6
C1-W8	155.0
C1-W9	163.4
C1-W13	245.8
C1-W5	253.6
C1-W6	266.7
C1-W10	267.1
C1-W7	334.0
C1-W4	401.6
C1-W37	413.0
C1-W20	416.5
C1-W17	434.3
C1-W38	463.9
C1-W14	466.2
C1-W28	497.2
C1-W33	522.6
C1-W39	533.6
C1-W21	539.4
C1-W18	555.3
C1-W29	580.4
C1-W15	583.8
C1-W34	593.8

Notional Distance	
NSR Label:	D1-C1a
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W39	533.6
C1-W21	539.4
C1-W18	555.3
C1-W29	580.4
C1-W15	583.8
C1-W34	593.8
C1-W23	628.6
C1-W30	652.5
C1-W22	654.3
C1-W19	663.5
C1-W40	666.7
C1-W35	675.5
C1-W16	691.1
C1-W3	698.6
C1-W24	704.8
C1-W31	734.9
C1-W36	759.0
C1-W25	787.2
C1-W32	849.0
C1-W26	918.5
C1-W1	953.6
C1-W27	978.5
C1-W2	1029.4

Notional Distance

NSR Label: D1-C1b
Building Name:

Zone ↑↓	Distance (m) ↑↓
C1-W12	69.7
C1-W11	89.6
C1-W9	160.2
C1-W13	177.0
C1-W8	206.7
C1-W10	235.6
C1-W6	263.1
C1-W5	283.1
C1-W7	305.4
C1-W20	345.7
C1-W17	372.2
C1-W14	413.8
C1-W37	416.0
C1-W38	444.6
C1-W4	453.0
C1-W21	469.4
C1-W18	491.3
C1-W28	499.2
C1-W39	504.8
C1-W33	509.8
C1-W15	527.8
C1-W34	568.2
C1-W29	573.4

Notional Distance

NSR Label: D1-C1b
Building Name:

Zone ↑↓	Distance (m) ↑↓
C1-W28	499.2
C1-W39	504.8
C1-W33	509.8
C1-W15	527.8
C1-W34	568.2
C1-W29	573.4
C1-W22	583.9
C1-W19	598.0
C1-W40	625.2
C1-W23	628.6
C1-W30	631.6
C1-W16	631.8
C1-W35	639.1
C1-W24	687.9
C1-W31	706.0
C1-W36	714.2
C1-W3	750.1
C1-W25	767.8
C1-W32	811.9
C1-W26	890.1
C1-W27	950.6
C1-W1	1034.3
C1-W2	1101.1

Notional Distance	
NSR Label:	D1-C2
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W12	56.8
C1-W13	118.2
C1-W11	130.4
C1-W9	153.5
C1-W10	197.8
C1-W8	227.9
C1-W6	249.8
C1-W7	273.2
C1-W20	289.3
C1-W5	291.1
C1-W17	319.2
C1-W14	365.4
C1-W37	404.0
C1-W21	412.9
C1-W38	416.9
C1-W18	437.2
C1-W4	467.1
C1-W39	469.5
C1-W15	477.2
C1-W28	484.7
C1-W33	485.5
C1-W22	527.1
C1-W34	534.8

Notional Distance	
NSR Label:	D1-C2
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W39	469.5
C1-W15	477.2
C1-W28	484.7
C1-W33	485.5
C1-W22	527.1
C1-W34	534.8
C1-W19	543.0
C1-W29	552.2
C1-W16	579.4
C1-W40	581.6
C1-W35	599.7
C1-W30	600.9
C1-W23	611.7
C1-W24	659.4
C1-W36	668.7
C1-W31	670.0
C1-W25	736.2
C1-W32	772.0
C1-W3	773.0
C1-W26	853.4
C1-W27	914.2
C1-W1	1080.1
C1-W2	1136.0

Notional Distance	
NSR Label:	D1-C3
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W12	99.0
C1-W13	106.7
C1-W10	186.5
C1-W9	189.6
C1-W11	202.3
C1-W20	234.0
C1-W7	268.8
C1-W6	272.5
C1-W8	277.1
C1-W17	277.6
C1-W14	338.7
C1-W5	342.1
C1-W21	357.0
C1-W18	387.9
C1-W38	416.7
C1-W37	424.8
C1-W15	435.8
C1-W39	455.9
C1-W22	469.5
C1-W33	489.3
C1-W19	490.8
C1-W28	500.8
C1-W4	510.4

Notional Distance	
NSR Label:	D1-C3
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W39	455.9
C1-W22	469.5
C1-W33	489.3
C1-W19	490.8
C1-W28	500.8
C1-W4	510.4
C1-W34	524.0
C1-W16	533.5
C1-W40	553.2
C1-W29	559.0
C1-W35	578.5
C1-W30	593.6
C1-W23	623.5
C1-W36	636.3
C1-W31	653.9
C1-W24	654.9
C1-W25	725.5
C1-W32	749.2
C1-W3	796.8
C1-W26	835.1
C1-W27	896.3
C1-W1	1148.7
C1-W2	1196.9

Notional Distance

NSR Label:

D1-C4

Building Name:

Zone ↑↓	Distance (m) ↑↓
C1-W13	55.9
C1-W20	125.9
C1-W10	133.1
C1-W12	152.7
C1-W17	185.8
C1-W9	204.9
C1-W7	215.4
C1-W21	247.1
C1-W14	256.0
C1-W6	261.7
C1-W18	279.7
C1-W11	289.2
C1-W15	331.6
C1-W8	335.1
C1-W22	359.7
C1-W38	362.4
C1-W5	372.6
C1-W39	380.9
C1-W19	381.3
C1-W37	401.6
C1-W16	426.4
C1-W33	437.9
C1-W34	451.8

Notional Distance

NSR Label:

D1-C4

Building Name:

Zone ↑↓	Distance (m) ↑↓
C1-W39	380.9
C1-W19	381.3
C1-W37	401.6
C1-W16	426.4
C1-W33	437.9
C1-W34	451.8
C1-W40	460.0
C1-W28	466.6
C1-W35	492.7
C1-W4	496.6
C1-W29	510.0
C1-W30	524.6
C1-W36	542.1
C1-W31	572.6
C1-W23	580.5
C1-W24	588.5
C1-W25	649.1
C1-W32	660.1
C1-W26	750.2
C1-W3	769.3
C1-W27	811.5
C1-W1	1213.9
C1-W2	1228.0

Notional Distance	
NSR Label:	D1-C5
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W20	95.5
C1-W21	108.1
C1-W17	171.1
C1-W18	174.2
C1-W22	185.3
C1-W13	212.2
C1-W19	229.4
C1-W14	249.8
C1-W10	250.1
C1-W15	259.2
C1-W7	298.9
C1-W16	303.9
C1-W12	364.9
C1-W39	377.6
C1-W40	384.5
C1-W9	391.6
C1-W38	414.1
C1-W6	414.9
C1-W35	440.5
C1-W34	446.7
C1-W36	461.1
C1-W33	485.6
C1-W11	502.9

Notional Distance	
NSR Label:	D1-C5
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W6	414.9
C1-W35	440.5
C1-W34	446.7
C1-W36	461.1
C1-W33	485.6
C1-W11	502.9
C1-W37	504.0
C1-W30	520.9
C1-W31	526.5
C1-W8	542.7
C1-W5	545.4
C1-W28	549.7
C1-W29	554.7
C1-W32	582.4
C1-W24	585.7
C1-W25	610.9
C1-W23	632.4
C1-W4	644.4
C1-W26	682.6
C1-W27	747.0
C1-W3	860.9
C1-W2	1386.4
C1-W1	1406.2

Notional Distance	
NSR Label:	D1-C6
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W22	50.5
C1-W19	113.8
C1-W21	119.8
C1-W18	150.0
C1-W16	192.4
C1-W15	219.2
C1-W20	223.0
C1-W17	237.7
C1-W14	279.3
C1-W40	314.0
C1-W13	364.2
C1-W36	366.9
C1-W10	369.4
C1-W39	378.8
C1-W35	381.6
C1-W7	386.8
C1-W34	431.5
C1-W38	450.8
C1-W31	459.6
C1-W32	479.1
C1-W30	497.2
C1-W33	509.3
C1-W6	530.5

Notional Distance	
NSR Label:	D1-C6
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W38	450.8
C1-W31	459.6
C1-W32	479.1
C1-W30	497.2
C1-W33	509.3
C1-W6	530.5
C1-W12	534.4
C1-W9	541.9
C1-W25	543.1
C1-W24	555.4
C1-W37	566.1
C1-W29	569.0
C1-W26	583.0
C1-W28	607.3
C1-W23	646.2
C1-W27	647.1
C1-W5	668.5
C1-W11	672.7
C1-W4	685.6
C1-W8	696.7
C1-W3	947.4
C1-W2	1504.5
C1-W1	1532.6

Notional Distance	
NSR Label:	YTMT-C1
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W36	24.6
C1-W40	83.8
C1-W35	108.5
C1-W32	114.1
C1-W16	127.1
C1-W31	152.2
C1-W15	179.4
C1-W25	197.5
C1-W34	210.2
C1-W19	217.1
C1-W26	218.3
C1-W39	218.8
C1-W30	221.9
C1-W24	253.2
C1-W18	257.9
C1-W14	268.1
C1-W27	282.4
C1-W22	286.6
C1-W21	334.5
C1-W17	335.0
C1-W33	338.1
C1-W38	342.4
C1-W29	348.5

Notional Distance	
NSR Label:	YTMT-C1
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W22	286.6
C1-W21	334.5
C1-W17	335.0
C1-W33	338.1
C1-W38	342.4
C1-W29	348.5
C1-W23	378.3
C1-W7	388.1
C1-W20	401.2
C1-W28	445.6
C1-W10	456.2
C1-W37	465.2
C1-W6	493.3
C1-W13	513.3
C1-W4	523.5
C1-W9	587.8
C1-W5	617.5
C1-W12	631.3
C1-W8	719.9
C1-W11	745.9
C1-W3	928.5
C1-W2	1370.1
C1-W1	1425.5

Notional Distance	
NSR Label:	YTMT-C2
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W32	26.1
C1-W36	63.7
C1-W26	116.4
C1-W31	119.9
C1-W25	131.9
C1-W35	147.1
C1-W40	178.1
C1-W27	179.5
C1-W30	227.1
C1-W24	229.4
C1-W16	231.9
C1-W34	240.4
C1-W39	278.7
C1-W15	279.6
C1-W19	321.7
C1-W29	356.2
C1-W18	360.9
C1-W14	362.6
C1-W33	363.6
C1-W38	385.2
C1-W22	390.6
C1-W23	421.8
C1-W17	431.2

Notional Distance	
NSR Label:	YTMT-C2
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W14	362.6
C1-W33	363.6
C1-W38	385.2
C1-W22	390.6
C1-W23	421.8
C1-W17	431.2
C1-W21	438.1
C1-W7	451.2
C1-W28	463.0
C1-W37	498.4
C1-W20	499.9
C1-W4	526.5
C1-W6	537.3
C1-W10	541.0
C1-W13	602.3
C1-W5	643.3
C1-W9	658.9
C1-W12	711.3
C1-W8	779.0
C1-W11	811.2
C1-W3	939.4
C1-W2	1365.0
C1-W1	1430.7

Notional Distance	
NSR Label:	YTMT-C3
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W26	65.1
C1-W27	72.9
C1-W32	107.5
C1-W25	197.0
C1-W31	226.3
C1-W36	232.8
C1-W35	305.5
C1-W24	322.7
C1-W30	344.5
C1-W40	346.9
C1-W34	383.8
C1-W16	391.3
C1-W39	441.0
C1-W15	448.1
C1-W23	461.9
C1-W29	465.0
C1-W19	480.0
C1-W33	490.1
C1-W14	518.8
C1-W18	527.8
C1-W38	530.2
C1-W22	545.6
C1-W28	578.0

Notional Distance	
NSR Label:	YTMT-C3
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W33	490.1
C1-W14	518.8
C1-W18	527.8
C1-W38	530.2
C1-W22	545.6
C1-W28	578.0
C1-W17	600.1
C1-W21	604.1
C1-W7	616.7
C1-W4	625.6
C1-W37	631.7
C1-W20	668.7
C1-W6	694.2
C1-W10	706.2
C1-W13	769.4
C1-W5	789.6
C1-W9	815.5
C1-W12	873.4
C1-W8	924.8
C1-W11	967.1
C1-W3	1020.5
C1-W2	1428.2
C1-W1	1510.3

Notional Distance	
NSR Label:	YTMT-C4
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W27	67.8
C1-W26	102.4
C1-W32	159.3
C1-W25	223.6
C1-W31	255.7
C1-W36	279.9
C1-W24	344.1
C1-W35	349.0
C1-W30	379.7
C1-W40	393.6
C1-W34	422.5
C1-W16	441.5
C1-W23	479.1
C1-W39	482.0
C1-W29	488.0
C1-W15	496.1
C1-W33	518.3
C1-W19	530.3
C1-W14	563.8
C1-W38	566.5
C1-W18	576.8
C1-W22	596.2
C1-W28	602.0

Notional Distance	
NSR Label:	YTMT-C4
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W19	530.3
C1-W14	563.8
C1-W38	566.5
C1-W18	576.8
C1-W22	596.2
C1-W28	602.0
C1-W4	646.5
C1-W17	646.6
C1-W21	653.3
C1-W7	659.9
C1-W37	662.8
C1-W20	716.1
C1-W6	732.0
C1-W10	748.8
C1-W13	813.4
C1-W5	823.8
C1-W9	853.3
C1-W12	914.0
C1-W8	957.6
C1-W11	1004.4
C1-W3	1032.5
C1-W2	1430.1
C1-W1	1518.3

Notional Distance	
NSR Label:	TMB-C1
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W26	86.4
C1-W27	90.3
C1-W25	92.7
C1-W32	151.5
C1-W24	167.1
C1-W31	170.3
C1-W30	222.4
C1-W36	247.4
C1-W35	261.9
C1-W34	284.7
C1-W29	297.4
C1-W23	314.8
C1-W40	334.8
C1-W33	346.4
C1-W39	357.9
C1-W28	397.9
C1-W38	407.2
C1-W4	428.0
C1-W16	435.4
C1-W15	436.0
C1-W14	463.0
C1-W37	477.0
C1-W19	519.2

Notional Distance	
NSR Label:	TMB-C1
Building Name:	
Zone ↑↓	Distance (m) ↑↓
C1-W4	428.0
C1-W16	435.4
C1-W15	436.0
C1-W14	463.0
C1-W37	477.0
C1-W19	519.2
C1-W7	525.4
C1-W18	526.0
C1-W17	559.0
C1-W6	573.2
C1-W22	591.0
C1-W21	605.1
C1-W10	621.9
C1-W20	636.4
C1-W5	645.0
C1-W9	694.0
C1-W13	695.5
C1-W12	768.5
C1-W8	773.9
C1-W3	805.2
C1-W11	839.4
C1-W2	1203.7
C1-W1	1290.4

Notional Distance

NSR Label: TMB-C2
Building Name:

Zone ↑↓	Distance (m) ↑↓
C1-W24	145.1
C1-W23	177.1
C1-W29	204.2
C1-W25	207.6
C1-W30	208.0
C1-W31	251.0
C1-W28	266.7
C1-W26	266.7
C1-W27	269.4
C1-W33	272.7
C1-W34	274.9
C1-W4	293.7
C1-W32	308.0
C1-W35	314.3
C1-W38	345.3
C1-W39	349.3
C1-W36	365.7
C1-W37	369.1
C1-W40	396.1
C1-W14	463.4
C1-W7	474.3
C1-W15	474.6
C1-W6	487.2

Notional Distance

NSR Label: TMB-C2
Building Name:

Zone ↑↓	Distance (m) ↑↓
C1-W37	369.1
C1-W40	396.1
C1-W14	463.4
C1-W7	474.3
C1-W15	474.6
C1-W6	487.2
C1-W16	512.5
C1-W5	531.9
C1-W17	558.7
C1-W18	561.8
C1-W10	576.8
C1-W19	587.1
C1-W9	608.0
C1-W3	625.2
C1-W21	637.1
C1-W20	637.2
C1-W13	654.8
C1-W8	655.0
C1-W22	657.6
C1-W12	694.2
C1-W11	740.6
C1-W2	1019.8
C1-W1	1107.4

Appendix 3.1

Predicted Construction Noise Level under Unmitigated Scenario

Appendix 3.1 Predicted Construction Noise Levels under Unmitigated Scenario

[illegible]

Appendix 3.1 Predicted Construction Noise Levels under Unmitigated Scenario

NAP ID:	THP-C2a																																					
Criterion:	75	dB(A)																																				
Activity Name	Start	End	Work Zone	Activity Index	SWL, dB(A)	Hori. Distance, m	Vert. Distance, m	Slant Distance, m	Distance Correction, dB(A)	Screening Correction, dB(A)	Façade Correction, dB(A)	2027										2028										2029						
												A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J
DRE Site Area (C1-W1)																																						
Site clearance	Apr-27	Apr-27	C1-W1	SC-DRE	120	70	0	70	-44.9	0	3	78																										
Site formation works	Aug-27	Oct-27	C1-W1	SF-F_3	122	70	0	70	-44.9	0	3						80	80	80																			
C1-W2																																						
Site clearance	Apr-27	Apr-27	C1-W2	SC	123	109	0	109	-48.7	0	3	77																										
Construction of haul road (Ngau Tam Mei Road)	May-27	May-27	C1-W2	RC	119	109	0	109	-48.7	0	3		73																									
Site formation works	May-28	Jul-28	C1-W2	SF-F	117	109	0	109	-48.7	0	3																											
CLC's Foundation Construction	Aug-27	Sep-27	C1-W2	CLC-F	123	109	0	109	-48.7	0	3						77	77																				
CLC's Superstructure	Oct-27	Jan-28	C1-W2	CLC-S	114	109	0	109	-48.7	0	3							68	68	68	68																	
C1-W3																																						
C1-W4																																						
C1-W5																																						
C1-W6																																						
C1-W7																																						
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C1-W27																																						
C1-W28																																						
C1-W29																																						
C1-W30																																						

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

Appendix 3.1 Predicted Construction Noise Levels under Unmitigated Scenario

NAP: Criteria:	THP-C2b 75		dB(A)																														
Activity Name	Start	End	Work Zone	Activity Index	SWL, dB(A)	Hori. Distance, m	Vert. Distance, m	Slant Distance, m	Distance Correction, dB(A)	Screening Correction, dB(A)	Façade Correction, dB(A)	2027								2028								2029					
												A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J
DRE Site Area (C1-W1)																																	
Site clearance	Apr-27	Apr-27	C1-W1	SC-DRE	120	46	0	46	-41.1	0	3	82																					
Site formation works	Aug-27	Oct-27	C1-W1	SF-F_3	122	46	0	46	-41.1	0	3					84	84	84															
C1-W2																																	
Site clearance	Apr-27	Apr-27	C1-W2	SC	123	138	0	138	-50.8	0	3	75																					
Construction of haul road (Ngau Tam Mei Road)	May-27	May-27	C1-W2	RC	119	138	0	138	-50.8	0	3	71																					
Site formation works	May-28	Jul-28	C1-W2	SF-F	117	138	0	138	-50.8	0	3																						
CLC's Foundation Construction	Aug-27	Sep-27	C1-W2	CLC-F	123	138	0	138	-50.8	0	3					75	75																
CLC's Superstructure	Oct-27	Jan-28	C1-W2	CLC-S	114	138	0	138	-50.8	0	3							66	66	66	66												
C1-W3																																	
C1-W4																																	
C1-W5																																	
C1-W6																																	
C1-W7																																	
C1-W8																																	
C1-W9																																	
C1-W10																																	
C1-W11																																	
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C1-W35																																	
C1-W36																																	
C1-W37																																	
C1-W38																																	
C1-W39																																	
C1-W40																																	

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

[illegible]

Appendix 3.1 Predicted Construction Noise Levels under Unmitigated Scenario

NAP ID:		THP-C3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
Criterion:		75	dB(A)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
Activity Name	Start	End	Work Zone	Activity Index	SWL, dB(A)	Hori. Distance, m	Vert. Distance, m	Slant Distance, m	Distance Correction, dB(A)	Screening Correction, dB(A)	Façade Correction, dB(A)	2027										2028										2029																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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Appendix 3.1 Predicted Construction Noise Levels under Unmitigated Scenario

Criterion:	LMV-C1		dB(A)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

Appendix 3.1 Predicted Construction Noise Levels under Unmitigated Scenario

[illegible]

Appendix 3.1 Predicted Construction Noise Levels under Unmitigated Scenario

NAP ID: Criterion:	WTT-C1																																														
	75										dB(A)																																				
Activity Name	Start	End	Work Zone	Activity Index	SWL, dB(A)	Hori. Distance, m	Vert. Distance, m	Slant Distance, m	Distance Correction, dB(A)	Screening Correction, dB(A)	Façade Correction, dB(A)	2027										2028										2029															
												A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J									
DRE Site Area (C1-W1)																																															
Site clearance	Apr-27	Apr-27	C1-W1	SC-DRE	120	277	0	277	-56.8	0	3	66																																			
Site formation works	Aug-27	Oct-27	C1-W1	SF-F_3	122	277	0	277	-56.8	0	3						68	68	68																												
C1-W2																																															
Site clearance	Apr-27	Apr-27	C1-W2	SC	123	73	0	73	-45.2	0	3	81																																			
Construction of haul road (Ngau Tam Mei Road)	May-27	May-27	C1-W2	RC	119	73	0	73	-45.2	0	3		77																																		
Site formation works	May-28	Jul-28	C1-W2	SF-F	117	73	0	73	-45.2	0	3																																				
CLC's Foundation Construction	Aug-27	Sep-27	C1-W2	CLC-F	123	73	0	73	-45.2	0	3						81	81								75	75	75																			
CLC's Superstructure	Oct-27	Jan-28	C1-W2	CLC-S	114	73	0	73	-45.2	0	3								72	72	72	72																									
C1-W3																																															
Site clearance	Apr-27	Apr-27	C1-W3	SC	123	269	0	269	-56.6	0	3	69																																			
Construction of haul road (Ngau Tam Mei Road)	May-27	Jun-27	C1-W3	RC	119	269	0	269	-56.6	0	3		65	65																																	
C1-W4																																															
C1-W5																																															
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C1-W38																																															
C1-W39																																															
C1-W40																																															
Predicted Noise Level, Leq (30mins), dB(A)												81	77	65		81	81	73	72	72	72					75	75	75																			
Concurrent Project (NOL), dB(A)												0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Cumulative Construction Noise Impact, dB(A)												81	77	65	0	81	81	73	72	72	72	0	0	0	0	75	75	75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.																																															

Appendix 3.1 Predicted Construction Noise Levels under Unmitigated Scenario

[illegible]

Appendix 3.1 Predicted Construction Noise Levels under Unmitigated Scenario

NAP: Criterion:		WTT-C3 75		dB(A)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
Activity Name		Start	End	Work Zone	Activity Index	SWL, dB(A)	Hori. Distance, m	Vert. Distance, m	Slant Distance, m	Distance Correction, dB(A)	Screening Correction, dB(A)	Façade Correction, dB(A)	2027										2028										2029																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

Predicted Noise Level, Leq (30mins), dB(A)	80	76	75		72	72	63	63	63	63						66	66	66
Concurrent Project (NOL), dB(A)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cumulative Construction Noise Impact, dB(A)	80	76	75	0	72	72	63	63	63	63	0	0	0	0	0	66	66	66

Appendix 3.1 Predicted Construction Noise Levels under Unmitigated Scenario

NAP ID:

Criterion:

EP-C1

75

	dB(A)
100 Hz	78
125 Hz	69
160 Hz	62
200 Hz	56
250 Hz	50
315 Hz	45
400 Hz	40
500 Hz	36
630 Hz	32
800 Hz	28
1000 Hz	25
1250 Hz	22
1600 Hz	19
2000 Hz	16
2500 Hz	14
3150 Hz	12
4000 Hz	10
5000 Hz	8
6300 Hz	7
8000 Hz	6
10000 Hz	5
Average	45

[illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

[illegible]

Appendix 3.1 Predicted Construction Noise Levels under Unmitigated Scenario

NAP ID:

Criterion:

TV-C1

75

dB(A)

[illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

Predicted Noise Level, Leg (30mins), dB(A)	80	76	76	69	69	60	60	60	60	63	63	63
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[illegible][illegible]

Appendix 3.1 Predicted Construction Noise Levels under Unmitigated Scenario

NAP ID:

TV-C2

dB(A)

[illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

[illegible]

Appendix 3.1 Predicted Construction Noise Levels under Unmitigated Scenario

NAP ID:

Criterion:

GV-C1

dB(A)

[illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

[illegible]

Appendix 3.1 Predicted Construction Noise Levels under Unmitigated Scenario

[illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

Predicted Noise Level, Leq (30mins), dB(A)	81	66				83	83	83	61	61	61						64	64	64
Concurrent Project (NOL), dB(A)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cumulative Construction Noise Impact, dB(A)	81	66	0	0	0	83	83	83	61	61	61	0	0	0	0	0	64	64	64

Appendix 3.1 Predicted Construction Noise Levels under Unmitigated Scenario

[illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

[illegible]

Appendix 3.1 Predicted Construction Noise Levels under Unmitigated Scenario

Criterion:	CYR-C3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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Activity Name	Start	End	Work Zone	Activity Index	SWL, dB(A)	Hori. Distance, m	Vert. Distance, m	Slant Distance, m	Distance Correction, dB(A)	Screening Correction, dB(A)	Façade Correction, dB(A)	2027												2028												2029																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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Appendix 3.1 Predicted Construction Noise Levels under Unmitigated Scenario

NAP ID:	Criterion

CYR-C4
75

	dB(A)
100	100
90	90
80	80
70	70
60	60
50	50
40	40
30	30
20	20
10	10
0	0

[illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

[illegible]

Appendix 3.1 Predicted Construction Noise Levels under Unmitigated Scenario

NAP ID:		CSR-C1		dB(A)																																								
Criterion:		75											2027										2028										2029											
Activity Name		Start	End	Work Zone	Activity Index	SWL, dB(A)	Hori. Distance, m	Vert. Distance, m	Slant Distance, m	Distance Correction, dB(A)	Screening Correction, dB(A)	Façade Correction, dB(A)	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J					
DRE Site Area (C1-W1)																																												
C1-W2																																												
C1-W3																																												
Site clearance		Apr-27	Apr-27	C1-W3	SC	123	99	0	99	-47.9	0	3	78																															
Construction of haul road (Ngau Tam Mei Road)		May-27	Jun-27	C1-W3	RC	119	99	0	99	-47.9	0	3		74	74																													
C1-W4																																												
Site clearance		Apr-27	Apr-27	C1-W4	SC_2	126	69	0	69	-44.8	0	3	84																															
Land decontamination works		May-27	May-27	C1-W4	Decon-1	120	69	0	69	-44.8	0	3		78																														
Construction of haul road (Ngau Tam Mei Road and Road L2)		Jun-27	Jun-27	C1-W4	RC	119	69	0	69	-44.8	0	3			77																													
Construction of temporary bridge (substructure)		Jul-27	Aug-27	C1-W4	TB	116	69	0	69	-44.8	0	3				74	74																											
Construction of temporary bridge (superstructure - 30m span)		Sep-27	Oct-27	C1-W4	TB	116	69	0	69	-44.8	0	3						74	74																									
Site formation works		Aug-28	Dec-28	C1-W4	SF-F	117	69	0	69	-44.8	0	3																																
C1-W5																																												
Site clearance		Apr-27	Apr-27	C1-W5	SC	123	245	0	245	-55.8	0	3	70																															
Site formation works		Jun-27	Dec-27	C1-W5	SF-F_2	121	245	0	245	-55.8	0	3				68	68	68	68	68	68																							
Construction of haul road (Road L2)		Jan-28	Jan-28	C1-W5	RC	119	245	0	245	-55.8	0	3										66																						
C1-W6																																												
C1-W7																																												
C1-W8																																												
Site clearance		Apr-27	Apr-27	C1-W8	SC	123	282	0	282	-57.0	0	3	69																															
Site formation works		Jun-27	Mar-28	C1-W8	SF-F_2	121	282	0	282	-57.0	0	3				67	67	67	67	67	67																							
Construction of haul road (Road L2)		Apr-28	Apr-28	C1-W8	RC	119	282	0	282	-57.0	0	3																																
C1-W9																																												
C1-W10																																												
C1-W11																																												
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Appendix 3.1 Predicted Construction Noise Levels under Unmitigated Scenario

[illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

[illegible]

Appendix 3.1 Predicted Construction Noise Levels under Unmitigated Scenario

WB-C1		dB(A)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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Activity Name	Start	End	Work Zone	Activity Index	SWL, dB(A)	Hori. Distance, m	Vert. Distance, m	Slant Distance, m	Distance Correction, dB(A)	Screening Correction, dB(A)	Façade Correction, dB(A)	2027										2028										2029																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

Appendix 3.1 Predicted Construction Noise Levels under Unmitigated Scenario

NAP ID: Criterion:	L3-C1		dB(A)																																						
	75												2027										2028										2029								
	Activity Name	Start	End	Work Zone	Activity Index	SWL, dB(A)	Hori. Distance, m	Vert. Distance, m	Slant Distance, m	Distance Correction, dB(A)	Screening Correction, dB(A)	Façade Correction, dB(A)	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J		
DRE Site Area (C1-W1)																																									
C1-W2																																									
C1-W3																																									
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C1-W5																																									
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C1-W11																																									
C1-W12																																									
C1-W13																																									
C1-W14																																									
Site clearance	Aug-27	Aug-27	C1-W14	SC	123	289	0	289	-57.2	0	3																														
Site formation works	Jul-28	Aug-28	C1-W14	SF-C	119	289	0	289	-57.2	0	3																														
C1-W15																																									
Site clearance	Sep-27	Sep-27	C1-W15	SC	123	176	0	176	-52.9	0	3																														
Site formation works	Jul-28	Aug-28	C1-W15	SF-C	119	176	0	176	-52.9	0	3																														
C1-W16																																									
Site clearance	Sep-27	Sep-27	C1-W16	SC	123	66	0	66	-44.4	0	3																														
Site formation works	Jul-28	Aug-28	C1-W16	SF-F_2	121	66	0	66	-44.4	0	3																														
C1-W17																																									
C1-W18																																									
Site clearance	Jul-27	Jul-27	C1-W18	SC	123	201	0	201	-54.1	0	3																														
Site formation works	Jul-28	Aug-28	C1-W18	SF-C	119	201	0	201	-54.1	0	3																														
C1-W19																																									
Site clearance	Aug-27	Aug-27	C1-W19	SC	123	107	0	107	-48.6	0	3																														
Site formation works	Jul-28	Aug-28	C1-W19	SF-C	119	107	0	107	-48.6	0	3																														
C1-W20																																									
C1-W21																																									
Site clearance	May-27	May-27	C1-W21	SC	123	251	0	251	-56.0	0	3																														
Site formation works	Apr-28	May-28	C1-W21	SF-C	119	251	0	251	-56.0	0	3																														
Construction of haul road (Road D1)	Jun-28	Jun-28	C1-W21	RC	119	251	0	251	-56.0	0	3																														
C1-W22																																									
Site clearance	May-27	May-27	C1-W22	SC	123	164	0	164	-52.3	0	3																														
Land decontamination works	Jun-27	Jun-27	C1-W22	Decon-2	119	164	0	164	-52.3	0	3																														
Site formation works	May-28	Jun-28	C1-W22	SF-C_2	122	164	0	164	-52.3	0	3																														
Construction of haul road (Road D1)	Jul-28	Jul-28	C1-W22	RC	119	164	0	164	-52.3	0	3																														
C1-W23																																									
C1-W24																																									
C1-W25																																									
C1-W26																																									
C1-W27																																									
C1-W28																																									
C1-W29																																									
C1-W30																																									
C1-W31																																									
Site clearance	Nov-28	Nov-28	C1-W31	SC	123	299	0	299	-57.5	0	3																														
Site formation works	Dec-28	Dec-28	C1-W31	SF-F	117	299	0	299	-57.5	0	3																														
C1-W32																																									
Site clearance	Dec-28	Jan-29	C1-W32	SC	123	258	0	258	-56.2	0	3																														
Site formation works	Feb-29	Apr-29	C1-W32	SF-F	117	258	0	258																																	

Appendix 3.1 Predicted Construction Noise Levels under Unmitigated Scenario

Criterion:	L3-C2	dB(A)																																					
	75											2027										2028										2029							
Activity Name	Start	End	Work Zone	Activity Index	SWL, dB(A)	Hori. Distance, m	Vert. Distance, m	Slant Distance, m	Distance Correction, dB(A)	Screening Correction, dB(A)	Façade Correction, dB(A)	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	
DRE Site Area (C1-W1)																																							
C1-W2																																							
C1-W3																																							
C1-W4																																							
C1-W5																																							
C1-W6																																							
C1-W7																																							
C1-W8																																							
C1-W9																																							
C1-W10																																							
C1-W11																																							
C1-W12																																							
C1-W13																																							
C1-W14																																							
C1-W15																																							
Site clearance	Sep-27	Sep-27	C1-W15	SC	123	249	0	249	-55.9	0	3																												
Site formation works	Jul-28	Aug-28	C1-W15	SF-C	119	249	0	249	-55.9	0	3																												
C1-W16																																							
Site clearance	Sep-27	Sep-27	C1-W16	SC	123	146	0	146	-51.3	0	3																												
Site formation works	Jul-28	Aug-28	C1-W16	SF-F_2	121	146	0	146	-51.3	0	3																												
C1-W17																																							
C1-W18																																							
Site clearance	Jul-27	Jul-27	C1-W18	SC	123	246	0	246	-55.8	0	3																												
Site formation works	Jul-28	Aug-28	C1-W18	SF-C	119	246	0	246	-55.8	0	3																												
C1-W19																																							
Site clearance	Aug-27	Aug-27	C1-W19	SC	123	131	0	131	-50.3	0	3																												
Site formation works	Jul-28	Aug-28	C1-W19	SF-C	119	131	0	131	-50.3	0	3																												
C1-W20																																							
C1-W21																																							
Site clearance	May-27	May-27	C1-W21	SC	123	264	0	264	-56.4	0	3																												
Site formation works	Apr-28	May-28	C1-W21	SF-C	119	264	0	264	-56.4	0	3																												
Construction of haul road (Road D1)	Jun-28	Jun-28	C1-W21	RC	119	264	0	264	-56.4	0	3																												
C1-W22																																							
Site clearance	May-27	May-27	C1-W22	SC	123	132	0	132	-50.4	0	3																												
Land decontamination works	Jun-27	Jun-27	C1-W22	Decon-2	119	132	0	132	-50.4	0	3																												

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

Appendix 3.1 Predicted Construction Noise Levels under Unmitigated Scenario

NAP ID:

L3-C3

Criterion:

75

dB(A)

[illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

Predicted Noise Level, Leq (30mins), dB(A)

Concurrent Project (NOL), dB(A)

Cumulative Construction Noise Impact, dB(A)

78 73 70 76 75 66 76 76 78 76 68 62 62

0 0

78 73 70 76 75 0 0 0 0 0 0 66 76 76 78 76 0 0 0 0 0 0 68 62 62

Appendix 3.1 Predicted Construction Noise Levels under Unmitigated Scenario

[illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

[illegible]

Appendix 3.1 Predicted Construction Noise Levels under Unmitigated Scenario

[illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

Appendix 3.1 Predicted Construction Noise Levels under Unmitigated Scenario

Criterion:	Activity Name	D1-C2										D1-C3										D1-C4										D1-C5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
		Start	End	Work Zone	Activity Index	SWL, dB(A)	Hori. Distance, m	Vert. Distance, m	Slant Distance, m	Distance Correction, dB(A)	Screening Correction, dB(A)	Façade Correction, dB(A)	2027										2028										2029																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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DRE Site Area (C1-W1)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											</

Appendix 3.1 Predicted Construction Noise Levels under Unmitigated Scenario

Criterion:	D1-C3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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Activity Name	Start	End	Work Zone	Activity Index	SWL, dB(A)	Hori. Distance, m	Vert. Distance, m	Slant Distance, m	Distance Correction, dB(A)	Screening Correction, dB(A)	Façade Correction, dB(A)	2027												2028												2029																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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DRE Site Area (C1-W1)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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C1-W4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
C1-W5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
C1-W6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
Site clearance													May-27		May-27	C1-W6	SC	123		273		0	273	-56.7		0	3	69																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					</

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

Predicted Noise Level, Leq [30mins], dB(A)	82	80	72	72	70	70	70	72	73	73	79	79	79	79	76	71
Concurrent Project (NOL), dB(A)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cumulative Construction Noise Impact, dB(A)	82	80	72	72	70	70	70	72	73	73	79	79	79	79	76	71

Appendix 3.1 Predicted Construction Noise Levels under Unmitigated Scenario

Criterion:	D1-C4		dB(A)																																					
	75																																							
	Activity Name	Start	End	Work Zone	Activity Index	SWL, dB(A)	Hori. Distance, m	Vert. Distance, m	Slant Distance, m	Distance Correction, dB(A)	Screening Correction, dB(A)	Façade Correction, dB(A)	2027								2028								2029											
													A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	
DRE Site Area (C1-W1)																																								
C1-W2																																								
C1-W3																																								
C1-W4																																								
C1-W5																																								
C1-W6																																								
Site clearance	May-27	May-27	C1-W6	SC	123	262	0	262	-56.3	0	3			70																										
Site formation works	Nov-27	Jan-28	C1-W6	SF-C	119	262	0	262	-56.3	0	3								66	66	66																			
C1-W7																																								
Site clearance	Jun-27	Jun-27	C1-W7	SC	123	215	0	215	-54.6	0	3				71																									
Site formation works	Apr-28	Jun-28	C1-W7	SF-C	119	215	0	215	-54.6	0	3																													
C1-W8																																								
C1-W9																																								
Site clearance	May-27	May-27	C1-W9	SC	123	205	0	205	-54.2	0	3																													
Site formation works	Oct-27	Dec-27	C1-W9	SF-C	119	205	0	205	-54.2	0	3								68	68	68																			
C1-W10																																								
Site clearance	May-27	May-27	C1-W10	SC	123	133	0	133	-50.5	0	3																													
Site formation works	Feb-28	Apr-28	C1-W10	SF-C	119	133	0	133	-50.5	0	3																													
C1-W11																																								
Site clearance	Apr-27	Apr-27	C1-W11	SC	123	289	0	289	-57.2	0	3	69																												
Land decontamination works	May-27	May-27	C1-W11	Decon-1	120	289	0	289	-57.2	0	3																													
Site formation works	Jun-27	Mar-28	C1-W11	SF-F	117	289	0	289	-57.2	0	3																													
Construction of haul road (Road L2 & D1)	Apr-28	Apr-28	C1-W11	RC	119	289	0	289	-57.2	0	3																													
C1-W12																																								
Site clearance	Apr-27	Apr-27	C1-W12	SC	123	153	0	153	-51.7	0	3																													
Land decontamination works	May-27	May-27	C1-W12	Decon-1	120	153	0	153	-51.7	0	3																													
Site formation works	Jan-28	Apr-28	C1-W12	SF-C	119	153	0	153	-51.7	0	3																													
Construction of haul road (Road D1)	May-28	May-28	C1-W12	RC	119	153	0	153	-51.7	0	3																													
C1-W13																																								
Site clearance	Apr-27	Apr-27	C1-W13	SC	123	56	0	56	-42.9	0	3																													
Land decontamination works	May-27	May-27	C1-W13	Decon-1	120	56	0	56	-42.9	0	3																													
Site formation works	Jan-28	Mar-28	C1-W13	SF-C_2	122	56	0	56	-42.9	0	3																													
Construction of haul road (Road D1)	Apr-28	Apr-28	C1-W13	RC	119	56	0	56	-42.9	0	3																													
C1-W14																																								
Site clearance	Aug-27	Aug-27	C1-W14	SC	123	256	0	256	-56.1	0	3																													
Site formation works	Jul-28	Aug-28	C1-W14	SF-C	119	256	0	256	-56.1	0	3																													
C1-W15																																								
C1-W16																																								

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

[illegible]

Appendix 3.1 Predicted Construction Noise Levels under Unmitigated Scenario

[illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

[illegible]

Appendix 3.1 Predicted Construction Noise Levels under Unmitigated Scenario

NAP ID:
Criterion

D1-C6
75

dB(A)

[illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

[illegible]

Appendix 3.1 Predicted Construction Noise Levels under Unmitigated Scenario

AP ID: Criterion:	TYMT-C1																																							
	75 dB(A)																																							
	Activity Name	Start	End	Work Zone	Activity Index	SWL, dB(A)	Hori. Distance, m	Vert. Distance, m	Slant Distance, m	Distance Correction, dB(A)	Screening Correction, dB(A)	Façade Correction, dB(A)	2027										2028										2029							
													A	M	J	J	A	S	O	N	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J
DRE Site Area (C1-W1)																																								
C1-W2																																								
C1-W3																																								
C1-W4																																								
C1-W5																																								
C1-W6																																								
C1-W7																																								
C1-W8																																								
C1-W9																																								
C1-W10																																								
C1-W11																																								
C1-W12																																								
C1-W13																																								
C1-W14																																								
Site clearance																																								
Site formation works																																								
C1-W15																																								
Site clearance																																								
Site formation works																																								
C1-W16																																								
Site clearance																																								
Site formation works																																								
C1-W17																																								
C1-W18																																								
Site clearance																																								
Site formation works																																								
C1-W19																																								
Site clearance																																								
Site formation works																																								
C1-W20																																								
C1-W21																																								
C1-W22																																								
Site clearance																																								
Land decontamination works																																								
Site formation works																																								
Construction of haul road (Road D1)																																								
C1-W23																																								
C1-W24																																								
Site clearance																																								
Site formation works																																								
C1-W25																																								
Site clearance																																								
Site formation works																																								
C1-W26																																								
Site clearance																																								
Site formation works																																								
C1-W27																																								
Site clearance																																								
Site formation works																																								
C1-W28																																								
C1-W29																																								
C1-W30																																								
Site clearance																																								
Site formation works																																								
C1-W31																																								
Site clearance																																								
Site formation works																																								
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C1-W35																																								
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C1-W36																																								
Site clearance																																								
Site formation works																																								
C1-W37																																								
C1-W38																																								
C1-W39																																								
Site clearance																																								
Site formation works																																								
C1-W40																																								
Site clearance																																								
Site formation works																																								

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

[illegible]

Appendix 3.1 Predicted Construction Noise Levels under Unmitigated Scenario

NAP ID:

YTMT-C2

Criterion:

dB(A)

dB(A)

[illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

Predicted Noise Level, Leq (30mins), dB(A)

Concurrent Project (NOL), dB(A)

Cumulative Construction Noise Impact, dB(A)

Appendix 3.1 Predicted Construction Noise Levels under Unmitigated Scenario

NAP ID:

Criterion:

YTMT-C3

75 dB(A)

[illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

Predicted Noise Level, Leq (30mins), dB(A)

Concurrent Project (NOL), dB(A)

Cumulative Construction Noise Impact, dB(A)

Predicted Noise Level, Leq (30mins), dB(A)	72	82	82	84	81	82	82	82	82	77	76	76
--	----	----	----	----	----	----	----	----	----	----	----	----

[illegible]

Cumulative Construction Noise Impact, dB(A)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	72	82	82	84	81	82	82	82	82	82	77	76	76
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----

Appendix 3.1 Predicted Construction Noise Levels under Unmitigated Scenario

NAP ID:
Criterion

YTMT-C4
75

dB(A)

[illegible]

Appendix 3.1 Predicted Construction Noise Levels under Unmitigated Scenario

Criterion:	TMB-C1		dB(A)																																							
	Activity Name	Start	End	Work Zone	Activity Index	SWL, dB(A)	Hori. Distance, m	Vert. Distance, m	Slant Distance, m	Distance Correction, dB(A)	Screening Correction, dB(A)	Façade Correction, dB(A)	2027												2028												2029					
													A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J			
DRE Site Area (C1-W1)																																										
C1-W2																																										
C1-W3																																										
C1-W4																																										
C1-W5																																										
C1-W6																																										
C1-W7																																										
C1-W8																																										
C1-W9																																										
C1-W10																																										
C1-W11																																										
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Site clearance																																										
Site formation works																																										
C1-W25																																										
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C1-W26																																										
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C1-W27																																										
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Site clearance																																										
Site formation works																																										
C1-W32																																										
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Site clearance																																										
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C1-W35																																										
Site clearance																																										
Site formation works																																										
C1-W36																																										
Site clearance																																										
Site formation works																																										
C1-W37																																										
C1-W38																																										
C1-W39																																										
C1-W40																																										
* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.																																										
Predicted Noise Level, Leq (30mins), dB(A)																																										
Concurrent Project (NOL), dB(A)																																										
Cumulative Construction Noise Impact, dB(A)																																										

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

Appendix 3.1 Predicted Construction Noise Levels under Unmitigated Scenario

NAP ID:

TMB-C2

Criterion:

dB(A)

dB(A)

[illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

Predicted Noise Level, Leq (30mins), dB(A)

Concurrent Project (NOL), dB(A)

Cumulative Construction Noise Impact, dB(A)

Appendix 4.1

Plant Inventory (Mitigated Scenario)

Appendix 4.1 Plant Inventory (Mitigated Scenario)

Identification Code *	PME	Maximum Quantity
CNP 002	Air Compressor, air flow > 10m ³ /min and ≤ 30m ³ /min	1
CNP 046	Concrete mixer (petrol)	2
CNP 047	Concrete pump, stationary/lorry mounted	2
CNP 103	Generator, super silenced, 70dB(A) at 7m	19
CNP 185	Road roller	7
CNP 186	Roller, vibratory	1
CNP 283	Water pump, submersible (electric)	24
EPD-15909	Bulldozer, tracked	4
EPD-15988	Road Roller	8
EPD-16208	Crane, mobile	13
EPD-16432	Excavator, wheeled/tracked	18
EPD-16597	Excavator, wheeled/tracked	38
OCUPME-009	Breaker, electric hand-held, 18kg ≤ mass ≤ 35kg	4
OCUPME-019	Concrete lorry mixer, gross vehicle weight ≤ 30 tonne, mixing drum rotation rate ≤ 10rpm	1
OCUPME-022	Drill rig, rotary type (diesel)	1
OCUPME-032	Grout mixer	4
OCUPME-036	Hydraulic concrete crusher	10
OCUPME-040	Poker, vibratory, hand-held (electric)	1
OCUPME-071	Lorry, with crane/grab, 5.5 tonne < gross vehicle weight ≤ 38 tonne	3
OCUPME-073	Dump truck, 5.5 tonne < gross vehicle weight ≤ 38 tonne	37
Ref 1	Quieter Type Blade Saw	6
Ref 2	Kubota U55-4 excavator rig, with HushTec Construction Barrier	11

* Identification codes of PME are presented in Appendix 2.4.

Appendix 4.2

*Predicted Sound Power Levels for Construction Activity Groups
under Mitigated Scenario*

Appendix 4.2 Predicted Sound Power Levels for Construction Activity Groups under Mitigated Scenario

Activity Index	Reference Code	Activities	Unit SWL, dB(A)	No. of plant item	Utilisation rate	Type of Noise Control	Noise Reduction, dB(A)	Corrected SWL, dB(A)	Group SWL, dB(A)	Max Group SWL, dB(A)
SC-DRE		<u>Group A</u>								106
	EPD-16208	Crane, mobile	100	1	100%			100		
	EPD-16597	Excavator, wheeled/tracked	101	1	100%			101		
	Ref 2	Kubota U55-4 excavator rig, with HushTec Construction Barrier	103	1	50%			100		
	CNP 103	Generator, super silenced, 70dB(A) at 7m	95	1	100%			95		
	CNP 283	Water pump, submersible (electric)	85	1	100%			85	106	
		<u>Group B</u>								
	OCUPME-073	Dump truck, 5.5 tonne < gross vehicle weight ≤ 38 tonne	105	1	60%			103		
	CNP 103	Generator, super silenced, 70dB(A) at 7m	95	1	100%			95		
	CNP 283	Water pump, submersible (electric)	85	1	100%			85	104	
SC		<u>Group A</u>								106
	EPD-16208	Crane, mobile	100	1	100%			100		
	EPD-16432	Excavator, wheeled/tracked	98	2	100%			101		
	Ref 2	Kubota U55-4 excavator rig, with HushTec Construction Barrier	103	1	50%			100		
	OCUPME-036	Hydraulic concrete crusher	94	1	100%			94		
	CNP 103	Generator, super silenced, 70dB(A) at 7m	95	1	100%			95		
	CNP 283	Water pump, submersible (electric)	85	2	100%			88	106	
		<u>Group B</u>								
	OCUPME-073	Dump truck, 5.5 tonne < gross vehicle weight ≤ 38 tonne	105	2	60%			106		
	CNP 103	Generator, super silenced, 70dB(A) at 7m	95	1	100%			95		
	CNP 283	Water pump, submersible (electric)	85	2	100%			88	106	
SC_2		<u>Group A</u>								110
	EPD-16208	Crane, mobile	100	2	100%			103		
	EPD-16597	Excavator, wheeled/tracked	101	4	100%			107		
	Ref 2	Kubota U55-4 excavator rig, with HushTec Construction Barrier	103	2	50%			103	110	
	OCUPME-036	Hydraulic concrete crusher	94	2	100%					
	CNP 103	Generator, super silenced, 70dB(A) at 7m	95	2	100%			98		
	CNP 283	Water pump, submersible (electric)	85	4	100%			91	99	
		<u>Group B</u>								
	OCUPME-073	Dump truck, 5.5 tonne < gross vehicle weight ≤ 38 tonne	105	4	60%			109		
	CNP 103	Generator, super silenced, 70dB(A) at 7m	95	2	100%			98		
	CNP 283	Water pump, submersible (electric)	85	4	100%			91	109	
SF-F	EPD-16208	Crane, mobile	100	1	100%			100		109
	EPD-16597	Excavator, wheeled/tracked	101	2	100%			104		
	OCUPME-073	Dump truck, 5.5 tonne < gross vehicle weight ≤ 38 tonne	105	2	60%			106		
	EPD-15988	Road Roller	94	1	70%			92		
	CNP 103	Generator, super silenced, 70dB(A) at 7m	95	1	100%			95		
	CNP 283	Water pump, submersible (electric)	85	2	100%			88	109	
SF-F_2	EPD-16208	Crane, mobile	100	2	100%			103		111
	EPD-16432	Excavator, wheeled/tracked	98	4	100%			104		
	OCUPME-073	Dump truck, 5.5 tonne < gross vehicle weight ≤ 38 tonne	105	4	60%			109		
	EPD-15988	Road Roller	94	2	70%			95		
	CNP 103	Generator, super silenced, 70dB(A) at 7m	95	2	100%			98		
	CNP 283	Water pump, submersible (electric)	85	4	100%			91	111	
SF-F_3	EPD-16208	Crane, mobile	100	3	100%			105		113
	EPD-16432	Excavator, wheeled/tracked	98	6	100%			106		
	OCUPME-073	Dump truck, 5.5 tonne < gross vehicle weight ≤ 38 tonne	105	6	60%			111		
	EPD-15988	Road Roller	94	3	70%			97		
	CNP 103	Generator, super silenced, 70dB(A) at 7m	95	3	100%			100		
	CNP 283	Water pump, submersible (electric)	85	6	100%			93	113	
SF-C	EPD-16208	Crane, mobile	100	1	100%			100		112
	EPD-16597	Excavator, wheeled/tracked	101	4	100%			107		
	OCUPME-073	Dump truck, 5.5 tonne < gross vehicle weight ≤ 38 tonne	105	4	60%			109		
	CNP 185	Road roller	108	1	20%			101		
	CNP 103	Generator, super silenced, 70dB(A) at 7m	95	1	100%			95		
	CNP 283	Water pump, submersible (electric)	85	2	100%			88	112	
SF-C_2	EPD-16208	Crane, mobile	100	2	100%			103		115
	EPD-16597	Excavator, wheeled/tracked	101	8	100%			110		
	OCUPME-073	Dump truck, 5.5 tonne < gross vehicle weight ≤ 38 tonne	105	8	60%			112		
	CNP 185	Road roller	108	2	20%			104		
	CNP 103	Generator, super silenced, 70dB(A) at 7m	95	2	100%			98		
	CNP 283	Water pump, submersible (electric)	85	4	100%			91	115	
RC		<u>Group A</u>								108
	Ref 2	Kubota U55-4 excavator rig, with HushTec Construction Barrier	103	1	50%			100	100	
		<u>Group B</u>								
	CNP 103	Generator, super silenced, 70dB(A) at 7m	95	1	100%			95		
	Ref 1	Quieter Type Blade Saw	106	2	70%			107	108	
		<u>Group C</u>								
	EPD-16597	Excavator, wheeled/tracked	101	2	70%			102		
	OCUPME-073	Dump truck, 5.5 tonne < gross vehicle weight ≤ 38 tonne	105	1	50%			102	105	
Decon-1		<u>Group D</u>								
	OCUPME-071	Lorry, with crane/grab, 5.5 tonne < gross vehicle weight ≤ 38 tonne	105	1	50%			102	102	
										113
	EPD-16597	Excavator, wheeled/tracked	101	4	80%			106		
	OCUPME-009	Breaker, electric hand-held, 18kg ≤ mass ≤ 35kg	108	1	80%			107		
	EPD-15909	Bulldozer, tracked	108	1	80%			107		
	OCUPME-073	Dump truck, 5.5 tonne < gross vehicle weight ≤ 38 tonne	105	4	30%			106		
	CNP 103	Generator, super silenced, 70dB(A) at 7m	95	3	100%			100		
Decon-2	OCUPME-032	Grout mixer	90	1	80%			89		
	EPD-15988	Road Roller	94	1	80%			93		
	CNP 283	Water pump, submersible (electric)	85	2	100%			88	113	
										113
	EPD-16597	Excavator, wheeled/tracked	101	3	80%			105		
	OCUPME-009	Breaker, electric hand-held, 18kg ≤ mass ≤ 35kg	108	1	80%			107		
	EPD-15909	Bulldozer, tracked	108	1	80%			107		
	OCUPME-073	Dump truck, 5.5 tonne < gross vehicle weight ≤ 38 tonne	105	2	30%			103		
TB	CNP 103	Generator, super silenced, 70dB(A) at 7m	95	2	100%			98		
	OCUPME-032	Grout mixer	90	1	80%			89		
	EPD-15988	Road Roller	94	1	80%			93		
	CNP 283	Water pump, submersible (electric)	85	2	100%			88	113	
		<u>Group B</u>								
	CNP 103	Generator, super silenced, 70dB(A) at 7m	95	1	100%			95		
		<u>Group A</u>								
	EPD-16208	Crane, mobile	100	2	70%			101		
	CNP 047	Concrete pump, stationary/lorry mounted	109	1	30%			104		
	CNP 046	Concrete mixer (petrol)	96	2	70%			97		
CLC-F	CNP 186	Roller, vibratory	108	1	50%			105		
	OCUPME-073	Dump truck, 5.5 tonne < gross vehicle weight ≤ 38 tonne	105	1	50%			102		
	CNP 103	Generator, super silenced, 70dB(A) at 7m	95	1	100%			95	110	
										109
		<u>Group A</u>								
	EPD-16208	Crane, mobile	100	1	60%			98		
	EPD-16597	Excavator, wheeled/tracked	101	2	60%			102		
	Ref 2	Kubota U55-4 excavator rig, with HushTec Construction Barrier	103	2	50%			103		
	CNP 103	Generator, super silenced, 70dB(A) at 7m	95	1	100%			95		
	CNP 283	Water pump, submersible (electric)	85	2	100%			88	107	
CLC-S		<u>Group B</u>								
	CNP 103	Generator, super silenced, 70dB(A) at 7m	95	1	100%			95		
	OCUPME-019	Concrete lorry mixer, gross vehicle weight ≤ 30 tonne, mixing drum rotation rate ≤ 10rpm	103	1	60%			101		
	OCUPME-040	Poker, vibratory, hand-held (electric)	102	1	60%			100		
	CNP 047	Concrete pump, stationary/lorry mounted	109	1	60%			107	109	
		<u>Group C</u>								
	EPD-16208	Crane, mobile	100	2	80%			102	102	
										109
		<u>Group A</u>								
	OCUPME-071	Lorry, with crane/grab, 5.5 tonne < gross vehicle weight ≤ 38 tonne	105	1	60%			103	103	

Brochure and Test Report of the Quieter Equipment Model

(Extracted from the approved CNMP for Construction and Operation of
Carriageway Bridge for Development of Tseung Kwan O Area 132)

ROCK BREAKERS

HUSHTEC BREAKER ATTACHMENT

THE NEW HUSHTEC ROCK BREAKER NOISE CONTROL ATTACHMENT WAS DEVELOPED TO MITIGATE THE HAMMER NOISE EFFECTS, control dust and prevent abrasive injuries to personnel onsite by also controlling flying concrete chip and debris.



MITIGATE NOISE, DUST AND FLYING DEBRIS

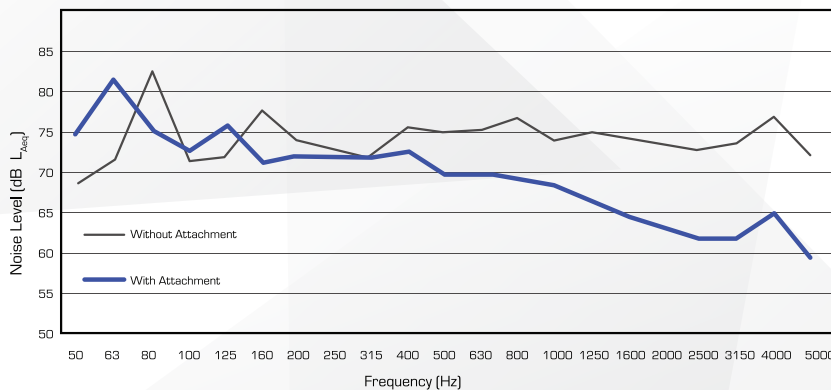


Features & Benefits:

- ▶ Mitigates noise
- ▶ Reduces Dust
- ▶ Prevents Flying Debris/chip
- ▶ 1-minute install / removal
- ▶ Available to suit breakers from 1Ton – over 100T in size
- ▶ Personalized branding available

NOISE TESTING

THIRD OCTAVE BAND SPECTRA FOR MEAUREMENTS



MEASUREMENT RESULTS

ROCK BREAKER Attachment	DURATION (m:ss)	NOISE Level
On	6:25	78 dB LAeq
Off	7:35	86 dB LAeq

Contact us today to learn further about how our bespoke and customized HUSHTEC solutions can advance your site safety and help you comply with noise governing laws.



Scan me

MEMO

Project:	HushTec Construction Barrier Testing	Document No.:	Mm 001		
To:	Duraflex Distribution	Date:	7 February 2020		
Attention:	Brentley Stewart	Cross Reference:			
Delivery:	Email	Project No.:	20190714		
From:	Pranaya Thaker	No. Pages:	5	Attachments:	No
Subject:	Rock Breaker Attachment Measurements				

Duraflex Distribution requested that Marshall Day Acoustics measure the noise reduction performance of their new rock breaker attachment during concrete breaking at their site at 1800 SH1, Kaiwaka.

We visited their site on 3 February 2020 for these measurements. This memo summarises our findings. See Appendix A for photos taken during the measurements.

Measurements and Results

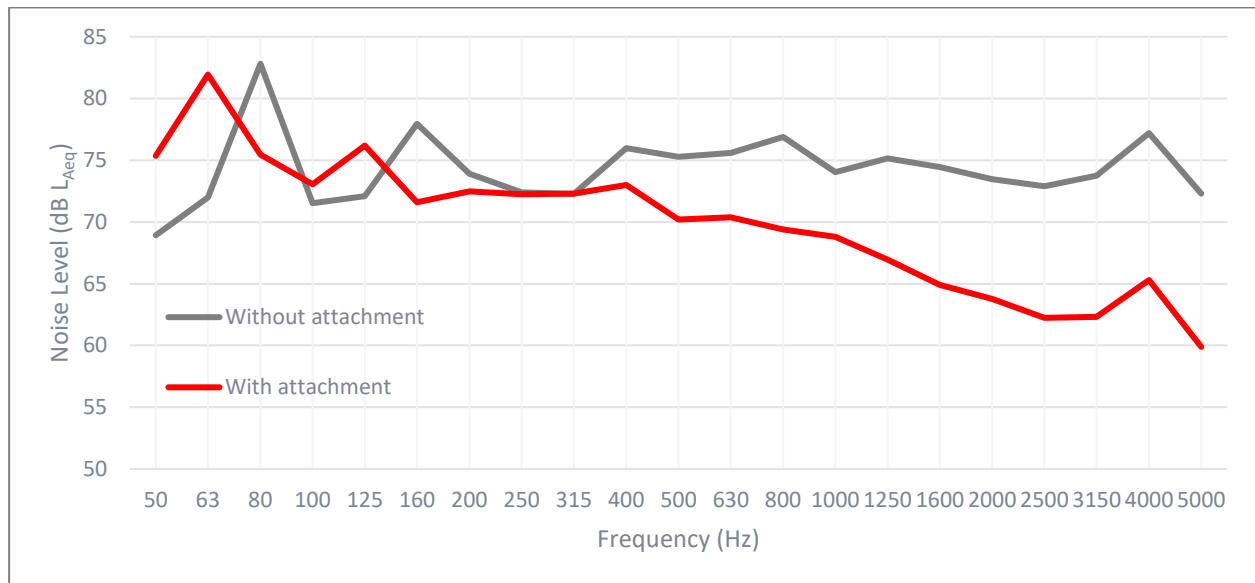
We measured noise from a 5.5 tonne Kubota U55-4 excavator rig breaking a concrete pad just outside your warehouse. We first measured with the rock breaker attachment, and then without the attachment for comparison. Due to the small total area of concrete that was available for breaking, we only measured each scenario for around 7 minutes. While the dominant noise source during the measurements was the concrete breaking, measured at a distance of approximately 7m, there were also high background noise levels due to the proximity of SH1.

The results are summarised in Table 1, and the third octave band spectrum measured for both scenarios is presented in Figure 1.

Table 1: Measurement results

Rock Breaker Attachment	Duration (m:ss)	Noise Level
On	6:25	78 dB LAeq
Off	7:35	86 dB LAeq

Figure 1: Third octave band spectra for measurements



Discussion and Conclusion

Measurements show that there was a difference of 8 decibels. However, the measurements were not controlled, and there was a number of complicating factors in the measurements. As such, we can't say with certainty that the noise level difference measured is the noise reduction that can be expected when using the rock breaker attachment on any sized equipment on any site.

Specifically, the complicating factors include:

- Road traffic noise from SH1
- Short measurement durations
- Only one breaking material measured
- Only one size of breaker measured.

As the Duraflex site is along SH1, and the concrete breaking was measured along the roadside façade of the warehouse quite close to SH1, there was significant influence from road traffic noise in the measurements. Unfortunately, due to the short measurement durations, we can't assume the contribution from road traffic was equal between the two measurements and so cannot ignore it.

However, the most significant component of road traffic noise is in the lower frequencies. The influence from road traffic noise in these lower frequencies is likely the reason the two spectra in Figure 1 cross over each other below 250 Hz, but are more clearly separated at the mid and high frequencies (where traffic noise would be less present). As such, we are limited to assessing the performance of the rock breaker attachment at these mid and high frequencies.

New Zealand Standard NZS 6803:1999 'Acoustics – Construction Noise' recommends a measurement duration of 15 minutes for construction activities, as this will generally capture a representative sample of the activity. Unfortunately, due to the limited volume of concrete available for breaking, a longer measurement wasn't possible. This may have resulted in an inadequate sampling of rock breaking with and without the attachment.

Further limitations were that only concrete was available to break, and only one size of breaker was captured – a relatively small 5.5 tonne rig. It's very common to require basalt breaking, which generates higher noise levels compared to concrete breaking. Measuring the noise reduction performance of the attachment during basalt breaking would provide valuable data and allow us to determine a more general expected noise reduction performance. Similarly, measurements on larger breakers – which are more commonly used for

breaking than the small rig measured – would also provide meaningful data and help to determine the general performance of the attachment.

Due to the complicating factors discussed, we consider the measured noise reduction performance of the attachment of 8 decibels to be indicative, as opposed to definite. With more measurements, and measurements that are more controlled, the performance rating can be determined with more certainty.

APPENDIX A MEASUREMENT PHOTOS

Figure A1: With rock breaker attachment



Figure A2: Without rock breaker attachment



Figure A3: Concrete pad thickness



Figure A4: Broken concrete

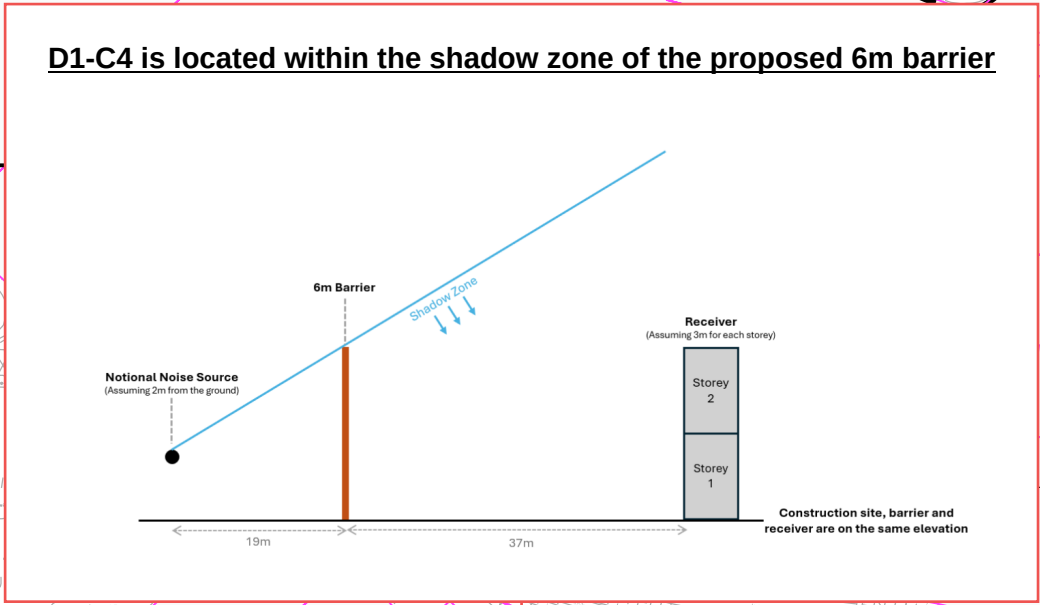
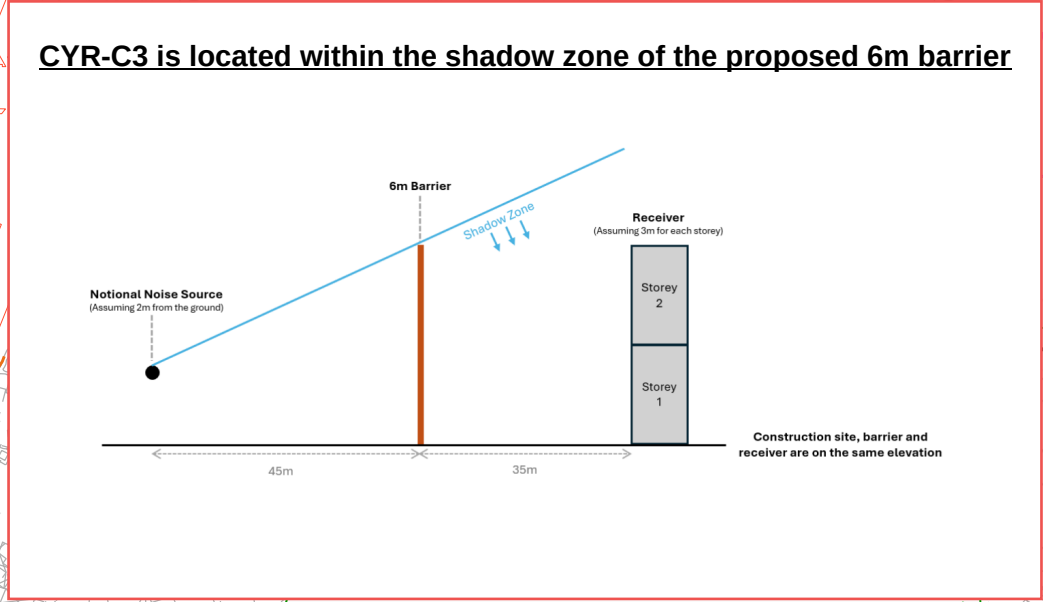
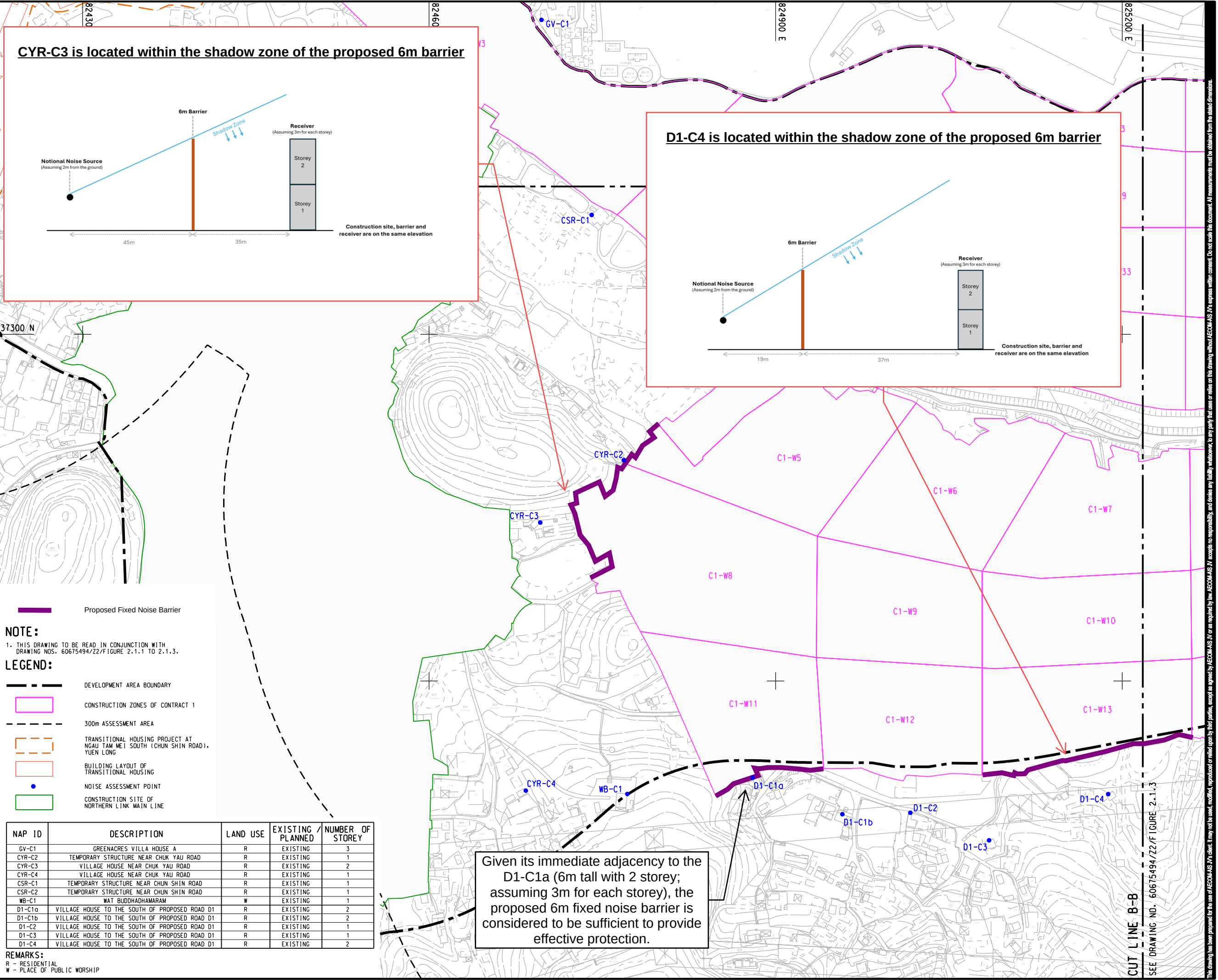


Appendix 4.3

Locations of Proposed Fixed Noise Barriers

ISO A1 594mm x 841mm
Approved:
Checked:
Designer:
Project Management Initials:

V:\BAKU\US05-BAK\CSWP\p1dtdrv\Create PH file\new\CSWP-T5\color\p1d
Plot File by: llyyung 5/11/2026
PATH P:\PROJECTS\60755494\DRAWING\REPORT\22\22_703.dgn



Proposed Fixed Noise Barrier

NOTE:
1. THIS DRAWING TO BE READ IN CONJUNCTION WITH
DRAWING NOS. 60675494/Z2/FIGURE 2.1.1 TO 2.1.3.

- LEGEND:**
- DEVELOPMENT AREA BOUNDARY
 - CONSTRUCTION ZONES OF CONTRACT 1
 - 300m ASSESSMENT AREA
 - TRANSITIONAL HOUSING PROJECT AT
NGAU TAM MEI SOUTH (CHUN SHIN ROAD),
YUEN LONG
 - BUILDING LAYOUT OF
TRANSITIONAL HOUSING
 - NOISE ASSESSMENT POINT
 - CONSTRUCTION SITE OF
NORTHERN LINK MAIN LINE

NAP ID	DESCRIPTION	LAND USE	EXISTING / PLANNED	NUMBER OF STOREY
GV-C1	GREENACRES VILLA HOUSE A	R	EXISTING	3
CYR-C3	TEMPORARY STRUCTURE NEAR CHUK YAU ROAD	R	EXISTING	1
CYR-C3	VILLAGE HOUSE NEAR CHUK YAU ROAD	R	EXISTING	2
CYR-C4	VILLAGE HOUSE NEAR CHUK YAU ROAD	R	EXISTING	1
CSR-C1	TEMPORARY STRUCTURE NEAR CHUN SHIN ROAD	R	EXISTING	1
CSR-C2	TEMPORARY STRUCTURE NEAR CHUN SHIN ROAD	R	EXISTING	1
WB-C1	WAT BUDDHADHAMARAM	W	EXISTING	1
D1-C1a	VILLAGE HOUSE TO THE SOUTH OF PROPOSED ROAD D1	R	EXISTING	2
D1-C1b	VILLAGE HOUSE TO THE SOUTH OF PROPOSED ROAD D1	R	EXISTING	2
D1-C2	VILLAGE HOUSE TO THE SOUTH OF PROPOSED ROAD D1	R	EXISTING	1
D1-C3	VILLAGE HOUSE TO THE SOUTH OF PROPOSED ROAD D1	R	EXISTING	1
D1-C4	VILLAGE HOUSE TO THE SOUTH OF PROPOSED ROAD D1	R	EXISTING	2

REMARKS:
R - RESIDENTIAL
W - PLACE OF PUBLIC WORSHIP

Given its immediate adjacency to the D1-C1a (6m tall with 2 storey; assuming 3m for each storey), the proposed 6m fixed noise barrier is considered to be sufficient to provide effective protection.



PROJECT
項目
SITE FORMATION AND
INFRASTRUCTURE WORKS
FOR NGAU TAM MEI
NEW DEVELOPMENT AREA –
DESIGN AND CONSTRUCTION

CLIENT
業主
CEDD 土木工程拓展署
Civil Engineering and
Development Department

CONSULTANT
工程顧問公司
AECOM - AIS Joint Venture

SUB-CONSULTANTS
分判工程顧問公司

ISSUE/REVISION			
設計			
I/R	DATE	DESCRIPTION	CHK.
修改	日期	內容摘要	校核
STATUS			
階段			

SCALE	DIMENSION UNIT
比例	尺寸單位
A1 1: 1500	METRES
KEY PLAN	
索引圖	

PROJECT NO. 項目編號
60755494
CONTRACT NO. 合約編號
CE 14/2025 (CE)

SHEET TITLE
圖紙名稱
LOCATIONS OF CONSTRUCTION
ZONES AND NOISE ASSESSMENT
POINTS

SHEET NUMBER
圖紙編號
60755494/Z2/FIGURE 2.1.2

60755494/Z2/FIGURE 2.1.3

Appendix 4.4

Predicted Construction Noise Level under Mitigated Scenario

Appendix 4.4 Predicted Construction Noise Levels under Mitigated Scenario

[illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

[illegible]

Appendix 4.4 Predicted Construction Noise Levels under Mitigated Scenario

NAP ID:

Criterion:

THP-C2b

75 dB(A)

[illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

Predicted Noise Level, Leg (30mins), dB(A)

Concurrent Project (NOL), dB(A)

Cumulative Construction Noise Impact, dB(A)

68	60		75	75	75	61	61	61		61	61	61
----	----	--	----	----	----	----	----	----	--	----	----	----

0 0

[illegible]

Appendix 4.4 Predicted Construction Noise Levels under Mitigated Scenario

NAP ID: Criterion:	THP-C3 75	dB(A)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

Appendix 4.4 Predicted Construction Noise Levels under Mitigated Scenario

NAP ID:

Criterion:

LMV-C1

75

dB(A)

[illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

Predicted Noise Level, Leq (30mins), dB(A)

Concurrent Project (NOL), dB(A)

Cumulative Construction Noise Impact, dB(A)

67 69 55 71 71 71 70 70 70 70 70 70

0 0

67 69 55 0 71 71 71 70 70 70 0 0 0 70 70 70 0 0 0 0 0 0 0 0 0 0 0

Appendix 4.4 Predicted Construction Noise Levels under Mitigated Scenario

NAP ID:		LMV-C2																																				
Criterion:		75	dB(A)																																			
Activity Name		Start	End	Work Zone	Activity Index	SWL, dB(A)	Hori. Distance, m	Vert. Distance, m	Slant Distance, m	Distance Correction, dB(A)	Screening Correction, dB(A)	Façade Correction, dB(A)	2027										2028										2029					
													A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M
DRE Site Area (C1-W1)																																						
Site clearance		Apr-27	Apr-27	C1-W1	SC-DRE	106	232	0	232	-55.3	0	3	54																									
Site formation works		Aug-27	Oct-27	C1-W1	SF-F_3	113	232	0	232	-55.3	0	3					61	61	61																			
C1-W2																																						
Site clearance		Apr-27	Apr-27	C1-W2	SC	106	37	0	37	-39.3	0	3	70																									
Construction of haul road (Ngau Tam Mei Road)		May-27	May-27	C1-W2	RC	108	37	0	37	-39.3	0	3		72																								
Site formation works		May-28	Jul-28	C1-W2	SF-F	109	37	0	37	-39.3	0	3																										
CLC's Foundation Construction		Aug-27	Sep-27	C1-W2	CLC-F	109	37	0	37	-39.3	0	3					73	73																				
CLC's Superstructure		Oct-27	Jan-28	C1-W2	CLC-S	109	37	0	37	-39.3	0	3							73	73																		
C1-W3																																						
Site clearance		Apr-27	Apr-27	C1-W3	SC	106	236	0	236	-55.5	0	3	54																									
Construction of haul road (Ngau Tam Mei Road)		May-27	Jun-27	C1-W3	RC	108	236	0	236	-55.5	0	3		56	56																							
C1-W4																																						
C1-W5																																						
C1-W6																																						
C1-W7																																						
C1-W8																																						
C1-W9																																						
C1-W10																																						
C1-W11																																						
C1-W12																																						
C1-W13																																						
C1-W14																																						
C1-W15																																						
C1-W16																																						
C1-W17																																						
C1-W18																																						
C1-W19																																						
C1-W20																																						

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

Appendix 4.4 Predicted Construction Noise Levels under Mitigated Scenario

NAP ID:

Criterion:

WTT-C1

75 dB(A)

[illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

[illegible]

Appendix 4.4 Predicted Construction Noise Levels under Mitigated Scenario

NAP ID:

Criterion:

WTT-C2

75 dB(A)

[illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

Predicted Noise Level, Leq (30mins), dB(A)

Concurrent Project (NOL), dB(A)

Cumulative Construction Noise Impact, dB(A)

66 68 56 69 69 69 69 69 69 69 69 69

0 0

66 68 56 0 69 69 69 69 69 69 0 0 0 69 69 69 0 0 0 0 0 0 0 0 0 0

Appendix 4.4 Predicted Construction Noise Levels under Mitigated Scenario

NAP ID:

Criterion:

WTT-C3

75 dB(A)

[illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

Predicted Noise Level, Leg (30mins), dB(A)

Concurrent Project (NOL), dB(A)

Cumulative Construction Noise Impact, dB(A)

0

0

Appendix 4.4 Predicted Construction Noise Levels under Mitigated Scenario

NAP ID:

Criterion:

EP-C1

75

[illegible][illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

[illegible]

Appendix 4.4 Predicted Construction Noise Levels under Mitigated Scenario

NAP ID:

Criterion:

TV-C1

75

[illegible][illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

Predicted Noise Level, Leq (30mins), dB(A)

Concurrent Project (NOL), dB(A)

Cumulative Construction Noise Impact, dB(A)

Appendix 4.4 Predicted Construction Noise Levels under Mitigated Scenario

[illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

[illegible]

NAP ID:
Criterion

GV-C1

75

dB(A)

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

Predicted Noise Level, Leq (30mins), dB(A)

Concurrent Project (NOL), dB(A)

Cumulative Construction Noise Impact, dB(A)

0

0

Appendix 4.4 Predicted Construction Noise Levels under Mitigated Scenario

NAP ID:	CYR-C1																																					
Criterion:	75	dB(A)																																				
Activity Name	Start	End	Work Zone	Activity Index	SWL, dB(A)	Hori. Distance, m	Vert. Distance, m	Slant Distance, m	Distance Correction, dB(A)	Screening Correction, dB(A)	Façade Correction, dB(A)	2027										2028										2029						
												A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J
DRE Site Area (C1-W1)																																						
Site clearance	Apr-27	Apr-27	C1-W1	SC-DRE	106	50	0	50	-41.9	0	3	67																										
Site formation works	Aug-27	Oct-27	C1-W1	SF-F_3	113	50	0	50	-41.9	0	3					74	74	74																				
C1-W2																																						
Site clearance	Apr-27	Apr-27	C1-W2	SC	106	260	0	260	-56.3	0	3	53																										
Construction of haul road (Ngau Tam Mei Road)	May-27	May-27	C1-W2	RC	108	260	0	260	-56.3	0	3		55																									
Site formation works	May-28	Jul-28	C1-W2	SF-F	109	260	0	260	-56.3	0	3																											
CLC's Foundation Construction	Aug-27	Sep-27	C1-W2	CLC-F	109	260	0	260	-56.3	0	3					56	56																					
CLC's Superstructure	Oct-27	Jan-28	C1-W2	CLC-S	109	260	0	260	-56.3	0	3																											
C1-W3																																						
C1-W4																																						
C1-W5																																						
C1-W6																																						
C1-W7																																						
C1-W8																																						
C1-W9																																						
C1-W10																																						
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C1-W28																																						
C1-W29																																						
C1-W30																						</																

Appendix 4.4 Predicted Construction Noise Levels under Mitigated Scenario

Criterion:	CYR-C2																																																							
	75	dB(A)																																																						
	Activity Name	Start	End	Work Zone	Activity Index	SWL, dB(A)	Hori. Distance, m	Vert. Distance, m	Slant Distance, m	Distance Correction, dB(A)	Screening Correction, dB(A)	Façade Correction, dB(A)	2027								2028								2029																											
DRE Site Area (C1-W1)													A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J																	
C1-W2																																																								
C1-W3																																																								
C1-W4																																																								
Site clearance													Apr-27	Apr-27	C1-W4	SC_2	110	185	0	185	-53.3	0	3	60																																
Land decontamination works													May-27	May-27	C1-W4	Decon-1	113	185	0	185	-53.3	0	3		63																															
Construction of haul road (Ngau Tam Mei Road and Road L2)													Jun-27	Jun-27	C1-W4	RC	108	185	0	185	-53.3	0	3			58																														
Construction of temporary bridge (substructure)													Jul-27	Aug-27	C1-W4	TB	113	185	0	185	-53.3	0	3				63	63																												
Construction of temporary bridge (superstructure - 30m span)													Sep-27	Oct-27	C1-W4	TB	113	185	0	185	-53.3	0	3					63	63																											
Site formation works													Aug-28	Dec-28	C1-W4	SF-F	109	185	0	185	-53.3	0	3									59	59	59	59	59																				
C1-W5																																																								
Site clearance													Apr-27	Apr-27	C1-W5	SC	106	49	0	49	-41.8	0	3	67																																
Site formation works													Jun-27	Dec-27	C1-W5	SF-F_2	111	49	0	49	-41.8	0	3																																	
Construction of haul road (Road L2)													Jan-28	Jan-28	C1-W5	RC	108	49	0	49	-41.8	0	3							69																										
C1-W6																																																								
Site clearance													May-27	May-27	C1-W6	SC	106	240	0	240	-55.6	0	3		53																															
Site formation works													Nov-27	Jan-28	C1-W6	SF-C	112	240	0	240	-55.6	0	3																																	
C1-W7																																																								
C1-W8																																																								
Site clearance													Apr-27	Apr-27	C1-W8	SC	106	50	0	50	-42.0	0	3	67																																
Site formation works													Jun-27	Mar-28	C1-W8	SF-F_2	111	50	0	50	-42.0	0	3			72	72	72	72	72	72	72	72	72	72																					
Construction of haul road (Road L2)													Apr-28	Apr-28	C1-W8	RC	108	50	0	50	-42.0	0	3				72	72	72	72	72	72	72	72	72	72	72			69																
C1-W9																																																								
Site clearance													May-27	May-27	C1-W9	SC	106	229	0	229	-55.2	0	3		54																															
Site formation works													Oct-27	Dec-27	C1-W9	SF-C	112	229	0	229	-55.2	0	3						60	60	60																									
C1-W10																																																								
C1-W11																																																								
Site clearance													Apr-27	Apr-27	C1-W11	SC	106	206	0	206	-54.3	0	3	55																																
Land decontamination works													May-27	May-27	C1-W11	Decon-1	113	206	0	206	-54.3	0	3			62																														
Site formation works													Jun-27	Mar-28	C1-W11	SF-F	109	206	0	206	-54.3	0	3			58	58	58	58	58	58	58	58	58																						
Construction of haul road (Road L2 & D1)													Apr-28	Apr-28	C1-W11	RC	108	206	0	206	-54.3	0	3																	57																
C1-W12																																																								
Site clearance													Apr-27	Apr-27	C1-W12	SC	106	290	0	290	-57.2	0	3	52																																
Land decontamination works													May-27	May-27	C1-W12	Decon-1	113	290	0	290	-57.2	0	3			59																														
Site formation works													Jan-28	Apr-28	C1-W12	SF-C	112	290	0	290	-57.2	0	3																																	
Construction of haul road (Road D1)													May-28	May-28	C1-W12	RC	108	290	0	290	-57.2	0	3																																	
C1-W13																																																								
C1-W14																																																								
C1-W15																																																								
C1-W16																																																								
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C1-W30																																																								
C1-W31																																																								
C1-W32																																																								
C1-W33																																																								
C1-W34																																																								
C1-W35																																																								
C1-W36																																																								
C1-W37																																																								
Site clearance													Jan-28	Feb-28	C1-W37	SC	106	288	0	288	-57.2	0	3																																	
Site formation works													Mar-28	Jun-28	C1-W37	SF-F	109	288	0	288	-57.2	0	3																																	
C1-W38																																																								
C1-W39																																																								
C1-W40																																																								
* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.													Predicted Noise Level, Leq (30mins), dB(A)												71	67	75	75	75	75	75	75	75	75	75	74	72	72	70	58	55															
													Concurrent Project (NOL), dB(A)												0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
													Cumulative Construction Noise Impact, dB(A)												71	67	75	75	75	75	75	75	75	75	75	74	72	72	70	58	55	0	59	59	59	59	59	0	0	0	0	0	0	0	0	0

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

[illegible]

Appendix 4.4 Predicted Construction Noise Levels under Mitigated Scenario

NAP ID:

CYR-C3

Criterion:

[illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

[illegible]

Appendix 4.4 Predicted Construction Noise Levels under Mitigated Scenario

NAP ID: Criterion:		CYR-C4 75		dB(A)																																								
Activity Name	Start	End	Work Zone	Activity Index	SWL, dB(A)	Hori. Distance, m	Vert. Distance, m	Slant Distance, m	Distance Correction, dB(A)	Screening Correction, dB(A)	Façade Correction, dB(A)	2027										2028										2029												
												A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J						
DRE Site Area (C1-W1)																																												
C1-W2																																												
C1-W3																																												
C1-W4																																												
C1-W5																																												
C1-W6																																												
C1-W7																																												
C1-W8																																												
Site clearance	Apr-27	Apr-27	C1-W8	SC	106	210	0	210	-54.4	0	3	55																																
Site formation works	Jun-27	Mar-28	C1-W8	SF-F_2	111	210	0	210	-54.4	0	3		60	60	60	60	60	60	60	60	60	60	60	60	57																			
Construction of haul road (Road L2)	Apr-28	Apr-28	C1-W8	RC	108	210	0	210	-54.4	0	3																																	
C1-W9																																												
C1-W10																																												
C1-W11																																												
Site clearance	Apr-27	Apr-27	C1-W11	SC	106	174	0	174	-52.8	0	3	56																																
Land decontamination works	May-27	May-27	C1-W11	Decon-1	113	174	0	174	-52.8	0	3	63																																
Site formation works	Jun-27	Mar-28	C1-W11	SF-F	109	174	0	174	-52.8	0	3		59	59	59	59	59	59	59	59	59	59	59	58																				
Construction of haul road (Road L2 & D1)	Apr-28	Apr-28	C1-W11	RC	108	174	0	174	-52.8	0	3																																	
C1-W12																																												
Site clearance	Apr-27	Apr-27	C1-W12	SC	106	294	0	294	-57.4	0	3	52																																
Land decontamination works	May-27	May-27	C1-W12	Decon-1	113	294	0	294	-57.4	0	3		59																															
Site formation works	Jan-28	Apr-28	C1-W12	SF-C	112	294	0	294	-57.4	0	3										58	58	58	58																				
Construction of haul road (Road D1)	May-28	May-28	C1-W12	RC	108	294	0	294	-57.4	0	3														54																			
C1-W13																																												
C1-W14																																												
C1-W15																																												
C1-W16																																												
C1-W17																																												
C1-W18																																												
C1-W19																																												
C1-W20																																												
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C1-W24																																												
C1-W25																																												
C1-W26																																												
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C1-W29																																												
C1-W30																																												
C1-W31																																												
C1-W32																																												
C1-W33																																												
C1-W34																																												
C1-W35																																												
C1-W36																																												
C1-W37																																												
C1-W38																																												
C1-W39																																												
C1-W40																																												
Predicted Noise Level, Leq (30mins), dB(A)												59	64	63	63	63	63	63	63	63	64	64	64	62	54																			</

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

Appendix 4.4 Predicted Construction Noise Levels under Mitigated Scenario

[illegible]

Appendix 4.4 Predicted Construction Noise Levels under Mitigated Scenario

NAP ID:

Criterion:

CSR-C2

75

dB(A)

[illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

[illegible]

Appendix 4.4 Predicted Construction Noise Levels under Mitigated Scenario

[illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

Appendix 4.4 Predicted Construction Noise Levels under Mitigated Scenario

[illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

Appendix 4.4 Predicted Construction Noise Levels under Mitigated Scenario

NAP ID:

L3-C2

Criterion:

75

dB(A)

[illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

Predicted Noise Level, Leq (30mins), dB(A)

Concurrent Project (NOL), dB(A)

Cumulative Construction Noise Impact, dB(A)

Appendix 4.4 Predicted Construction Noise Levels under Mitigated Scenario

[illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

[illegible]

Appendix 4.4 Predicted Construction Noise Levels under Mitigated Scenario

[illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

Appendix 4.4 Predicted Construction Noise Levels under Mitigated Scenario

NAP ID:	D1-C1b																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
Criterion:	75	dB(A)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
Activity Name	Start	End	Work Zone	Activity Index	SWL, dB(A)	Hori. Distance, m	Vert. Distance, m	Slant Distance, m	Distance Correction, dB(A)	Screening Correction, dB(A)	Façade Correction, dB(A)	2027												2028												2029																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
												A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
DRE Site Area (C1-W1)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												</

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

[illegible]

Appendix 4.4 Predicted Construction Noise Levels under Mitigated Scenario

Criterion:	D1-C2		dB(A)																																											
	75																																													
	Activity Name	Start	End	Work Zone	Activity Index	SWL, dB(A)	Hori. Distance, m	Vert. Distance, m	Slant Distance, m	Distance Correction, dB(A)	Screening Correction, dB(A)	Façade Correction, dB(A)	2027								2028								2029																	
	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J																			
DRE Site Area (C1-W1)																																														
C1-W2																																														
C1-W3																																														
C1-W4																																														
C1-W5																																														
Site clearance	Apr-27	Apr-27	C1-W5	SC	106	291	0	291	-57.3	0	3	52																																		
Site formation works	Jun-27	Dec-27	C1-W5	SF-F_2	111	291	0	291	-57.3	0	3			57	57	57	57	57	57	57	57																									
Construction of haul road (Road L2)	Jan-28	Jan-28	C1-W5	RC	108	291	0	291	-57.3	0	3												54																							
C1-W6																																														
Site clearance	May-27	May-27	C1-W6	SC	106	250	0	250	-55.9	0	3		53																																	
Site formation works	Nov-27	Jan-28	C1-W6	SF-C	112	250	0	250	-55.9	0	3											59	59	59																						
C1-W7																																														
Site clearance	Jun-27	Jun-27	C1-W7	SC	106	273	0	273	-56.7	0	3			52																																
Site formation works	Apr-28	Jun-28	C1-W7	SF-C	112	273	0	273	-56.7	0	3														58	58	58																			
C1-W8																																														
Site clearance	Apr-27	Apr-27	C1-W8	SC	106	228	0	228	-55.1	0	3	54																																		
Site formation works	Jun-27	Mar-28	C1-W8	SF-F_2	111	228	0	228	-55.1	0	3			59	59	59	59	59	59	59	59	59	59	59	59	59	59																			
Construction of haul road (Road L2)	Apr-28	Apr-28	C1-W8	RC	108	228	0	228	-55.1	0	3														56																					
C1-W9																																														
Site clearance	May-27	May-27	C1-W9	SC	106	154	0	154	-51.7	0	3		57																																	
Site formation works	Oct-27	Dec-27	C1-W9	SF-C	112	154	0	154	-51.7	0	3																																			
C1-W10																																														
Site clearance	May-27	May-27	C1-W10	SC	106	198	0	198	-53.9	0	3			55																																
Site formation works	Feb-28	Apr-28	C1-W10	SF-C	112	198	0	198	-53.9	0	3														61	61	61																			
C1-W11																																														
Site clearance	Apr-27	Apr-27	C1-W11	SC	106	130	0	130	-50.3	0	3	59																																		
Land decontamination works	May-27	May-27	C1-W11	Decon-1	113	130	0	130	-50.3	0	3		66																																	
Site formation works	Jun-27	Jun-27	C1-W11	SF-F	109	130	0	130	-50.3	0	3																																			
Construction of haul road (Road L2 & D1)	Apr-28	Apr-28	C1-W11	RC	108	130	0	130	-50.3	0	3			62	62	62	62	62	62	62	62	62	62	62	62	61																				
C1-W12																																														
Site clearance	Apr-27	Apr-27	C1-W12	SC	106	57	0	57	-43.1	0	3	66																																		
Land decontamination works	May-27	May-27	C1-W12	Decon-1	113	57	0	57	-43.1	0	3		73																																	
Site formation works	Jan-28	Apr-28	C1-W12	SF-C	112	57	0	57	-43.1	0	3																																			
Construction of haul road (Road D1)	May-28	May-28	C1-W12	RC	108	57	0	57	-43.1	0	3																																			
C1-W13																																														
Site clearance	Apr-27	Apr-27	C1-W13	SC	106	118	0	118	-49.4	0	3	60																																		
Land decontamination works	May-27	May-27	C1-W13	Decon-1	113	118	0	118	-49.4	0	3		67																																	
Site formation works	Jan-28	Mar-28	C1-W13	SF-C_2	115	118	0	118	-49.4	0	3																																			
Construction of haul road (Road D1)	Apr-28	Apr-28	C1-W13	RC	108	118	0	118	-49.4	0	3																																			
C1-W14																																														
C1-W15																																														
C1-W16																																														
C1-W17																																														
C1-W18																																														
C1-W19																																														
C1-W20																																														
Site clearance	Apr-27	Apr-27	C1-W20	SC	106	289	0	289	-57.2	0	3	52																																		
Site formation works	Apr-28	May-28	C1-W20	SF-C_2	115	289	0	289	-57.2	0	3															61	61																			
Construction of haul road (Road D1)	Jun-28	Jun-28	C1-W20	RC	108	289	0	289	-57.2	0	3																54																			
C1-W21																																														
C1-W22																																														
C1-W23																																														
C1-W24																																														
C1-W25																																														
C1-W26																																														
C1-W27																																														
C1-W28																																														
C1-W29																																														
C1-W30																																														
C1-W31																																														
C1-W32																																														
C1-W33																																														
C1-W34																																														
C1-W35																																														
C1-W36																																														
C1-W37																																														
C1-W38																																														
C1-W39																																														
C1-W40																																														
* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.																																														
Predicted Noise Level, Leq (30mins), dB(A)												68	75	65	65	65	65	67	68	68	74	74	74	73	69	59																				
Concurrent Project (NOL), dB(A)												0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Cumulative Construction Noise Impact, dB(A)												68	75	65	65	65	65	67	68	68	74	74	74	73	69	59																				

Appendix 4.4 Predicted Construction Noise Levels under Mitigated Scenario

[illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

Predicted Noise Level, Leq [30mins], dB(A)	65	71	61	61	61	61	64	65	65	72	72	72	71	67	62
Concurrent Project (NOL), dB(A)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cumulative Construction Noise Impact, dB(A)	65	71	61	61	61	61	64	65	65	72	72	72	71	67	62

Appendix 4.4 Predicted Construction Noise Levels under Mitigated Scenario

AP ID:	D1-C4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
Criterion:	75	dB(A)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Activity Name	Start	End	Work Zone	Activity Index	SWL, dB(A)	Hori. Distance, m	Vert. Distance, m	Slant Distance, m	Distance Correction, dB(A)	Screening Correction, dB(A)	Façade Correction, dB(A)	2027								2028								2029																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
												A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
DRE Site Area (C1-W1)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

Predicted Noise Level, Leq (30mins), dB(A)	67	74	58	59	57	55	62	64	64	68	69	69	73	70	70	66	62	62
Concurrent Project (NOL), dB(A)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cumulative Construction Noise Impact, dB(A)	67	74	58	59	57	55	62	64	64	68	69	69	73	70	70	66	62	62

Appendix 4.4 Predicted Construction Noise Levels under Mitigated Scenario

NAP ID:

Criterion:

D1-C5

75

dB(A)

[illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

Predicted Noise Level, Leq (30mins), dB(A)

Concurrent Project (NOL), dB(A)

Cumulative Construction Noise Impact, dB(A)

Appendix 4.4 Predicted Construction Noise Levels under Mitigated Scenario

NAP ID:
Criterion

D1-C6	
75	dB(A)

	dB(A)
100 Hz	78
125 Hz	69
160 Hz	62
200 Hz	57
250 Hz	52
315 Hz	48
400 Hz	45
500 Hz	42
630 Hz	40
800 Hz	38
1000 Hz	36
1250 Hz	35
1600 Hz	34
2000 Hz	33
2500 Hz	32
3150 Hz	31
4000 Hz	30
5000 Hz	29
6300 Hz	28
8000 Hz	27
10000 Hz	26
Average	42

[illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

[illegible]

Appendix 4.4 Predicted Construction Noise Levels under Mitigated Scenario

AP ID: Criterion:	TYMT-C1																																							
	75 dB(A)																																							
	Activity Name	Start	End	Work Zone	Activity Index	SWL, dB(A)	Hori. Distance, m	Vert. Distance, m	Slant Distance, m	Distance Correction, dB(A)	Screening Correction, dB(A)	Façade Correction, dB(A)	2027										2028										2029							
													A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	
DRE Site Area (C1-W1)																																								
C1-W2																																								
C1-W3																																								
C1-W4																																								
C1-W5																																								
C1-W6																																								
C1-W7																																								
C1-W8																																								
C1-W9																																								
C1-W10																																								
C1-W11																																								
C1-W12																																								
C1-W13																																								
C1-W14																																								
Site clearance	Aug-27	Aug-27	C1-W14	SC	106	268	0	268	-56.5	0	3																													
Site formation works	Jul-28	Aug-28	C1-W14	SF-C	112	268	0	268	-56.5	0	3																													
C1-W15																																								
Site clearance	Sep-27	Sep-27	C1-W15	SC	106	179	0	179	-53.1	0	3																													
Site formation works	Jul-28	Aug-28	C1-W15	SF-C	112	179	0	179	-53.1	0	3																													
C1-W16																																								
Site clearance	Sep-27	Sep-27	C1-W16	SC	106	127	0	127	-50.1	0	3																													
Site formation works	Jul-28	Aug-28	C1-W16	SF-F_2	111	127	0	127	-50.1	0	3																													
C1-W17																																								
C1-W18																																								
Site clearance	Jul-27	Jul-27	C1-W18	SC	106	258	0	258	-56.2	0	3																													
Site formation works	Jul-28	Aug-28	C1-W18	SF-C	112	258	0	258	-56.2	0	3																													
C1-W19																																								
Site clearance	Aug-27	Aug-27	C1-W19	SC	106	217	0	217	-54.7	0	3																													
Site formation works	Jul-28	Aug-28	C1-W19	SF-C	112	217	0	217	-54.7	0	3																													
C1-W20																																								
C1-W21																																								
C1-W22																																								
Site clearance	May-27	May-27	C1-W22	SC	106	287	0	287	-57.1	0	3																													
Land decontamination works	Jun-27	Jun-27	C1-W22	Decon-2	113	287	0	287	-57.1	0	3																													
Site formation works	May-28	Jun-28	C1-W22	SF-C_2	115	287	0	287	-57.1	0	3																													
Construction of haul road (Road D1)	Jul-28	Jul-28	C1-W22	RC	108	287	0	287	-57.1	0	3																													
C1-W23																																								
C1-W24																																								
Site clearance	Apr-28	Apr-28	C1-W24	SC	106	253	0	253	-56.1	0	3																													
Site formation works	May-28	Jul-28	C1-W24	SF-F	109	253	0	253	-56.1	0	3																													
C1-W25																																								
Site clearance	Jul-28	Jul-28	C1-W25	SC	106	198	0	198	-53.9	0	3																													
Site formation works	Aug-28	Sep-28	C1-W25	SF-F	109	198	0	198	-53.9	0	3																													
C1-W26																										</														

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

Predicted Noise Level, Leq (30mins), dB(A)	52	59	53	56	61								57	63	63	69	69	62	63	63	66	66	74	74	71	71	71
Concurrent Project (NOL), dB(A)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cumulative Construction Noise Impact, dB(A)	0	52	59	53	56	61	0	0	0	0	0	0	57	63	63	69	69	62	63	63	66	66	74	74	71	71	71

Appendix 4.4 Predicted Construction Noise Levels under Mitigated Scenario

NAP ID:

YTMT-C2

Criterion:

dB(A)

[illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

Predicted Noise Level, Leq (30mins), dB(A)	
1	65
2	65
3	65
4	65
5	65
6	65
7	65
8	65
9	65
10	65
11	65
12	65
13	65
14	65
15	65
16	65
17	65
18	65
19	65
20	65
21	65
22	65
23	65
24	65
25	65
26	65
27	65
28	65
29	65
30	65
31	65
32	65
33	65
34	65
35	65
36	65
37	65
38	65
39	65
40	65
41	65
42	65
43	65
44	65
45	65
46	65
47	65
48	65
49	65
50	65
51	65
52	65
53	65
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61	65
62	65
63	65
64	65
65	65
66	65
67	65
68	65
69	65
70	65
71	65
72	65
73	65
74	65
75	65
76	65
77	65
78	65
79	65
80	65
81	65
82	65
83	65
84	65
85	65
86	65
87	65
88	65
89	65
90	65
91	65
92	65
93	65
94	65
95	65
96	65
97	65
98	65
99	65
100	65

Concurrent Project (NOL), dB(A)

Cumulative Construction Noise Impact, dB(A)

Appendix 4.4 Predicted Construction Noise Levels under Mitigated Scenario

NAP ID:

TMB-C1

Criterion:

dB(A)

[illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

Location	Predicted Noise Level, Leq (30mins), dB(A)
1. Outside of the building	65
2. Inside of the building	55

Concurrent Project (NOL), dB(A)

Cumulative Construction Noise Impact, dB(A)

Appendix 4.4 Predicted Construction Noise Levels under Mitigated Scenario

NAP ID:

Criterion:

TMB-C2

75

	dB(A)
100 Hz	78
125 Hz	69
160 Hz	62
200 Hz	58
250 Hz	55
315 Hz	52
400 Hz	50
500 Hz	48
630 Hz	46
800 Hz	44
1000 Hz	42
1250 Hz	40
1600 Hz	38
2000 Hz	36
2500 Hz	34
3150 Hz	32
4000 Hz	30
5000 Hz	28
6300 Hz	26
8000 Hz	24
10000 Hz	22
Average	50

[illegible]

* Construction activities with notional source position located more than 300 m from the NAP are not shown in the table above.

Predicted Noise Level, Leq (30mins), dB(A)	
1	65
2	65
3	65
4	65
5	65
6	65
7	65
8	65
9	65
10	65
11	65
12	65
13	65
14	65
15	65
16	65
17	65
18	65
19	65
20	65
21	65
22	65
23	65
24	65
25	65
26	65
27	65
28	65
29	65
30	65
31	65
32	65
33	65
34	65
35	65
36	65
37	65
38	65
39	65
40	65
41	65
42	65
43	65
44	65
45	65
46	65
47	65
48	65
49	65
50	65
51	65
52	65
53	65
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62	65
63	65
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67	65
68	65
69	65
70	65
71	65
72	65
73	65
74	65
75	65
76	65
77	65
78	65
79	65
80	65
81	65
82	65
83	65
84	65
85	65
86	65
87	65
88	65
89	65
90	65
91	65
92	65
93	65
94	65
95	65
96	65
97	65
98	65
99	65
100	65

Concurrent Project (N

Cumulative Construction Noise Impact, dB(A)