Appendix E

Environmental Assessment

Prepared by

Ramboll Hong Kong Limited

SECTION 16 PLANNING APPLICATION FOR PROPOSED RESIDENTIAL DEVELOPMENT WITH MINOR RELAXATION OF PLOT RATIO RESTRICTION AT LOTS 1027, 1029, 1030, 1034A, 1034B, 1039 (PART), 1040, 1042 RP, 1043 RP, 1044 RP (PART), 1045, 1047, 2233 (PART), 2251 S.A RP, 2256 RP, 2315 (PART) AND 2316 RP (PART) IN D.D. 92 AND ADJOINING GOVERNMENT LAND (NEW LOT TO BE KNOWN AS LOT 2644 IN D.D. 92), KWU TUNG SOUTH, SHEUNG SHUI, NEW TERRITORIES

ENVIRONMENTAL ASSESSMENT

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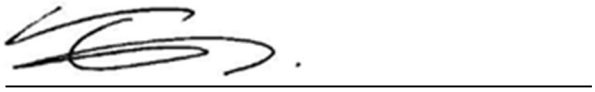
Signed	
Project Reference	**SHKKTSS3EI01**
Document No.	**R7977_v2.1**

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1. INTRODUCTION

1.1 Project Background

1.1.1 The Proposed Development is located at various lots and the adjoining Government land in D.D.92, Kwu Tung South (the Application Site). It falls within the Approved Kwu Tung South Outline Zoning Plan (OZP No. S/NE-KTS/22, gazetted on 21/02/2025) and is currently zoned "Comprehensive Development Area (3)" ("CDA(3)"). A rezoning application for residential development with building height of 70mPD and plot ratio of 2 was partially agreed by the Town Planning Board on 28/10/2022 (the Approved Development).

1.1.2 To materialize residential development in the subject "CDA(3)" zone, the Applicant now submits a refined scheme (the Proposed Development) under Section 16 Planning Application. This Environmental Assessment (EA) is prepared as part of the technical assessments to support the Application from an environmental perspective.

1.1.3 The indicative master layout plan, floor plans, section plans and other technical assessments of the Proposed Development are provided by the project architect and other project team members.

1.2 Project Location and Scope

1.2.1 The Application Site is located at the northern part within an area known as Kwu Tung South and is to the immediate south of the Kwu Tung North New Development Area (KTN NDA). It is bounded by Kwu Tung Road to the north, Hang Tau Road to the east and an existing footpath to the south connecting to the river. To the immediate west of the Application Site are some planting areas and an abandoned meander established under the rehabilitation works of River Beas managed by the Agriculture, Fisheries and Conservation Department (AFCD). The site is accessible by the existing Hang Tau Road. **Figure 1** shows the location of the Application Site and its environs.

1.2.2 According to the Traffic Noise Mitigation Plan (Ref.EP-465/2013/A, dated January 2025) for North East New Territories New Development Areas ("NENT NDA") (EIA-213/2013), multiple road improvement works will be carried out near the Subject Site. The latest road alignments and the proposed noise mitigation measures as confirmed by CEDD would be incorporated in the assessment. Details are presented in **Appendix 2**.

1.3 Proposed Development

1.3.1 The Proposed Development has an area of about 19,591m^2 which consists of two 15-storey and one 16-storey residential towers (excluding 1 level of basement). The indicative master layout plan and section plan of the Proposed Development are shown in **Appendix 1**. The tentative completion year of the project is 2032.

2. AIR QUALITY IMPACT

2.1 Introduction

2.1.1 This section examines the potential air quality impacts that could arise from the construction phase and operation phase of the Project.

2.2 Environmental Legislation and Guidelines

2.2.1 The following legislation and regulations provide the standards and guidelines for evaluation of air quality impacts and the type of works that are subject to air pollution control:

- Air Pollution Control Ordinance (APCO) (Cap. 311) and the Air Quality Objectives (AQO)
- Air Pollution Control (Construction Dust) Regulation
- Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation
- Air Pollution Control (Fuel Restriction) Regulations
- Control of Air Pollution in Car Parks (ProPECC PN 2/96)

Air Pollution Control Ordinance (CAP 311)

2.2.2 A set of Air Quality Objectives (AQOs) is established under the Air Pollution Control Ordinance (Cap. 311). The current AQOs that came into effect on 11 April 2025 is presented in **Table 2.1**.

Table 2.1 Hong Kong Air Quality Objectives (AQOs)

Pollutant	Averaging time	Concentration limit [i] (μg/m³)	Number of exceedances allowed per year
SO_2	10-minute	500	3
	24-hour	40	3
RSP (PM_{10}) [ii]	24-hour	75	9
	Annual	30	Not applicable
FSP ($PM_{2.5}$) [iii]	24-hour	37.5	18
	Annual	15	Not applicable
NO_2	1-hour	200	18
	24-hour	120	9
	Annual	40	Not applicable
O_3	8-hour	160	9
	Peak season	100	Not applicable
CO	1-hour	30,000	0
	8-hour	10,000	0
	24-hour	4,000	0
Lead	Annual	0.5	Not applicable

Notes:

[i] All measurements of the concentration of gaseous air pollutants, i.e. sulphur dioxide, nitrogen dioxide, ozone and carbon monoxide, are to be adjusted to a reference temperature of 293 Kelvin and a reference pressure of 101.325 kilopascal.

[ii] Respirable suspended particulates mean suspended particles in air with a nominal aerodynamic diameter of 10 μm or less.

[iii] Fine suspended particulates mean suspended particles in air with a nominal aerodynamic diameter of 2.5 μm or less.

2.2.3 In accordance with the EIAO-TM, odour predicted at all ASRs should meet 5 odour units (OUs) based on an averaging time of 5 seconds.

Air Pollution Control (Construction Dust) Regulation

2.2.4 Made under Section 43 of the APCO, this Regulation defines notifiable and regulatory works for achieving the purpose of dust control for a number of activities. The Regulation requires that any notifiable work shall give advance notice to EPD, and the Contractors shall ensure that the notifiable and regulatory works are carried out in accordance with the Schedule of the Regulation. Dust control and suppression measures are also provided in the Schedule.

2.2.5 The proposed construction works for the proposed Project are both regulatory and notifiable works due to activities including material stockpiling and dusty material handling as potential sources of fugitive dust emissions as detailed under Parts I to IV of the Schedule on Dust Control Requirements.

Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation

2.2.6 The Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation, which aims to control emissions from non-road mobile machinery (NRMMs) to improve air quality, became effective on 1 June 2015. NRMMs include non-road vehicles, as well as mobile machines and equipment (regulated machines) such as crawler cranes, excavators and air compressors.

2.2.7 Under the regulation, regulated machines have to comply with the Stage IIIA emission standards of the European Union. It also requires all regulated machines sold or leased for use in Hong Kong to bear an approval or exemption label issued to them by the EPD, started from 1 September 2015. It restricts specified activities and locations including construction sites, designed waste disposal facilities and specified processes to use only NRMMs that bear an approval or exemption label issued to them by the EPD, with effect from 1 December 2015.

Air Pollution Control (Fuel Restriction) Regulations

2.2.8 The Air Pollution Control (Fuel Restriction) Regulation was enacted in 1990 to impose legal control on the type of fuels allowed for use and their sulphur contents in commercial and industrial processes to reduce sulphur dioxide (SO_2) emissions. The Air Pollution Control (Fuel Restriction) (Amendment) Regulation 2024 commenced on 1 April 2025. The sulphur content of liquid fuel is tightened to 0.001% by weight. The Regulation does not apply to any fuel-using equipment that is used or operated in premises used solely as a dwelling or is used or operated in or on a vessel, motor vehicle, railway locomotive or aircraft.

ProPECC PN2/96 - Control of Air Pollution in Car Parks

2.2.9 This practice notes include air quality guidelines required for the protection of public health and factors that should be considered in the design and operation of car parks in order to achieve the required air quality. The limits for air pollutants as recommended by the practice notes are summarised in Table 2.2.

Table 2.2 Limits of Air Pollutant Concentrations Inside Car Parks

Air Pollutant	Average Time	Maximum Concentration (µg/m3) [i]	Parts Per Million (ppm)
CO	5 minutes	115,000	100
NO_2	5 minutes	1,800	1

Notes:
[i] All limits are expressed as at reference conditions of 298K and 101.325kPa.

2.3 Representative Air Sensitive Receivers (ASRs)

2.3.1 There are a number of temporary structures, village houses, and low-rise residential buildings within 500m of the Proposed Development. The representative ASRs for the construction phase and operational phase were identified as given in **Table 2.3**. The relative location and distance between the representative ASRs and the Subject Site can be referred to **Figure 2**.

Table 2.3 Representative ASRs

ASR ID	Description	Type	Land Use	Distance from the Project Boundary
A1	Temporary Structure	Existing	Residential	~14m
A2	Casas Domingo Block 22	Existing	Residential	~18m
A3	Village House	Existing	Residential	~33m
A4	Jockey Club Beas River Lodge	Existing	Residential	~14m
A5	Temporary Structure	Existing	Residential	~97m
A6	2 Rhein Avenue	Existing	Residential	~92m
A7	1 Bern Avenue	Existing	Residential	~65m
A8	11 Interlaken Avenue	Existing	Residential	~66m

2.4 Existing Air Quality in North District

2.4.1 The nearest air quality monitoring station (AQMS) to the Proposed Development is the North AQMS. The five most recent years of air quality monitoring data, 2019 to 2023, from this station are summarized in **Table 2.4**. According to the AQMS monitoring data, exceedance in O_3 is recorded.

Table 2.4 Air Quality Monitoring Data at North AQMS

Pollutant	Averaging Time	AQO	Pollutant Concentration (µg/m3)				
			2019	2020	2021	2022	2023
RSP	10th Highest 24-hour	75 (9)	-	55	62	50	57
	Annual	30	-	-	25	23	27
FSP	19th Highest 24-hour	37.5 (18)	-	29	29	28	28
	Annual	15	-	-	15	14	15
NO2	19th Highest 1-hour	200 (18)	-	112	135	115	116
	10th Highest 24-hour	120 (9)	-	54	70	58	58
	Annual	40	-	-	36	31	30
SO2	4th Highest 10-Min	500 (3)	-	19	18	27	27
	4th Highest 24-hour	40 (3)	-	8	7	7	7
O_3	10th Highest 8-hour	160 (9)	-	**166**	**187**	**197**	**164**
	Peak season	100	-	-	97	98	95
CO	1st Highest 1-hour	30000 (0)	-	1830	2150	1710	2390
	1st Highest 8-hour	10000 (0)	-	1238	1550	1304	1231
	1st Highest 24-hour	4000 (0)	-	1022	1213	994	1001

Notes:

(a) *Bolded values exceed the relevant AQO.*

(b) *Data extracted from EPD's Smart Air Modelling Platform (SAMP v2.1).*

2.4.2 Apart from the air quality monitoring data, a set of background levels from PATH v3.0 ("Pollutants in the Atmosphere and their Transport over Hong Kong") is also reviewed. As the tentative year of the completion of the Proposed Development is 2032, the background air quality predicted by PATH v3.0 for Year 2030 in Grid 33,53 is summarized in **Table 2.5**. With respect to the future background air quality predicted by PATH v3.0 in **Table 2.5**, all values are below the relevant AQOs except O_3.

Table 2.5 Year 2030 Background Annual Average Concentrations of the Air Pollutants from PATH v3.0

Pollutant	Averaging Time	AQO	Data Summary	PATH v3.0 Grid in Year 2030
				33,53
RSP	24-hour	75 (9)	10th	55.66
			Exceedance	0
	Annual	30	-	21.48
FSP	24-hour	37.5 (18)	19th	33.96
			Exceedance	11
	Annual	15	-	13.57
NO2	1-hour	200 (18)	19th	70.31
			Exceedance	0
	24-hour	120 (9)	10th	23.79
			Exceedance	0
	Annual	40	-	14.52
SO2	10-Min	500 (3)	4th	26.14
			Exceedance	0

Pollutant	Averaging Time	AQO	Data Summary	PATH v3.0 Grid in Year 2030
				33,53
	24-hour	40 (3)	4th	7.04
			Exceedance	0
O3	8-Hour	160 (9)	10th	**171.95**
			Exceedance	19
	Peak Season	100	-	118.47
CO	1-Hour	30000 (0)	1st	524.75
			Exceedance	0
	8-Hour	10000 (0)	1st	494.07
			Exceedance	0
	24-Hour	4000 (0)	1st	461.04
			Exceedance	0

Notes:

(a) *Numbers in brackets is the number of exceedances allowed per year.*

(b) *Bolded values exceed the relevant AQO.*

(c) *Data extracted from EPD's Smart Air Modelling Platform (SAMP v2.1).*

2.5 Construction Phase

Impact Brought during Construction Phase

2.5.1 Construction activities will bring potential temporary air quality impact to the surrounding area. Significant emissions are not anticipated from other criteria air pollutants - NO2, SO2, and CO, etc. as the number of on-site diesel/petroleum fuelled machinery (5-6 machineries) to be used for construction works is limited owing to the small size of the work site with an area of 19,684 m^2. However, electric power supply shall be provided for on-site machinery as far as practicable and diesel generators shall be avoided to minimize the gaseous and PM emissions. Travelling of the dump trucks is another potential source of construction dust. As this planning application stage, there is no detailed information on the construction program; however, with reference to other similar scale projects, there is likely to be around 6 dump trucks per hour during the site formation stage of the Proposed Development. Watering the haul road and the site once per hour would be implemented to minimize the potential dust emission during the traveling of the dump trucks within the site.

2.5.2 Furthermore, there is a potential concurrent project "Proposed Comprehensive Development at Lot 2579" within the 500m study area from the site boundary which would contribute to the cumulative impact during the construction phase. According to the available public information, the tentative completion year of the potential concurrent project would be 2027. Nevertheless, with the adoption of good practices, it is expected that emission of construction fugitive dust can be kept to an acceptable level. In addition, the applicant will liaise with the relevant parties of the concurrent project, if any, to avoid any heavy dusty activities to be conducted at the same time to minimize the cumulative dust impact at the area. The location of the potential concurrent project is shown in **Figure 3**.

General Requirements during Construction Phase

2.5.3 The assessment criteria for aerial emission is based on the Hong Kong Air Quality Objectives (AQO) for air pollutants under *APCO* and the AQOs for the pollutants relevant to the construction phase air quality impact are listed in **Table 2.1**.

Control Measures Recommended during Construction Phase

2.5.4 Appropriate dust reduction measures should be adopted as required under the Air Pollution Control (Construction Dust) Regulation. Essential dust mitigation measures must be implemented to minimize the potential dust impact. Dust impact could be effectively mitigated by inclusion of appropriate contract clauses for dust minimisation in the work contracts. Mitigation measures may include:

- dump trucks for material transport should be totally enclosed using impervious sheeting;
- any excavated dusty materials or stockpile of dusty materials should be covered entirely by impervious sheeting or sprayed with water so as to maintain the entire surface wet, and recovered or backfilled or reinstated within 24 hours of the excavation or unloading;
- the stockpiled malodorous materials should be removed from Application Site as soon as possible, and they should be covered entirely by plastic tarpaulin sheets;
- dusty materials remaining after a stockpile is removed should be wetted with water;
- the area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with e.g. concrete, bituminous materials or hardcore or similar;
- stockpile of dusty materials to be either covered entirely by impervious sheeting, placed in an area sheltered on the top and the 3 sides; or sprayed with water so as to maintain the entire surface wet;
- all dusty materials to be sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dusty material wet;
- vehicle speed to be limited to 10 kph except on completed access roads;
- the portion of road leading only to a construction site that is within 30 m of a designated vehicle entrance or exit should be kept clear of dusty materials;
- every vehicle should be washed to remove any dusty materials from its body and wheels before leaving the construction sites;
- the load of dusty materials carried by vehicle leaving a construction site should be covered entirely by clean impervious sheeting to ensure that the dusty materials would not leak from the vehicle;
- the working area of excavation should be sprayed with water immediately before, during and immediately after (as necessary) the operations so as to maintain the entire surface wet; and
- use of effective dust screens, sheeting or netting to be provided to enclose dry scaffolding which may be provided from the ground floor level of the building or if a canopy is provided at the first floor level, from the first floor level, up to the highest level (maximum four floors for this Project) of the scaffolding where scaffolding is erected around the perimeter of a building under construction.

2.5.5 In addition to the dust control measures described above, dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices listed below shall be carried out to further minimize construction dust impact:

- Plan site layout so that machinery and dust causing activities (e.g. haul roads and stockpiling areas) are located away from receptors as far as possible;
- Consider connecting construction plant and equipment to mains electricity supply and avoid use of diesel generators and diesel-powered equipment as far as practicable;
- Provision of not less than 2.4m high hoarding from ground level along site boundary where adjoins a road, streets or other accessible to the public except for a site entrance or exit;
- Implement phasing of the excavation work to avoid large scale excavation at the same time in vicinity of nearby ASRs; and
- Erect solid screens or barriers around dusty activities,etc.

2.5.6 A monitoring programme (i.e. biweekly site audit) could also be instigated to monitor the construction process in order to enforce dust controls and modify methods of works to reduce the dust emission down to an acceptable level.

2.5.7 Good site management is important for reducing potential air quality impact down to an acceptable level. As a general guidance, the contractor shall maintain high standard of site management to prevent potential emission of fugitive dust emission. Loading, unloading, handling and storage of fuel, raw materials, products, wastes or by-products should also be carried out in a manner so as to minimise the release of visible dust emission.

2.5.8 A high standard of site management shall be maintained. Any piles of materials accumulated on or around the work areas shall be cleaned up regularly. Cleaning, repair and maintenance of all plant facilities within the work areas shall be carried out in a manner without generating fugitive dust emissions. The material shall be handled properly to prevent fugitive dust emission before cleaning.

2.5.9 "Recommended Pollution Control Clauses for Construction Contracts" is available on EPD website. It contains the recommended air pollution control measures to be implemented by the contractor during the construction stage.

2.6 Operation Phase

Review on Odour Impact

2.6.1 It was also confirmed during the site visit that there are no other emission sources (such as vessels and power plants) in the vicinity of the Application Site.

2.6.2 RCP is located at the South of the Application Site, site visits were conducted in October 2024 and June 2025 to identify any noticeable odour of the RCP. From the most recent site visit conducted on 20 June 2025 (between noon to 2pm) to verify the potential odour sources, the temperature and relative humidity are 31.3°C and 88% respectively. **Figure 4** shows the inspection route and no identifiable odour were detected at the boundary of the RCP. It is anticipated that the Application Site would not be subject to adverse odour impact.

Review on Industrial Emission Impact

2.6.3 Onsite surveys were conducted in October 2024 and June 2025 to verify the presence of chimneys. There was no chimney identified within 200m from the boundary of Proposed Development. As such, it is anticipated that the Proposed Development would not be subject to adverse industrial emission impact.

Review on Vehicular Emission Impact

2.6.4 In accordance with above table as stipulated in HKPSG, the minimum requirements on the buffer distance from Kwu Tung Road, Kam Hang Road and Hang Tau Road is >5m.

Table 2.6 Buffer Distances between Kerb Side of Concerned Road Links and Proposed Air Sensitive Uses

Road Name	Road Type	Recommended Buffer Distance (m)	Shortest Horizontal Distances Between Kerb Side of Concerned Road Links and the Application Site (m)
Kwu Tung Road	Local Distributor	>5m	~14m
Kam Hang Road	Local Distributor	>5m	~23m
Hang Tau Road	Local Distributor	>5m	~1m

2.6.5 As shown in **Table 2.6** and **Figure 5,** the recommended buffer distance requirement for Kwu Tung Road and Kam Hang Road in the HKPSG would be complied. For the Hang Tau Road, a portion of the application site is within 5m buffer distance, however, no air sensitive uses (including fresh air intake, openable window, and open space for recreational use, etc.) would be located within 5m buffer distance. In conclusion, there would be no air sensitive uses within the above-mentioned 5m buffer zones. Since the recommended minimum buffer distance of the vehicular emission in the HKPSG can be met, the future residents and occupants of Proposed Development and existing air sensitive receivers will not be subjected to insurmountable vehicular emission impact.

Review on Impact from Proposed Carpark

2.6.6 Basement carpark has been proposed for the Proposed Development. The air quality inside the basement carpark shall satisfy the air pollutant standards as recommended by the ProPECC PN 2/96 Control of Air Pollution in Car Parks. Therefore, the mechanical ventilation system and layout the basement carpark shall be properly designed. Furthermore, the exhaust outlet of the mechanical ventilation system of the basement carpark shall also be designed by facing away from the nearest air sensitive uses as practicable as possible to ensure not to cause a nuisance to the occupants/ residents of the air sensitive uses including the surrounding developments and the Proposed Development.

3. TRAFFIC NOISE IMPACT ASSESSMENT

3.1 Introduction

3.1.1 This traffic noise impact assessment is prepared to address road traffic noise impact on the Proposed Development and to recommend mitigation measures where practicable to attenuate the impact.

3.2 Assessment Criteria

3.2.1 The Proposed Development includes domestic dwellings which will rely on openable window for ventilation. According to the guidelines, the maximum noise level from road traffic, measured in terms of L_{10} (1-hr) is recommended to be 70 dB(A).

3.3 Assessment Methodology

3.3.1 The methodology involves the prediction of future noise impacts on Noise Sensitive Receivers (NSRs) arising from traffic flows on existing and future road carriageways in the vicinity of the Application Site.

3.3.2 The U.K. Department of Transport's procedure "Calculation of Road Traffic Noise" was applied to predict the $L_{10(1\text{-hr.})}$ noise level generated from road traffic at all noise sensitive facades of the residential towers. Then, the predicted noise levels were compared with the recommended noise standards in HKPSG for assessing the impact.

3.3.3 Based on the tentative completion year of the development (Year 2032), traffic forecast for the year 2047 on the road carriageways in the vicinity of the Proposed Development was provided by MVA Hong Kong Limited (the project traffic consultant) for prediction of the worst-case traffic noise impact within 15 years from the completion of the Proposed Development. The projected traffic flows and vehicle composition are shown in **Appendix 2**. Reply from Transport Department (TD) on the methodology adopted for the traffic forecast and the confirmation letter from traffic consultant on the validity of the traffic data will be provided when available.

3.4 Road Characteristics

3.4.1 As mentioned in **S1.2.2**, there will be road improvement works and new roads at NENT NDA. The latest road alignments and the proposed noise mitigation measures as confirmed by CEDD have been incorporated in the assessment with reference to Traffic Noise Mitigation Plan for NENT NDA EIA (Ref.EP-465/2013/A, Date. January 2025).

3.4.2 According to the traffic limit provided by traffic consultant and existing available information referenced from the approved Traffic Noise Mitigation Plan for NENT NDA EIA, all roads are with a speed limit of 50km/hr with an impervious surface except the Fanling Highway, which is with a speed limit of 100km/hr with a pervious surface. Details of speed limit, road surface and noise mitigation measures adopted are provided in **Appendix 2**.

3.5 Noise Sensitive Receivers

3.5.1 All noise sensitive facades with openable windows/doors were identified as NSRs in the assessment. The assessment points are taken at 1.2 m above the floors of the selected storey and 1m away from the facades of openable windows/doors. Locations of the NSRs of the Application Site for the road traffic noise impact assessment are shown in **Figure 6**.

3.6 Road Traffic Impact Assessment Result (Base Case)

3.6.1 To address the potential road traffic noise impact, building setback, building orientation and podia building, have been duly considered in building design and arrangement to shield noise sources as far as practicable. The base case is defined as the scheme to reflect the aforementioned design but without further direct noise mitigation measures.

Orientation

3.6.2 Some residential blocks are designed to be non-parallel to the carriageways nearby in order to minimize the angle of view to the road. As shown in **Figure 6**, some sensitive façades are about 60 degree towards Fanling Highway such that the potential noise impact on future resident will be minimized.

Setback

3.6.3 As shown in **Figure 1**, the Proposed Development is bounded by Kwu Tung Road, Kam Hang Road and Hang Tau Road, which are considered as local roads. The separation distance from the residential towers to the roads is at least 5m.

3.6.4 Taken into account the noise mitigation designs incorporated in MLP, the assessment results show that an overall compliance rate of 84% is resulted with 173 units with traffic noise exceedance. Maximum predicted traffic noise level is 74 dB(A), which exceeds the 70 dB(A) noise criterion as listed in HKPSG for residential units. Hence, noise mitigation measures are proposed to the Proposed Development to further mitigate the adverse noise nuisances to an acceptable noise level. The predicted road traffic noise result is presented in **Appendix 3**.

3.7 Proposed Noise Mitigation Measures for Proposed NSRs

3.7.1 Noise mitigation measures have been duly studied and applied where practicable. The noise mitigation measures will be written in the Deed of Mutual Covenant and made known to future buyers in sales brochure.

a. Acoustic Window (Baffle Type)

The baffle type acoustic window refers to the type of window that can reduce noise entering indoor while allowing air flow into the room via the air gap between two layers of windows –
(i) the outer window system with side hung openable window; and
(ii) the inner sliding panel.

Innovative noise mitigation measures are being explored in recent years. Baffle type acoustic windows and acoustic doors have been adopted for numerous residential developments for attenuating road traffic noise. It is understood that Environmental Protection Department (EPD) has issued the Practice Note on Application of Innovative Noise Mitigation Designs in Planning Private Residential Developments against Road Traffic Noise Impact (hereafter referred as "ProPECC PN5/23") for mitigating road traffic noise impact.

However, after checking with the Project Architect that some major parameters (i.e. window openings) of the reference case in ProPECC PN5/23 cannot be followed. In this Proposed Development, the design of the proposed baffle type acoustic window has made reference to the designs of the baffle type acoustic window system in the redevelopment project of ex-North Point Estate (hereinafter referred to as "reference case – NPE(AW)"), according to the on-site noise measurement results, it is verified that the baffle type acoustic window system with absorption material – Micro-Perforated Absorber (MPA) applied can

achieve a noise reduction of not less than 6.8 dB(A). The indicative design of acoustic window (baffle type) is shown in **Figure 7**.

It is noted that the room size plays a significant role in affecting the sound attenuation performance. The sound attenuation performance provided by the AW(BT) and EAB(BT) increases with room size because of the longer reverberation time and lower reverberation effect in a larger room. Due to the room size difference between the Proposed Development and the reference case – NPE(AW), further adjustment is needed and is made by accounting the difference between the room size adopted for the Proposed Development and that in the reference case – NPE(AW). For example, if the acoustic window dimensions of both the Proposed Development and the reference case – NPE(AW) are same but the room size is smaller than the reference case – NPE(AW), the sound attenuation will be deducted by a factor of 10 x log (R_{ref}/R_{design}) where R_{ref} and R_{design} are the area of the room of the reference case – NPE(AW) and the Proposed Development respectively. In cases where the room size of the Proposed Development is larger than the reference case – NPE(AW), the corrected sound attenuation will be capped at 6.8 dB(A). **Appendix 4** shows the sound attenuation adjustment of acoustic window (baffle type) adopted in the Proposed Development. Location of proposed acoustic window (baffle type) is shown in **Figure 6**.

b. Enhanced Acoustic Balcony (Baffle Type)

Enhanced Acoustic Balcony (EAB) is specially designed balcony which adopt a combination of mitigation measures to further enhance the noise reduction ability of balcony. Similar to the acoustic window (baffle type) mentioned above, after checking with the Project Architect that some major parameters (i.e. window openings) of the reference case in ProPECC PN5/23 cannot be followed.

In this Proposed Development, the design of the proposed EAB (BF) has made reference to the designs of the baffle type enhanced acoustic balcony system in the redevelopment project of ex-North Point Estate (hereinafter referred to as "reference case – NPE(EAB)"), according to the on-site noise measurement results, it is verified that the baffle type acoustic balcony system can achieve a noise reduction of not less than 8.8 dB(A). The indicative design of enhanced acoustic balcony (baffle type) is shown in **Figure 7**.

It is noted that the room size plays a significant role in affecting the sound attenuation performance. The sound attenuation performance provided by the NPE(EAB) increases with room size because of the longer reverberation time and lower reverberation effect in a larger room. Due to the room size difference between the Proposed Development and the reference case – NPE(EAB), further adjustment is needed and is made by accounting the difference between the room size adopted for the Proposed Development and that in the reference case – NPE(EAB). For example, if the acoustic balcony dimensions of both the Proposed Development and the reference case – NPE(EAB) are the same but the room size is smaller than the reference case – NPE(EAB), the sound attenuation will be deducted by a factor of 10 x log (R_{ref}/R_{design}) where R_{ref} and R_{design} are the area of the room of the reference case – NPE(EAB) and the Proposed Development respectively. In cases where the room size of the Proposed Development is larger than the reference case – NPE(EAB), the corrected sound attenuation will be capped at 8.8 dB(A). **Appendix 4** shows the sound attenuation adjustment of enhanced acoustic balcony (baffle type) adopted in

the Proposed Development. Location of proposed enhanced acoustic balcony (baffle type) is shown in **Figure 6**.

3.8 Mitigated Case Assessment for Proposed NSRs

3.8.1 With the provision of noise mitigation measures, the predicted road traffic noise levels at all NSRs would comply with HKPSG's noise standard, i.e. 70 dB(A), as shown in **Appendix 3**. Full compliance is achieved. As a result, no adverse road traffic noise impact is anticipated at the proposed NSRs.

3.9 Schedule of Noise Mitigation Measures for Proposed Development

3.9.1 Schedule of noise mitigation measures is tabulated below for reference.

Table 3.1 Schedule of Noise Mitigation Measures

Tower	NSR ID	Floor	Noise Mitigation Measures
T1	T1-35	1F-15F	Acoustic Window (BF)
	T1-36	1F-15F	Enhanced Acoustic Balcony (BF)
	T1-37	1F-15F	Acoustic Window (BF)
	T1-38	1F-15F	Enhanced Acoustic Balcony (BF)
	T1-39	1F-15F	Enhanced Acoustic Balcony (BF)
	T1-40	1F-15F	Acoustic Window (BF)
	T1-41	1F-15F	Enhanced Acoustic Balcony (BF)
	T1-42	1F-15F	Acoustic Window (BF)
	T1-43	1F-2F	Acoustic Window (BF)
	T1-44	1F-2F	Enhanced Acoustic Balcony (BF)
	T1-45	1F-6F	Acoustic Window (BF)
	T1-46	1F-7F	Acoustic Window (BF)
	T1-47	1F-8F	Enhanced Acoustic Balcony (BF)
	T1-48	1F-9F	Acoustic Window (BF)
	T1-49	1F-9F	Acoustic Window (BF)
	T1-50	1F-9F	Enhanced Acoustic Balcony (BF)
	T1-51	1F-9F	Enhanced Acoustic Balcony (BF)
	T1-52	1F-9F	Acoustic Window (BF)
	T1-53	1F-10F	Acoustic Window (BF)
	T1-54	1F-10F	Acoustic Window (BF)
	T1-55	1F-10F	Acoustic Window (BF)
	T1-56	1F-10F	Enhanced Acoustic Balcony (BF)
	T1-57	1F-10F	Enhanced Acoustic Balcony (BF)
	T1-58	1F-10F	Acoustic Window (BF)
	T1-59	1F-10F	Acoustic Window (BF)
	T1-60	1F-10F	Acoustic Window (BF)
	T1-61	1F-10F	Enhanced Acoustic Balcony (BF)
	T1-62	1F-9F	Acoustic Window (BF)
	T1-63	1F-9F	Acoustic Window (BF)
	T1-64	1F-9F	Enhanced Acoustic Balcony (BF)
	T1-65	1F-9F	Acoustic Window (BF)

Tower	NSR ID	Floor	Noise Mitigation Measures
	T1-66	1F-9F	Enhanced Acoustic Balcony (BF)
	T1-67	1F-9F	Acoustic Window (BF)
	T1-68	1F-8F	Enhanced Acoustic Balcony (BF)
	T1-69	1F-8F	Acoustic Window (BF)
	T1-70	1F-8F	Acoustic Window (BF)
T2	T2-40	2F	Acoustic Window (BF)
	T2-41	2F	Enhanced Acoustic Balcony (BF)
	T2-42	1F-2F	Enhanced Acoustic Balcony (BF)
	T2-43	1F-2F	Acoustic Window (BF)
	T2-44	1F-2F	Acoustic Window (BF)
	T2-45	1F-2F	Acoustic Window (BF)
	T2-46	1F-2F	Acoustic Window (BF)
	T2-47	1F	Enhanced Acoustic Balcony (BF)
	T2-48	1F	Acoustic Window (BF)
	T2-49	1F	Acoustic Window (BF)
	T2-50	1F	Enhanced Acoustic Balcony (BF)
	T2-51	1F	Enhanced Acoustic Balcony (BF)
	T2-52	1F	Acoustic Window (BF)
	T2-53	1F	Acoustic Window (BF)
	T2-54	1F	Acoustic Window (BF)
	T2-55	1F-2F	Acoustic Window (BF)
	T2-56	1F-2F	Enhanced Acoustic Balcony (BF)
	T2-57	1F-2F	Acoustic Window (BF)
	T2-58	1F-2F	Enhanced Acoustic Balcony (BF)
	T2-59	1F-2F	Acoustic Window (BF)
	T2-60	1F-2F	Enhanced Acoustic Balcony (BF)
	T2-61	1F-2F	Acoustic Window (BF)
	T2-62	1F-2F	Acoustic Window (BF)
	T2-63	1F-2F	Acoustic Window (BF)
	T2-64	1F-3F	Acoustic Window (BF)
	T2-65	1F-3F	Acoustic Window (BF)
	T2-66	1F-3F	Enhanced Acoustic Balcony (BF)
	T2-67	2F-3F	Enhanced Acoustic Balcony (BF)
	T2-68	2F-3F	Acoustic Window (BF)
	T2-69	2F-3F	Acoustic Window (BF)
	T2-70	2F	Enhanced Acoustic Balcony (BF)
	T2-71	2F	Acoustic Window (BF)
T3	T3-35	2F	Acoustic Window (BF)
	T3-36	2F	Enhanced Acoustic Balcony (BF)
	T3-37	2F	Acoustic Window (BF)
	T3-38	2F	Acoustic Window (BF)
	T3-39	2F	Enhanced Acoustic Balcony (BF)
	T3-40	2F	Acoustic Window (BF)

Tower	NSR ID	Floor	Noise Mitigation Measures
	T3-41	2F	Enhanced Acoustic Balcony (BF)
	T3-42	1F-2F	Acoustic Window (BF)
	T3-43	1F-2F	Enhanced Acoustic Balcony (BF)
	T3-44	1F-2F	Acoustic Window (BF)
	T3-45	1F-2F	Acoustic Window (BF)
	T3-46	1F-2F	Enhanced Acoustic Balcony (BF)
	T3-47	1F-2F	Acoustic Window (BF)
	T3-48	1F-2F	Acoustic Window (BF)
	T3-49	1F-2F	Acoustic Window (BF)
	T3-50	1F-2F	Enhanced Acoustic Balcony (BF)
	T3-51	1F-2F	Enhanced Acoustic Balcony (BF)
	T3-52	1F-2F	Acoustic Window (BF)
	T3-53	1F-2F	Acoustic Window (BF)
	T3-54	1F-2F	Acoustic Window (BF)
	T3-55	1F-2F	Acoustic Window (BF)
	T3-56	1F-2F	Enhanced Acoustic Balcony (BF)
	T3-57	1F	Enhanced Acoustic Balcony (BF)
	T3-58	1F	Acoustic Window (BF)
	T3-59	1F	Acoustic Window (BF)
	T3-60	1F	Enhanced Acoustic Balcony (BF)
	T3-61	1F	Acoustic Window (BF)
	T3-62	1F	Acoustic Window (BF)

4. FIXED NOISE IMPACT ASSESSMENT

4.1 Introduction

4.1.1 A site visit was conducted in October 2024 and June 2025 to identify whether there are any industrial activities in the vicinity (i.e. 300m) of the Application Site. The land use surrounding the Application Site was mainly low-rise residential use or village houses and no fixed noise source were identified in the vicinity of the Application Site. Therefore, significant fixed noise impact upon the Proposed Development is not anticipated.

4.2 Potential Fixed Noise Sources within Proposed Development

4.2.1 In order to ensure that the fixed sources noise generated by the Proposed Development would not cause excessive impact to the neighbouring noise sensitive uses, the ventilation and air conditioning systems for the carpark, plant room etc. will be carefully designed and installed to comply with relevant fixed source noise standards under Chapter 9 of HKPSG.

5. CONSTRUCTION PHASE – NOISE IMPACT

5.1 Introduction

5.1.1 During the construction phase of the Proposed Development, major noise impacts would arise from piling works, operation of Powered Mechanical Equipment (PME), and construction-related traffic.

5.2 Construction Noise Criteria

5.2.1 Construction noise is controlled under the Noise Control Ordinance (NCO) which prohibits the use of powered mechanical equipment (PME) during the restricted hours (7 p.m. to 7 a.m. on normal weekdays and any time on a public holiday, including Sunday) without a valid Construction Noise Permit (CNP) from the Authority. The criteria and procedures for issuing such a permit are specified in the "Technical Memorandum on Noise from Construction Works Other than Percussive Piling" (TM1). While there is no planned construction works to be carried out during the restricted hours, TM1 should be followed in case there is any need to carry out works in such time period in future.

5.2.2 With effect from 1 November 1996, the use of specified powered mechanical equipment (SPME) for carrying out construction work other than percussive piling and/ or the carrying out of prescribed construction work (PCW) within a designated area are also brought under control. The relevant technical details are provided in the "Technical Memorandum on Noise from Construction Work in Designated Areas" (TM2).

5.2.3 Percussive pilling is controlled similarly by a construction noise permit system and described in the NCO and the "Technical Memorandum on Noise from Percussive Piling" (TM3) which restrict the number of hours during which piling can be conducted. Percussive piling is prohibited between 7 p.m. and 7 a.m. and on holidays (including Sundays). Percussive piling during the daytime (i.e. between 7 a.m. and 7 p.m. on any day not being a holiday) may be carried out in accordance with the permitted hours and other conditions under a valid construction noise permit.

5.2.4 For construction works other than percussive piling, although TM1 does not provide control over daytime construction activities, noise limits as shown in below Table are set out in the "Practice Note for Professional Persons Environmental Consultative Committee" (ProPECC) PN 1/24.

Table 6.1 Noise Limit for Daytime Construction Activities

NSR	0700 to 1900 Hours on Any Day Not Being a Sunday or General Holiday, Leq (30min), dB(A)
Dwelling	75
School	70 65 (During Examination)

Notes:

(i) The above standards apply to uses which rely on opened windows for ventilation;

(ii) The above standards shall be viewed as the maximum permissible noise levels assessed at 1m from the external façade.

5.3 Recommended Mitigation Measures for Construction Noise

5.3.1 Noise mitigation measures should be introduced in the Proposed Development to alleviate potential noise impacts on nearby NSRs if any. The Contractor(s) will be required under the contract to ensure regular maintenance of all plant and equipment, and that noise generation at source would be minimized and practicable noise mitigation measures would be in use. The Contractor(s) will be required to adopt quiet type construction plants (e.g. EPD's quality powered mechanical equipment (QPME) inventory), wherever practicable. Similarly, quieter method other than percussive piling will be adopted as far as practicable for any piling works subject to ground investigation result (which usually dictates the piling method). Movable noise barriers will also be erected around noisy plants in order to minimize noise generation at source. With these measures in place noise generation due to construction activities would be minimized.

5.3.2 The following general noise mitigation measures could be considered:

- Application of properly designed silencers, mufflers, acoustically dampened panels and acoustic sheds or shields, etc.;
- Use of electric-powered equipment where applicable instead of diesel-powered or pneumatic-powered equipment;
- Erecting noise enclosures/ movable noise barriers around noisy plants;
- Only well-maintained plants should be operated on-site;
- Plants should be serviced regularly during the construction programme;
- Noisy activities can be scheduled to minimize exposure of nearby NSRs to high levels of construction noise. For example, noisy activities can be scheduled for midday or at times coinciding with periods of high background noise;
- Noisy equipment such as emergency generators shall always be sited as far away as possible from noise sensitive receivers;
- Location of noise emitting plants at maximum possible distances from sensitive receivers;
- Contractual clauses for construction works; and
- Schedule of noisy operations during non-restricted hours where possible.

5.3.3 The above-mentioned noise mitigation measures will be included in the contractual clauses for implementation by the contractor(s) during the construction stage. With these measures in place, construction noise due to the Proposed Development can be minimized, and no significant noise impact is anticipated.

5.3.4 Requirements in relevant pollution control ordinances/regulations and the guideline document "Recommended Pollution Control Clause for Construction Contracts" also are relevant for construction noise control.

6. WATER QUALITY IMPACT

6.1 Introduction

6.1.1 This section presents the water quality impact assessment for the construction and operational phases of the Project. Potential impacts have been identified and their significance on the Water Sensitive Receivers (WSRs) are evaluated. The location of these WSRs can be referred to **Figure 8.** Appropriate mitigation measures and good site practices are recommended, where necessary, to reduce the potential water quality impacts in order to control the residual impacts to acceptable levels.

6.1.2 The details of the WSR are summarized in **Table 6.1**.

Table 6.1 Details of the WSR

WSR ID	Description	Type	Status	Estimated Distance (m)
WSR 1	Lotus Pond	Pond	Active	433m
WSR 2	nullah	Channelized watercourse		51m
WSR 3	Sheung Yue River	Channelized watercourse	Active	5m
WSR 4	Pond	Pond	Active	68m
WSR 5	Existing Meander	Natural Meander	Active	2m
WSR 6	nullah	Channelized watercourse	Active	145m
WSR 7	nullah	Channelized watercourse	Active	372m
WSR 8	Pond	Pond	Active	419m
WSR 9	Pond	Pond	Active	464m
WSR 10	Pond	Pond	Active	93m
WSR 11	nullah	Channelized watercourse	Active	166m

6.2 Legislations, Standards and Guidelines

6.2.1 Construction acidities may induce potential water quality impact due to the discharge of the effluent generated from the construction site. Effluent discharges from construction site is subject to control under the Water Pollution Control Ordinance and the Technical Memorandum Standards for Effluents Discharged in Drainage and Sewerage Systems, Inland and Coastal Water issued by EPD. Information in the ProPECC PN 2/24 Construction Site Drainage will also be considered to provide some

basic environmental guidelines for handling and disposal of construction site discharges.

6.2.2 Protection of natural streams/rivers from adverse impacts arising from construction work (ETWB TC(W) No. 5/2005) is applicable to this study which provides framework to protect the natural streams/rivers from the impacts of construction works.

6.2.3 The Professional Persons Environmental Consultative Committee Practice Note 1/23 Drainage Plans subject to Comment by the Environmental Protection Department (ProPECC PN 1/23) provides guidelines for Drainage Plans of the Proposed Development; whereby domestic sewage should be discharged to a foul water sewer and surface water should be discharged via rainwater pipes to stormwater drains during operation phase.

6.2.4 Chapter 9 of Hong Kong Planning Standards and Guidelines ("HKPSG") sets out the guidelines for sewage collection and disposal whereby public sewerage system should be used for sewage collection as it is considered the most efficient and safe means of disposing sewage.

6.3 Evaluation of Water Quality Impact in Construction Phase

6.3.1 Site construction activities will inevitably have the potential to generate wastewater. Such works should be carried out in such a manner to minimise potential impacts on the water quality. Pollution sources could include:

- General construction activities;
- Construction works in close proximity to inland watercourses;
- Construction runoff;
- Sewage effluent from the construction workforce; and
- Accidental spillage of chemicals.

<u>General Construction Activities</u>

6.3.2 Debris and rubbish generated on site shall be collected, handled and disposed of properly. All fuel tanks shall be provided with locks and be sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank. Open storm water drains and culverts near the works area shall be covered to block the entrance of large debris and refuse.

<u>Construction works in close proximity to inland watercourses</u>

6.3.3 Construction activities such as site formation, earthwork and excavation within the Project site have the potential to impact nearby inland watercourses through the release of discharges and runoff laden with suspended solids and other pollutants. Mitigation measures should be devised and implemented for construction work that is in close proximity to natural rivers and streams, alternation or diversion of watercourses (WSR5) within or in close proximity to the project site would be conducted, in order to reduce the potential for construction site discharges polluting the receiving water quality.

<u>Construction Runoff</u>

6.3.4 The surface runoff from construction works areas may contain increased loads of suspended solids (SS) and contaminants. Potential sources of pollution from construction site drainage include:

- Runoff and erosion from site surfaces, drainage channels, demolition works, earth working areas and stockpiles;

- Release of any bentonite slurries, concrete washings and other grouting activities;
- Wash water from dust suppression spray facilities; and
- Fuel, oil, solvents and lubricants from maintenance of mechanical equipment.

6.3.5 Sediment laden runoff particularly from works areas subjected to excavation or earth works, if uncontrolled, may cause increased levels of suspended solids and pollutants entering the stormwater drainage system and into the marine environment.

6.3.6 Mitigation measures and good site practices outlined in ProPECC PN 1/94 should be implemented to control construction site runoff and drainage from the works area. The Contractor would also be required to apply for a discharge license under the WPCO. With implementation of the recommended mitigation measures along with compliance of the effluent standards set under TM-DSS, construction site runoff can be effectively controlled, and adverse impacts to storm drains or the marine environment is not anticipated.

Sewage effluent from the construction workforce

6.3.7 The sewage from construction workforce is expected to be handled by portable chemical toilets. To prevent additional pollution loads to the watercourse, portable chemical toilets shall be provided by licensed contractors who shall be responsible for appropriate disposal of collected sewage and maintenance of these facilities. Guidelines shall be prepared by contractor to avoid the illegal discharge of untreated sewage from the workforce. Adequate number of portable chemical toilet should be provided to ensure the sewage effluent from workforce is proper collected.

Accidental spillage of chemicals

6.3.8 All fuel tanks shall be provided with locks and be sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank. The contractors shall prepare guidelines of immediate clean-up actions for any spillage of oil, fuels and chemical. Only trained personnel with safety and protective equipment shall be allowed to handling the chemical spillage. Absorbent material for cleaning up the spills shall be disposed of as chemical waste.

6.4 Mitigation Measures During Construction Phase

6.4.1 Control of potential water quality impact arising from the construction works shall be achieved based on the following principles:

- Minimisation of runoff;
- Prevention or minimisation of the likelihood of the identified pollutants being in contact with rain or runoff; and
- Measures to abate pollutants in the stormwater runoff.

6.4.2 The Contractor shall apply for a discharge licence under the WPCO and the discharge shall comply with the terms and conditions of the licence.

6.4.3 Contractor(s) of this Project will be required to submit a Construction Phase Drainage Management Plan with details of the design of the temporary site drainage system for the approval of the Engineers Representative (RE) and the Environmental Team in order to ensure that the above mitigation measures are in place.

6.4.4 Regular inspection (weekly) of the site drainage system and the implementation of the Plan shall be carried out by the Contractor(s), RE, and ET in order to ensure no

off-site spillage of runoff and that the mitigation measures are effectively implemented. Any deficiencies identified shall be rectified by the Contractor(s).

Best Management Practices (BMPs)

6.4.5 The BMPs given in the ProPECC PN 2/24 shall be implemented in controlling water pollution during the whole construction phase. The main practices provided in the above-mentioned document (i.e. ProPECC PN 2/24) are also summarized in the following paragraphs which should be implemented by the contractor during the construction phase, where practicable:

- High loading of suspended solids (SS) in construction site runoff will be prevented through proper site management by the contractor;
- The boundary of critical work areas will be surrounded by ditches or embankment. Accidental release of soil or refuse into the adjoining lands should be prevented by the provision of site hoarding or earth bunds, etc. at the site boundary. These facilities should be constructed in advance of the site formation works and roadworks;
- Consideration will be given to plan construction activities to allow the use of natural topography of the Project Site as a barrier to minimize uncontrolled non-point discharge of construction runoff;
- Temporary ditches, earth bunds should be provided to facilitate controlled discharge of runoff into storm drains via sand/ silt removal facilities such as sand traps and sedimentation basins. Oil and grease removal facilities should also be provided where appropriate, for example, in area near plant workshop/ maintenance areas;
- Sedimentation basins and sand traps designed in accordance with the requirements of ProPECC Note PN 2/24 should be installed at the construction site for collecting surface runoff;
- Sand and silt removal facilities, channels and manholes should be maintained and the deposited silt and grit should be removed regularly by the contractor, and at the onset of and after each rainstorm to ensure that these facilities are functioning properly;
- Slope exposure should be minimized where practicable especially during the wet season. Exposed soil surfaces should be protected from rainfall through covering the temporarily exposed slope surfaces or stockpiles with tarpaulin or the like;
- Haul roads should be protected by crushed rock, gravel or other granular materials (i.e. hard paved) to minimize discharge of contaminated runoff;
- Slow down water run-off flowing across exposed soil surfaces;
- Plant workshop/ maintenance areas should be bonded and constructed on a hard standing. Sediment traps and oil interceptors should be provided at appropriate locations;
- Manholes (including newly constructed ones) should be adequately covered or temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system;
- Construction works should be programmed to minimize soil excavation works where practicable during the rainy days;

- Chemical stores will be contained (bonded) to prevent any spills from contact with water bodies. All fuel tanks and/ or storage areas should be provided with locks and be sited on hard surface;
- Chemical waste arising from the Project Site should be properly stored, handled, treated and disposed of in compliance with the requirements stipulated under the Waste Disposal (Chemical Waste) (General) Regulation;
- Drainage facilities must be adequate for the controlled release of storm flows.
- Vehicle wheel washing facilities should be provided at the site exit such that mud, debris, etc. attached to the vehicle wheels or body can be washed off before the vehicle leaves the work site;
- Section of the road between the wheel washing bay and the public road will be paved to reduce vehicle tracking of soil and to prevent site run-off from entering public road drains;
- Bentonite slurries, if any to be generated, shall be reconditioned and reused as far as practicable. Spent bentonite should be kept in a separate slurry collection system for disposal at a marine spoil grounds subject to obtaining a marine dumping licence from EPD. If used bentonite slurry is to be disposed of through public drainage system, it should be treated to meet the respective applicable effluent standards for discharges into sewers, storm drains or the receiving waters.

6.5 Evaluation of Water Quality Impact in Operational Phase

Runoff from road surfaces and paved areas

6.5.1 During operation, the irrigation runoff and surface runoff during rainfall events, which is known as non-point source of pollution, may be the cause potential water quality impact. Fallen leaves, particles, litter from open areas, which is a source of organic and nutrient pollutants, can be washed into the drainage system during heavy rainfall if it is not properly controlled. Pollutants, contributed by non-point source are often bound or adsorbed onto particles, thus an effective stormwater management system will be required for the removal of pollution sources prior to rainstorm and the provision of degritting/screening facilities will be required for sediment collection. As the particles settle out, the associated pollutants will also settle out and removed from stormwater.

6.5.2 Under normal condition, runoff carrying pollutants will not be generated in low rainfall intensity, but increased runoff may occur during heavy rainfall condition. The first flush flow would carry most of the pollutants and the subsequent overland flow generated from rainstorms is expected to be uncontaminated. Thus, prevention of "first flush" pollution in stormwater runoff will be an effective way in controlling pollution at source and to abate pollutants.

6.5.3 Relevant assessment on the total peak flow of stormwater of the Proposed Development and the capacity of proposed drainage system are provided in a separate Drainage Impact Assessment.

Sewage generated from the development

6.5.4 During the operation phase of the Proposed Development, sewage generated by the occupants are the main sources of water quality impacts. The Average Dry Weather Flow (ADWF) for sewerage generation from the Project is estimated to be 792m^3/day. All sewage generated from the operation of the Proposed Development will be discharged to the drainage system and the public sewers (along Kwu Tung

Road to the north of the Application Site) which will eventually leads to Shek Wu Hui Sewage Treatment Works via Tsung Pak Long Sewage Pumping Station for disposal to River Indus and in turn to Deep Bay.

6.5.5 Relevant assessment on the total peak flow of sewerage of the Proposed Development and the capacity of drainage system are provided in a separate Sewerage Impact Assessment.

6.6 Conclusion

6.6.1 With the implementation of the recommended good practices or mitigation measures during the construction and operational phases, no adverse water quality impact is anticipated.

7.

7. WASTE MANAGEMENT

7.1 Introduction

7.1.1 This section examines the type, quantity and the timing of potential sources of waste that will arise during the construction stage as well as address the waste impact during operation phase. It identifies potential environmental impacts associated with their handling and disposal. Options for avoidance, minimization, reuse, recycling, treatment, storage, collection, transport and disposal of such wastes are examined. Where appropriate, procedures for waste reduction and management are considered and environmental control measures for avoiding and minimizing the potential impacts are recommended.

7.2 Legislation

7.2.1 References have been made to the following relevant Hong Kong legislation governing waste management and disposal. Directly relevant legislations include:

- The Waste Disposal Ordinance (Cap. 354) and subsidiary legislations, such as the Waste Disposal (Chemical Waste) (General) Regulation, set out requirements for the storage, handling and transportation of all types of wastes;
- Land (Miscellaneous Provisions) Ordinance (Cap 28);
- Public Health and Municipal Services Ordinance (Cap 132) – Public Cleansing and Prevention of Nuisance Regulation – control of disposal of general refuse;
- DEVB TCW No. 9/2011, Enhanced Control Measures for Management of Public Fill;
- Monitoring of Solid Waste in Hong Kong 2021;
- Practice Note for Authorized Persons and Registered Structural Engineers – Construction and Demolition Waste (PNAP ADV – 19) issued by the Buildings Department;
- Code of Practices and Guidelines for Asbestos Control and Handling; and
- ProPECC PN2/97 Handling of Asbestos Containing Materials in Building

7.2.2 Other relevant documents and guidelines that are applicable to waste management and disposal include:

- ETWB Technical Circular (Works) No. 19/2005 - Environmental Management on Construction Sites;
- Development Bureau Technical Circular (Works) No. 8/2010 - Enhanced Specification for Site Cleanliness and Tidiness;
- ETWB TCW No. 22/2003A - Additional Measures to Improve Site Cleanliness and Control Mosquito Breeding on Construction Sites;
- Development Bureau Technical Circular (Works) No. 6/2010 - Trip-ticket System for Disposal of Construction and Demolition Materials;
- WBTC No. 19/2001 - Metallic Site Hoardings and Signboards;
- Works Bureau Technical Circular No. 12/2000 - Fill Management;
- Works Branch Technical Circular No. 2/93 - Public Dumps;
- Works Branch Technical Circular No. 2/93B - Public Filling Facilities; and
- Project Administration Handbook for Civil Engineering Works.

7.3 Assessment Methodology

7.3.1 The assessment of the potential waste management implications during the construction and operation phases of the Project has been conducted in accordance with Annexes 7 and 15 of the EIAO-TM, including the following tasks:

- Estimation of the types and quantities of the wastes generated;
- Evaluation of opportunities for waste reduction and re-use;
- Identification of disposal options for each type of wastes;
- Assessment of potential environmental impacts arising from the wastes management with respect of potential hazards, air and odour emissions, noise, wastewater discharge, and public transport; and
- Assessment of the impacts caused by handling, collection, transportation and re-use /disposal of wastes.

7.3.2 Prior to considering the disposal options for various types of waste, opportunities for reducing waste generation, on-site or off-site reuse and recycling have been evaluated. Measures which can be taken in the planning and design phases (e.g. by modifying the design approach) and in the construction phase for maximizing waste reduction have been separately considered. Practices to promote segregation of waste materials are additionally considered for advancing the waste management efficiency.

7.3.3 After considering the opportunities for reducing waste generation and maximizing reuse, the types and quantities of the waste required to be disposed of have been estimated and the disposal options for each type of waste have been described. The disposal method recommended for each type of waste has been taken into account the result of the assessment. The impacts caused by handling (including stockpiling, labelling, packaging and storage), collection and reuse / disposal of waste have been addressed and appropriate mitigation measures have been proposed.

7.4 Identification and Evaluation of Potential Impact

Construction Phase

7.4.1 The construction activities to be carried out for the proposed Project would generate a variety of wastes that can be divided into distinct categories based on their composition and ultimate method of disposal. The identified waste types include:

- Construction and Demolition (C&D) materials;
- General refuse; and
- Chemical waste

7.4.2 It is anticipated that the majority of C&D materials will be generated from the following key construction activities:

- Site Clearance;
- Excavation for Basement and foundation construction;
- Site formation works;
- Building construction and superstructure works

7.4.3 The nature of each type of waste arising is described in the following section, together with an evaluation of the potential environmental impacts associated with these waste arisings.

C&D Materials

7.4.4 C&D materials comprise mainly of unwanted materials, including surplus materials arising from excavations that are generated from the works (e.g. site clearance, site formation works, excavation work for basement). Inert soft C&D materials comprise of soil, sand, clay, slurry, etc., while hard C&D materials comprise of crushed concrete, asphalt, rock, etc. The amount of non-inert C&D materials generated during site clearance would be minor (as there is little vegetation at the Application Site). C&D materials may comprise different types of materials, including:

- Inert C&D materials (also known as public fill, including soil, rock debris, rubble earth, concrete, etc.) do not decompose and are suitable to reuse as filling materials for land reclamation and site formation. Inert C&D materials could be reused on-site as filling materials. For those inert C&D materials that cannot be reused should be delivered to Public Fill Reception Facilities.
- Non-inert C&D materials (also known as C&D waste, including bamboo, timber, paper, metal, glass, plastic, packaging wastes, etc.). Non-inert C&D materials should be reused or recycled as far as possible. For those non-inert C&D materials that cannot be reused or recycled, they should be disposed of at designated landfill sites as last resort.

7.4.5 The general waste management strategy is to avoid waste generation in the first place. Should it be unavoidable, reduction and segregation at-source should be exercised as far as practicable and recycling and reuse should be adopted at the same time to salvage all the recyclable and reusable materials as much as possible.

7.4.6 Inert C&D materials should be re-used on-site (e.g. for backfilling) if it is practical and/or disposed of at CEDD designated public fill reception facilities. Non-inert C&D materials (i.e. C&D waste) should be re-used or recycled. For those that cannot be reused or recycled should be disposed of at designated landfill sites as last resort.

7.4.7 The contractors should be responsible for ensuring that waste is collected by approved waste collectors and appropriate measures are taken to minimize adverse impacts to the surrounding environment, such as dust generation. The contractors must also ensure that all necessary waste disposal permits are obtained.

7.4.8 Prior to disposal of non-inert C&D materials, it is recommended that wood, steel, glass and other metals be separated for re-use and/or recycling and inert C&D materials utilized as fill materials to minimize the quantity of waste to be disposed of to the landfill.

7.4.9 If the total quantity of C&D materials generated from the Project is estimated to be over 59,400 m^3, a Construction and Demolition Material Management Plan (C&DMMP) is required to be prepared at the feasibility study or preliminary design stage in accordance with Chapter 4 Clause 4.1.3 of Project Administration Handbook for Civil Engineering Works. The purpose of the C&DMMP is to actively seek to minimise generation of C&D materials and to reuse inert materials generated, including rock, as far as possible. The C&DMMP shall be signed off by a D1 officer. The C&DMMP has been prepared in accordance with the guidelines stipulated in Appendix 4.9 of Project Administration Handbook for Civil Engineering Works for separate submission.

General Refuse

7.4.10 The amount of general site wastes to be generated will depend on the contractor's operating procedure and practices. The estimated quantity of general refuse generated would be about 26 kg/day, which is based on the 0.65kg/person/day of generation rate with 40 workers per day. In addition, during the construction phase,

the workforce would generate general refuse, comprising food scraps, paper, empty containers etc. Rapid and effective collection of site wastes will be required to prevent waste materials being blown around by wind, flushed or leached into the environment and odour nuisance.

7.4.11 Recyclable materials (i.e. paper, plastic bottles and aluminium cans) will be collected separately for recycling, in order to reduce the amount of general refuse to be disposed into the landfill. Adequate number of enclosed waste containers will be provided to avoid over-spillage of waste. The non-recyclable refuse will be placed in bags and stored in enclosed containers, the disposed of on a daily basis to the designated landfill. Given that the quantity of general refuse to be disposed will be small, no adverse impact on the operation of these waste disposal facilities is anticipated. With the implementation of the recommended waste management practices at the site, adverse environmental impacts would not arise from the storage, handling and transportation of refuse.

7.4.12 Food waste is the main source of generating unpleasant odour and causing environmental hygiene concerns. In order to reduce the amount of general refuse to be disposed into the landfill, the food waste would be collected separately for recycling and the recycling bins should be placed in prominent places to promote waste separation at-source.

Chemical Waste

7.4.13 Apart from above, Construction plant and equipment will require regular maintenance and servicing, which would generate waste such as solvents, lubrication oil and fuel, etc. Chemical wastes arising during the construction phase may pose serious environmental, health and safety hazards if not stored and disposed of in an appropriate manner.

7.4.14 The amount of chemical waste would be depended on the contractor's on-site maintenance practice and the quantities of plant and vehicles utilised at the construction site. Nevertheless, it is anticipated that the quantity of chemical waste such as lubrication oil and solvent produced from equipment maintenance would be small and less than hundred litres per month. The quantity of chemical waste to be generated would be quantified in the Waste Management Plan as part of the Environmental Management Plan to be prepared by the contractor.

7.4.15 The contractor is required to register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.

7.4.16 Mitigation and control requirements for chemical waste are provided in the "Recommended Pollution Control Clauses for Construction Contracts" available in EPD website mentioned the handling, storage, transportation and disposal of chemical wastes. With good management and site practices, adverse environmental impacts should not result.

7.4.17 Preliminary quantity estimation of construction waste involved, and disposal method is summarised in the **Table 6.1** below.

Table 7.1 Summary of Estimated Construction Waste and Disposal Method

Waste Material Type		Estimated Quantity Generated[(a)]	Disposal Method
Inert C&D materials (Soil, rock debris, rubble earth, concrete etc.)	Excavation of Basements	53,000 m^3	~0.5% (i.e.291m^3) would be reused or recycled on site or in other projects; and the remaining (i.e., 99.5%, ~58,009m^3) would be delivered to Public Fill Reception Facilities for another beneficial reuse. [(b)(c)]
	Construction of New Buildings/Structures	5,300 m^3	
Non-inert C&D materials (Bamboo, timber, paper, metal, glass, plastic, packaging wastes etc.)	Excavation of Basements	1,000 m^3	Disposed to landfill. [(c) (d)]
	Construction of New Buildings/Structures	100 m^3	
Chemical Waste	-	Less than hundred litres /month (preliminary estimate)	To be collected by licensed chemical waste collector and delivered to CWTC
General Refuse	-	26kg/day (Preliminary estimate, assuming there are 40 workers at any one time with generation rate of 0.65kg per worker per day)	Recyclables to recyclers; non-recyclables to landfill

Note:

(a) The above estimated quantities are subject to detailed design.

(b) With total ~20,977 tonnes inert/ non-inert C&D material, the number of dump truck is anticipated to be around 5 trucks/day (assuming each truck can carry 15tones and there is around 270 working day per year)

(c) The destination of inert C&D materials is subject to the designation by the Public Fill Committee according to DEVB TC(W)

(d) The disposal of non- inert C&D materials is subject to agreement with relevant section of the EPD

Operation Phase

General Refuse

7.4.18 According to Waste Statistic for 2023, the most recent domestic waste disposal rate and commercial waste disposal rate are 0.89 kg/person/day and 0.55 kg/person/day respectively. According to the Project Architect, the number of units in the Proposed Development is 1,062 unit. With reference to the 2021 Population By-census for North District, the average domestic household size is assumed to be 2.7 persons/unit, which means that the total residential population of the Proposed Development will be approximately 2,867 persons. As a result, the total domestic waste to be generated every year is estimated to be around 931,474 kg (i.e. 2,867 persons x 0.89 kg/person/day x 365 days/year).

7.4.19 The non-domestic GFA of the Proposed Development is about 1,380 m^2. With reference to Table 2 in Chapter 5 of HKPSG, the density of workers in business use is 20m^2 to 25m^2/worker. Assuming a worker density of 20m^2/worker, the number of workers is estimated to be 69. As a result, the total commercial waste generated every year is estimated to be 13,851 kg (i.e. 69 workers x 0.55 kg/person/day x 365 days/year).

7.4.20 With reference to Plate 3.2 of Waste Statistics for 2023, the recovery rate of domestic waste and commercial waste is 21% and 46% respectively. Therefore, it is estimated that 21% of domestic waste (i.e. 195,609 kg/year) and 46% commercial waste (i.e. 6,371kg/year).

7.4.21 The remaining municipal solid waste of 743,345kg/year would be disposed of at a landfill managed by EPD.

7.4.22 Since the remaining domestic and commercial waste will be collected on a regular basis by waste collectors and disposed of at landfill managed by EPD, the impact from the waste disposal of the operational phase is anticipated to be insignificant with the implementation of the above measures

7.4.23 Such waste will be properly managed by suitable waste collectors so that intentional or accidental release to the surrounding environment will not occur. Effective collection of domestic wastes will be implemented to prevent waste materials from creating odour nuisance or pest/vermin problem. Waste storage areas will be well maintained and cleaned regularly to avoid adverse impact to the surroundings. To reduce waste and facilitate the recycling, sufficient properly labelled recycling bins for food waste, paper, plastic and aluminium should be provided at appropriate locations of the site to collect recyclables for off-site recycling. Regular (e.g. daily) waste removal and recyclables collecting should be arranged to avoid odour nuisance or pest/vermin problem. These waste management practices and good site practises should be properly implemented to ensure adverse environmental impacts from handling and disposal of general refuse would not arise.

7.5 Waste Management Measures

Construction Phase

Good Site Practices

7.5.1 Appropriate waste handling, transportation and disposal methods for all waste arising generated during the construction works should be implemented to ensure that construction wastes do not enter the nearby water bodies.

7.5.2 It is expected that adverse impacts from waste management would not arise, provided that good site practices are strictly followed. Recommendations for good site practices during construction include:

- nomination of approved personnel, such as a site manager, to be responsible for good site practices, and making arrangements for collection of all wastes generated at the site and effective disposal to an appropriate facility;
- training of site personnel in proper waste management and chemical waste handling procedures;
- provision of sufficient waste disposal points and regular collection for disposal;
- appropriate measures to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers;
- regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors;
- an Environmental Management Plan (EMP) which includes a Waste Management Plan (WMP) should be prepared by the Contractor in accordance with ETWB TC(W) No. 19/2005 Environmental Management on Construction *Sites* and should be submitted to the Engineer and/or Architect for approval before construction; and
- a recording system for the amount of wastes generated, recycled and disposed of (including the disposal sites) should be updated on monthly basis and submitted to the Engineer for approval and record.

7.5.3 In order to monitor the disposal of C&D material at landfills and public fill reception facilities, as appropriate, and to control fly tipping, a trip-ticket system should be included as one of the contractual requirements to be implemented by the Contractor. One may make reference to DEVB TCW No. 6/2010 for details.

Waste Reduction Measures

7.5.4 Good management and control can prevent the generation of excessive amounts of waste. Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Recommendations to achieve waste reduction include:

- segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal;
- separate labelled bins shall be provided to segregate recyclables including but not limited to aluminum cans, wastepaper, and plastic bottles from other general refuse generated by the work force, and to encourage collection for recycling by individual collectors;
- any unused chemicals or those with remaining functional capacity shall be recycled;
- maximizing the use of reusable steel formwork to reduce the amount of C&D material;
- prior to disposal of C&D waste, it is recommended that wood, steel and other metals shall be separated for re-use and / or recycling to minimize the quantity of waste to be disposed of to landfill;
- proper storage and site practices to minimize the potential for damage or contamination of construction materials;

- plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste; and
- minimize over ordering of concrete, mortars and cement grout by doing careful check before ordering.

7.5.5 In addition to the above good site practices and waste reduction measures, specific mitigation measures are recommended for the identified waste to minimise environmental impacts during handling, transportation and disposal of these wastes.

General Refuse

7.5.6 General refuse should be stored in enclosed bins or compaction units separated from C&D material. A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D material. An enclosed and covered area is preferred to reduce the occurrence of windblown light material. Adequate recycling containers are recommended to be provided at suitable locations of the Project to encourage recycling of waste such as aluminium cans, plastics and wastepaper.

Construction and Demolition Material

7.5.7 The C&D material generated from the site formation should be sorted on-site into inert C&D material (that is, public fill) and C&D waste. In order to minimise the impact resulting from collection and transportation of C&D materials for off-site disposal, the excavated material comprising fill material should be reused on-site as backfilling material as far as practicable. C&D waste, such as wood, plastic, steel and other metals should be reused or recycled and, as a last resort, disposed of to landfill.

7.5.8 A suitable area should be designated within the site for temporary stockpiling of C&D material and to facilitate the sorting process. Within stockpile areas, the following measures should be taken to control potential environmental impacts or nuisance:

- covering material during heavy rainfall;
- locating stockpiles to minimize potential air quality, water quality and visual impacts; and
- minimizing land intake of stockpile areas as far as possible.

7.5.9 When delivering C&D material to a public fill reception facility, it shall be noted that the material should only consist of soil, rock, concrete, brick, cement plaster/mortar, inert building debris, aggregates and asphalt. The material should be free from marine mud, household refuse, plastic, metals, industrial and chemical waste, animal and vegetable matter, and other material considered to be unsuitable by the Filling Supervisor.

7.5.10 With the implementation of the recommended mitigation measures in the "Recommended Pollution Control Clauses for Construction Contracts" available in EPD website, the potential environmental impacts resulting from the storage, handling and transportation of inert C&D materials, non-inert C&D materials, chemical wastes and general site wastes would be minimal.

Chemical Wastes

7.5.11 If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a Chemical Waste Producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used. Appropriate labels should be securely attached on each chemical

waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosives, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes generated at the Chemical Waste Treatment Centre at Tsing Yi, or other licenced facility, in accordance with the *Waste Disposal (Chemical Waste) (General) Regulation*.

7.5.12 With these waste managements in place, waste generated from the construction works of the proposed development is anticipated to be properly controlled and adverse waste disposal impact is not anticipated.

7.5.13 The Waste Management Plan would be prepared and submitted to the Project Engineer/Architect for approval prior to construction works according to ADV-19.

Operation Phase

General Refuse

7.5.14 General refuse should be collected on a daily basis and delivered to the refuse collection point accordingly. A reputable waste collector should be employed to remove general refuse on a daily basis to avoid odour nuisance or pest/vermin problem. Adequate recycling containers are recommended to be provided at suitable locations of the Project to encourage recycling of waste such as aluminium cans, plastics and wastepaper.

7.6 Conclusion

7.6.1 Waste generated during construction works and operation phase have been qualitatively evaluated. With the implementation of the waste management measures, the waste generated from the construction work and operation of the Proposed Development would be properly controlled and no adverse waste management impact is anticipated.

8. CONCLUSION

8.1.1 The key environmental issues associated with both operation and construction phase of the Application Site are qualitatively discussed in this report.

8.1.2 With sufficient buffer distance from the network of surrounding roads and no industrial activities identified in the vicinity (i.e. 500m) of the Application Site, the Proposed Development will not be subject to unacceptable air quality impacts.

8.1.3 A road traffic noise impact assessment has been carried out for the Proposed Development. With the implementation of proposed noise mitigation measures, full compliance of road traffic noise standard (i.e. L10(1-hr) 70 dB(A)) can be achieved. Therefore, the Proposed Development will not be subject to traffic noise impact.

8.1.4 There is no fixed noise source identified in the vicinity (i.e. 300m) of the Application Site. Therefore, significant fixed noise impact upon the Proposed Development is not anticipated.

8.1.5 With the implementation of the recommended good practices or mitigation measures during the construction and operational phases, no adverse water quality impact is anticipated.

8.1.6 Waste generated during construction works and operation phase have been qualitatively evaluated. With the implementation of the waste management measures, the waste generated from the construction work and operation of the Proposed Development would be properly controlled and no adverse waste management impact is anticipated.

8.1.7 During construction, the project proponent would control noise, dust and site run-off nuisances to within established standard and guidelines through the implementation of relevant mitigation measures. In addition, the "Recommended Pollution Control Clauses for Construction Contracts", should also be implemented where necessary.

8.1.8 It confirms the feasibility of the proposed S16 Planning Application for proposed residential development in environmental terms.

Figures

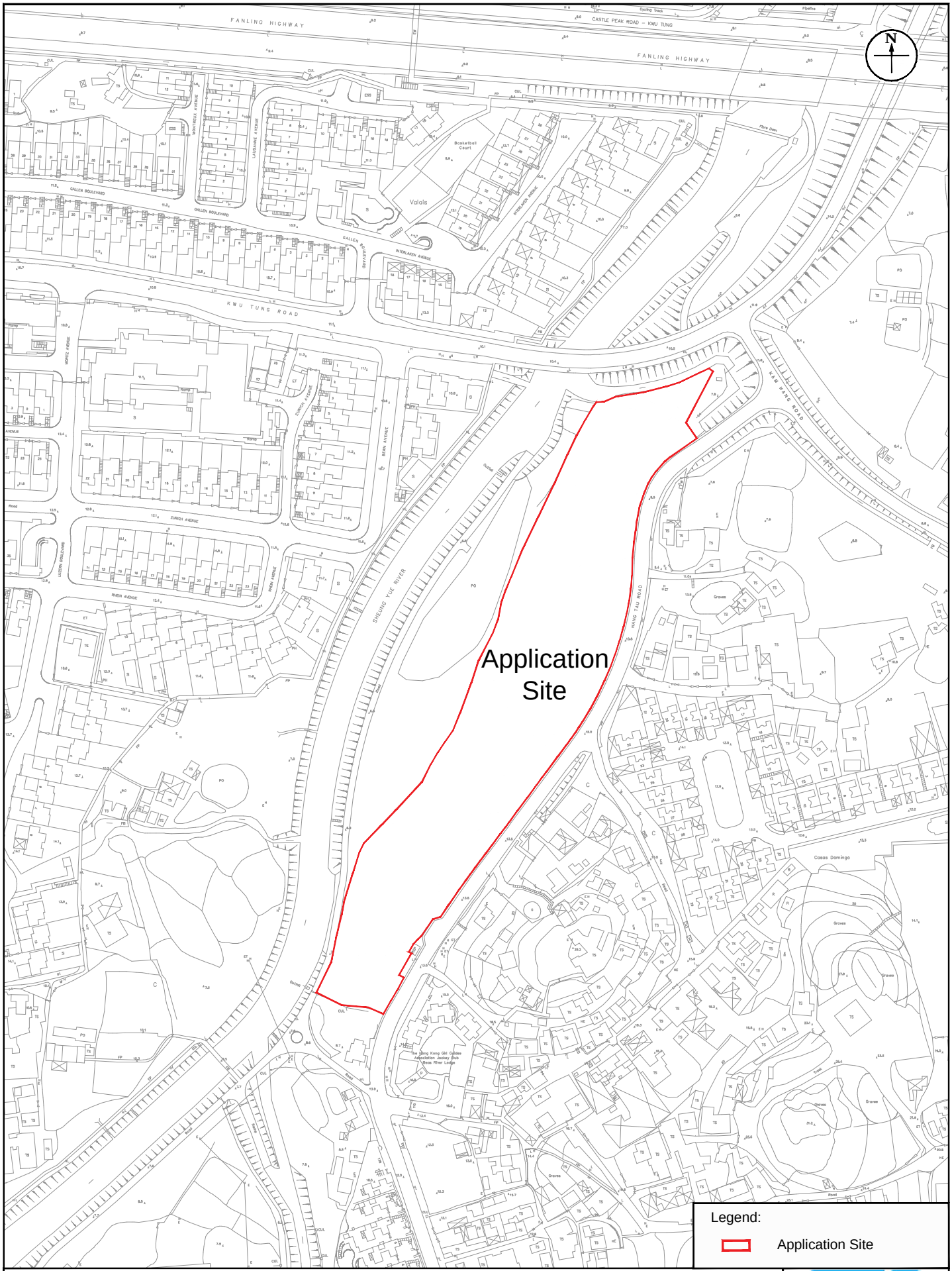

Figure: 1

Title: Location of Application Site and Its Environs

Project: Section 16 Planning Application for Proposed Residential Development with Minor Relaxation of Plot Ratio Restriction at Lots 1027, 1029, 1030, 1034A, 1034B, 1039 (Part), 1040, 1042 RP, 1043 RP, 1044 RP (Part), 1045, 1047, 2233 (Part), 2251 S.A RP, 2256 RP, 2315 (Part) and 2316 RP (Part) in D.D. 92 and Adjoining Government Land (New Lot to be known as Lot 2644 in D.D. 92), Kwu Tung South, Sheung Shui, New Territories

RAMBOLL

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Checked by:	TC
Rev.:	2.0
Date:	Feb 2025

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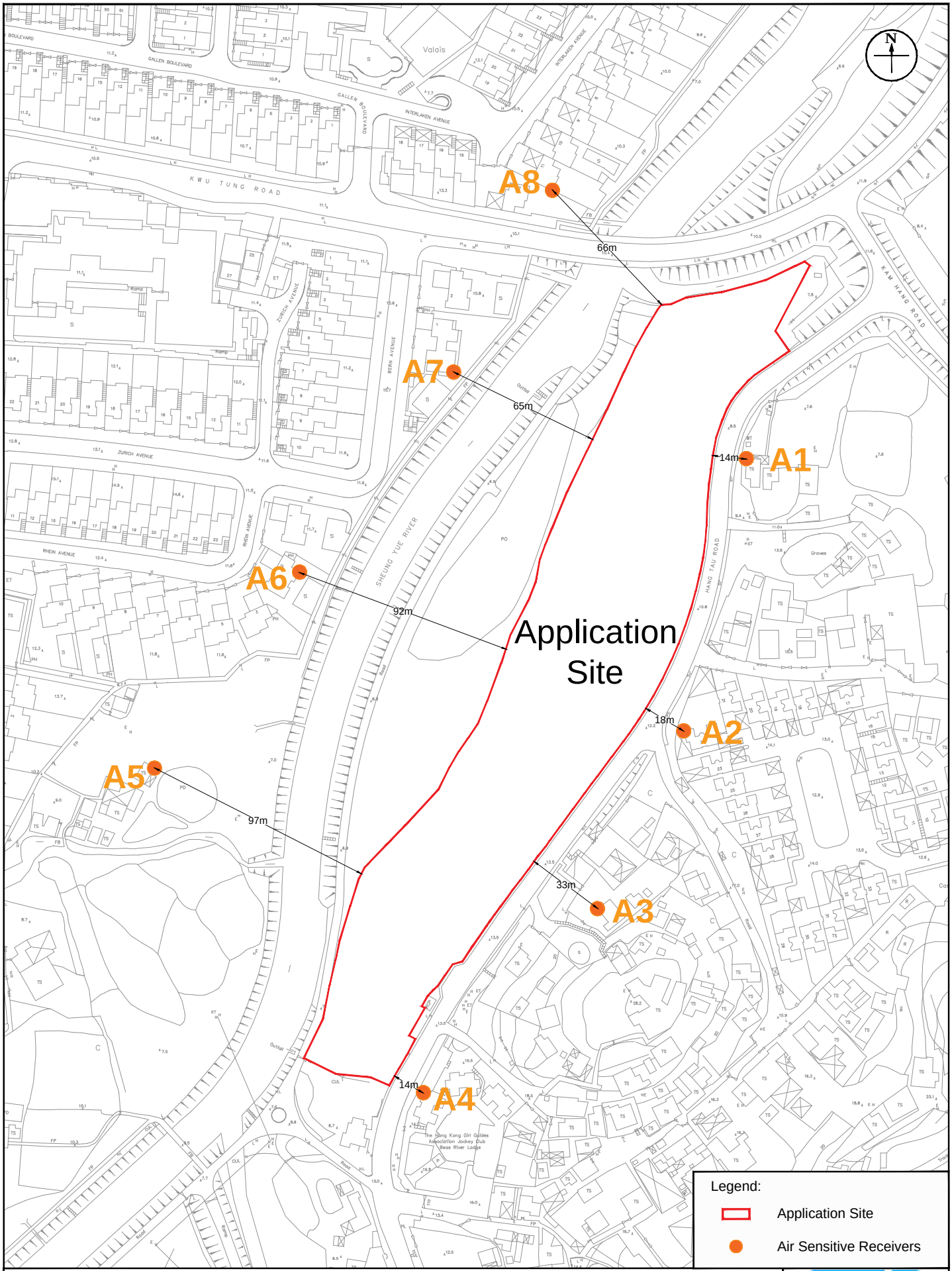

Figure: 2		RAMBOLL
Title: Location of Representative ASRs		Drawn by: TL
		Checked by: TC
Project: Section 16 Planning Application for Proposed Residential Development with Minor Relaxation of Plot Ratio Restriction at Lots 1027, 1029, 1030, 1034A, 1034B, 1039 (Part), 1040, 1042 RP, 1043 RP, 1044 RP (Part), 1045, 1047, 2233 (Part), 2251 S.A RP, 2256 RP, 2315 (Part) and 2316 RP (Part) in D.D. 92 and Adjoining Government Land (New Lot to be known as Lot 2644 in D.D. 92), Kwu Tung South, Sheung Shui, New Territories		Rev.: 2.1
		Date: Jul 2025

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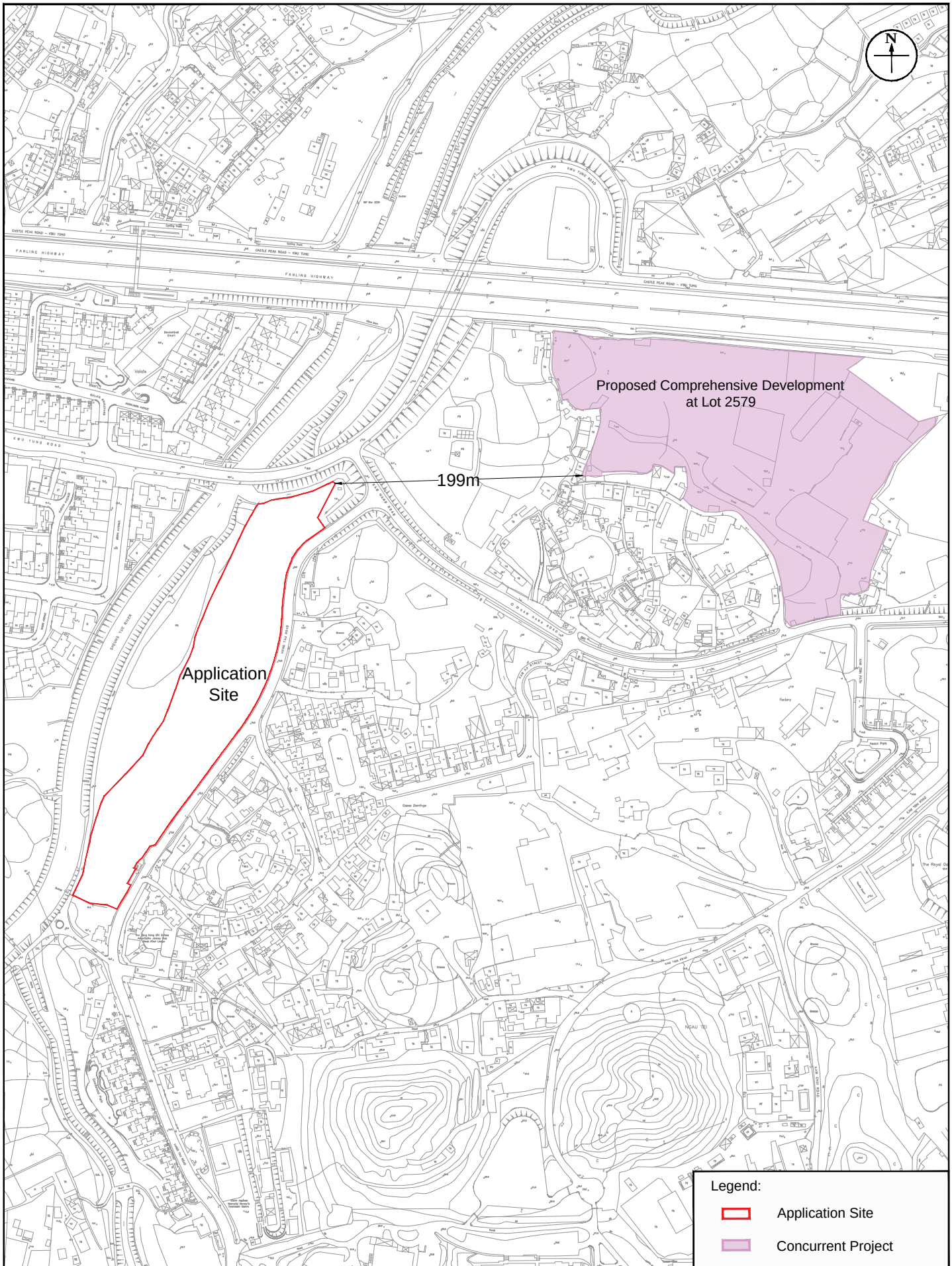

Figure: 3

Title: Location of Potential Concurrent Project

Project: Section 16 Planning Application for Proposed Residential Development with Minor Relaxation of Plot Ratio Restriction at Lots 1027, 1029, 1030, 1034A, 1034B, 1039 (Part), 1040, 1042 RP, 1043 RP, 1044 RP (Part), 1045, 1047, 2233 (Part), 2251 S.A RP, 2256 RP, 2315 (Part) and 2316 RP (Part) in D.D. 92 and Adjoining Government Land (New Lot to be known as Lot 2644 in D.D. 92), Kwu Tung South, Sheung Shui, New Territories

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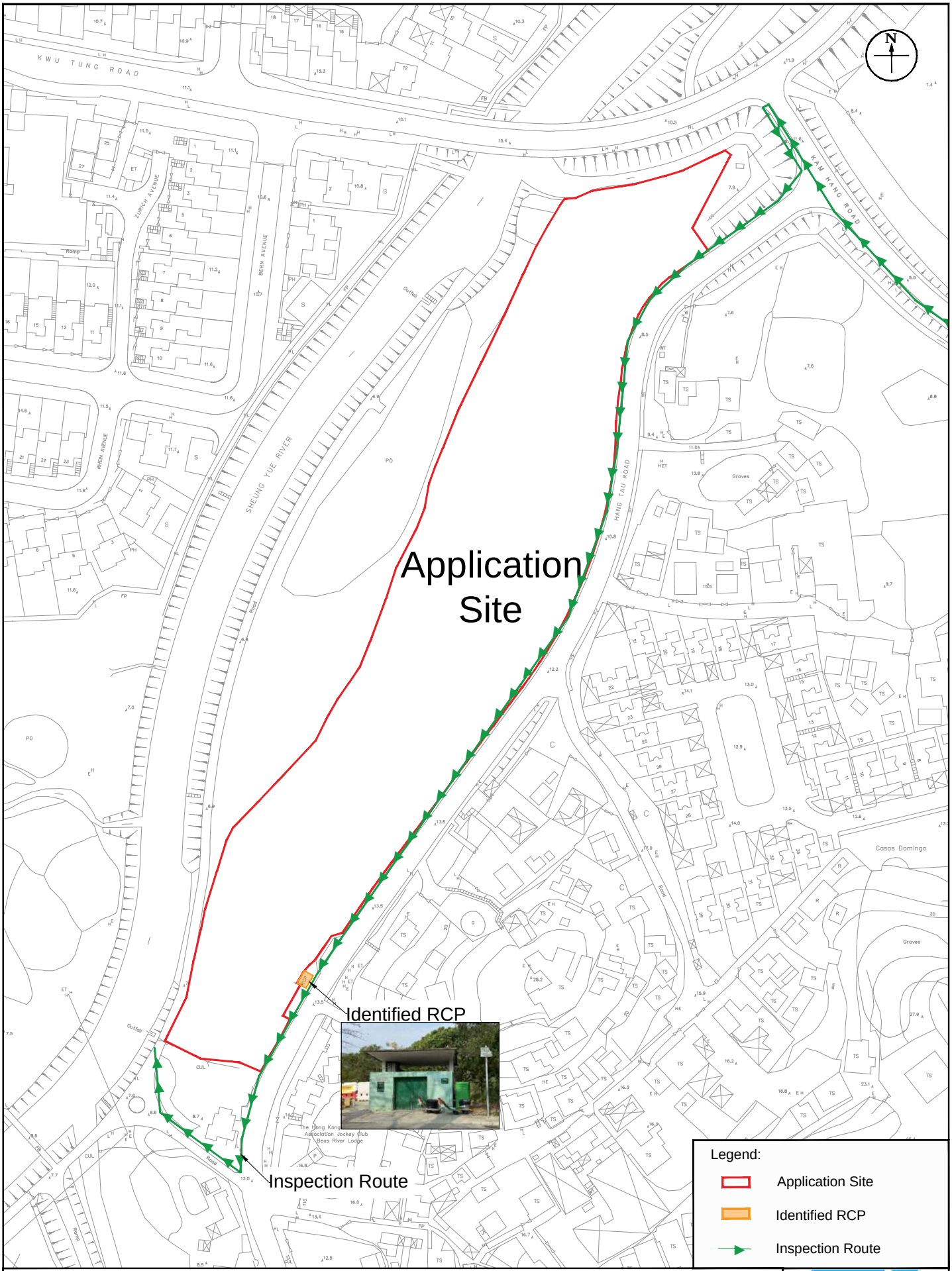

Figure:	4	RAMBOLL
Title:	Location of the Potential Odour Emission Source and Inspection Route	Drawn by: TL Checked by: TC
Project:	Section 16 Planning Application for Proposed Residential Development with Minor Relaxation of Plot Ratio Restriction at Lots 1027, 1029, 1030, 1034A, 1034B, 1039 (Part), 1040, 1042 RP, 1043 RP, 1044 RP (Part), 1045, 1047, 2233 (Part), 2251 S.A RP, 2256 RP, 2315 (Part) and 2316 RP (Part) in D.D. 92 and Adjoining Government Land (New Lot to be known as Lot 2644 in D.D. 92), Kwu Tung South, Sheung Shui, New Territories	Rev.: 2.1 Date: Jul 2025

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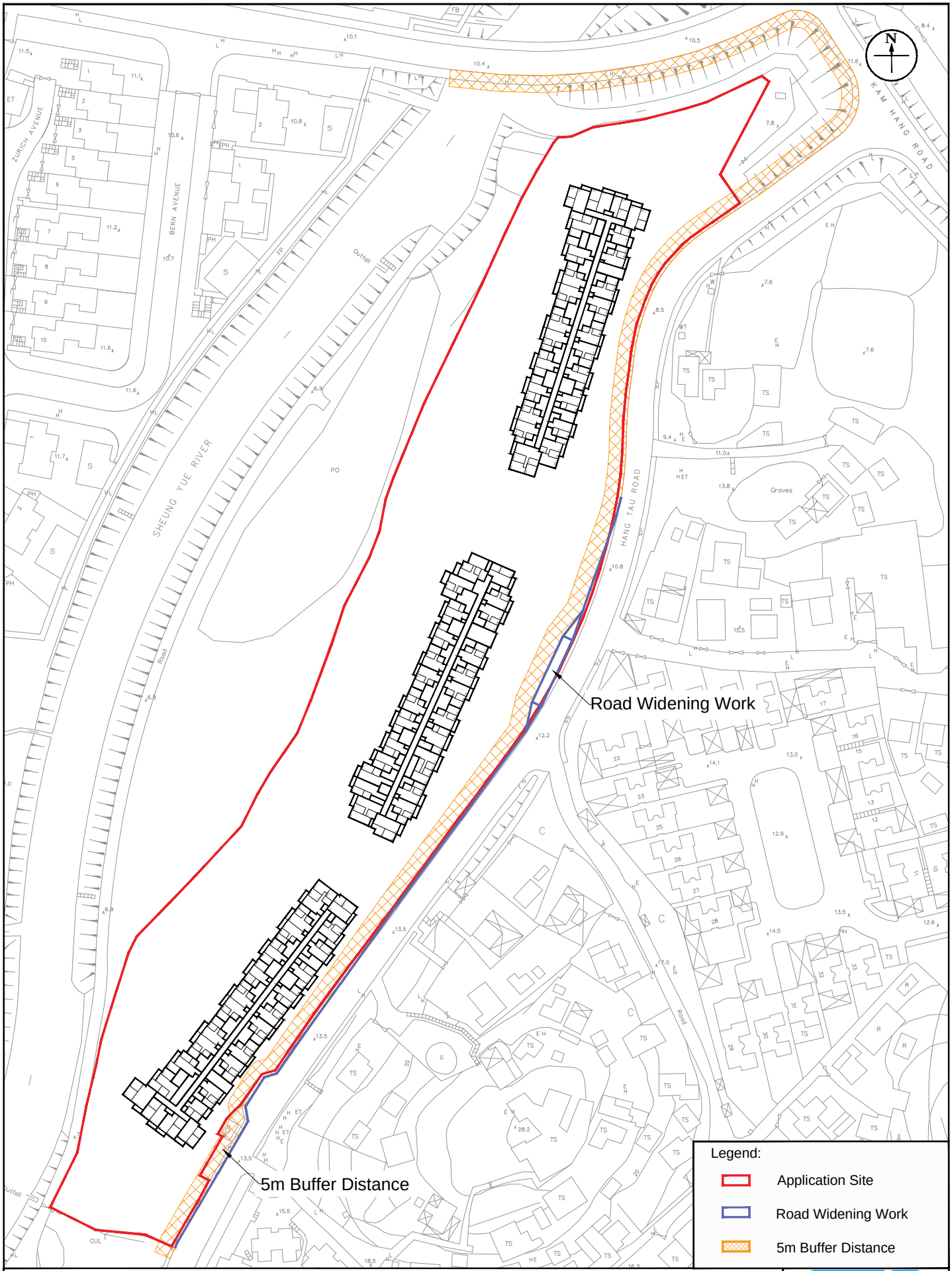

Figure:	5	RAMBOLL
Title:	Buffer Distance between the Proposed Development and Kerb Side of the Nearest Carriageways	Drawn by: TL Checked by: TC
Project:	Section 16 Planning Application for Proposed Residential Development with Minor Relaxation of Plot Ratio Restriction at Lots 1027, 1029, 1030, 1034A, 1034B, 1039 (Part), 1040, 1042 RP, 1043 RP, 1044 RP (Part), 1045, 1047, 2233 (Part), 2251 S.A RP, 2256 RP, 2315 (Part) and 2316 RP (Part) in D.D. 92 and Adjoining Government Land (New Lot to be known as Lot 2644 in D.D. 92), Kwu Tung South, Sheung Shui, New Territories	Rev.: 2.1 Date: Jul 2025

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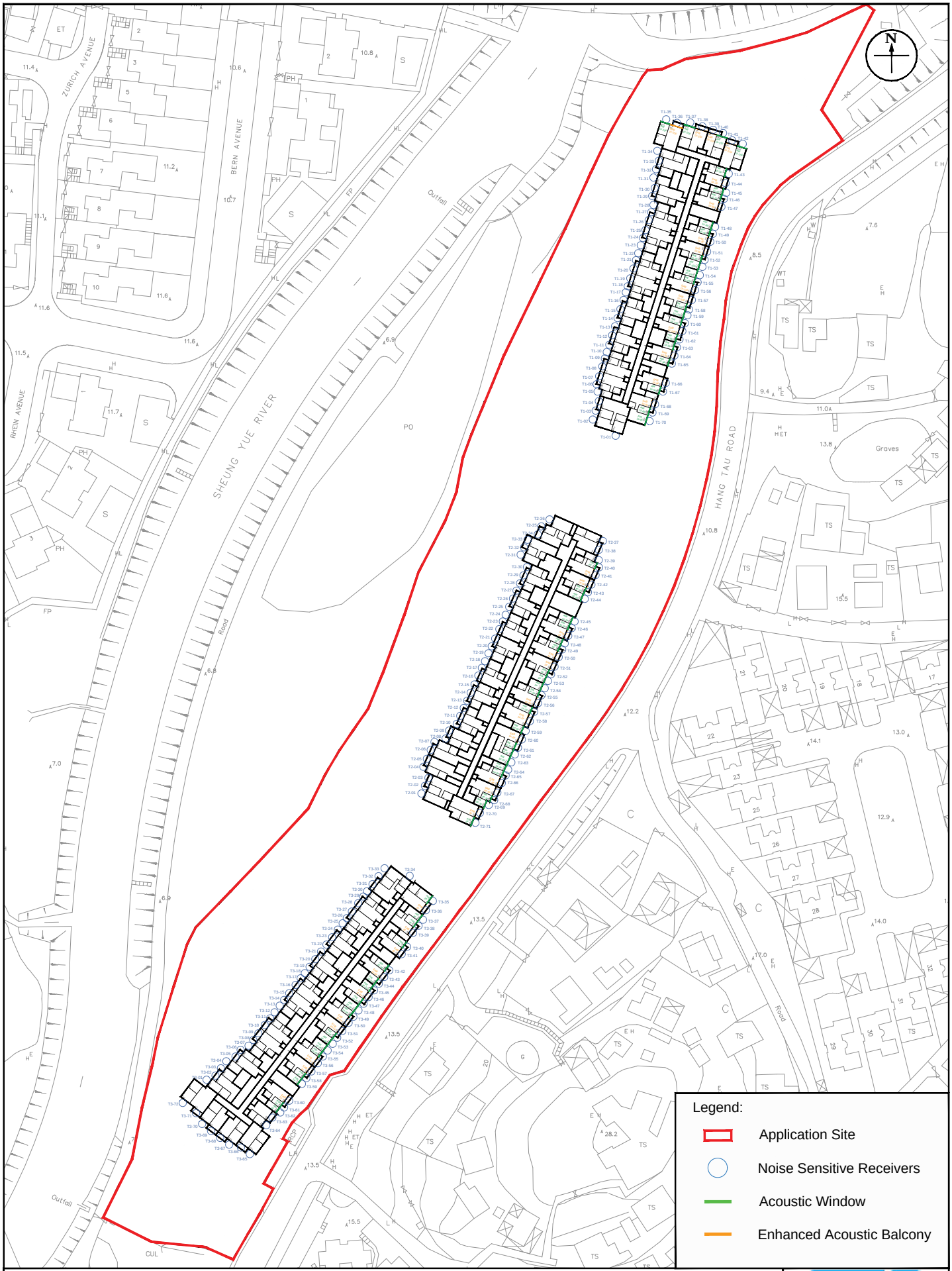

Figure: 6

Title: Location of Representative Noise Sensitive Receivers and Proposed Noise Mitigation Measures for Road Traffic Noise Impact Assessment

Project: Section 16 Planning Application for Proposed Residential Development with Minor Relaxation of Plot Ratio Restriction at Lots 1027, 1029, 1030, 1034A, 1034B, 1039 (Part), 1040, 1042 RP, 1043 RP, 1044 RP (Part), 1045, 1047, 2233 (Part), 2251 S.A RP, 2256 RP, 2315 (Part) and 2316 RP (Part) in D.D. 92 and Adjoining Government Land (New Lot to be known as Lot 2644 in D.D. 92), Kwu Tung South, Sheung Shui, New Territories

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Date:	Jul 2025

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Figure: 6a		RAMBOLL
Title:	Location of Representative Noise Sensitive Receivers and Proposed Noise Mitigation Measures for Road Traffic Noise Impact Assessment - Tower 1	Drawn by: TL Checked by: TC
Project:	Section 16 Planning Application for Proposed Residential Development with Minor Relaxation of Plot Ratio Restriction at Lots 1027, 1029, 1030, 1034A, 1034B, 1039 (Part), 1040, 1042 RP, 1043 RP, 1044 RP (Part), 1045, 1047, 2233 (Part), 2251 S.A RP, 2256 RP, 2315 (Part) and 2316 RP (Part) in D.D. 92 and Adjoining Government Land (New Lot to be known as Lot 2644 in D.D. 92), Kwu Tung South, Sheung Shui, New Territories	Rev.: 2.1 Date: Jul 2025

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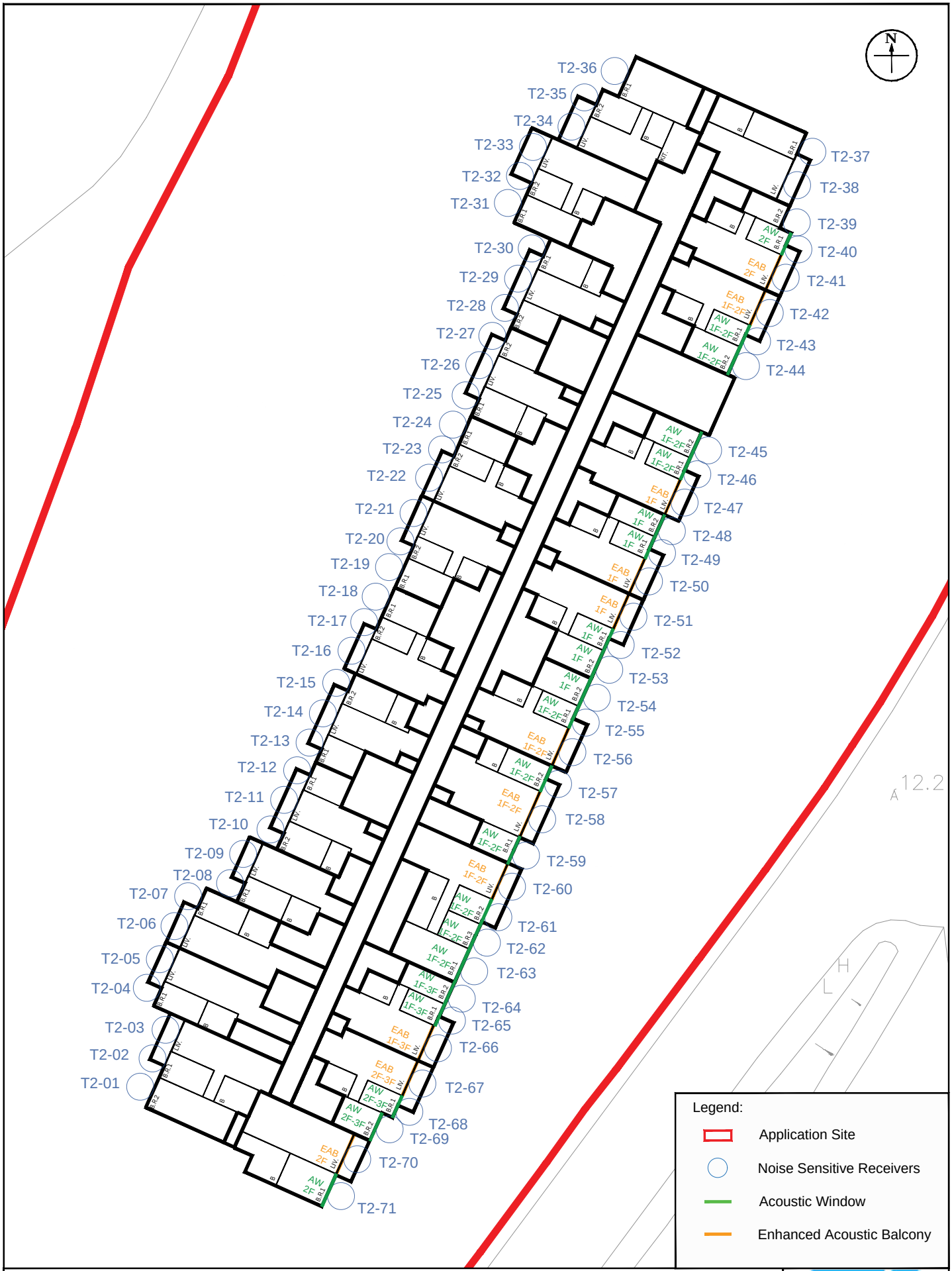

Figure:	6b	RAMBOLL
Title:	Location of Representative Noise Sensitive Receivers and Proposed Noise Mitigation Measures for Road Traffic Noise Impact Assessment - Tower 2	Drawn by: TL Checked by: TC
Project:	Section 16 Planning Application for Proposed Residential Development with Minor Relaxation of Plot Ratio Restriction at Lots 1027, 1029, 1030, 1034A, 1034B, 1039 (Part), 1040, 1042 RP, 1043 RP, 1044 RP (Part), 1045, 1047, 2233 (Part), 2251 S.A RP, 2256 RP, 2315 (Part) and 2316 RP (Part) in D.D. 92 and Adjoining Government Land (New Lot to be known as Lot 2644 in D.D. 92), Kwu Tung South, Sheung Shui, New Territories	Rev.: 2.1 Date: Jul 2025

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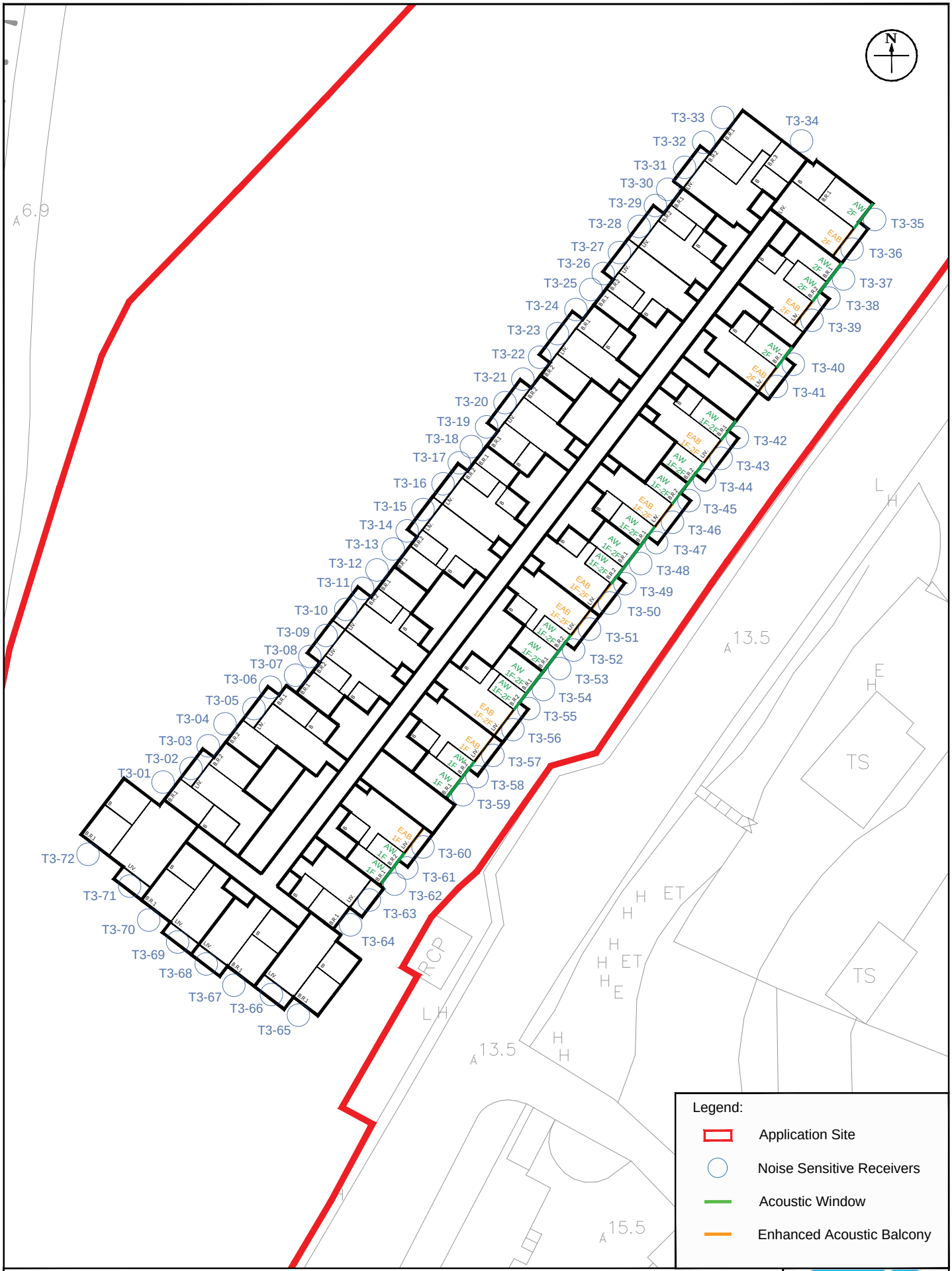

Figure: 6c

Title: Location of Representative Noise Sensitive Receivers and Proposed Noise Mitigation Measures for Road Traffic Noise Impact Assessment - Tower 3

Project: Section 16 Planning Application for Proposed Residential Development with Minor Relaxation of Plot Ratio Restriction at Lots 1027, 1029, 1030, 1034A, 1034B, 1039 (Part), 1040, 1042 RP, 1043 RP, 1044 RP (Part), 1045, 1047, 2233 (Part), 2251 S.A RP, 2256 RP, 2315 (Part) and 2316 RP (Part) in D.D. 92 and Adjoining Government Land (New Lot to be known as Lot 2644 in D.D. 92), Kwu Tung South, Sheung Shui, New Territories

RAMBOLL

Drawn by:	TL
Checked by:	TC
Rev.:	2.1
Date:	Jul 2025

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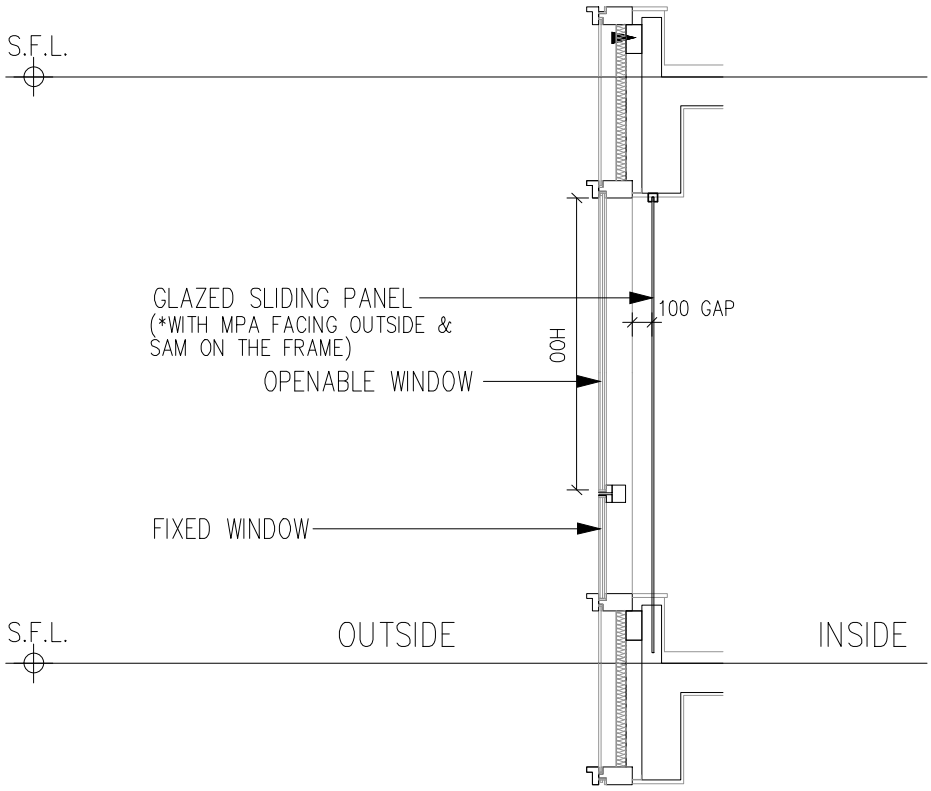
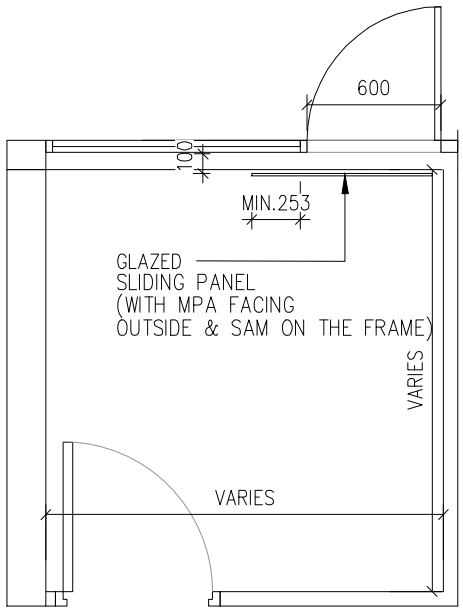


TYPICAL SECTION



TYPICAL PLAN

Figure: 7a		RAMBOLL
Title: Indicative Design of Acoustic Window (Baffle Type)		Drawn by: TL
		Checked by: TC
Project: Section 16 Planning Application for Proposed Residential Development with Minor Relaxation of Plot Ratio Restriction at Lots 1027, 1029, 1030, 1034A, 1034B, 1039 (Part), 1040, 1042 RP, 1043 RP, 1044 RP (Part), 1045, 1047, 2233 (Part), 2251 S.A RP, 2256 RP, 2315 (Part) and 2316 RP (Part) in D.D. 92 and Adjoining Government Land (New Lot to be known as Lot 2644 in D.D. 92), Kwu Tung South, Sheung Shui, New Territories		Rev.: 2.1
		Date: Jul 2025

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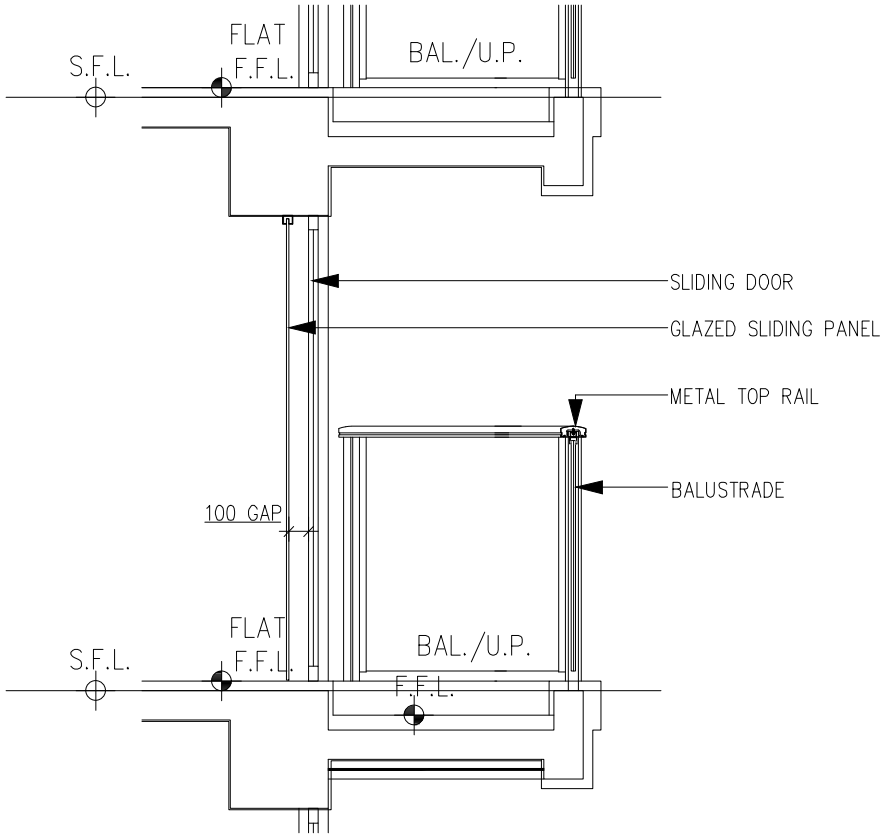

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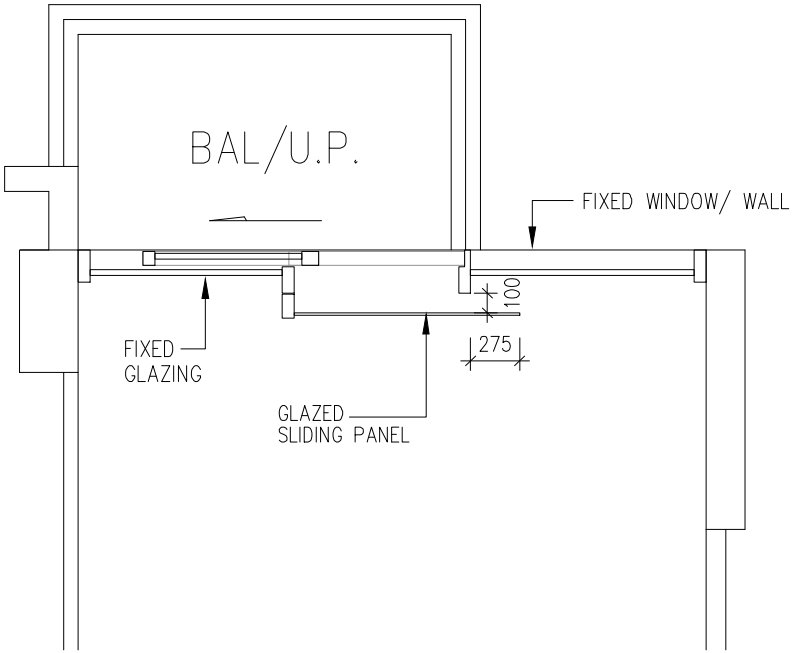

TYPICAL PLAN

Figure: 7b	RAMBOLL
Title: Indicative Design of Enhanced Acoustic Balcony (Baffle Type)	Drawn by: TL Checked by: TC
Project: Section 16 Planning Application for Proposed Residential Development with Minor Relaxation of Plot Ratio Restriction at Lots 1027, 1029, 1030, 1034A, 1034B, 1039 (Part), 1040, 1042 RP, 1043 RP, 1044 RP (Part), 1045, 1047, 2233 (Part), 2251 S.A RP, 2256 RP, 2315 (Part) and 2316 RP (Part) in D.D. 92 and Adjoining Government Land (New Lot to be known as Lot 2644 in D.D. 92), Kwu Tung South, Sheung Shui, New Territories	Rev.: 2.1 Date: Jul 2025

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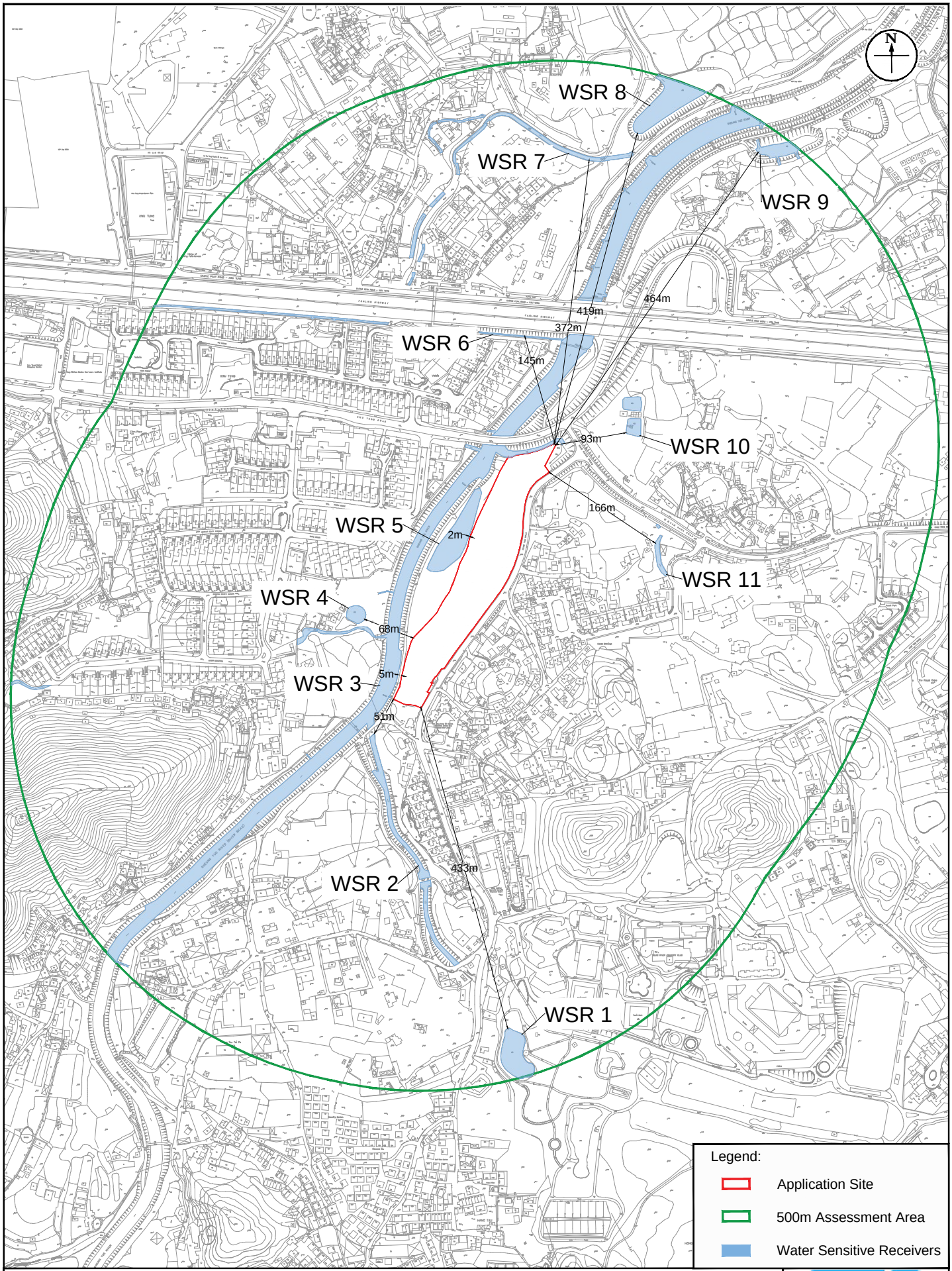

Figure: 8	RAMBOLL
Title: Location of Representative WSRs	Drawn by: TL
	Checked by: TC
Project: Section 16 Planning Application for Proposed Residential Development with Minor Relaxation of Plot Ratio Restriction at Lots 1027, 1029, 1030, 1034A, 1034B, 1039 (Part), 1040, 1042 RP, 1043 RP, 1044 RP (Part), 1045, 1047, 2233 (Part), 2251 S.A RP, 2256 RP, 2315 (Part) and 2316 RP (Part) in D.D. 92 and Adjoining Government Land (New Lot to be known as Lot 2644 in D.D. 92), Kwu Tung South, Sheung Shui, New Territories	Rev.: 1.1
	Date: Jul 2025

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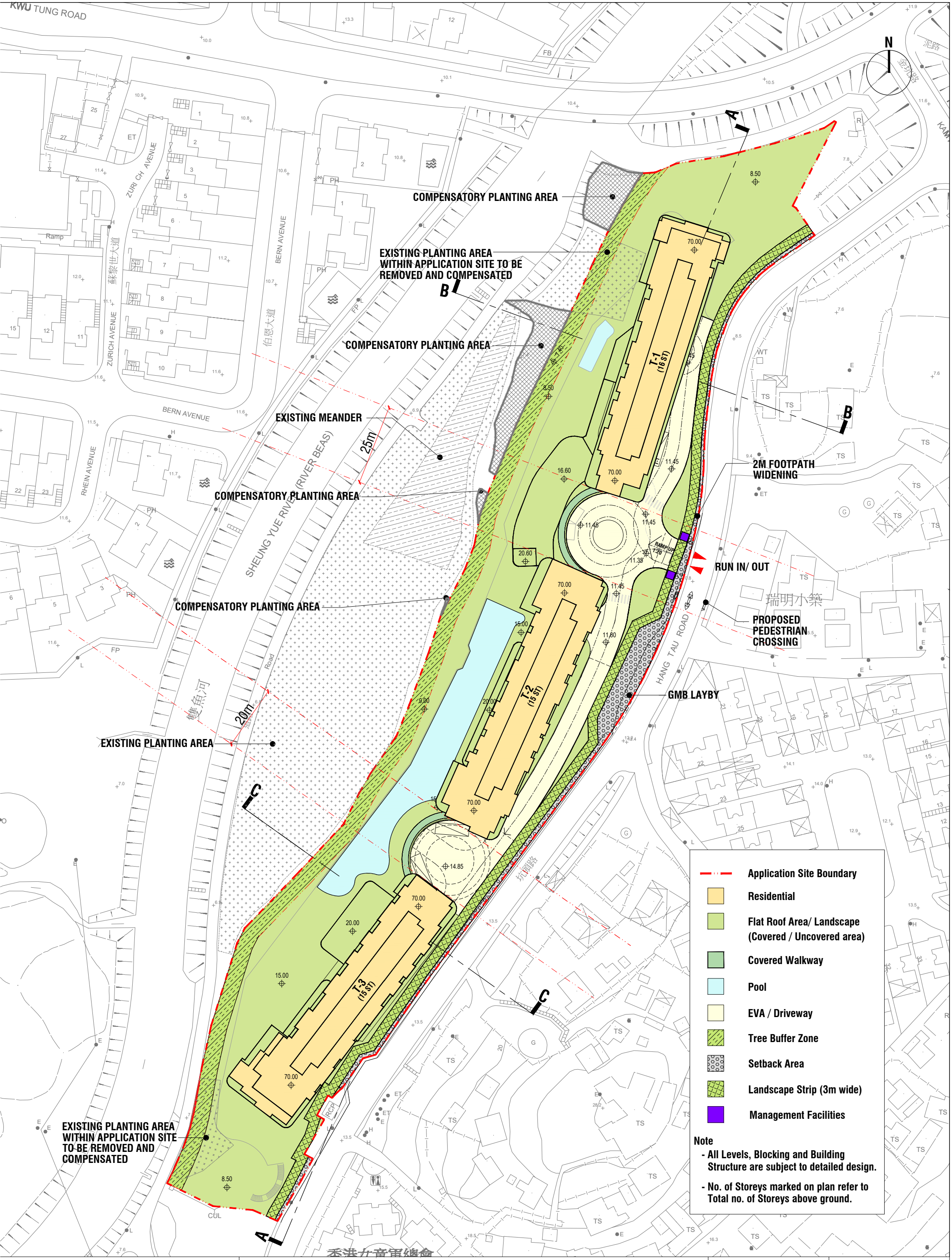
Appendix 1 **Indicative Master Layout Plan and Section Plan of The Proposed Development**



SUN HUNG KAI
ARCHITECTS AND ENGINEERS LIMITED
SUN HUNG KAI CENTRE, WANCHAI, HONGKONG
TEL. 28278111 FAX. 28272884

Title

Indicative Master Layout Plan

Rev.	Date
	28 AUG 2025
Scale	Figure
1:1000 [A3]	

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TEL. 28278111 FAX. 28272884

Title

Indicative Basement Layout Plan

Rev.	Date
	27 AUG 2025
Scale	Figure
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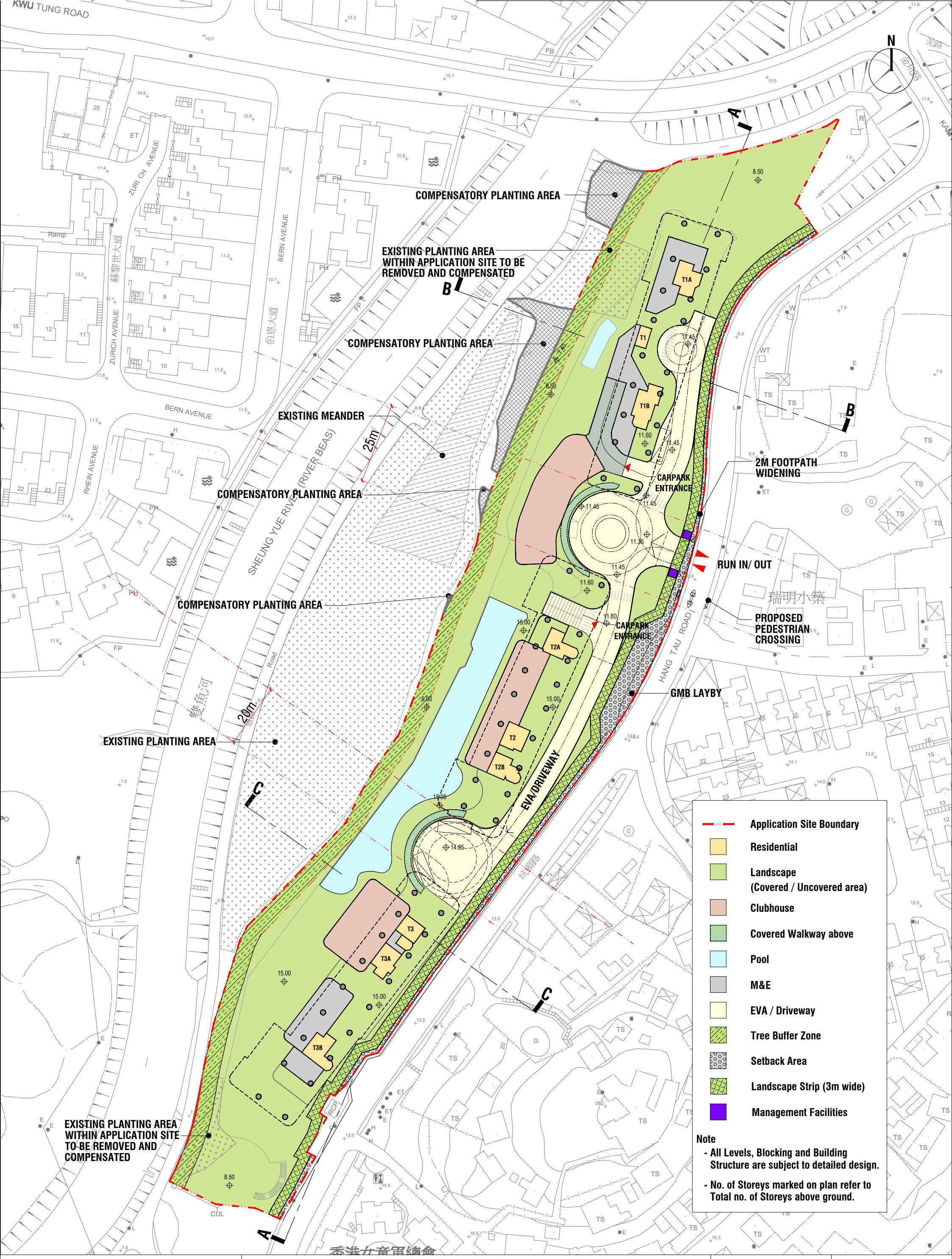

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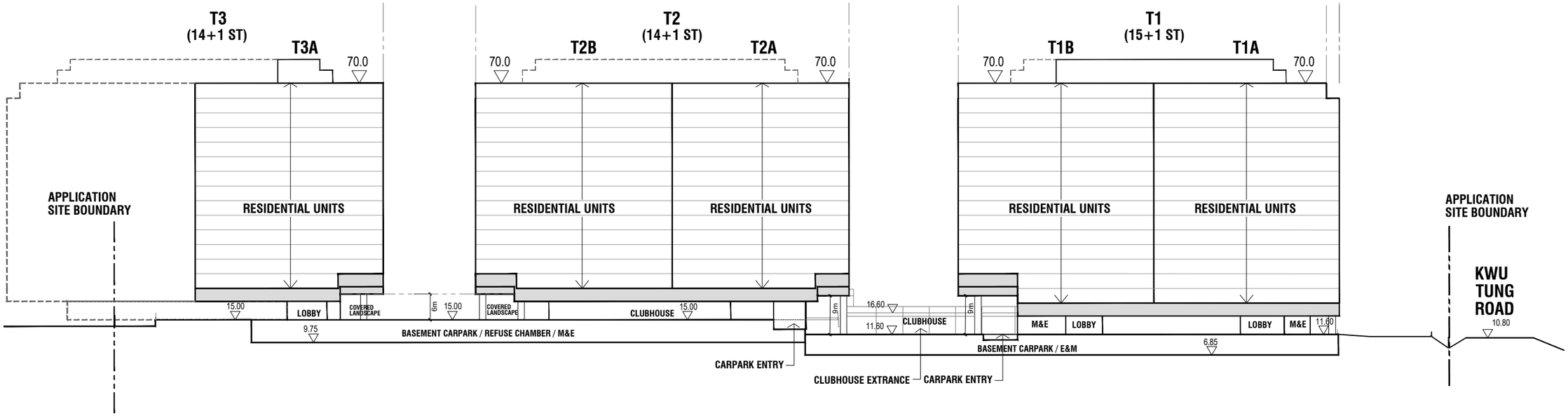
TEL. 28278111 FAX. 28272884

Title

Indicative Ground Floor Layout Plan

Rev.	Date
	28 AUG 2025
Scale	Figure
1:1000 [A3]	



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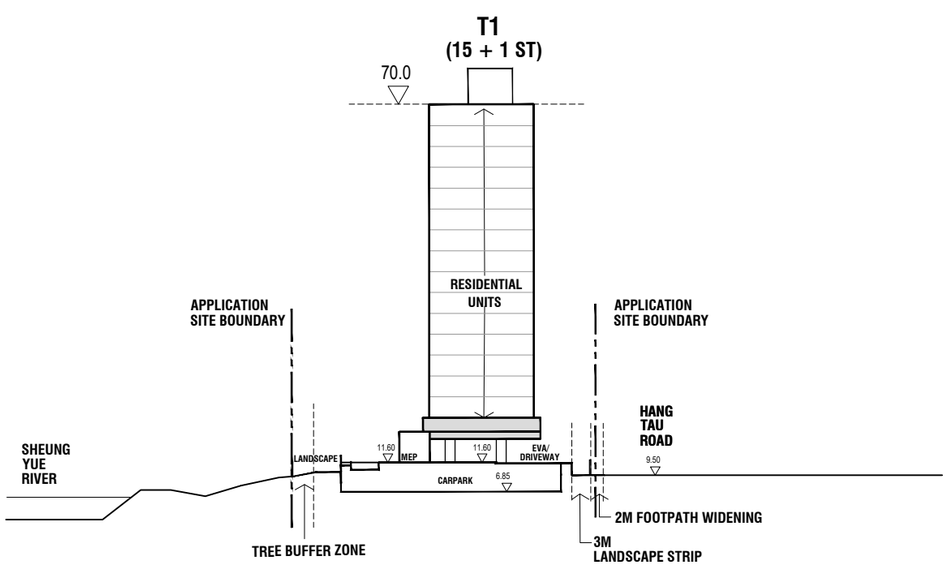

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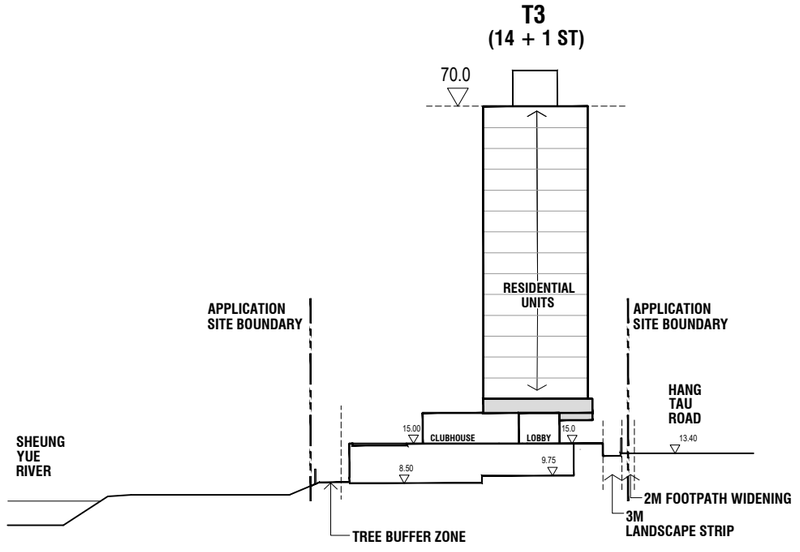

SECTION C-C

Note

- **All Levels, Blocking and Building Structure are subject to detailed design.**
- **No. of Storeys marked on plan refer to Total no. of Storeys above ground.**

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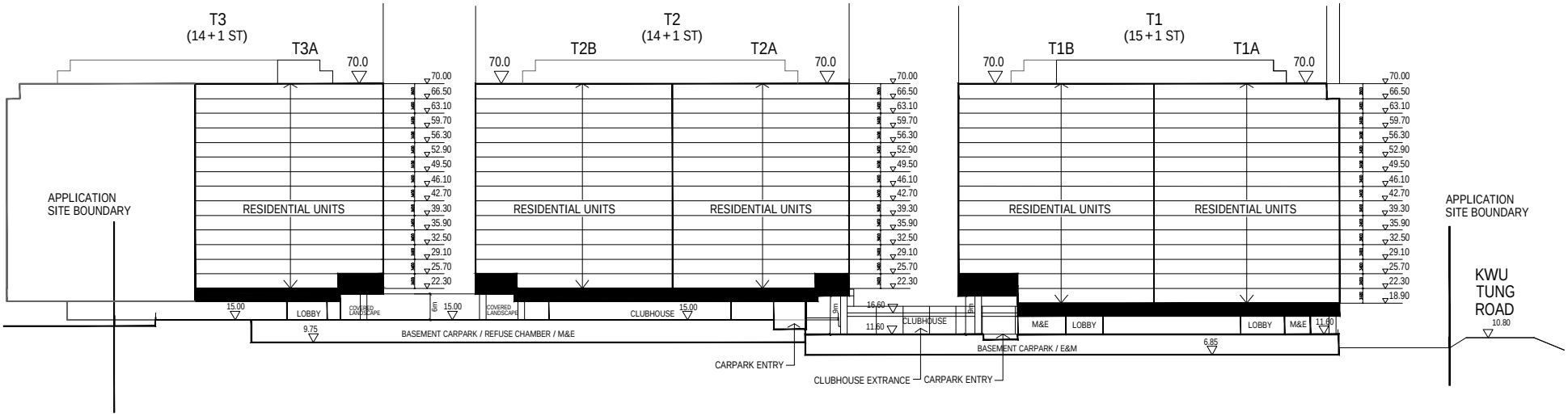
TEL. 28278111 FAX. 28272884

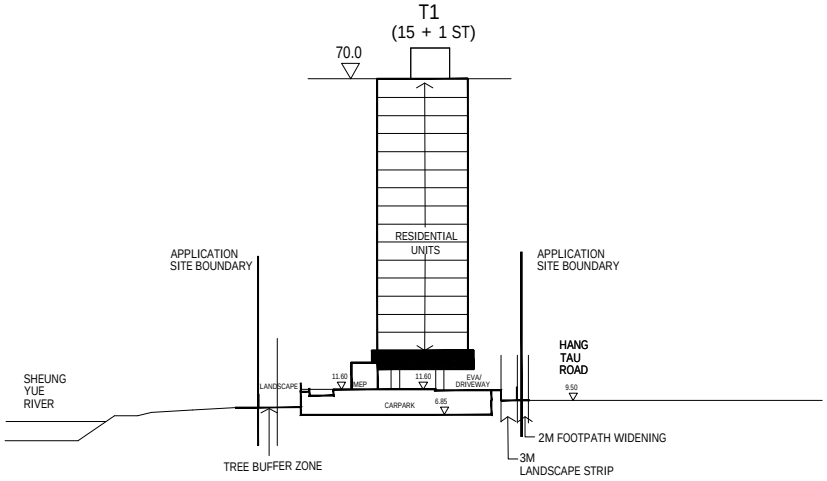
Title

Indicative Sections

Rev.	Date
	28 JULY 2025
Scale	Figure
1:1000 [A3]	A-4



SECTION A-A



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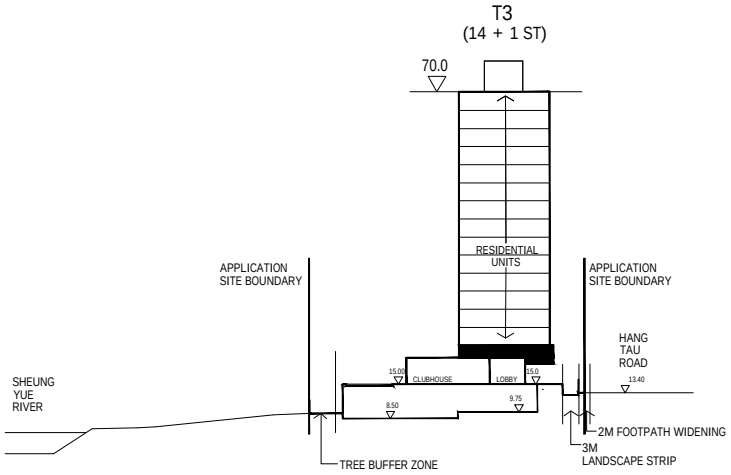

SECTION C-C

Note
- All Levels, Blocking and Building Structure are subject to detailed design.
- No. of Storeys marked on plan refer to Total no. of Storeys above ground.

SUN HUNG KAI
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SUN HUNG KAI CENTRE, WANCHAI, HONGKONG
TEL. 28278111 FAX. 28272884

Title

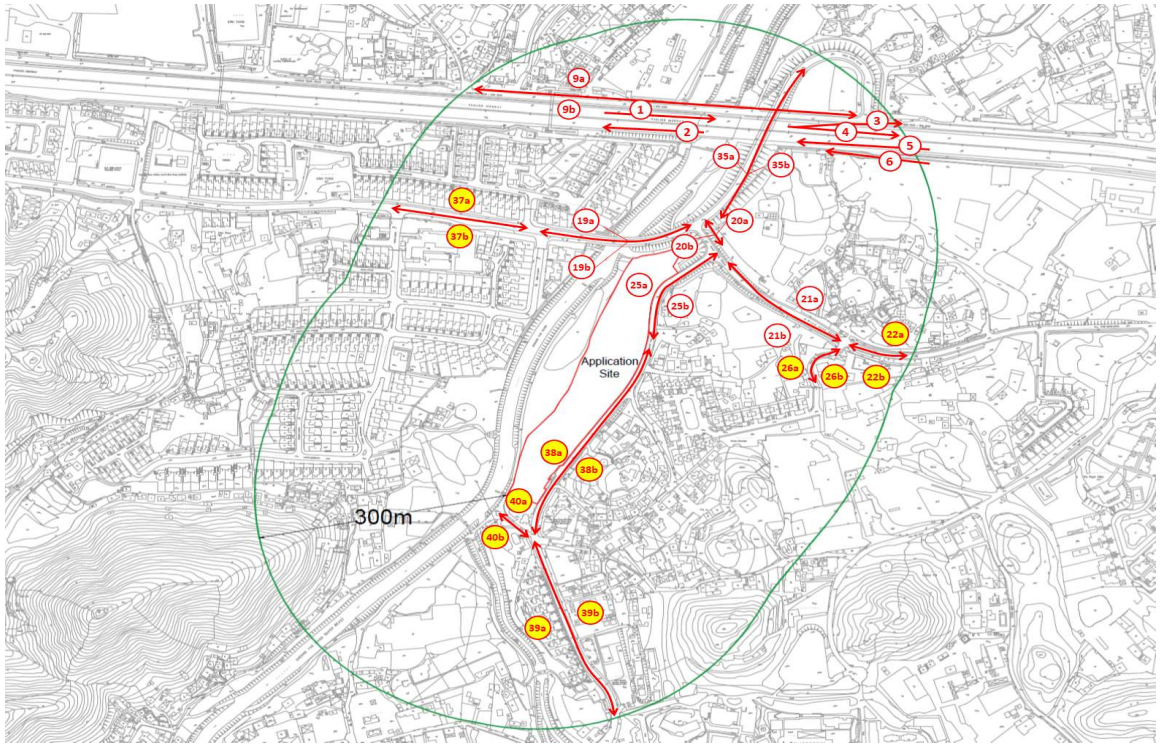
Indicative Sections

Rev.	Date
	24 MAR 2025
Scale	Figure
1:1000 [A3]	A-4

Appendix 2 **Year 2047 Traffic Forecast and Noise Mitigation Measures extracted from the Approved Traffic Noise Mitigation Plan**

Year 2047 (KTS3-S16 - 09 Jun 2025)

Index	Road Name	Direction	AM Flow (veh/hr)	%HV	PM Flow (veh/hr)	%HV	Design Speed (km/h)
1	Fanling Highway	EB	4,036	38.1%	5,370	23.7%	100
2	Fanling Highway	WB	5,024	31.2%	5,026	30.1%	100
3	Fanling Highway Slip Road	EB	86	21.5%	135	11.9%	50
4	Fanling Highway	EB	3,950	38.5%	5,235	24.0%	100
5	Fanling Highway	WB	4,725	32.1%	4,878	30.4%	100
6	Fanling Highway Slip Road	WB	299	17.7%	150	20.3%	50
9a	Castle Peak Road - Kwu Tung	EB	258	38.0%	255	34.4%	50
9b	Castle Peak Road - Kwu Tung	WB	183	43.8%	238	32.7%	50
35a	Kwu Tung Road	NB	448	26.0%	334	29.9%	50
35b	Kwu Tung Road	SB	340	33.0%	358	23.1%	50
37a	Kwu Tung Road	NB	200	43.1%	218	29.2%	50
37b	Kwu Tung Road	SB	337	27.0%	235	25.0%	50
19a	Kwu Tung Road	NB	211	40.9%	229	27.8%	50
19b	Kwu Tung Road	SB	355	25.6%	247	23.8%	50
20a	Kam Hang Road	EB	323	27.9%	345	23.8%	50
20b	Kam Hang Road	WB	479	22.3%	287	26.7%	50
21a	Kam Hang Road	EB	199	23.3%	164	27.1%	50
21b	Kam Hang Road	WB	235	24.3%	163	28.2%	50
22a	Kam Hang Road	EB	182	25.3%	168	30.0%	50
22b	Kam Hang Road	WB	234	25.2%	171	23.9%	50
25a	Hang Tau Road	NB	269	23.1%	156	21.9%	50
25b	Hang Tau Road	SB	155	27.7%	198	19.2%	50
26a	Kam Ka Street	NB	11	24.0%	6	12.5%	50
26b	Kam Ka Street	SB	15	23.3%	12	8.3%	50
38a	Hang Tau Road	NB	218	23.1%	133	21.9%	50
38b	Hang Tau Road	SB	123	27.7%	171	19.2%	50
39a	Hang Tau Road	NB	216	23.3%	131	22.2%	50
39b	Hang Tau Road	SB	122	28.0%	170	19.3%	50
40a	DSD Access Road	EB	5	52.8%	5	15.0%	50
40b	DSD Access Road	WB	4	87.4%	5	20.0%	50



Appendix 1.2
Updated Traffic Noise Mitigation Measures Proposal

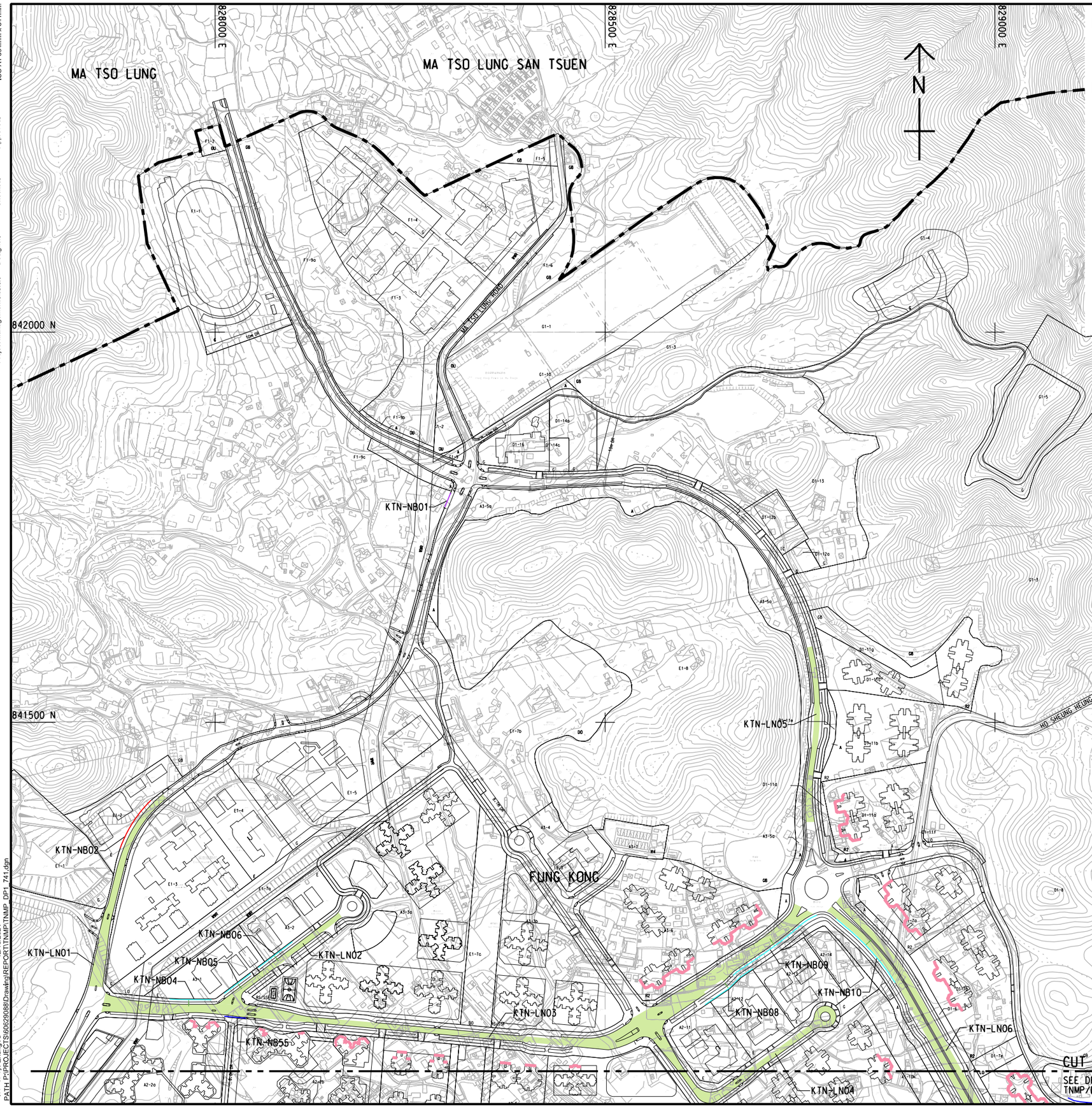
ISO A1 594mm x 841mm

Approved:

Checked:

Designer:

Project Management Initials:



NOTE:

1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60629088/TNMP/DP1/APPENDIX 1.2.1 TO APPENDIX 1.2.4.
2. IN VIEW OF THE SIGHTLINE CONSTRAINT OF THE ASSOCIATED ROADS, KTN-NB09 & KTN-NB10 AND KTN-NB15 & KTN-NB16 COULD NOT BE CONNECTED.

LEGEND:

- KTN NDA PROJECT BOUNDARY
- PROPOSED 0.5m STRUCTURE
- PROPOSED 3m VERTICAL NOISE BARRIER (ABSORPTIVE)
- PROPOSED 5m VERTICAL NOISE BARRIER (ABSORPTIVE)
- PROPOSED 7m VERTICAL NOISE BARRIER (ABSORPTIVE)
- PROPOSED 5m + 3m CANTILEVER NOISE BARRIER (ABSORPTIVE)
- PROPOSED 7m + 3m CANTILEVER NOISE BARRIER (ABSORPTIVE)
- PROPOSED SEMI ENCLOSURE (WITH OPENING SIDE)
- PROPOSED FULL ENCLOSURE
- PROPOSED LOW NOISE ROAD SURFACING
- LOW NOISE ROAD SURFACING PROVISION FOR ROAD TRAFFIC SPEED HIGHER THAN 80KPH
- INDICATIVE LOCATIONS OF FACADES THAT WOULD BE PROVIDED WITH AT RECEIVER END MITIGATION MEASURES (WITHIN KTN NDA)

THE EXACT LOCATIONS OF FACADES THAT REQUIRE AT-RECEIVER END MITIGATION MEASURES ARE SUBJECT TO THE DETAILED TNIA TO BE CONDUCTED BY RELAVANT PARTIES AT LATER STAGE

AECOM

PROJECT
項目

IMPROVEMENT OF TAI TAU LEUNG ROUNDABOUT AND FANLING HIGHWAY (KWU TUNG SECTION) - DESIGN & CONSTRUCTION

CLIENT
業主

土木工程拓展署
Civil Engineering and Development Department

CONSULTANT
土木顧問公司

AECOM Asia Company Ltd.
www.aecom.com

SUB-CONSULTANTS
分判工程顧問公司

ISSUE/REVISION
修訂

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

STATUS
階段

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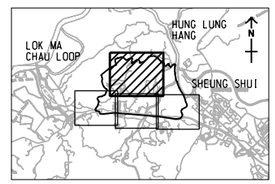
METRES

KEY PLAN 索引圖 A1 1 : 100000



PROJECT NO. 項目編號
60629088

CONTRACT NO. 合約編號
CE 20/2019

SHEET TITLE
圖紙名稱

UPDATED TRAFFIC NOISE MITIGATION MEASURES PROPOSAL

SHEET 1 OF 4

SHEET NUMBER
圖紙編號

60629088/TNMP/DP1/APPENDIX 1.2.1

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ISO A1 594mm x 841mm

Approved:

Checked:

Designer:

Project Management Initials:

NOTES:

1. FOR NOTES AND LEGEND REFER TO DRAWING NO. 60629088/TNMP/DP1/APPENDIX 1.2.1.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60629088/TNMP/DP1/APPENDIX 1.2.1 TO APPENDIX 1.2.4.

N

CUT LINE A-A
SEE DRAWING NO. 60629088/TNMP/DP1/APPENDIX 1.2.1

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829200 E
840800 N
840400 N
840000 N

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KTN-LN04
KTN-LN10
KTN-LN11
KTN-LN12
KTN-LN13
KTN-NB54
KTN-NB13
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KTN-NB33
KTN-NB34
KTN-NB35
KTN-SE01
KTN-FE01
KTN-NB29
KTN-NB31

KWU TUNG
KWU TUNG ROAD

CUT LINE B-B
SEE DRAWING NO. 60629088/TNMP/DP1/APPENDIX 1.2.2

CUT LINE C-C
SEE DRAWING NO. 60629088/TNMP/DP1/APPENDIX 1.2.4

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AECOM

PROJECT
項目
IMPROVEMENT OF TAI TAU LEUNG ROUNDABOUT AND FANLING HIGHWAY (KWU TUNG SECTION) - DESIGN & CONSTRUCTION

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

CONSULTANT
土木顧問公司
AECOM Asia Company Ltd.
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SUB-CONSULTANTS
分判工程顧問公司

ISSUE/REVISION
修訂

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

STATUS
階段

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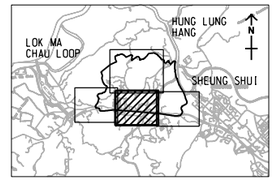
METRES

KEY PLAN 索引圖 A1 1 : 100000



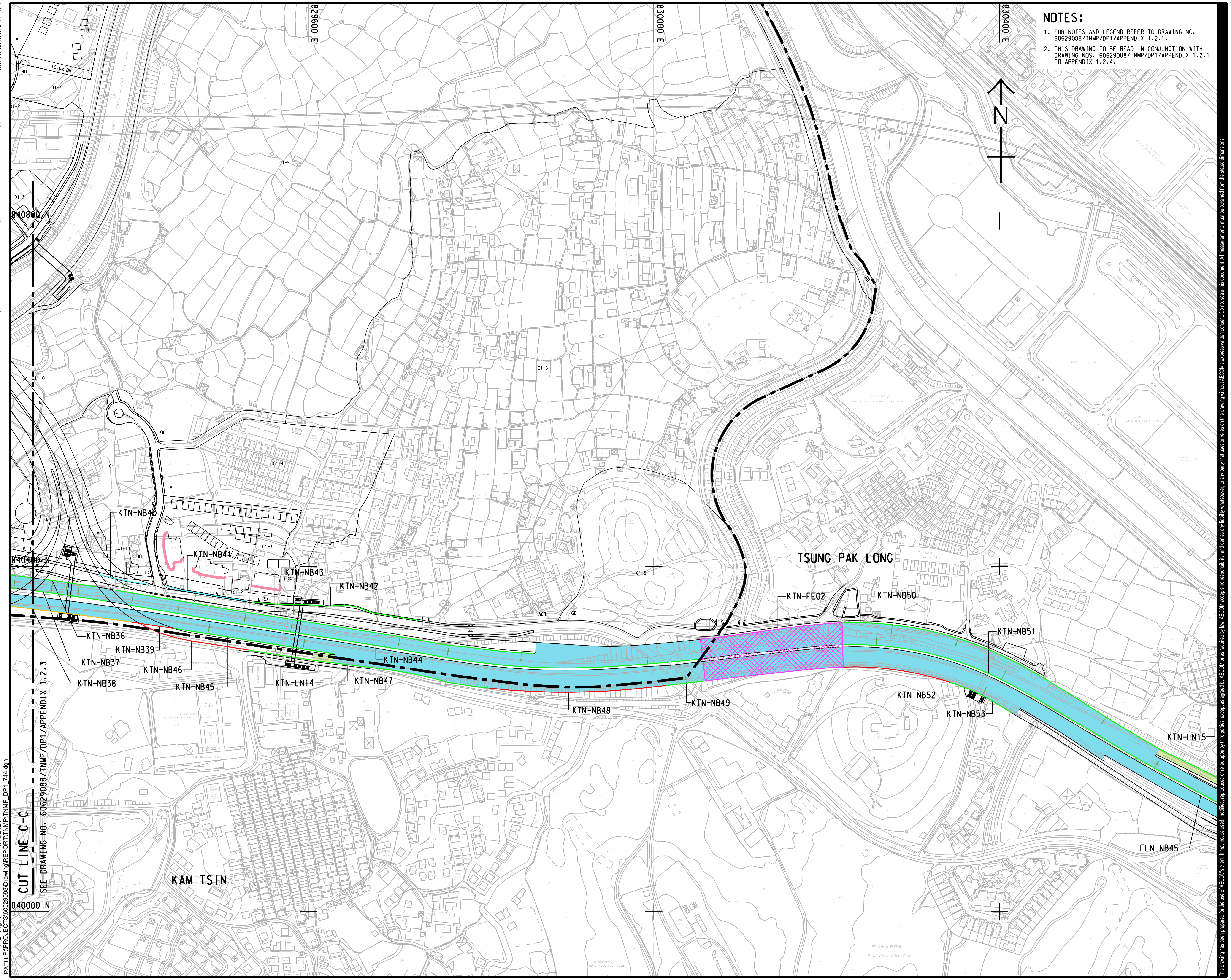
PROJECT NO. 項目編號
60629088

CONTRACT NO. 合約編號
CE 20/2019

SHEET TITLE
圖紙名稱
UPDATED TRAFFIC NOISE MITIGATION MEASURES PROPOSAL

SHEET 3 OF 4

SHEET NUMBER
圖紙編號
60629088/TNMP/DP1/APPENDIX 1.2.3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2. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60629088/TNMP/DP1/APPENDIX 1.2.1 TO APPENDIX 1.2.4.
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840800 N
840400 N
840000 N
N
TSUNG PAK LONG
KAM TSIN
CUT LINE C-C
SEE DRAWING NO. 60629088/TNMP/DP1/APPENDIX 1.2.3
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KTN-FE02
FLN-NB45

AECOM

PROJECT

IMPROVEMENT OF TAI TAU LEUNG ROUNDABOUT AND FANLING HIGHWAY (KWU TUNG SECTION) - DESIGN & CONSTRUCTION

CLIENT

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

CONSULTANT

AECOM Asia Company Ltd.
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SUB-CONSULTANTS

ISSUE/REVISION

I/R	DATE	DESCRIPTION	CHK.

STATUS

SCALE: A1 1 : 2000

DIMENSION UNIT: METRES

KEY PLAN A1 1 : 100000

PROJECT NO.: 60629088

CONTRACT NO.: CE 20/2019

SHEET TITLE

UPDATED TRAFFIC NOISE MITIGATION MEASURES PROPOSAL

SHEET 4 OF 4

SHEET NUMBER

60629088/TNMP/DP1/APPENDIX 1.2.4

Appendix 3 Results of Road Traffic Noise Impact Assessment

Predicted Results for Road Traffic Noise Impact Assessment of Proposed Development
Base Case

Tower 1 - Typical

Floor	Assessment Point Level, mPD	T1-01	T1-02	T1-03	T1-04	T1-05	T1-06	T1-07	T1-08	T1-09	T1-10	T1-11	T1-12	T1-13	T1-14	T1-15	T1-16	T1-17	T1-18	T1-19	T1-20	T1-21	T1-22	T1-23	T1-24	T1-25	T1-26	T1-27	T1-28	T1-29	T1-30	T1-31	T1-32	T1-33	T1-34
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2	22.30	--	--	--	--	--	--	--	63	62	62	62	62	63	63	63	63	63	64	64	64	64	64	65	65	65	65	65	65	66	66	66	66	66	66
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7	39.30	67	62	61	61	62	62	62	63	63	63	63	63	64	64	64	65	65	65	65	65	65	65	65	66	66	66	66	66	66	66	66	66	66	65
8	42.70	67	63	62	62	62	63	63	63	63	63	63	64	64	65	65	65	65	65	65	65	65	66	66	66	66	66	66	66	66	66	67	66	66	65
9	46.10	67	63	62	62	63	63	63	63	63	63	63	64	65	65	65	65	65	65	66	66	66	66	66	66	66	66	66	66	66	66	67	66	66	65
10	49.50	67	63	62	62	63	63	63	63	63	64	64	64	65	65	65	65	66	66	66	66	66	66	66	66	66	66	66	66	67	67	67	67	66	65
11	52.90	66	63	63	62	63	63	63	64	64	64	64	64	65	66	66	66	66	66	66	66	66	66	66	67	67	67	67	67	67	67	67	67	66	65
12	56.30	66	63	63	63	63	63	64	64	64	64	64	64	65	66	66	66	66	66	66	67	67	67	67	67	67	67	67	67	67	67	68	67	67	66
13	59.70	66	64	63	63	63	64	64	64	64	64	64	64	66	66	66	67	67	67	67	67	67	67	67	67	67	67	67	67	68	68	68	68	67	66
14	63.10	66	64	63	63	64	64	64	64	64	64	64	64	66	67	67	67	67	67	67	67	67	68	68	68	68	68	68	68	68	68	68	68	67	66
Max. Noise Level		68	64	63	63	64	64	64	64	64	64	64	64	66	67	67	67	67	67	67	67	67	68	68	68	68	68	68	68	68	68	68	68	67	66
No. of Exceedance		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
No. of Exceedance Unit		0				0			0			0			0			0			0			0			0			0			0		
No. of Unit		12				12			14			14			14			14			14			14			14			14			14		

Floor	Assessment Point Level, mPD	T1-35	T1-36	T1-37	T1-38	T1-39	T1-40	T1-41	T1-42	T1-43	T1-44	T1-45	T1-46	T1-47	T1-48	T1-49	T1-50	T1-51	T1-52	T1-53	T1-54	T1-55	T1-56	T1-57	T1-58	T1-59	T1-60	T1-61	T1-62	T1-63	T1-64	T1-65	T1-66	T1-67	T1-68	T1-69	T1-70
1	18.90	73	73	73	73	73	73	73	74	71	72	73	73	73	73	73	73	73	73	73	73	74	73	73	73	73	73	73	73	73	73	73	73	73	--	--	--
2	22.30	73	73	73	73	73	73	73	73	71	71	72	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	72	72	--	--	--
3	25.70	73	73	73	73	73	73	73	73	70	46	72	72	72	72	72	72	72	72	73	73	73	73	73	73	73	73	72	72	72	72	72	72	72	72	72	72
4	29.10	73	73	73	73	73	73	73	73	69	46	71	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
5	32.50	72	72	73	73	73	73	73	73	69	46	71	71	71	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	71	71	71
6	35.90	72	72	73	73	73	73	72	73	68	46	71	71	71	71	71	71	71	71	72	72	72	72	72	72	72	72	72	72	71	71	71	71	71	71	71	71
7	39.30	72	72	73	73	73	73	72	73	68	45	70	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71
8	42.70	72	72	73	73	73	73	72	73	68	45	70	70	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71
9	46.10	72	72	73	73	73	73	72	73	67	45	70	70	70	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	70	70	70
10	49.50	73	73	73	73	73	73	72	73	67	46	70	70	70	70	70	70	70	70	71	71	71	71	71	71	71	71	71	70	70	70	70	70	70	70	70	70
11	52.90	73	73	73	73	73	73	73	73	67	46	69	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
12	56.30	73	73	73	73	73	73	73	73	67	48	69	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
13	59.70	73	73	73	73	73	73	73	73	66	51	69	69	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
14	63.10	73	73	73	73	73	73	73	73	67	56	69	69	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	69	69	69
Max. Noise Level		73	73	73	73	73	73	73	74	71	72	73	73	73	73	73	73	73	73	73	73	74	73	73	73	73	73	73	73	73	73	73	73	73	72	72	72
No. of Exceedance		14	14	14	14	14	14	14	14	2	2	6	7	8	9	9	9	9	9	10	10	10	10	10	10	10	10	10	9	9	9	9	9	9	6	6	6
No. of Exceedance Unit		14		14		14		14		2		8			9			10			10			10			10			9			9		6		
No. of Unit		14		14		14		14		14		14			14			14			14			14			14			14			14		12		

Tower 1 - Simplex

Floor	Assessment Point Level, mPD	S1-01	S1-02	S1-03	S1-04	S1-05	S1-06	S1-07	S1-08	S1-09	S1-10	S1-11	S1-12	S1-13	S1-14	S1-15	S1-16	S1-17	S1-18	S1-19	S1-20	S1-21	S1-22	S1-23	S1-24	S1-25	S1-26	S1-27	S1-28	S1-29	S1-30	S1-31	S1-32	S1-33
15	66.50	66	65	64	64	64	64	65	65	65	65	65	65	67	67	67	67	67	67	67	68	68	68	68	68	68	68	68	68	68	69	68	68	66
Max. Noise Level		66	65	64	64	64	64	65	65	65	65	65	65	67	67	67	67	67	67	67	68	68	68	68	68	68	68	68	68	68	69	68	68	66
No. of Exceedance		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
No. of Exceedance Unit		0				0			0			0			0			0			0			0			0			0				
No. of Unit		1				1			1			1			1			1			1			1			1			1				

Floor	Assessment Point Level, mPD	S1-34	S1-35	S1-36	S1-37	S1-38	S1-39	S1-40	S1-41	S1-42	S1-43	S1-44	S1-45	S1-46	S1-47	S1-48	S1-49	S1-50	S1-51	S1-52	S1-53	S1-54	S1-55	S1-56	S1-57	S1-58	S1-59	S1-60	S1-61	S1-62	S1-63	S1-64	S1-65
15	66.50	69	70.4	70.2	67.4	67.4	67.9	69.0	69	69	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	69	69	69	69	69	69	69	69
Max. Noise Level		69	70	70	67	67	68	69	69	69	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	69	69	69	69	69	69	69	69
No. of Exceedance		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
No. of Exceedance Unit		0				0		0			0			0			0			0			0			0			0		0		
No. of Unit		1				1		1			1			1			1			1			1			1			1		1		

Tower 2 - Typical

Floor	Assessment Point Level, mPD	T2-01	T2-02	T2-03	T2-04	T2-05	T2-06	T2-07	T2-08	T2-09	T2-10	T2-11	T2-12	T2-13	T2-14	T2-15	T2-16	T2-17	T2-18	T2-19	T2-20	T2-21	T2-22	T2-23	T2-24	T2-25	T2-26	T2-27	T2-28	T2-29	T2-30	T2-31	T2-32	T2-33	T2-34	T2-35	T2-36
1	22.30	--	--	--	61	56	56	56	56	56	56	56	56	56	56	56	57	56	57	57	57	57	57	57	57	57	57	57	58	59	63	--	--	--	--	--	--
2	25.70	57	48	42	55	55	55	55	55	55	55	55	55	55	56	56	56	56	56	56	56	56	56	56	56	56	56	56	55	52	44	57	57	58	57	60	61
3	29.10	57	49	42	55	55	55	55	55	55	55	55	55	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	55	53	45	57	58	59	58	60	61
4	32.50	57	49	42	55	55	55	55	55	55	55	55	56	56	56	56	56	56	56	56	56	56	57	57	57	57	56	56	56	53	46	58	58	59	58	60	61
5	35.90	57	50	43	55	55	55	55	55	56	56	56	56	56	56	56	56	56	56	56	57	57	57	57	57	57	57	57	56	54	47	58	58	59	58	60	61
6	39.30	57	50	43	55	55	56	56	56	56	56	56	56	56	56	56	56	57	57	57	57	57	57	57	57	57	57	57	57	54	48	58	58	59	59	60	62
7	42.70	57	51	44	56	56	56	56	56	56	56	56	56	56	56	57	57	57	57	57	57	57	57	57	58	57	57	57	57	55	49	59	59	60	59	61	62
8	46.10	57	52	44	56	56	56	56	56	56	56	56	56	57	57	57	57	57	57	57	57	58	58	58	58	58	58	58	57	56	50	59	59	60	59	61	62
9	49.50	57	52	45	56	56	56	56	56	57	57	57	57	57	57	57	57	57	57	58	58	58	58	58	58	58	58	58	58	56	51	59	59	60	59	61	62
10	52.90	57	53	45	56	56	57	57	57	57	57	57	57	57	57	57	58	58	58	58	58	58	58	58	58	58	58	58	58	57	51	59	60	60	60	61	62
11	56.30	57	53	46	57	57	57	57	57	57	57	57	57	57	58	58	58	58	58	58	58	58	58	59	59	59	59	59	58	57	52	60	60	60	60	61	63
12	59.70	57	54	46	57	57	57	57	57	57	57	57	58	58	58	58	58	58	58	58	58	59	59	59	59	59	59	59	59	57	53	60	60	61	60	61	63
13	63.10	57	54	47	57	57	57	57	57	57	58	58	58	58	58	58	58	58	58	59	59	59	59	59	59	59	59	59	59	58	53	60	60	61	60	62	63
14	66.50	58	55	49	57	57	57	58	58	58	58	58	58	58	58	58	58	59	59	59	59	59	59	59	59	59	59	59	59	58	54	60	60	61	60	62	63
Max. Noise Level		58	55	49	61	57	57	58	58	58	58	58	58	58	58	58	58	59	59	59	59	59	59	59	59	59	59	59	59	59	63	60	60	61	60	62	63
No. of Exceedance		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	0
No. of Exceedance Unit		0			0		0		0		0			0			0			0			0			0			0			0			0		
No. of Unit		13			14		14		14		14			14			14			14			14			14			14			13			13		

Floor	Assessment Point Level, mPD	T2-37	T2-38	T2-39	T2-40	T2-41	T2-42	T2-43	T2-44	T2-45	T2-46	T2-47	T2-48	T2-49	T2-50	T2-51	T2-52	T2-53	T2-54	T2-55	T2-56	T2-57	T2-58	T2-59	T2-60	T2-61	T2-62	T2-63	T2-64	T2-65	T2-66	T2-67	T2-68	T2-69	T2-70	T2-71
1	22.30	--	--	--	--	--	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	--	--	--	--	--
2	25.70	70	70	70	71	71	71	71	71	71	71	70	70	70	70	70	70	70	70	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71
3	29.10	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	71	71	71	71	71	71	70	70
4	32.50	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
5	35.90	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	69	69
6	39.30	70	69	70	70	70	70	70	70	70	70	70	69	70	69	69	69	69	69	69	69	69	69	69	69	69	69	69	70	70	69	70	70	69	69	69
7	42.70	69	69	69	70	70	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69
8	46.10	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	68	68
9	49.50	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	68	68
10	52.90	69	69	69	69	69	69	69	69	69	69	69	69	69	69	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68
11	56.30	69	68	69	69	69	69	69	69	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	67	68
12	59.70	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	67	67
13	63.10	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	67	67
14	66.50	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	67	67	67	68	67	67	67	67	67	67	67
Max. Noise Level		70	70	70	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71
No. of Exceedance		0	0	0	1	1	2	2	2	2	2	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	3	3	3	2	2	2	1	1
No. of Exceedance Unit		0		1			2			2			1			1			2			2			2				3			2			1	
No. of Unit		13		13			14			14			14			14			14			14			14				14			13			13	

Tower 3 - Typical

Floor	Assessment Point Level, mPD	T3-01	T3-02	T3-03	T3-04	T3-05	T3-06	T3-07	T3-08	T3-09	T3-10	T3-11	T3-12	T3-13	T3-14	T3-15	T3-16	T3-17	T3-18	T3-19	T3-20	T3-21	T3-22	T3-23	T3-24	T3-25	T3-26	T3-27	T3-28	T3-29	T3-30	T3-31	T3-32	T3-33	T3-34
1	22.30	50	50	50	50	50	50	54	54	54	54	54	54	54	54	54	54	55	55	55	55	55	55	55	55	55	57	61	--	--	--	--	--	--	--
2	25.70	47	47	47	47	48	48	53	53	53	53	53	53	53	53	53	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	58	67
3	29.10	47	47	47	47	48	48	53	53	53	53	53	53	53	53	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	58	66
4	32.50	47	47	47	47	48	48	53	53	53	53	53	53	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	58	66
5	35.90	47	47	47	47	48	48	53	53	53	53	53	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	58	66
6	39.30	47	47	47	47	47	47	53	53	53	53	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	58	65
7	42.70	47	47	47	47	47	47	53	53	53	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	55	55	55	58	65
8	46.10	47	47	47	47	47	47	53	53	53	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	55	55	55	55	55	58	65
9	49.50	47	47	47	47	47	47	53	53	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	55	55	55	55	55	55	55	55	55	58	65
10	52.90	47	47	47	47	47	47	53	54	54	54	54	54	54	54	54	54	54	54	54	54	54	55	55	55	55	55	55	55	55	55	55	55	58	65
11	56.30	47	47	47	47	47	47	54	54	54	54	54	54	54	54	54	54	54	54	55	55	55	55	55	55	55	55	55	55	55	55	55	55	58	64
12	59.70	47	47	47	47	47	47	54	54	54	54	54	54	54	54	54	54	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	56	58	64
13	63.10	47	48	48	48	48	48	54	54	54	54	54	54	54	54	55	55	55	55	55	55	55	55	55	55	55	55	55	56	56	56	56	56	58	64
Max. Noise Level		50	50	50	50	50	50	54	54	54	54	54	54	54	54	55	55	55	55	55	55	55	55	55	55	55	57	61	56	56	56	56	56	58	67
No. of Exceedance		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
No. of Exceedance Unit		0			0			0			0			0			0			0			0			0			0			0			
No. of Unit		13			13			13			13			13			13			13			13			13			12			12			

Floor	Assessment Point Level, mPD	T3-35	T3-36	T3-37	T3-38	T3-39	T3-40	T3-41	T3-42	T3-43	T3-44	T3-45	T3-46	T3-47	T3-48	T3-49	T3-50	T3-51	T3-52	T3-53	T3-54	T3-55	T3-56	T3-57	T3-58	T3-59	T3-60	T3-61	T3-62	T3-63	T3-64	T3-65	T3-66	T3-67	T3-68	T3-69	T3-70	T3-71	T3-72
1	22.30	--	--	--	--	--	--	--	72	72	72	72	71	72	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	70	69	69	67	67	66	66	65	64	64
2	25.70	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	70	70	70	70	70	70	70	69	69	67	67	66	66	65	64	64
3	29.10	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	69	68	68	67	67	66	65	65	63	64
4	32.50	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	69	69	69	69	69	69	69	69	68	68	67	66	66	65	65	63	63
5	35.90	70	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	68	67	68	66	66	65	65	64	63	63
6	39.30	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	68	67	67	66	66	65	65	64	63	63
7	42.70	69	69	69	69	69	69	69	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	66	67	65	65	65	64	64	62	63
8	46.10	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	67	66	66	65	65	65	64	64	62	62
9	49.50	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	67	66	66	65	65	64	64	63	62	62
10	52.90	68	68	68	68	68	68	68	68	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	65	66	65	65	64	63	63	62	62
11	56.30	68	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	66	65	66	64	64	64	63	63	61	62
12	59.70	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	66	65	65	64	64	64	63	63	61	61
13	63.10	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	66	67	66	67	67	67	66	66	66	66	66	66	66	66	65	65	64	64	63	63	62	61	61
Max. Noise Level		71	71	71	71	71	71	71	72	72	72	72	71	72	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	70	69	69	67	67	66	66	65	64	64
No. of Exceedance		1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0
No. of Exceedance Unit		1		1			1		2			2			2			2			2			1			1			0		0		0		0		0	
No. of Unit		12		12			12		13			13			13			13			13			13			13			13		13		13		13		13	

Tower 3 - Simplex

Floor	Assessment Point Level, mPD	S3-01	S3-02	S3-03	S3-04	S3-05	S3-06	S3-07	S3-08	S3-09	S3-10	S3-11	S3-12	S3-13	S3-14	S3-15	S3-16	S3-17	S3-18	S3-19	S3-20	S3-21	S3-22	S3-23	S3-24	S3-25	S3-26	S3-27	S3-28	S3-29	S3-30	S3-31	S3-32	S3-33
14	66.50	53	53	53	54	53	56	56	56	56	57	57	57	57	57	57	57	57	57	57	57	58	58	58	58	59	59	59	59	59	60	60	62	65
Max. Noise Level		53	53	53	54	53	56	56	56	56	57	57	57	57	57	57	57	57	57	57	57	58	58	58	58	59	59	59	59	59	60	60	62	65
No. of Exceedance		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
No. of Exceedance Unit		0					0			0			0			0			0			0			0			0			0			
No. of Unit		1					1			1			1			1			1			1			1			1			1			

Floor	Assessment Point Level, mPD	S3-34	S3-35	S3-36	S3-37	S3-38	S3-39	S3-40	S3-41	S3-42	S3-43	S3-44	S3-45	S3-46	S3-47	S3-48	S3-49	S3-50	S3-51	S3-52	S3-53	S3-54	S3-55	S3-56	S3-57	S3-58	S3-59	S3-60	S3-61	S3-62	S3-63	S3-64	S3-65	S3-66	S3-67
14	66.50	67	67	67	67	67	67	67	67	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	65	57	55	54	51
Max. Noise Level		67	67	67	67	67	67	67	67	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	65	57	55	54	51
No. of Exceedance		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
No. of Exceedance Unit		0		0			0		0			0			0			0			0			0			0					0			
No. of Unit		1		1			1		1			1			1			1			1			1			1					1			

Max. Noise Level	74
No. of Exceedance Unit	173

No of Unit	1062
Compliance Rate	84%

Remarks:
Shaded cell denotes noise level exceeding limit of 70dB(A)

Predicted Results for Road Traffic Noise Impact Assessment of Proposed Development
Mitigated Case

Tower 1 - Typical

Floor	Assessment Point Level, mPD	T1-01	T1-02	T1-03	T1-04	T1-05	T1-06	T1-07	T1-08	T1-09	T1-10	T1-11	T1-12	T1-13	T1-14	T1-15	T1-16	T1-17	T1-18	T1-19
1	18.90	--	--	--	--	--	--	--	63	61	61	61	62	62	62	63	63	63	63	63
2	22.30	--	--	--	--	--	--	--	63	62	62	62	62	63	63	63	63	63	64	64
3	25.70	68	61	60	59	61	61	61	61	61	61	62	62	62	63	63	63	63	63	64
4	29.10	68	62	60	60	61	61	61	61	62	62	62	62	63	63	63	63	64	64	64
5	32.50	68	62	61	60	61	61	62	62	62	62	62	63	63	63	64	64	64	64	64
6	35.90	67	62	61	61	62	62	62	62	62	63	63	63	64	64	64	64	64	64	65
7	39.30	67	62	61	61	62	62	62	63	63	63	63	63	64	64	64	65	65	65	65
8	42.70	67	63	62	62	62	63	63	63	63	63	63	64	64	65	65	65	65	65	65
9	46.10	67	63	62	62	63	63	63	63	63	63	63	64	65	65	65	65	65	65	66
10	49.50	67	63	62	62	63	63	63	63	63	64	64	64	65	65	65	65	66	66	66
11	52.90	66	63	63	62	63	63	63	64	64	64	64	64	65	66	66	66	66	66	66
12	56.30	66	63	63	63	63	63	64	64	64	64	64	64	65	66	66	66	66	66	66
13	59.70	66	64	63	63	63	64	64	64	64	64	64	64	66	66	66	67	67	67	67
14	63.10	66	64	63	63	64	64	64	64	64	64	64	64	66	67	67	67	67	67	67
Max. Noise Level		68	64	63	63	64	64	64	64	64	64	64	64	66	67	67	67	67	67	67
No. of Exceedance		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of Exceedance Unit		0				0			0			0			0			0		
No. of Unit		12				12			14			14			14			14		

Floor	Assessment Point Level, mPD	T1-20	T1-21	T1-22	T1-23	T1-24	T1-25	T1-26	T1-27	T1-28	T1-29	T1-30	T1-31	T1-32	T1-33	T1-34
1	18.90	63	64	64	64	64	64	64	65	65	65	65	66	66	65	65
2	22.30	64	64	64	65	65	65	65	65	65	66	66	66	66	66	66
3	25.70	64	64	64	64	64	65	65	65	65	65	65	66	66	66	65
4	29.10	64	64	64	65	65	65	65	65	65	66	66	66	66	66	65
5	32.50	64	65	65	65	65	65	65	65	66	66	66	66	66	66	65
6	35.90	65	65	65	65	65	65	66	66	66	66	66	66	66	66	65
7	39.30	65	65	65	65	66	66	66	66	66	66	66	66	66	66	65
8	42.70	65	65	66	66	66	66	66	66	66	66	66	67	66	66	65
9	46.10	66	66	66	66	66	66	66	66	66	66	66	67	66	66	65
10	49.50	66	66	66	66	66	66	66	66	66	67	67	67	67	66	65
11	52.90	66	66	66	66	67	67	67	67	67	67	67	67	67	66	65
12	56.30	67	67	67	67	67	67	67	67	67	67	67	68	67	67	66
13	59.70	67	67	67	67	67	67	67	67	67	68	68	68	68	67	66
14	63.10	67	67	68	68	68	68	68	68	68	68	68	68	68	67	66
Max. Noise Level		67	67	68	68	68	68	68	68	68	68	68	68	68	67	66
No. of Exceedance		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of Exceedance Unit		0			0			0			0			0		
No. of Unit		14			14			14			14			14		

Floor	Assessment Point Level, mPD	T1-35	T1-36	T1-37	T1-38	T1-39	T1-40	T1-41	T1-42	T1-43	T1-44	T1-45	T1-46	T1-47	T1-48	T1-49	T1-50	T1-51	T1-52	T1-53
1	18.90	66	66	66	66	68	66	66	67	64	66	66	67	67	66	68	67	67	68	67
2	22.30	66	66	66	66	68	66	66	67	64	66	66	67	67	66	67	67	67	67	66
3	25.70	66	66	66	66	68	66	66	66	70	46	65	66	66	66	67	66	66	67	66
4	29.10	66	65	66	66	68	66	66	66	69	46	65	66	66	65	66	66	66	66	65
5	32.50	66	65	66	66	68	66	66	66	69	46	64	66	65	65	66	65	65	66	65
6	35.90	66	65	66	66	68	66	66	66	68	46	64	65	65	65	66	65	65	66	65
7	39.30	66	65	66	66	68	66	66	66	68	45	70	65	65	64	66	65	65	66	64
8	42.70	66	65	66	65	68	66	66	66	68	45	70	70	64	64	65	65	65	65	64
9	46.10	66	65	66	66	68	66	66	66	67	45	70	70	70	64	65	64	64	65	64
10	49.50	66	65	66	66	68	66	66	66	67	46	70	70	70	70	70	70	70	70	64
11	52.90	66	66	66	66	68	66	66	66	67	46	69	70	70	70	70	70	70	70	70
12	56.30	66	66	66	66	68	66	66	66	67	48	69	70	70	70	70	70	70	70	70
13	59.70	66	66	66	66	68	66	66	66	66	51	69	69	70	70	70	70	70	70	70
14	63.10	66	66	66	66	68	66	66	66	67	56	69	69	70	70	70	70	70	70	70
Max. Noise Level		66	66	66	66	68	66	66	67	70	66	70	70	70	70	70	70	70	70	70
No. of Exceedance		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of Exceedance Unit		0		0		0		0		0		0			0			0		
No. of Unit		14		14		14		14		14		14			14			14		

Floor	Assessment Point Level, mPD	T1-54	T1-55	T1-56	T1-57	T1-58	T1-59	T1-60	T1-61	T1-62	T1-63	T1-64	T1-65	T1-66	T1-67	T1-68	T1-69	T1-70
1	18.90	67	68	67	67	68	67	66	68	66	66	67	66	67	66	--	--	--
2	22.30	66	68	67	67	67	66	66	67	66	66	67	66	67	66	--	--	--
3	25.70	66	67	66	66	67	66	66	67	66	66	67	65	67	65	66	65	65
4	29.10	65	67	66	66	67	65	65	67	65	65	66	65	66	65	66	65	65
5	32.50	65	66	66	66	66	65	65	66	65	65	66	65	66	65	66	65	65
6	35.90	65	66	65	65	66	65	65	66	65	65	66	65	66	64	66	64	64
7	39.30	64	66	65	65	66	64	64	66	64	64	66	64	65	64	65	64	64
8	42.70	64	65	65	65	65	64	64	66	64	64	65	64	65	64	65	64	64
9	46.10	64	65	65	65	65	64	64	65	64	64	65	64	65	64	70	70	70
10	49.50	64	65	64	64	65	64	64	65	70	70	70	70	70	70	70	70	70
11	52.90	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
12	56.30	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
13	59.70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
14	63.10	70	70	70	70	70	70	70	70	70	70	70	70	70	70	69	69	69
Max. Noise Level		70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
No. of Exceedance		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of Exceedance Unit		0			0			0			0			0		0		
No. of Unit		14			14			14			14			14		12		

Tower 1 - Simplex

Floor	Assessment Point Level, mPD	S1-01	S1-02	S1-03	S1-04	S1-05	S1-06	S1-07	S1-08	S1-09	S1-10	S1-11	S1-12	S1-13	S1-14	S1-15	S1-16	S1-17	S1-18	S1-19
15	66.50	66	65	64	64	64	64	65	65	65	65	65	65	67	67	67	67	67	67	67
Max. Noise Level		66	65	64	64	64	64	65	65	65	65	65	65	67	67	67	67	67	67	67
No. of Exceedance		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of Exceedance Unit		0				0			0			0			0			0		
No. of Unit		1				1			1			1			1			1		

Floor	Assessment Point Level, mPD	S1-20	S1-21	S1-22	S1-23	S1-24	S1-25	S1-26	S1-27	S1-28	S1-29	S1-30	S1-31	S1-32	S1-33
15	66.50	68	68	68	68	68	68	68	68	68	68	69	68	68	66
Max. Noise Level		68	68	68	68	68	68	68	68	68	68	69	68	68	66
No. of Exceedance		0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of Exceedance Unit		0			0			0			0				
No. of Unit		1			1			1			1				

Floor	Assessment Point Level, mPD	S1-34	S1-35	S1-36	S1-37	S1-38	S1-39	S1-40	S1-41	S1-42	S1-43	S1-44	S1-45	S1-46	S1-47	S1-48	S1-49	S1-50	S1-51
15	66.50	69	70.4	70.2	67.4	67.4	67.9	69.0	69	69	70	70	70	70	70	70	70	70	70
Max. Noise Level		69	70	70	67	67	68	69	69	69	70	70	70	70	70	70	70	70	70
No. of Exceedance		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of Exceedance Unit		0				0		0			0			0			0		
No. of Unit		1				1		1			1			1			1		

Floor	Assessment Point Level, mPD	S1-52	S1-53	S1-54	S1-55	S1-56	S1-57	S1-58	S1-59	S1-60	S1-61	S1-62	S1-63	S1-64	S1-65
15	66.50	70	70	70	70	70	70	69	69	69	69	69	69	69	69
Max. Noise Level		70	70	70	70	70	70	69	69	69	69	69	69	69	69
No. of Exceedance		0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of Exceedance Unit		0			0			0			0		0		
No. of Unit		1			1			1			1		1		

Tower 2 - Typical

Floor	Assessment Point Level, mPD	T2-01	T2-02	T2-03	T2-04	T2-05	T2-06	T2-07	T2-08	T2-09	T2-10	T2-11	T2-12	T2-13	T2-14	T2-15	T2-16	T2-17	T2-18	T2-19	T2-20	T2-21
1	22.30	--	--	--	61	56	56	56	56	56	56	56	56	56	56	56	57	56	57	57	57	57
2	25.70	57	48	42	55	55	55	55	55	55	55	55	55	55	56	56	56	56	56	56	56	56
3	29.10	57	49	42	55	55	55	55	55	55	55	55	55	56	56	56	56	56	56	56	56	56
4	32.50	57	49	42	55	55	55	55	55	55	55	56	56	56	56	56	56	56	56	56	56	56
5	35.90	57	50	43	55	55	55	55	55	56	56	56	56	56	56	56	56	56	56	56	57	57
6	39.30	57	50	43	55	55	56	56	56	56	56	56	56	56	56	56	56	57	57	57	57	57
7	42.70	57	51	44	56	56	56	56	56	56	56	56	56	56	56	57	57	57	57	57	57	57
8	46.10	57	52	44	56	56	56	56	56	56	56	56	56	57	57	57	57	57	57	57	57	58
9	49.50	57	52	45	56	56	56	56	56	57	57	57	57	57	57	57	57	57	57	58	58	58
10	52.90	57	53	45	56	56	57	57	57	57	57	57	57	57	57	57	58	58	58	58	58	58
11	56.30	57	53	46	57	57	57	57	57	57	57	57	57	57	58	58	58	58	58	58	58	58
12	59.70	57	54	46	57	57	57	57	57	57	57	57	58	58	58	58	58	58	58	58	58	59
13	63.10	57	54	47	57	57	57	57	57	57	58	58	58	58	58	58	58	58	58	59	59	59
14	66.50	58	55	49	57	57	57	58	58	58	58	58	58	58	58	58	58	59	59	59	59	59
Max. Noise Level		58	55	49	61	57	57	58	58	58	58	58	58	58	58	58	58	59	59	59	59	59
No. of Exceedance		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of Exceedance Unit		0			0		0		0		0			0			0			0		
No. of Unit		13			14		14		14		14			14			14			14		

Floor	Assessment Point Level, mPD	T2-22	T2-23	T2-24	T2-25	T2-26	T2-27	T2-28	T2-29	T2-30	T2-31	T2-32	T2-33	T2-34	T2-35	T2-36
1	22.30	57	57	57	57	57	57	58	59	63	--	--	--	--	--	--
2	25.70	56	56	56	56	56	56	55	52	44	57	57	58	57	60	61
3	29.10	56	56	56	56	56	56	55	53	45	57	58	59	58	60	61
4	32.50	57	57	57	57	56	56	56	53	46	58	58	59	58	60	61
5	35.90	57	57	57	57	57	57	56	54	47	58	58	59	58	60	61
6	39.30	57	57	57	57	57	57	57	54	48	58	58	59	59	60	62
7	42.70	57	57	58	57	57	57	57	55	49	59	59	60	59	61	62
8	46.10	58	58	58	58	58	58	57	56	50	59	59	60	59	61	62
9	49.50	58	58	58	58	58	58	58	56	51	59	59	60	59	61	62
10	52.90	58	58	58	58	58	58	58	57	51	59	60	60	60	61	62
11	56.30	58	59	59	59	59	59	58	57	52	60	60	60	60	61	63
12	59.70	59	59	59	59	59	59	59	57	53	60	60	61	60	61	63
13	63.10	59	59	59	59	59	59	59	58	53	60	60	61	60	62	63
14	66.50	59	59	59	59	59	59	59	58	54	60	60	61	60	62	63
Max. Noise Level		59	59	59	59	59	59	59	59	63	60	60	61	60	62	63
No. of Exceedance		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of Exceedance Unit		0			0			0			0			0		
No. of Unit		14			14			14			13			13		

Floor	Assessment Point Level, mPD	T2-37	T2-38	T2-39	T2-40	T2-41	T2-42	T2-43	T2-44	T2-45	T2-46	T2-47	T2-48	T2-49	T2-50	T2-51	T2-52	T2-53
1	22.30	--	--	--	--	--	65	65	64	64	65	64	64	65	64	64	65	64
2	25.70	70	70	70	65	64	64	65	64	64	65	70	70	70	70	70	70	70
3	29.10	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
4	32.50	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
5	35.90	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
6	39.30	70	69	70	70	70	70	70	70	70	70	70	69	70	69	69	69	69
7	42.70	69	69	69	70	70	69	69	69	69	69	69	69	69	69	69	69	69
8	46.10	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69
9	49.50	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69
10	52.90	69	69	69	69	69	69	69	69	69	69	69	69	69	69	68	68	68
11	56.30	69	68	69	69	69	69	69	69	68	68	68	68	68	68	68	68	68
12	59.70	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68
13	63.10	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68
14	66.50	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68
Max. Noise Level		70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
No. of Exceedance		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of Exceedance Unit		0		0			0			0			0			0		
No. of Unit		13		13			14			14			14			14		

Floor	Assessment Point Level, mPD	T2-54	T2-55	T2-56	T2-57	T2-58	T2-59	T2-60	T2-61	T2-62	T2-63	T2-64	T2-65	T2-66	T2-67	T2-68	T2-69	T2-70	T2-71
1	22.30	64	65	64	64	64	64	64	65	65	64	64	66	65	--	--	--	--	--
2	25.70	70	65	64	64	63	64	64	65	65	64	64	65	65	65	64	64	64	64
3	29.10	70	70	70	70	70	70	70	70	70	70	64	65	64	64	64	64	70	70
4	32.50	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
5	35.90	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	69	69
6	39.30	69	69	69	69	69	69	69	69	69	69	70	70	69	70	70	69	69	69
7	42.70	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69
8	46.10	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	68	68
9	49.50	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	68	68
10	52.90	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68
11	56.30	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	67	68
12	59.70	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	67	67
13	63.10	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	67	67
14	66.50	68	68	68	68	68	68	68	67	67	67	68	67	67	67	67	67	67	67
Max. Noise Level		70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
No. of Exceedance		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of Exceedance Unit		0			0			0				0			0			0	
No. of Unit		14			14			14				14			13			13	

Tower 3 - Typical

Floor	Assessment Point Level, mPD	T3-01	T3-02	T3-03	T3-04	T3-05	T3-06	T3-07	T3-08	T3-09	T3-10	T3-11	T3-12	T3-13	T3-14	T3-15	T3-16	T3-17	T3-18	T3-19	T3-20	T3-21
1	22.30	50	50	50	50	50	50	54	54	54	54	54	54	54	54	54	54	55	55	55	55	55
2	25.70	47	47	47	47	48	48	53	53	53	53	53	53	53	53	53	54	54	54	54	54	54
3	29.10	47	47	47	47	48	48	53	53	53	53	53	53	53	53	54	54	54	54	54	54	54
4	32.50	47	47	47	47	48	48	53	53	53	53	53	53	54	54	54	54	54	54	54	54	54
5	35.90	47	47	47	47	48	48	53	53	53	53	53	54	54	54	54	54	54	54	54	54	54
6	39.30	47	47	47	47	47	47	53	53	53	53	54	54	54	54	54	54	54	54	54	54	54
7	42.70	47	47	47	47	47	47	53	53	53	54	54	54	54	54	54	54	54	54	54	54	54
8	46.10	47	47	47	47	47	47	53	53	53	54	54	54	54	54	54	54	54	54	54	54	54
9	49.50	47	47	47	47	47	47	53	53	54	54	54	54	54	54	54	54	54	54	54	54	54
10	52.90	47	47	47	47	47	47	53	54	54	54	54	54	54	54	54	54	54	54	54	54	54
11	56.30	47	47	47	47	47	47	54	54	54	54	54	54	54	54	54	54	54	54	54	55	55
12	59.70	47	47	47	47	47	47	54	54	54	54	54	54	54	54	54	54	54	55	55	55	55
13	63.10	47	48	48	48	48	48	54	54	54	54	54	54	54	54	55	55	55	55	55	55	55
Max. Noise Level		50	50	50	50	50	50	54	54	54	54	54	54	54	54	55	55	55	55	55	55	55
No. of Exceedance		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of Exceedance Unit		0			0			0			0			0			0			0		
No. of Unit		13			13			13			13			13			13			13		

Floor	Assessment Point Level, mPD	T3-22	T3-23	T3-24	T3-25	T3-26	T3-27	T3-28	T3-29	T3-30	T3-31	T3-32	T3-33	T3-34
1	22.30	55	55	55	55	57	61	--	--	--	--	--	--	--
2	25.70	54	54	54	54	54	54	54	54	54	54	54	58	67
3	29.10	54	54	54	54	54	54	54	54	54	54	54	58	66
4	32.50	54	54	54	54	54	54	54	54	54	54	54	58	66
5	35.90	54	54	54	54	54	54	54	54	54	54	54	58	66
6	39.30	54	54	54	54	54	54	54	54	54	54	54	58	65
7	42.70	54	54	54	54	54	54	54	54	55	55	55	58	65
8	46.10	54	54	54	54	54	54	55	55	55	55	55	58	65
9	49.50	54	54	55	55	55	55	55	55	55	55	55	58	65
10	52.90	55	55	55	55	55	55	55	55	55	55	55	58	65
11	56.30	55	55	55	55	55	55	55	55	55	55	55	58	64
12	59.70	55	55	55	55	55	55	55	55	55	55	56	58	64
13	63.10	55	55	55	55	55	55	56	56	56	56	56	58	64
Max. Noise Level		55	55	55	55	57	61	56	56	56	56	56	58	67
No. of Exceedance		0	0	0	0	0	0	0	0	0	0	0	0	0
No. of Exceedance Unit		0			0			0			0			
No. of Unit		13			13			12			12			

Floor	Assessment Point Level, mPD	T3-35	T3-36	T3-37	T3-38	T3-39	T3-40	T3-41	T3-42	T3-43	T3-44	T3-45	T3-46	T3-47	T3-48	T3-49	T3-50	T3-51	T3-52	T3-53
1	22.30	--	--	--	--	--	--	--	65	66	65	65	66	65	65	66	65	65	66	64
2	25.70	64	65	64	64	66	64	65	64	66	64	64	65	64	64	65	64	65	65	64
3	29.10	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
4	32.50	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
5	35.90	70	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69
6	39.30	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69
7	42.70	69	69	69	69	69	69	69	68	68	68	68	68	68	68	68	68	68	68	68
8	46.10	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68
9	49.50	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68
10	52.90	68	68	68	68	68	68	68	68	67	67	67	67	67	67	67	67	67	67	67
11	56.30	68	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67
12	59.70	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67
13	63.10	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	66	67	66	67
Max. Noise Level		70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
No. of Exceedance		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of Exceedance Unit		0		0			0		0			0			0			0		
No. of Unit		12		12			12		13			13			13			13		

Floor	Assessment Point Level, mPD	T3-54	T3-55	T3-56	T3-57	T3-58	T3-59	T3-60	T3-61	T3-62	T3-63	T3-64	T3-65	T3-66	T3-67	T3-68	T3-69	T3-70	T3-71	T3-72
1	22.30	64	66	65	65	65	64	65	65	64	70	69	69	67	67	66	66	65	64	64
2	25.70	64	65	64	70	70	70	70	70	70	70	69	69	67	67	66	66	65	64	64
3	29.10	70	70	70	70	70	70	70	70	70	69	68	68	67	67	66	65	65	63	64
4	32.50	70	70	69	69	69	69	69	69	69	69	68	68	67	66	66	65	65	63	63
5	35.90	69	69	69	69	69	69	69	69	69	68	67	68	66	66	65	65	64	63	63
6	39.30	69	69	69	69	69	69	69	69	69	68	67	67	66	66	65	65	64	63	63
7	42.70	68	68	68	68	68	68	68	68	68	68	66	67	65	65	65	64	64	62	63
8	46.10	68	68	68	68	68	68	68	68	68	67	66	66	65	65	65	64	64	62	62
9	49.50	68	68	68	68	68	68	68	68	68	67	66	66	65	65	64	64	63	62	62
10	52.90	67	67	67	67	67	67	67	67	67	67	65	66	65	65	64	63	63	62	62
11	56.30	67	67	67	67	67	67	67	67	67	66	65	66	64	64	64	63	63	61	62
12	59.70	67	67	67	67	67	67	67	67	67	66	65	65	64	64	64	63	63	61	61
13	63.10	67	67	66	66	66	66	66	66	66	66	65	65	64	64	63	63	62	61	61
Max. Noise Level		70	70	70	70	70	70	70	70	70	70	69	69	67	67	66	66	65	64	64
No. of Exceedance		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of Exceedance Unit		0			0			0			0		0		0		0		0	
No. of Unit		13			13			13			13		13		13		13		13	

Tower 3 - Simplex

Floor	Assessment Point Level, mPD	S3-01	S3-02	S3-03	S3-04	S3-05	S3-06	S3-07	S3-08	S3-09	S3-10	S3-11	S3-12	S3-13	S3-14	S3-15	S3-16	S3-17	S3-18	S3-19	S3-20
14	66.50	53	53	53	54	53	56	56	56	56	57	57	57	57	57	57	57	57	57	57	57
Max. Noise Level		53	53	53	54	53	56	56	56	56	57	57	57	57	57	57	57	57	57	57	57
No. of Exceedance		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of Exceedance Unit		0					0			0			0			0			0		
No. of Unit		1					1			1			1			1			1		

Floor	Assessment Point Level, mPD	S3-21	S3-22	S3-23	S3-24	S3-25	S3-26	S3-27	S3-28	S3-29	S3-30	S3-31	S3-32	S3-33
14	66.50	58	58	58	58	59	59	59	59	59	60	60	62	65
Max. Noise Level		58	58	58	58	59	59	59	59	59	60	60	62	65
No. of Exceedance		0	0	0	0	0	0	0	0	0	0	0	0	0
No. of Exceedance Unit		0			0			0			0			
No. of Unit		1			1			1			1			

Floor	Assessment Point Level, mPD	S3-34	S3-35	S3-36	S3-37	S3-38	S3-39	S3-40	S3-41	S3-42	S3-43	S3-44	S3-45	S3-46	S3-47	S3-48	S3-49	S3-50	S3-51	S3-52
14	66.50	67	67	67	67	67	67	67	67	66	66	66	66	66	66	66	66	66	66	66
Max. Noise Level		67	67	67	67	67	67	67	67	66	66	66	66	66	66	66	66	66	66	66
No. of Exceedance		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of Exceedance Unit		0		0			0		0			0			0			0		
No. of Unit		1		1			1		1			1			1			1		

Floor	Assessment Point Level, mPD	S3-53	S3-54	S3-55	S3-56	S3-57	S3-58	S3-59	S3-60	S3-61	S3-62	S3-63	S3-64	S3-65	S3-66	S3-67
14	66.50	66	66	66	66	66	66	66	66	66	66	65	57	55	54	51
Max. Noise Level		66	66	66	66	66	66	66	66	66	66	65	57	55	54	51
No. of Exceedance		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No. of Exceedance Unit		0			0			0					0			
No. of Unit		1			1			1					1			

Max. Noise Level	70
No. of Exceedance Unit	0

No of Unit	1062
Compliance Rate	100%

Remarks:

- Acoustic Window (Baffle Type) (green shading)
- Enhanced Acoustic Balcony (Baffle Type) (orange shading)

Appendix 4 **Sound Attenuation Adjustment of Acoustic Window (Baffle Type) and Enhanced Acoustic Balcony (Baffle Type)**

Sound Attenuation Adjustment of Acoustic Window (Baffle Type)

Reference Case - NPE (AW)

Room Type	Number of Outer Opening	MPA	Room Area (m^2)	Parameters of Acoustic Window (Baffle Type) (mm)						On-site Sound Attenuation, dB(A)
				OOW	OOH	G	O	IOW	IOH	
BR2	1	0.2mm thick	6.8	600	1165	100	253	1397	2400	6.8

Proposed Development

NSR	Max. Noise Level, dB(A)	Required Sound Attenuation, dB(A)	Room Area (m^2)	Corrected Sound Attenuation Performance, dB(A)	Predicted Noise Level, dB(A)
T1-35	73	2.4	8.7	6.8	66
T1-37	73	2.5	10.7	6.8	66
T1-40	73	2.7	9.8	6.8	66
T1-42	74	3.1	9.0	6.8	67
T1-43	71	0.5	6.7	6.8	64
T1-45	73	2.2	6.5	6.6	66
T1-46	73	2.5	5.1	5.5	67
T1-48	73	2.7	8.5	6.8	66
T1-49	73	2.8	5.1	5.5	68
T1-52	73	2.9	5.1	5.5	68
T1-53	73	2.9	9.0	6.8	67
T1-54	73	3.0	8.5	6.8	67
T1-55	74	3.1	5.1	5.5	68
T1-58	73	3.0	5.1	5.5	68
T1-59	73	2.9	9.7	6.8	67
T1-60	73	2.8	7.3	6.8	66
T1-62	73	2.7	6.9	6.8	66
T1-63	73	2.6	6.8	6.8	66
T1-65	73	2.4	7.3	6.8	66
T1-67	73	2.2	7.7	6.8	66
T1-69	72	1.4	6.8	6.8	65
T1-70	72	1.4	15.6	6.8	65
T2-40	71	0.2	5.1	5.6	65
T2-43	71	0.3	5.1	5.6	65
T2-44	71	0.3	10.0	6.8	64
T2-45	71	0.3	9.4	6.8	64
T2-46	71	0.2	5.1	5.6	65
T2-48	71	0.2	7.9	6.8	64
T2-49	71	0.2	5.1	5.6	65
T2-52	71	0.2	5.1	5.6	65
T2-53	71	0.3	8.5	6.8	64
T2-54	71	0.2	8.5	6.8	64
T2-55	71	0.3	5.1	5.6	65
T2-57	71	0.4	7.3	6.8	64
T2-59	71	0.5	9.0	6.8	64
T2-61	71	0.6	5.3	5.7	65
T2-62	71	0.6	5.3	5.7	65
T2-63	71	0.7	12.9	6.8	64
T2-64	71	0.8	7.9	6.8	64
T2-65	71	0.9	5.1	5.6	66
T2-68	71	0.6	7.5	6.8	64
T2-69	71	0.5	7.0	6.8	64
T2-71	71	0.3	11.7	6.8	64
T3-35	71	0.6	10.7	6.8	64
T3-37	71	0.6	10.2	6.8	64
T3-38	71	0.6	6.8	6.8	64
T3-40	71	0.6	7.7	6.8	64
T3-42	72	1.2	7.3	6.8	65
T3-44	72	1.2	6.9	6.8	65
T3-45	72	1.1	6.9	6.8	65
T3-47	72	1.1	7.3	6.8	65
T3-48	71	1.0	9.2	6.8	65
T3-49	71	1.0	5.1	5.6	66
T3-52	71	0.8	5.1	5.5	66
T3-53	71	0.8	8.4	6.8	64
T3-54	71	0.7	9.0	6.8	64
T3-55	71	0.8	5.1	5.5	66
T3-58	71	0.5	5.1	5.5	65
T3-59	71	0.6	8.4	6.8	64
T3-61	71	0.3	5.1	5.5	65
T3-62	71	0.4	6.6	6.7	64

Remarks:
MPA - Micro-perforated Absorber

Note:
The Sound Attenuation for Acoustic Window is determined according to the following equation: 6.9 + 10log(Proposed area/Reference area)

Sound Attenuation Adjustment of Enhanced Acoustic Balcony (Baffle Type)

Reference Case - NPE (EAB)

Room Type	Number of Outer Opening	MPA	Room Area (m^2)	Parameters of Enhanced Acoustic Balcony (Baffle Type) (mm)						On-site Sound Attenuation, dB(A)
				OOW	OOH	G	O	IOW	IOH	
LIV	1	no MPA	38.3	1275	2535	100	275	1480	2535	8.8

Proposed Development

NSR	Max. Noise Level, dB(A)	Required Sound Attenuation, dB(A)	Room Area (m^2)	Corrected Sound Attenuation, dB(A)	Predicted Noise Level, dB(A)
T1-36	73	2.4	25.5	7.0	66
T1-38	73	2.6	25.5	7.0	66
T1-39	73	2.7	14.6	4.6	68
T1-41	73	2.5	22.5	6.5	66
T1-44	72	1.2	17.4	5.4	66
T1-47	73	2.6	21.0	6.2	67
T1-50	73	2.8	21.0	6.2	67
T1-51	73	2.8	21.0	6.2	67
T1-56	73	3.0	21.0	6.2	67
T1-57	73	3.0	21.0	6.2	67
T1-61	73	2.8	17.2	5.3	68
T1-64	73	2.5	17.6	5.4	67
T1-66	73	2.3	18.1	5.5	67
T1-68	72	1.4	17.4	5.4	66
T2-41	71	0.2	21.7	6.3	64
T2-42	71	0.5	21.7	6.3	65
T2-47	71	0.2	21.8	6.3	64
T2-50	71	0.2	21.7	6.3	64
T2-51	71	0.2	21.7	6.3	64
T2-56	71	0.3	23.1	6.6	64
T2-58	71	0.4	26.8	7.2	64
T2-60	71	0.5	25.3	7.0	64
T2-66	71	0.9	21.6	6.3	65
T2-67	71	0.6	21.6	6.3	65
T2-70	71	0.1	25.2	7.0	64
T3-36	71	0.5	21.2	6.2	65
T3-39	71	0.5	17.4	5.4	66
T3-41	71	0.6	18.1	5.5	65
T3-43	72	1.2	17.3	5.3	66
T3-46	71	1.0	17.3	5.3	66
T3-50	71	0.9	21.1	6.2	65
T3-51	71	0.9	21.0	6.2	65
T3-56	71	0.6	21.0	6.2	65
T3-57	71	0.6	21.0	6.2	65
T3-60	71	0.5	21.0	6.2	65

Note:
The Sound Attenuation for Enhanced Acoustic Balcony is determined according to the following equation: 8.8 + 10log(Proposed area/Reference area)