
Appendix F
Environmental Assessment

Prepared for

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SECTION 12A PLANNING APPLICATION FOR PROPOSED AMENDMENTS TO THE TUNG CHUNG VALLEY OUTLINE ZONING PLAN TO REZONE "RESIDENTIAL (GROUP C)2" ZONE TO "RESIDENTIAL (GROUP B)" ZONE IN SUPPORT OF PRIVATE RESIDENTIAL DEVELOPMENT AT VARIOUS LOTS IN D.D. 1 TUNG CHUNG AND ADJOINING GOVERNMENT LAND, TUNG CHUNG, LANTAU ISLAND

ENVIRONMENTAL ASSESSMENT

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1. INTRODUCTION

1.1 Background

- 1.1.1 Ramboll Hong Kong Ltd. (the Consultant) has been commissioned by the Applicant to conduct this Environmental Assessment (EA) in support of the S12A Planning Application for a proposed residential development in D.D. 1 TC and adjoining government land, Tung Chung, Lantau Island ("Application Site").
- 1.1.2 The Application Site is currently zoned as "Residential (Group C)2" ("R(C)2") area under the current Outline Zoning Plan (OZP), which is intended for residential developments. Thus, the Application Site has already been designated by the government for residential use. With a view to optimizing the usage of valuable land resources, the application is to seek permission from the Town Planning Board for rezoning the Application Site from "Residential (Group C)2" ("R(C)2") Zone to "Residential (Group B)" Zone to facilitate a Proposed Development with a domestic plot ratio of 2.1 at the Application Site.

1.2 The Project Location

- 1.2.1 The Application Site is bounded by Chung Mun Road to the east and existing Tung Chung Stream to its west and south. To the further north is the Tung Chung Bay area.
- 1.2.2 **Figure 1.1** shows the location and the environ of the Application Site.
- 1.2.3 The area of the Application Site is about 3.38 ha. The Application Site is currently a vacant land with vegetation and a few existing village houses within the site.

1.3 The Project Description

- 1.3.1 The Proposed Development will comprise 9 residential blocks of 6 to 22 residential-storey over 1-3 storeys of podium, providing about 1,783 units with clubhouses, carpark, transport layby, kindergarten, and local commercial facilities. The master layout plan of the Proposed Development and typical internal layout of the residential towers are presented in **Figure 1.2** and **Figure 1.3** respectively. A carpark in the basement and a transport layby are also proposed at the Proposed Development subject to detailed design stage, reference will be made to the requirements stipulated in ProPECC PN 2/96 on Control of Air Pollution in Car Parks. It will be designed in a way that the exhaust of the proposed basement carpark will be located away from any sensitive uses as far as possible. Typical internal layouts of the residential towers are presented in **Appendix 1.1**.
- 1.3.2 This report has been prepared to support the said rezoning planning application. Possible environmental mitigation measures have been explored for further evaluation of project master layout plan.
- 1.3.3 The Application Site is already zoned by the government for residential development under the current OZP. The current proposed development is to materialize the planned land use, which is in line with the government's planning intension at this location. Under the Tung Chung New Town Development Extension EIA project (Register No: AEIAR-196/2016)(Tung Chung New Town EIA), the whole Application Site is already designed for residential development. Aircraft noise upon the Application Site has already been assessed under the same EIA study. According to Section 4.7 of the Tung Chung New Town EIA, the current Application Site which is over 1.7km away from the airport, will be located well away from the criteria of NEF 25 contours. Thus, no adverse aircraft noise impact is therefore anticipated at the Application Site given the large separation distance. According to Section 4.10 of the approved Tung Chung New Town EIA, the predicted helicopter noise at the current Application Site would comply with

relevant noise criteria. It was also concluded in that EIA study that indirect mitigation measure is not required at the Application Site as a result. Thus, no adverse impact due to helicopter noise is expected. As this proposed development is still at very early planning stage, the Applicant will further consider the feasibility of acoustic insulation at the Application Site in the later detailed design stage.

1.4 Scope

1.4.1 The scope of this EA study includes the assessment of the key potential environmental impacts of the Proposed Development:

- Air quality impact;
- Road traffic noise impact;
- Fixed noise impact;
- Water quality impact;
- Waste management; and
- Land Contamination

2. AIR QUALITY

2.1 Introduction

2.1.1 This Chapter assesses and addresses the potential air quality impact on the proposed residential development at the Application Site. The Assessment Area for air quality impact assessment is defined by a distance of 500m from the boundary of the Application Site.

2.2 Legislation, Standards, Guidelines and Criteria

Air Pollution Control Ordinance (Cap.311)

- 2.2.1 The principal legislation regulating air quality in Hong Kong is the Air Pollution Control Ordinance (APCO) (Cap. 311). The Air Pollution Control Ordinance (APCO) and its subsidiary regulations provide the statutory control on air pollutants from a variety of sources. The APCO makes provision for abating, prohibiting and controlling emissions of any solid, particulate, liquid, vapour, objectionable odours or gaseous substances into the atmosphere. The whole of the HKSAR has been covered by Air Control Zones.
- 2.2.2 The APCO specifies Air Quality Objectives (AQOs), which are statutory limits for a number of pollutants, and the maximum number of times that they may be exceeded in a year for specified averaging periods. The prevailing AQOs are shown in **Table 2.1**.

Table 2.1 Hong Kong Air Quality Objectives

Pollutant	Averaging time	Concentration limit ^[1] ($\mu\text{g}/\text{m}^3$)	Number of exceedances allowed per year
Sulphur dioxide, SO ₂	10-minute	500	3
	24-hour	50	3
Respirable suspended particulates, RSP (PM ₁₀) ^[2]	24-hour	100	9
	Annual	50	Not applicable
Fine suspended Particulates, FSP (PM _{2.5}) ^[3]	24-hour	50	35
	Annual	25	Not applicable
Nitrogen dioxide, NO ₂	1-hour	200	18
	Annual	40	Not applicable
Ozone, O ₃	8-hour	160	9
Carbon monoxide, CO	1-hour	30,000	0
	8-hour	10,000	0
Lead	Annual	0.5	Not applicable

Notes:

- [1] 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 293Kelvin and a reference pressure of 101.325 kilopascal.
- [2] Respirable suspended particulates means suspended particles in air with a nominal aerodynamic diameter of 10 μm or less.
- [3] Fine suspended particulates means suspended particles in air with a nominal aerodynamic diameter of 2.5 μm or less.

Air Pollution Control (Construction Dust) Regulation

- 2.2.3 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.
- 2.2.4 The proposed construction works for the Proposed Development 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

- 2.2.5 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.
- 2.2.6 Under the regulation, regulated machines have to comply with the Stage IIIA emission standards of the European Union (EU). 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) Regulation

- 2.2.7 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 process to reduce sulphur dioxide (SO₂) emissions. In June 2008, the Regulation was amended to tighten the control requirements of liquid fuels. In particular, liquid fuel with a sulphur content not exceeding 0.005% by weight and a viscosity not more than 6 centistokes at 40°C, such as Ultra Low Sulphur Diesel should be used.

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

- 2.2.8 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.
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Hong Kong Planning Standards and Guidelines (HKPSG)

2.2.10 Table 3.1 of the HKPSG provides the broad guidelines for locating active open spaces close to potentially polluting uses, viz. road traffic. The recommended buffer distances are reproduced in **Table 2.2**.

Table 2.2 Recommended Minimum Buffer Distance from Roads

Pollution Source	Parameter	Buffer Distance	Permitted Uses
Road and Highways	<i>Type of Road</i>		
	Trunk Road and Primary Distributor (PD)	>20m	Active and passive recreation uses
		3-20m	Passive recreational uses
		<3m	Amenity areas
	District Distributor (DD)	>10m	Active and passive recreational uses
		<10m	Passive recreational uses
	Local Distributor (LD)	>5m	Active and passive recreational uses
<5m		Passive recreational uses	
Under Flyovers	-	Passive recreational uses	
Industrial Areas	<i>Difference in Height between Industrial Chimney Exit and the Site</i>		
	<20m	>200m	Active and passive recreation uses
		5-200m	Passive recreational uses
	20-30m	>100m	Active and passive recreation uses
		5-100m	Passive recreational uses
	30-40m	>50m	Active and passive recreation uses
		5-50m	Passive recreational uses
>40m	>10m	Active and passive recreation uses	

Remarks:

- a) In situations where the height of chimneys is not known, use the set of guidelines marked with an asterisk for preliminary planning purpose and refine as and when more information is available.
- b) The buffer distance is the horizontal, shortest distance from the boundary of the industrial lot, the position of existing chimneys or the edge of road kerb to the boundary of open space sites.
- c) The guideline is generally applicable to major industrial areas but NOT individual large industrial establishments which are likely to be significant air pollution sources. Consult EPD when planning open space site close to such establishments.
- d) Amenity areas are permitted in any situation.

2.3 Identification and Evaluation of Potential Air Quality Impact during Construction Phase

2.3.1 The air sensitive receivers (ASRs) which are located in close proximity to the Application Site will be potentially affected by the construction work of the Proposed Development. The locations of some of the existing ASRs that are nearest to the Application Site is shown in **Figure 2.2** and detailed in **Table 2.3**.

Table 2.3 Representative Air Sensitive Receivers (ASRs) for Construction Phase

ASR ID	Description	Type	No. of Storey	Approx. Shortest Horizontal Distance to Boundary of the Application Site (m)
Existing ASRs Nearest to the Application Site				
A01	Hong Kong Playground Association Tung Chung Outdoor Recreation Camp	Recreational	1	12
A02	Football field	Recreational	1	33
A03	Hau Wong Temple	Place of worship	1	74
A04	Tung Chung Sitting-out area	Recreational	1	67
A05	Tung Chung Area Recreation Centre	Recreational	1	15
A06	Playground next to Tung Chung Area Recreation Centre	Recreational	1	29
A07	Wai Fung Farm Store	Commercial	1	92
A08	Island Community Green Station	GIC	1	46
A09	Mun Wo House of Mun Tung Estate	Residential	40	96
A10	Hong Chi Shiu Pong Morninghope School	Educational	3	36
A11	Mun Shun House of Mun Tung Estate	Residential	40	121
A12	Mun Tai House of Mun Tung Estate	Residential	31	30
A13	26 Ngau Au Village	Residential	3	278
A14	28 Ngau Au Village	Residential	3	252
A15	27, 27A, 27B Ngau Au Village	Residential	3	285

2.3.2 The key potential sources of air quality impact during the construction of the Proposed Development will be the exhaust emission from construction plant and equipment, as well as the construction dust emission generated from construction activities related to excavation and material handling works during site formation, foundation and superstructure.

- 2.3.3 The Application Site is relatively a flat land and is already served by existing road network, thus extensive earth work is not anticipated during construction. As the Project is still at early planning stage, many details such as construction programme, construction method, and exact no. of PMEs/NRMMs to be used, will only be available in later detailed design stage. Based on a preliminary estimation, the amount of excavated materials would be about 73,000m³. Assuming some of the materials would be reused on-site as fill materials, it is estimated that about 58,000m³ of excavated materials would require delivery to public fill reception facilities to be assigned by the government for reuse. By assuming a 6-month construction period for site formation work, 25 works days per month, and an average truck capacity of 7.5 m³, then it would be equivalent to about 52 truck trips per day (or about 4 truck trips per hour). It is expected that phased construction should be considered during the earth works in site formation stage with a view to minimize the active works area, although details of construction and its phasing will only available in later detailed design stage. Various best practices have also been recommended in Section 2.5 to control construction dust emission. Thus, construction works should be under control and significant construction dust impact is not anticipated. The need for the implementation of a construction dust monitoring and audit program will be reviewed in later detailed design stage and statutory requirements will be followed.
- 2.3.4 The use of construction plants and equipment for the construction of the Proposed Development should strictly follow the Air Pollution Control (Fuel Restriction) Regulation. In particular, liquid fuel with a sulphur content not exceeding 0.005% by weight and a viscosity not more than 6 centistokes at 40°C, such as Ultra Low Sulphur Diesel should be used. In addition, emissions from all the regulated machines within construction site will be controlled under the Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation. Only approved or exempted Non-road Mobile Machinery with a proper label will be allowed to be used at construction site. As mentioned above, the Application Site is relatively a flat land and is already served by existing road network, thus extensive earth work is not anticipated. Moreover, contractor should be advised to allocate only the required amount of construction machinery on-site and to minimize number of machines used at the same time. As such, no. of construction plant and equipment to be used and exhaust emission from the plant/ equipment can be minimised and are unlikely to be significant.
- 2.3.5 The Application Site is located as part of the government's proposed Tung Chung New Town Development Extension area. Infrastructural works in the area and site formation works commenced by the government in 2016 with first population intake around 2025 according to the development proposal of Tung Chung New Town Extension. The above-mentioned works are the subject of an approved Tung Chung New Town Extension EIA (AEIAR-196/2016), and its implementation and construction dust control measures are subject to EM&A programme and are controlled under an Environmental Permit (EP). With the implementation of the EM&A programme, it is expected that construction activities and control measures under the Tung Chung New Town Development Extension project, will be properly implemented and emissions will be under control. The Application Site forms part of the proposed Tung Chung New Town Development Extension area. The planned Tung Chung Line Extension project is also located to the further east of the Application Site. Similarly, that railway project is the subject of an approved EIA study under the Tung Chung Line Extension (AEIAR-235/2022), the implementation of which is also governed by an existing EP with an EM&A programme. Based on current information, the Tung Chung Line Extension project would be completed by 2029. Following the completion of infrastructure works in the area by the government, the proposed development will be implemented and operated around 2030 or so. Thus, cumulative impact due to concurrent project on the air-sensitive uses of

the Proposed Development is largely avoided. During detailed design stage of proposed development, concurrent projects at that time will be identified. Due consideration will also be given to schedule major earth movement construction activities of proposed development so as to minimize concurrent works with other projects as far as practicable.

2.4 Identification and Assessment of Potential Air Quality Impacts during Operation Phase

2.4.1 The key potential sources of air quality impact during the operation of the Proposed Development are described in following paragraphs:

Vehicular Emissions from Public Roads

2.4.2 Vehicular emissions from the adjacent public roads could be a potential source of air pollution affecting the Proposed Development. On the other hand, internal access roads within the Proposed Development are EVA roads only.

2.4.3 The existing road network in the vicinity of the Application Site includes Chung Mun Road and Yu Tung Road. According to Annual Traffic Census 2022, Yu Tung Road is a District Distributor Road. The existing Chung Mun Road is the subject of proposed road upgrading works as part of the proposed Tung Chung New Town Development Extension EIA project¹. Road alignment of the upgraded Chung Mun Road is extracted and incorporated in **Figure 2.1**. It is understood that the upgraded Chung Mun Road will be a District Distributor Road. There is also a planned new access road proposed by the proposed Tung Chung New Town Development Extension EIA project, it is located to the further south of Application Site across Tung Chung Stream. It is understood that it is local access road (or Local Distributor Road) only.

2.4.4 According to Table 2.2 a buffer distance of >10m is required between the kerb side of a district distributor and the air sensitive uses. For local distributor, the required buffer distance is >5m.

2.4.5 Considering that the Proposed Development is located more than 10m from the Chung Mun Road, Yu Tung Road, there should not be any air quality concern given adequate separation distance. Regarding the proposed new access road, its separation distance from the Application Site can meet the buffer distance requirement for both the local distributor and district distributor (i.e. >10m). The Application Site has incorporated adequate setback distance from road kerb location (**Figure 2.1** refers) and can satisfy the above-mentioned buffer distance requirement in HKPSG, no adverse air quality impact is therefore anticipated.

Proposed Carpark

2.4.6 There is a carpark proposed and a private transport layby within the Application Site. Since the Proposed Development is still in early planning stage, the exhaust location of the proposed carpark / transport layby within the Application Site has not yet been determined. The proposed carpark is for parking of private vehicles. The carpark and the proposed transport layby will be designed and operated to meet the requirements in EPD's ProPECC PN 2/96 on Control of Air Pollution in Car Parks, which is subject to further review in detailed design stage. The exhaust (if any) of the proposed carpark/ transport layby shall be designed to locate away from any nearby air sensitive receivers including the air sensitive uses of the proposed development as far as possible.

Odour Impact

¹ Tung Chung New Town Extension EIA (AEIAR-196/2016).

- 2.4.7 During operation, sewage generated from the Proposed Development will be directly connected to public sewerage system via proposed sewer. Since there will be no direct discharge of sewage from Proposed Development into adjacent area, no adverse odour impact is anticipated.
- 2.4.8 There is Chung Mun Road Sewage Pumping Station (SPS) to the east of the Application Site across Chung Mun Road (with capacity of about 20,600 m³/day)¹. According to the Tung Chung New Town Extension EIA project¹, there will be no odour impact due to the said SPS with a separation distance of 10m with odour removal efficiency of at least 95%. According to the Project Profile for "Public Housing Development at Lin Cheung Road Site - Temporary Sewage Pumping Station and Associated Sewer Pipes (DIR-239/2014)", the Cheung Sha Wan SPS as presented in DIR-239/2014 (with a capacity of 456,863 m³/day with odour efficiency of 95%) revealed that odour can be controlled effectively to within the SPS site boundary with odour removal system with at least 95% efficiency.
- 2.4.9 The current Proposed Development has allowed adequate setback with a separation distance of about 39.5m from the said SPS (**Figure 2.1** refers). Site visit has also been conducted in May 2023, June 2023 and August 2024 around the project site as well as surrounding areas within 200m radius, and no particular odour source was identified during the visit. There was no particular odour from the said SPS identified during the visit both at the SPS as well as near Application Site boundary. Also there are other existing ASRs already surrounding the said SPS such as existing Hong Chi Shiu Pong Morninghope School and Mun Tung Estate. It is also confirmed by the Environmental Compliance Division of EPD that there was no odour complaint of the Chung Mun Road SPS received over the past three years (**Appendix 2.1** refers). Therefore, with adequate separation distance adverse odour impact to the ASRs of proposed development is unlikely to occur.

Chimney Emissions

- 2.4.10 A review of chimney locations based on EPD's register previously obtained, was carried out. No chimneys were identified within the 500m Assessment Area. Chimney surveys were also conducted in May 2023, June 2023 and August 2024. No chimney was identified during the site survey. Also, there is no industrial chimney operation from the Proposed Development. Therefore, air quality impact related to chimney emissions is not anticipated and is not assessed further.

Air Quality Impact from Tung Chung Hau Wong Temple

- 2.4.11 Tung Chung Hau Wong Temple is located at the north of the Application Site (A03 in Figure 2.2a). The temple is only used by the local villagers and visitors. The temple is a fully enclosed structure with its opening facing northwest direction face away from the current proposed development. There is no installed chimney identified at the temple. The temple is currently surrounded by other closer existing air sensitive uses such as existing Tung Chung Sitting-out Area, playground, football field, etc. (A04, A06, A02 as shown in **Figure 2.2**) and with a separation distance varying from about 5m to 30m. These air sensitive uses are existing and located between the temple and the current proposed development. While the proposed development is further away with a separation distance of about 80m.
- 2.4.12 Site visits to the temple have been conducted in May 2023, June 2023, August 2024, and October 2024. During the visits, no chimney or joss paper burning activity was observed in the temple and incense burning was only observed inside the temple with occasional visits by local villagers and visitors. During the visits, no particular incense smell was detected at downwind location of the temple. According to the operator of the temple, there is no special event during festivals such as Ching Ming and Chung

Yeung, and no joss paper burning activity during normal operation of the temple. However, in case there are any burning activities it should be small scale, in short duration only, and localised given to the fact that the temple is in small scale (measured as 15m by 12m, or so). In addition, according to Environmental Compliance Division (ECD) of EPD, there was no air quality complaint received associated with the temple in the past 3 years (**Appendix 2.1** refers).

2.4.13 As mentioned in **Section 1.1.2**, the current Application Site is already designated by the government for residential developments. The proposed use under the current application is in line with the government's planned land use intensification at this location. In addition, the whole Application Site is already covered in the study under the approved Tung Chung New Town Extension EIA (AEIAR-196/2016). The planned land use for the whole Application Site in that EIA, is also for residential development. The concerned temple is an existing use in that EIA. The said approved EIA did not raise any particular concern on air quality impact or nuisance due to nearby existing use such as the temple.

2.4.14 Given the temple is in small scale (building structure is only about 15m by 12m or so); large separation distance from the temple to the Proposed Development; no air quality complaint associated with the temple received in the past 3 years; and in case of burning activities during festivals it should be limited, in small scale and in short duration only, no adverse air quality impact due to the temple is then anticipated. In addition, the current proposed development is in line with the government's intended land use and that previous studies have already covered the current Application Site as planned residential use and with no particular concern raised.

2.5 Best Practices during Construction Phase

2.5.1 Fugitive dust emission arising from construction activities can be effectively suppressed by incorporating proper mitigation measures into work procedures through contractual clauses, good site management, and close monitoring by the resident engineers. Air quality control measures stipulated under the Air Pollution Control (Construction Dust) Regulation, together with proper site management / practice and good housekeeping are required to mitigate the potential air quality impacts on the nearby ASRs. Requirements stipulated in the Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation will also be followed to control potential emissions from non-road mobile machinery during construction phase. Contractors should be advised to avoid exempted Non-road Mobile Machineries (NRMMS) as far as practicable. Feasibility and applicability of electric NRMM and provision of on-site electric power supply for the construction machinery, should be considered in later detailed design stage to minimise air emissions. "Recommended Pollution Control Clauses for Construction Contracts" available on EPD website also contains the recommended control measures to be implemented during construction. General air quality control measures and best practices detailed below shall also be incorporated into the Contract Specification where practicable as an integral part of good construction practices:

- Where a site boundary adjoins a road, streets or other accesses to the public, hoarding should be provided along the entire length except for a site entrance or exit;
- The working area of any excavation or earth moving operation shall be sprayed with water or a dust suppression chemical regularly so as to maintain the entire surface wet;
- Use of regular watering to reduce dust emissions from exposed site surface and unpaved roads, particularly during dry weather;

- Covering of any dusty material storage piles by impervious sheeting to reduce emissions. Where this is not practicable owing to frequent usage, watering shall be applied;
- Open stockpiles (if any) shall be avoided or covered. Prevent placing dusty material storage piles near ASRs;
- Establishment and use of vehicle wheel and body washing facilities at the exit points of the Site;
- Imposition of speed controls for vehicles on unpaved site roads to about 10 km/hr;
- All dusty vehicle loads should have side and tail boards covered by tarpaulin sheeting;
- Every stock of more than 20 bags of cement or dry pulverized fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides;
- careful arrangement of construction program to avoid concurrent dusty works as far as practicable; and
- Locate dusty activities away from any nearby ASRs as far as practicable.

2.6 Mitigation Measures during Operation Phase

- 2.6.1 Provided that there is adequate buffer distance from road kerb of nearby public roads, which can satisfy the relevant HKPSG air buffer distance requirement, adverse air quality impact from the nearby roads is not anticipated during operation phase. On the other hand, there is no active chimneys within 200m of the Application site, and no odour is detected from the identified source. Thus, no mitigation measure is therefore proposed. For the vehicular emission from the proposed carpark and transport layby, their design will strictly follow the guidelines and requirements stated in **Section 2.4.6** and **2.4.8** to minimise adverse air quality impact to the ASRs.

2.7 Conclusion

- 2.7.1 Adequate building setback from Chung Mun Road, Yu Tung Road and the planned new access road under Tung Chung New Town Extension EIA in accordance with the buffer distance requirements stated in the HKPSG has been incorporated into the design of the Proposed Development. Also, the design of the proposed carpark and transport layby will strictly follow the relevant requirements in ProPECC PN 2/96 . Sewage generated from the Proposed Development will be directly connected to public sewerage system, and with adequate setback distance from the existing SPS outside Application Site. Thus, no adverse air quality/ odour impact during operation is therefore anticipated.

3. TRAFFIC NOISE IMPACT ASSESSMENT

3.1 Introduction

3.1.1 In this assessment, operational phase road traffic noise impact from roads within 300m radius on the Proposed Development has been assessed. The assessment area is shown in **Figure 3.1**. Practicable environmental mitigation measures have been recommended as appropriate.

3.2 Assessment Criteria

3.2.1 Noise standards are recommended in Chapter 9 of the HKPSG for planning against possible road traffic noise impacts. For new dwellings, as in the case of the Proposed Development within the Application Site, the maximum allowable road traffic noise level expressed in terms of L10(1 hr) at the typical façades of the Proposed Development is recommended to be 70 dB(A) and 65 dB(A) for schools.

3.3 Identification of Potential Noise Impacts

3.3.1 The local road network (e.g. Chung Mun Road and Yu Tung Road) and a planned local access road proposed under Tung Chung New Town Extension EIA (AEIAR-196/2016) are considered as the major noise sources potentially affecting the Proposed Development (**Figure 3.4** refers). Thus, the following paragraphs have assessed the road traffic noise impact upon the Proposed Development site.

3.4 Determination of Traffic Noise Sensitive Receivers

3.4.1 The planned residential blocks within the Application Site are noise sensitive receivers (NSRs) of road traffic noise impact. The proposed residential blocks located closest to the public roads (i.e. Towers 7,8,9) would be affected, thus they are selected as the representative NSRs for detailed road traffic noise impact assessment according to their typical internal layout plans. For other towers at the rear (i.e. Towers 1-6) which are far away from the public roads and are partially shielded by other towers in the front, these towers are unlikely to be affected by road traffic noise thus the worst affected façades are selected for noise assessment. As for the proposed kindergarten, it is located at commercial floor at the podium underneath Towers 7 to 9. The exact location and details of the kindergarten is not available at this stage, to be conservative, noise assessment points are therefore assigned along its building facade. The locations and details of the representative NSRs are provided in **Figure 3.2**, respectively. Typical internal layout plans of proposed residential towers is provided in **Figure 1.3**.

Table 3.1 Representative NSRs for Road Traffic Noise Assessment in Operation Phase

NSRs*	Tower / Podium	Assessment Level, mPD (Ground level +1.2m)	
		Assessment Level, mPD	Assessment Level, mPD
T1_NSR1 to T1_NSR29	Tower 1	1/F to 6/F	18.1 - 34.6
T2_NSR1 to T2_NSR29	Tower 2	1/F to 8/F	18.1 - 41.1
T3_NSR1 to T3_NSR29	Tower 3	1/F to 9/F	18.1 - 44.3
T4_NSR1 to T4_NSR33	Tower 4	1/F to 18/F	18.1 - 73.6
T5_NSR1 to T5_NSR50	Tower 5	1/F to 15/F	18.1 - 63.8
T6_NSR01 to T6_NSR42	Tower 6	1/F to 18/F	18.1 - 73.6
T7_NSR01 to T7_NSR47	Tower 7	1/F to 22/F	28.1 - 96.6
T8_NSR01 to T8_NSR40	Tower 8	1/F to 22/F	28.1 - 96.6

NSRs*	Tower / Podium	Assessment Level, mPD (Ground level +1.2m)	
		1/F to 22/F	28.1 – 96.6
T9_NSR01 to T9_NSR50	T9	1/F to 22/F	28.1 – 96.6
P1_NSR01 to P1_NSR16	Podium under Tower 7 to 9	G/F to 1/F	9.8 – 14.8

Notes:

* Please refer to **Figure 3.2** for locations of NSRs.

3.5 Assessment Methodology

- 3.5.1 As discussed in Section 3.2, according to HKPSG, the maximum allowable road traffic noise level expressed in terms of L10(1 hr) at the typical façades of the Proposed Development is recommended to be 70 dB(A) and 65 dB(A) for schools. In this regard, the traffic noise impact assessment below involves the prediction of the maximum hourly L10 level at the noise sensitive receivers (NSRs) of the Proposed Development due to the projected traffic flow from the major roads within 300m from the Proposed Development.
- 3.5.2 The projected peak hour traffic flow data for Year 2045 which is considered to be the worst-case scenario within 15 years upon completion of the current Proposed Development, have been adopted for the noise assessment. The traffic flow data was predicted by the project traffic consultant. Please refer to **Appendix 3.1** for the traffic flow forecast data for this project.
- 3.5.3 The UK Department of Transport's procedures - "Calculation of Road Traffic Noise" (CRTN) has been used in the prediction of the road traffic noise at the representative NSRs of the Proposed Development within the Application Site. The existing topographic details, such as the existing village houses near the Application Site, have been considered in the assessment.
- 3.5.4 The noise prediction has been carried out using the *RoadNoise 2000* software, which is a computerised model developed on the basis of the U.K. Department of Transport's CRTN procedures, and is acceptable to the EPD.

3.6 Environmental Precautionary Measures Adopted

- 3.6.1 Details of information on peak hour traffic volume and percentage of heavy vehicle of the road network within the 300m assessment area provided by the project traffic consultant is presented in **Appendix 3.1**, which represents the worst-case scenario of the projected traffic flows.
- 3.6.2 According to the approved Tung Chung New Town Development Extension EIA (AEIAR-196/2016)², there will be planned roadside noise barriers located outside YMCA of Hong Kong Christian College and low-noise road surfacing at the section of Chung Mun Road nearby the Application Site. According to relevant EM&A submission under the Environmental Permit, the said noise barriers and low-noise road surfacing will be constructed as part of its construction works. These are incorporated into the noise model for assessment as unmitigated scenario. Please also refer to **Figure 3.4** for their locations and extent.
- 3.6.3 An assessment on the road traffic noise level at the NSRs based on the above traffic flow data has been conducted. Precautionary noise mitigation measures which have

² Figure 4.16b of the Approved Tung Chung New Town Extension EIA (AEIAR-196/2016)

already been incorporated in the design of the layout, and considered in the unmitigated scenario include the followings:

- Setback of residential blocks from the site boundary; and
- Use of podium design to maximize the separation distance to public road.

3.6.4 Incorporation of the above-mentioned measures in the design of the proposed scheme have been accepted by the Applicant and the project Architect.

3.7 Prediction and Evaluation of Noise Impacts

Unmitigated Results

3.7.1 The above-mentioned precautionary measures and planned noise mitigation measures at Chung Mun Road as described in Section 3.6, have been incorporated into the noise assessment as unmitigated scenario. Based on the predicted noise levels, results of AM peak hour are generally higher which are then presented in **Table 3.2**. The details of all unmitigated results during both AM and PM peaks are presented in **Appendix 3.2**. As summarised in **Table 3.2**, under the unmitigated scenario, the predicted road traffic noise levels at some NSRs along the southern side of the Application Site would exceed the relevant noise criteria of 70 dB(A) by up to about 4 dB(A). As for the proposed kindergarten the predicted noise level would reach up to 76 dB(A) at the façade abutting Chung Mun Road. Thus, noise mitigation measures would be required.

Table 3.2 Summary of Predicted Unmitigated Road Traffic Noise Levels at Representative NSRs

NSR	Tower / Podium	Predicted Road Traffic Noise Level, L_{10} (1-hour), dB(A) ^[1]
T1_NSR1 to T1_NSR29	Tower 1	64
T2_NSR1 to T2_NSR29	Tower 2	64
T3_NSR1 to T3_NSR29	Tower 3	61
T4_NSR1 to T4_NSR33	Tower 4	70
T5_NSR1 to T5_NSR50	Tower 5	63
T6_NSR01 to NSR42	Tower 6	61
T7_NSR01 to T7_NSR47	Tower 7	74
T8_NSR01 to T8_NSR40	Tower 8	73
T9_NSR01 to T9_NSR50	Tower 9	71
P1_NSR01 to P1_NSR16	Podium under Tower 7 to 9	76

Notes:

1. Bold number denotes exceedance of noise criteria.
2. The noise criteria for residential towers and kindergarten are 70 dB(A) and 65 dB(A) respectively.

Please refer to **Appendix 3.2** for details of predicted noise levels and **Figure 3.2** for the locations of NSRs.

Mitigated Results

3.7.2 The following mitigation measures are proposed in order to alleviate the noise levels to comply with the noise criteria:

- Provision of baffle type acoustic window and baffle type acoustic balcony at affected units at affected units at Towers 7,8,9 by making reference to the Ex-North Point Estate Project by the developer;

- Maintenance windows have been incorporated into the design for general maintenance (e.g. cleaning) and access only, but not for prescribed ventilation purpose. Future residents will be informed of the fact that these maintenance windows are part of the noise mitigation measures, which are not for ventilation purpose and should be kept closed during normal operation. The intended usage of the maintenance window would be stated in the Deed of Mutual Covenant and sales brochure and alteration is not allowed; and
 - As for the kindergarten, as detailed design and internal layout is not available at this stage, it is expected that the design of kindergarten would avoid openable windows facing Chung Mun Road so that openable windows should face away from the road to the west as far as possible. Possible openable window locations have been identified which are indicated in **Figure 3.3**. Locations of fixed glazing / blank façade are also recommended. Alternatively, other design provision such as central air-conditioning and not relying on openable window for air ventilation can also be considered. The exact noise mitigation measures will be subject to later detailed design stage.
- 3.7.3 Baffle type acoustic windows will be provided at the dwellings that are still affected after all other measures are applied. According to EPD's website regarding the innovative noise mitigation design and measures³, different balconies and special design window systems have been implemented in public rental housing, private residential and hostel developments. In King Tai Court project, baffle type acoustic window is adopted for the residential dwellings with road traffic noise sound attenuation of about 4 to 8 dB(A) (i.e. additional noise reduction indoors when compared with case using conventional window; or the relative insertion loss of baffle type acoustic window and conventional window). In another residential development project such as Ex-North Point Estate redevelopment (reference project), baffle type acoustic window with sliding panel behind window and balcony openings has been employed. The sliding panel behind window opening(s) of bedroom is equipped with micro-perforated absorber (MPA) panel (1mm) which is sound absorptive. Therefore, sound propagating to indoor area will be mostly absorbed and the sound attenuation performance can be improved. In-situ test has been conducted after the building structure of the Proposed Development was completed. According to the test result, a road traffic noise sound attenuation of 8.8 dB(A) can be achieved for living room with baffle type acoustic balcony and 6.9 dB(A) for smaller bedroom with baffle type acoustic window with 1 window opening. Sound attenuation of the baffle type acoustic window/acoustic balcony adopted for the Proposed Development is estimated based on the reference project and presented in **Appendix 3.3**.
- 3.7.4 Since detailed design for Proposed Development is not available at this moment, the design of baffle type acoustic window/ balcony in the above-mentioned reference project has been adopted for affected units at typical floors. The location and extent of the proposed noise mitigation measures are indicated in **Figure 3.3**.
- 3.7.5 Under the mitigated scenario, all noise levels could satisfy the relevant noise criteria and no further noise mitigation measures are therefore required. The summary of the road traffic noise impact assessment results is presented in **Table 3.3**, and the details of mitigated noise levels are presented in **Appendix 3.2**.

³ <http://www.epd.gov.hk/epd/Innovative/greeny/eng/index.html>

Table 3.3 Summary of Predicted Mitigated Road Traffic Noise Levels at Representative NSRs

NSR	Tower	Predicted Road Traffic Noise Level, L ₁₀ (1-hour), dB(A) ^[1]
T1_NSR1 to T1_NSR29	Tower 1	64
T2_NSR1 to T2_NSR29	Tower 2	64
T3_NSR1 to T3_NSR29	Tower 3	61
T4_NSR1 to T4_NSR33	Tower 4	70
T5_NSR1 to T5_NSR50	Tower 5	63
T6_NSR01 to NSR42	Tower 6	61
T7_NSR01 to T7_NSR47	Tower 7	70
T8_NSR01 to T8_NSR40	Tower 8	70
T9_NSR01 to T9_NSR50	Tower 9	70

Notes:

1. Please refer to **Appendix 3.2** for details of predicted noise levels and **Figure 3.2** for locations of NSRs.
2. For the noise level exceedance at the NSRs (P1_NSR01 to P1_NSR09) of the proposed kindergarten under the unmitigated scenario, mitigation measures such as fixed glazing or blank façade have been proposed at these NSRs, it is anticipated the road traffic noise level at the proposed kindergarten would comply with the 65dB(A) noise criteria.

3.8 Conclusion

- 3.8.1 Noise impacts due to road traffic within 300m radius from the Application Site have been assessed following the CRTN. With the implementation of the proposed noise mitigation measures in terms of baffle type acoustic window/ balcony, fixed glazing/ blank façade and maintenance windows, the predicted road traffic noise levels at NSRs within the Application Site would comply with the relevant noise criteria. No adverse traffic noise impact on the Proposed Development is therefore anticipated. It is recommended that a noise impact assessment (NIA) should be prepared in later detailed design stage by the future developer and update relevant proposed noise mitigation measures to comply with the relevant noise criteria of HKPSG.

4. FIXED NOISE IMPACT ASSESSMENT

4.1 Introduction

- 4.1.1 In this assessment, potential noise impacts arising from the nearby fixed noise sources within 300m radius on the Proposed Development have been assessed by general acoustic principle and Technical Memorandum for the Assessment of Noise from Places Other Than Domestic Premises, Public Places or Construction Sites (IND-TM). Practicable environmental mitigation measures would be recommended, where necessary.

4.2 Application Site

- 4.2.1 The Application Site is bounded by Chung Mun Road to the east and existing Tung Chung Stream to its west and south (**Figure 1.1** refers).
- 4.2.2 The Application Site is mostly vacant land with a few existing village houses and an existing private cars parking area within the southern portion. Within 300m assessment area outside the boundary of the Application Site, potential fixed noise sources include a planned public transport interchange located next to Yu Tung Road, existing Chung Mun Road Sewage Pumping Station, planned salt water / sewage pumping stations in the vicinity of the Application Site.

4.3 Government Legislation and Standards

Noise Control Ordinance (NCO)

- 4.3.1 The Noise Control Ordinance (NCO) provides the statutory framework for the control of fixed plant. It defines statutory limits applicable to the fixed plants used during the operational phase of the Proposed Development. The Technical Memorandum for the Assessment of Noise from Places other than Domestic Premises, Public Places or Construction Sites (IND-TM) sets the criteria - Acceptable Noise Level (ANL) for governing noise from existing fixed plant / industrial noise sources.

Hong Kong Planning Standards and Guidelines (HKPSG)

- 4.3.2 The HKPSG states that planned fixed noise source should be assessed in accordance with 5dB(A) below the appropriate Acceptable Noise Level (ANL) shown in Table 2 of the Technical Memorandum (TM) for the Assessment of Noise from Places Other than Domestic Premises, Public Places or Construction Sites and the prevailing background level. NSRs are classified according to the Area Sensitivity Rating (ASR) provided in IND-TM. For planned fixed noise source, it shall comply with 5 dB(A) below the ANL, or the prevailing background noise levels, whichever is lower.

- 4.3.3 There is no Influencing Factor nearby the application site. The Application Site is located as part of the proposed Tung Chung New Town Development Extension area. Once the area is developed, it will become an urbanized and developed area comprising a mixture of medium- to high-rise residential developments, commercial activities, and other uses. According to the approved EIA of Tung Chung New Town Extension (AEIAR-196/2016), ASR of "B" has already been assigned for the Application Site. It is also understood nearby relevant infrastructures and road works as part of the Tung Chung New Town Extension EIA are already undergoing construction which would be completed by year 2024/ 2025 and ready for use, while the completion year of current Proposed Development is by year 2030. Thus, ASRs "B" is assigned for the Application Site which is depicted in Table 4.1.

Table 4.1 Relevant Noise Standard for Fixed Noise Sources

Area Sensitivity Rating	Criteria in Relevant Time Periods	Acceptable Noise Level (ANL)
B	Day and Evening (07:00 – 23:00)	65 dB(A)
	Night (23:00 – 07:00)	55 dB(A)

- 4.3.4 The ASR proposed in this EA is intended for noise assessment only. Nothing in the EA shall bind the Noise Control Authority in the context of enforcement against any of the fixed noise sources identified and assessed in the future under the NCO.
- 4.3.5 On-site measurement of background noise levels was conducted on 31st May 2023 at 09:30am (day-time) and on 1st June 2023 at 12:00am (night-time). The location of background noise measurement is shown in **Figure 4.2**. The measurement was using Norsonic Precision Integration Sound Level Meter, which complies with International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1). The weather condition was good with calm wind condition (<5m/s) during measurement. The equipment was properly calibrated immediately prior to and following each measurement by a Norsonic AS calibrator. The noise levels before and after measurement agreed to within 1.0 dB. The microphone was oriented 1.2m above ground level to obtain a representative baseline condition of the Application Site. A +3 dB(A) correction factor has been applied to the measured noise levels in order to represent the façade noise levels. The Measured background noise level of LA90 near site boundary line was about 60 dB(A) during day-time and about 50 dB(A) during night-time. Therefore, the ANL-5 criteria is adopted as the noise criteria for planned fixed noise sources. The background noise level shall be reviewed in the future Noise Impact Assessment of the proposed development, if necessary.

4.4 Identification of Potential Noise Impacts

Fixed Noise Sources

- 4.4.1 The Application Site is vacant, there is currently no particular noisy operation identified within the Application Site. To the west of Applicant Site near the river bank of Tung Chung Stream, a few abandoned containers and stockpiled materials were found near the river bank (**Figure 4.1** refers). Site visit was carried out and no particular operation was observed. It is noted that the concerned location falls within the existing Coastal Protection Area under the OZP, which should be a protected area. Since no particular operation or noisy plant was identified, it is not considered further.
- 4.4.2 Within 300m radius from the boundary of the Application Site, the existing Chung Mun Road Sewage Pumping Station is identified as a potential fixed noise source. On the other hand, there are few planned fixed noise source proposed in the Tung Chung New

Town Development Extension EIA, these includes three salt water / sewage pumping stations (TCV-d, TCV-e and TCV-f), the upgraded sewage plant at the Chung Mun Road Sewage Pumping Station (PNS07), as well as a planned public transport interchange (PNS04). The location of fixed noise sources is shown in **Figure 4.1**.

- 4.4.3 For the planned fixed noise sources located within 300m from the Application Site boundary such as TCV-d, TCV-e, TCV-f, PNS04, and PNS07 construction works have already commenced. It is understood the concerned planned pumping stations under Tung Chung New Town Development Extension project would be completed as early as 2025 and up to 2028. Thus, all these fixed noise sources will be in operation and would be required to serve the Application Site after the completion of current Proposed Development by 2030 or so. Information such as the locations and planned maximum allowable sound power levels for the above-mentioned fixed noise source locations have been directly extracted from the relevant approved EIA studies for noise assessment, which are also provided in **Appendix 4.1**.

Other Facilities

- 4.4.4 The proposed development includes a proposed transport layby. The said transport layby is located within a semi-enclosed structure inside a podium. Details of design of the transport laybys will only be available in detailed design stage. It is recommended that the exhaust (if any) of the transport layby shall be directed away from nearby noise sensitive receivers as far as possible and be designed in such a way to meet the relevant noise criteria as stipulated in the Noise Control Ordinance.

4.5 Determination of Noise Sensitive Receivers and Assessment Points

- 4.5.1 The planned residential blocks within the Application Site are noise sensitive receivers (NSRs) of potential fixed noise impact. The proposed residential blocks located closest to the identified fixed noise sources would be worst affected by the noise sources. Therefore, assessment points (APs) on the blocks within Application Site which are located closest to the noise sources are selected for this fixed noise impact assessment as the worst-case scenario.
- 4.5.2 The locations and details of the APs are also provided in **Figure 4.1** and **Appendix 4.1**, respectively.

Table 4.2 Assessment Points for Operational Fixed Noise Impact Assessment

NSR	Description	No. of Storeys
T4_NSR1	Tower 4	18
T5_NSR1	Tower 5	15
T6_NSR1	Tower 6	18
T7_NSR1	Tower 7	22
T8_NSR1	Tower 8	22
T9_NSR1	Tower 9	22

4.6 Assessment Methodology

- 4.6.1 For the identified fixed noise sources, it has been assumed that all the identified noise sources will be in operation at the same time, which also represents a worst-case scenario. Noise sources are assumed to operate continuously instead of occasional and all noise sources are regarded as point source.
- 4.6.2 To predict the noise level at the future noise sensitive uses at Application Site, the following correction factors have been accounted for:

- Distance correction: based on the slant distance between the identified noise sources and the AP, the distance correction is projected based on standard acoustical principle for point source;
- Although it is unlikely that all the identified fixed sources will be in operation simultaneously, to be conservative, it has been assumed that all the identified noise sources are in operation at the same time, which also represents a worst-case scenario. Noise sources are assumed to operate continuously as point source;
- Façade correction: a +3dB(A) correction is applied to account for noise reflection from façade;
- Barrier correction: The barrier attenuation, if any, is calculated based on Path Difference Method. ISO 9613 is applied in the calculation of barrier effect.
- Tonal Correction: +0/3/6 dB(A) correction is applied to account for the presence of certain tonal components of the noise.

4.6.3 Corrected Noise Level (CNL) at the APs of the Proposed Development can be calculated by applying the above corrections to the measured SWL of the noise sources in accordance with the following formula:

$$\mathbf{CNL} = \mathbf{SWL} + \mathbf{C_{dist}} + \mathbf{C_{fac}} + \mathbf{C_{PD}} \text{ (if any)} + \mathbf{C_{tone}}$$

Where,

CNL is the corrected noise level at the Assessment Point in dB(A)

SWL is the sound power level of the industrial plant in dB(A)

C_{dist} is the distance correction in dB(A) for correcting the noise attenuation between the source and the receiver.

C_{fac} is façade correction, +3 dB(A).

C_{PD} is the path difference, if any.

C_{tone} is the tonal correction.

4.7 Prediction and Evaluation of Noise Impacts

Fixed Noise Assessment Results

4.7.1 Information based on the assumptions mentioned above and information of noise sources in **Section 4.4**, noise level estimation for the selected APs at the Application Site has been conducted. Details of calculated noise level at NSRs are provided in **Appendix 4.1**.

4.7.2 The calculated fixed noise levels at all APs comply with the noise criteria. No adverse fixed noise impact is therefore anticipated at the Application Site.

4.7.3 The predicted fixed noise levels at the APs are summarised in **Table 4.3**. The details are presented in **Appendix 4.1**.

Table 4.3 Predicted Day and Evening time Noise Levels at APs for Fixed Noise Impact Assessment

NSR ID	Noise Criteria, dB(A)	Maximum Predicted Noise Level, dB(A)
T4_NSR1	65	42
T5_NSR1	65	34
T6_NSR1	65	37
T7_NSR1	65	46
T8_NSR1	65	45
T9_NSR1	65	37

Table 4.4 Predicted Night-time Noise Levels at APs for Fixed Noise Impact Assessment

NSR ID	Noise Criteria, dB(A)	Maximum Predicted Noise Level, dB(A)
T4_NSR1	55	42
T5_NSR1	55	34
T6_NSR1	55	37
T7_NSR1	55	46
T8_NSR1	55	45
T9_NSR1	55	37

4.8 Conclusion

4.8.1 Noise impacts due to identified fixed noise sources within 300m radius of the Application Site have been examined. According to the noise assessment results, no adverse fixed noise impact upon the Proposed Development is anticipated. The predicted noise levels at planned NSRs would comply with the HKPSG noise criteria for all the potential planned fixed noise sources in the future.

5. WATER QUALITY IMPACT

5.1 Introduction

- 5.1.1 This assessment is to identify the potential water quality impact during the construction and operational phase of the Proposed Development in the Application Site. The extent of water quality impact assessment was based on an area within 500m radius from the boundary of the Application Site.

5.2 Assessment Criteria

Water Pollution Control Ordinance

- 5.2.1 The Water Pollution Control Ordinance (WPCO) provides the major statutory framework for the protection and control of water quality in Hong Kong. According to the Ordinance and its subsidiary legislation, Hong Kong waters are divided into ten Water Control Zones (WCZs). Corresponding statements of Water Quality Objectives (WQOs) are stipulated for different water regimes (marine waters, inland waters, bathing beaches subzones, secondary contact recreation subzones and fish culture subzones) in the WCZ based on their beneficial uses. The Proposed Development is located within North Western WCZ.

Technical Memorandum

- 5.2.2 Discharge of effluents are subject to control under the WPCO. The "Technical Memorandum on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters" (TM-DSS) gives guidance on the permissible effluent discharges based on the type of receiving waters (foul sewers, stormwater drains, inland and coastal waters). The limits control the physical, chemical and microbial quality of effluents. Any sewage from the proposed construction and operation activities must comply with the standards for effluents discharged into the foul sewers, inland waters and coastal waters of North Western WCZ, as given in the TM-DSS. Group D discharge standards are considered relevant to the Proposed Development.

Practice Note

- 5.2.3 Various Professional Persons Environmental Consultative Committee Practice Note (ProPECC PN) were issued by the EPD to provide guidelines for handling and disposal of relevant discharges. The ProPECC PN 2/23 "Construction Site Drainage" provides good practice guidelines for dealing with discharge from construction sites. These include surface run-off, groundwater, boring and drilling water, bentonite slurry, water for testing and sterilisation of water retaining structures and water pipes, wastewater from building constructions, acid cleaning, etching and pickling wastewater, and wastewater from site facilities. Practices given in the ProPECC PN 2/23 should be followed as far as possible during construction to minimise the water quality impact due to construction site drainage.
- 5.2.4 The ProPECC PN 1/23 "Drainage Plans subject to Comments by Environmental Protection Department" provides guidelines and practices for handling, treatment and disposal of various effluent discharges to stormwater drains and foul sewers. The design of site drainage and disposal of various site effluents generated within the new development area should follow the relevant guidelines and practices as given in the ProPECC PN 1/23.

5.3 Water Quality Sensitive Receivers

- 5.3.1 The Tung Chung Bay, Tung Chung Stream and planned stormwater attenuation and treatment ponds within the 500m assessment area are identified as the water quality sensitive receivers (WSRs) for the Proposed Development. Based on approved Outline

Zoning Plan No. S/I-TCV/2 there are two areas zoned as Coastal Protection Area (CPA) and one area zoned as Conservation Area (CA) within the assessment area to the west, north, and southwest of the Application Site, respectively which may be potential WSRs as well. In addition, there are planned stormwater attenuation and treatment ponds nearby but outside the boundary of the Application Site as part of the Tung Chung New Town Development Extension EIA project¹. A section of existing Tung Chung Stream to the further south is also proposed for upgrading into a River Park under the said EIA project. The locations of identified WSRs are indicated and presented in **Figure 5.1**.

- 5.3.2 The planned stormwater attenuation and treatment ponds and River Park are currently undergoing construction. Thus, during construction of the ponds and the River Park including its establishment period, these locations will form part of a construction site, which is not a WSR. Once the ponds and the River Park have been fully functional later on, it will become a WSR. Please refer to below discussion. As for the River Park, it is located at upstream location of Proposed Development and may only be affected subject to tidal effect, if any.

Table 5.1 Locations of WSRs

Location	WSR of Current Proposed Development?	
	Construction Phase	Operation Phase
Watercourse (Tung Chung Stream)	Yes	Yes
Tung Chung Bay	Yes	Yes
Coastal Protection Area (CPA)	Yes	Yes
Conservation Area (CA)	Yes	Yes
Stormwater attenuation and treatment ponds & River Park	Yes *	Yes

Remark: * The planned stormwater attenuation and treatment ponds and River Park are currently undergoing construction, which forms part of a construction site, the construction starts in 2022 and expected to be completed up to 2028. It will be a WSR only if it is fully functional in later stage. Further review is required before commencement of construction of current proposed development to confirm the status of the said ponds and river park.

Table 5.2 Information of WSRs

WSR	Distance to the Application Site (m)	Description
Tung Chung Stream & River Park	<5m	Existing channelized ditch. Planned River Park for eco-education and recreational uses
Tung Chung Bay	40	Existing bay
Coastal Protection Area (CPA)	-	Existing CPA in close proximity
Conservation Area (CA)	69	Existing CA, mainly woodlands
Stormwater attenuation and treatment ponds	-	Planned ponds and river channel in close proximity

5.4 Water Quality Impact during Construction Phase

- 5.4.1 The potential source of water quality impacts during the construction phase of the Proposed Development includes general construction activities, construction site surface runoff, accidental spillage and sewage from construction workforce.

General Construction activities

- 5.4.2 Wastewater generated from construction activities, such as general cleaning, wheel washing, dust suppression, often contains significant concentrations of suspended solid (SS). The potential water quality impacts arising from the discharge of such wastewater can be minimized by implementing construction and site management practices to ensure that litter, fuels, and solvents are prevented from entering public drainage system. It is expected that if the good site practices are followed as far as practicable, the potential water quality impacts associated with construction activities would be minimal.

Construction Site Runoff

- 5.4.3 Site runoff will be generated from erosion of exposed surfaces, stockpiles and material storage areas. During a rainstorm event, site runoff would wash away the soil particles on unpaved lands and areas with the topsoil exposed. This site runoff is characterised by high concentration of SS. Release of uncontrolled site runoff could lead to increase in SS levels and turbidity in the nearby water environment.

Construction Work near Watercourses

- 5.4.4 The proximity of construction works to the inland watercourses may pose a risk of polluting the inland water bodies due to the potential release of construction wastes, construction wastewater and site runoff. These typically exhibit high concentrations of SS and elevated pH values. Mitigation measures should be implemented to control the release of construction wastes, construction wastewater and site runoff into the nearby watercourse.

Accidental Spillage

- 5.4.5 The utilisation, handling and storage of chemicals, including engine oil, lubricants, fuels and solvents, carrying the potential to impact water quality in the event of spillage. Thus, it is imperative to properly handle, store and dispose of chemicals properly to prevent spillage.

Sewage from Construction Workforce

- 5.4.6 Domestic sewage would be generated from the workforce during construction stage. This should be collected onsite using chemical toilets and be appropriately handled by licensed contractor. No direct discharge of sewage effluent would be allowed.

Mitigation Measures

General Construction Activities and Site Runoff

- 5.4.7 Appropriate site drainage should be provided on site to collect site runoff and prevent untreated runoff from entering nearby waterbodies. Silt removal facilities such as sedimentation tanks with sufficient capacity should also be provided to treat the collected runoff to appropriate quality before discharge. The site practices outlined in ProPECC PN 2/23 Construction Site Drainage provides good practice guidelines for dealing with various types of discharge from a construction site and should be adopted

as far as practicable to minimise the potential water quality impacts from various construction activities and construction site runoff.

- 5.4.8 Debris and refuse generated on site should be collected, handled and disposed of properly and regularly to avoid entering the nearby waterbodies and public drainage system. Stockpiles of construction materials should be covered and placed on storage platform to avoid contact with storm runoff or construction site runoff. Chemicals and fuels used on site should be kept in designated area(s) with appropriate pollution prevention facilities, such as perimeter bund, separate drainage system and spillage clean up kits.
- 5.4.9 Exposed slope/soil surfaces should be covered by a tarpaulin or similar material during rainstorms to prevent the washing away of construction materials into any drainage system and watercourses. Other measures which are proposed to be implemented before, during, and after rainstorms, as appropriate, are summarised in ProPECC PN 2/23. The surface runoff from construction site as detailed below should also be incorporated into the construction site drainage where practicable as an integral part of good practices.
- Surface runoff from construction sites should be discharged into storm drains via adequately designed sand / silt removal facilities such as sand traps, silt traps and sediment basins. Channels or earth bunds, or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Perimeter channels at site boundaries should be provided where necessary.
 - Silt removal Facilities, channels and manholes should be maintained, and the deposited silt and grit should be removed regularly.
 - Construction work should be programmed to minimise soil excavation works in rainy seasons as far as practicable. If excavation in soil could not be avoided, temporarily exposed slope surfaces should be covered, and temporary access roads should be protected by crushed stone or gravel, as excavation proceeds.
 - Earthworks final surfaces should be well compacted, and the subsequent permanent work or surface protection should be carried out as soon as possible after the final surfaces are formed.
 - Measures should be taken to minimise the ingress of rainwater into trenches. If excavation of trenches in wet seasons is necessary, they should be dug and backfilled in short sections. Rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities.
 - Open stockpiles of construction materials (e.g. aggregates, sand and fill materials) on sites should be covered with tarpaulin or similar fabric. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.
 - Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm runoff from getting into foul sewers.
 - Precautions should be taken at any time of year when rainstorms are likely; actions should be taken when rainstorms are imminent or forecasted, and during or after rainstorms.

Construction Works at and near Watercourse

- 5.4.10 In the case of construction works located near natural watercourse, in order to minimise the potential water quality impacts the Contractor should follow the practices outlined

in the ETWB TCW No. 5/2005 "Protection of natural streams/rivers from adverse impacts arising from construction works" where applicable. Some of the relevant mitigation measures are listed below:

- The proposed works should preferably be scheduled during dry season as far as practicable where the flow in the watercourse is low;
- Temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well away from any waterbodies during carrying out of the construction works;
- Stockpiling of construction materials and dusty materials should be covered and located away from any watercourses;
- Construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nearby watercourses;
- Mitigation measures to control site run-off from entering the nearby water environment should be implemented to minimize water quality impacts;
- Surface channels should be provided along the edge of the waterfront within the work sites to intercept the run-off;
- Perimeter intercepting drains should be provided along the construction site boundary abutting the watercourse and the coastal protection area in order to collect and treat any surface runoff. Direct discharge without treatment into the watercourse should not be avoided;
- Construction effluent, site run-off and sewage should be properly collected and/or treated;
- Proper lateral support may need to be erected in order to prevent soil/mud from slipping into the nearby waterbodies;
- Any effluent discharge should be pre-treated to comply with the WPCO requirement and it should be sited away from natural section of watercourse; and
- Contractor(s) should be required to prepare and implement a construction site drainage management plan for the approval of the residents engineer (RE) and the discharge should comply with relevant requirements in the effluent discharge licence to be issued under the WPCO.

Accidental Spillage

5.4.11 Oils and fuels should only be used and stored in designated areas which have pollution prevention facilities. All fuel tanks and storage areas should be sited on sealed areas in order to prevent spillage of fuels and solvents to nearby watercourses and coastal water. All waste oils and fuels should be collected in designated tanks prior to disposal.

5.4.12 Drainage serving on open oil filling point should be connected to storm drains via a petrol interceptor with peak storm bypass.

Sewage from Construction Workforce

5.4.13 Temporary sanitary facilities, such as sufficient chemical toilets, should be employed in the works areas. The toilet facilities should be away from any watercourses. A licensed contractor would be responsible for cleaning and maintenance of the chemical toilets on a regular basis. The number of the temporary sanitary facilities required for the construction sites would be subject to later detailed design, the capacity of the chemical toilets, and contractor's site practices.

- 5.4.14 Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the nearby environment. Regular environmental audit on the construction site would be conducted in order to provide an effective control of any malpractices and achieve continual improvement of environmental performance on site.

5.5 Water Quality Impact during Operation Phase

Source of Wastewater

- 5.5.1 Currently, the Application Site is mostly vacant land and partially paved for private cars parking uses. Surface runoff within the area is discharged by means of overland flow into nearby watercourse without and any treatment.
- 5.5.2 During operation stage of the Proposed Development, potential water quality impact would be the discharge of wastewater from domestic and commercial activities as well as surface runoff during rainfall events which is known as non-point source of pollution.

Evaluation of Water Quality Impact Due to Sewage Discharge

- 5.5.3 During operation, sewage generated from the Proposed Development will be collected and conveyed to the nearby public sewerage system via proposed sewer. According to the sewerage impact assessment (SIA) prepared by others, the estimated total Average Dry Weather Flow (ADWF) from the Application Site is about 1,712 m³/day which is based on a population of about 5,572. Sewage from the proposed development will be discharged to terminal manhole at Yu Tung Road, which is then conveyed to the Chung Mun Road Sewage Pumping Station, and then via Tung Chung Valley East SPS, Tung Chung SPS, be conveyed to the ultimate Siu Ho Wan Sewage Treatment Works for treatment. There is enough capacity at the public sewerage network to cater for the sewage discharge from the proposed development. As raw sewage will be discharged into public sewerage system, there should be no particular water pollution concern.

Evaluation of Water Quality Impact Due to Stormwater Discharge

- 5.5.4 Proper stormwater drainage system will be provided for the Proposed Development to properly collect stormwater runoff, and discharge through screening facilities. The Application Site falls within the boundary of government's planned Tung Chung New Town Extension Development Project. The Application Site is already planned for residential development under the government's planning intension, thus the current Proposed Development is to materialize such planned land use. Various infrastructure facilities including public drainage system and stormwater attenuation ponds have already been planned by the government, which are now undergoing construction and planned for completion by phases up to 2028 or so, while the Proposed Development would also be completed by year 2030 or so. By the time of operation of the Proposed Development, surface runoff generated by the Proposed Development would be discharged into public drainage system.
- 5.5.5 Proper drainage system will be provided along the site boundary of Proposed Development and the discharge according to government's drainage facilities. The stormwater runoff within the Application Site would be collected and treated by standard screening facilities before discharging. As discharge will be through degritting / screening facilities, there will be no direct discharge of untreated stormwater runoff into nearby WSRs. As pollutants contributed by non-point source are often bound or adsorbed onto particles, an effective stormwater management system will be the removal of pollution sources prior to rainstorm and the provision of degritting/ screening facilities that collect debris or sediment. It is recommended that regular cleaning and sweeping of road surface/ open areas as well as prior to occurrence of rainstorm should

be carried out to minimize exposure of pollutants to stormwater. As for landscaping area, it is recommended that fertilizers will only be applied when needed e.g. in early Spring and in late summer and to avoid major rainy season. Slow-release type fertilizers should be selected as far as possible and over dosage should be avoided.

- 5.5.6 Details of the drainage system will only be available in detailed design stage. It is recommended that the drainage system of the development should be designed in such a way that stormwater runoff should be collected and directed towards the site drainage system as far as possible; screening facilities such as standard gully grating and trash grille, with spacing which is capable of screening off large substances such as fallen leaves and rubbish should be provided at the inlet of drainage system/ discharge points. It is expected that most of the large substances in stormwater runoff would be removed with such devices so as to prevent it from entering the drainage system; road gullies with standard design and petrol interceptors should be incorporated during the detailed design to remove particles and grease present in stormwater runoff; and drainage outlet of any covered car park should be connected to foul sewers via petrol interceptors or similar facilities in accordance with EPD's ProPECC Practice Note PN 1/23. Any effluent discharge should be pre-treated to comply with the WPCO requirement and it should be sited away from natural section of watercourse.

Evaluation of Water Quality Impact Due to Clubhouse and Swimming Pools

- 5.5.7 Clubhouse, retails, and swimming pool are proposed in the podium of the residential tower. The drainage design of the clubhouse, retails, and swimming pool will follow the ProPECC PN 1/23 requirements as well, and the wastewater generated from the relevant activities will be strictly controlled and treated to prevent leakage to the nearby waterbodies. Any effluent discharge should be pre-treated to comply with the WPCO requirement and it should be sited away from natural section of watercourse. According to the ProPECC PN 1/23, swimming pool backwash should be discharged to foul sewers.
- 5.5.8 With the proposed drainage system and recommended pollution control measures in place, no adverse water quality impact is anticipated during the operation phase of the Proposed Development.

6. WASTE MANAGEMENT

6.1 Introduction

6.1.1 This section reviews the types and quantities of potential sources of waste that will arise during the construction and operation of the proposed development. Potential environmental impacts associated with the handling and disposal of waste have been identified. Options for avoidance, minimization, reuse, recycling, treatment, storage, collection, transport and disposal of such wastes are examined.

6.2 Environmental Legislation, Policies, Standards and Criteria and other Relevant Guidelines

6.2.1 There are various types of waste which may arise during construction works. The various types of waste may require a different approach for management according to their specific characteristics. The regulations and requirements regarding waste management (collection, storage, transfer and disposal) of the various waste streams are summarised below.

6.2.2 The principal legislation controlling waste materials in Hong Kong which are relevant to this proposed development are:

- Waste Disposal Ordinance (WDO) (Cap. 354);
- Waste Disposal (Chemical Waste) (General) Regulation; and
- Waste Disposal (Charges for Disposal of Construction Waste) Regulation.

6.2.3 Other key relevant guidelines published by various Government Departments and Bureaux include:

- Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes;
- Works Branch Technical Circular No. 2/93 "Public Dumps"; and
- PNAP No. 243 (ADV-19) – "Construction and Demolition Waste"

6.3 Identification and Evaluation of Potential Impacts

Construction Phase

6.3.1 Construction of proposed development would involve site clearance, site formation and excavation, foundation and piling works, as well as superstructure building construction works. The construction activities to be carried out for the proposed development 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 (including site clearance waste);
- General refuse; and
- Chemical wastes.

6.3.2 The nature of each type of waste arising is described in the following sections, together with an evaluation of the potential environmental impacts associated with these wastes.

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

6.3.4 The following paragraphs provide a general waste management approach as well as good practices for waste management.

Construction and Demolition (C&D) Materials

- 6.3.5 C&D materials are categorized to "inert C&D materials" and "non-inert C&D materials". C&D materials that are wholly inert, namely public fill, should not be disposed of to landfill, but taken to public fill reception facilities, which usually form part of reclamation schemes. The Land (Miscellaneous Provisions) Ordinance requires that dumping licences be obtained by individuals or companies who deliver public fill to public fill reception facilities. The Civil Engineering & Development Department (CEDD) issues the licences under delegated powers from the Director of Lands. The contractor should be advised to follow the "Construction and Demolition Waste" in PNAP ADV-19, published by Buildings Department, including adoption of a trip ticket system for disposal of C&D materials.
- 6.3.6 Clearance of vegetation and temporary building structures comprising concrete, steel etc is required. Clearance and demolition would also generate inert and non-inert C&D materials. Inert C&D materials would be delivered off-site for reuse in other construction contractors or to designated public fill reception facilities.
- 6.3.7 Under the Waste Disposal (Charges for Disposal of Construction Waste) Regulation, enacted in January 2006, construction waste delivered to a landfill for disposal must not contain more than 50% by weight of inert material. Construction waste delivered to a sorting facility for disposal must contain more than 50% by weight of inert material, and construction waste delivered to a public fill reception facilities for disposal must consist entirely of inert material.
- 6.3.8 Inert C&D materials would be delivered off-site for reuse in other construction contractors or to designated public fill reception facilities, or it can be reused as fill materials on site. The Contractor should timely notify the estimated volumes of excavated materials to be generated and make agreement with the PFC on the handling of the inert C&D materials. Inert C&D materials should be segregated from other wastes to avoid contamination and to ensure acceptability at public fill reception facilities and other construction sites. All inert C&D materials will need to be carefully stockpiled if it cannot be removed directly to avoid dust and other nuisance impacts. The inert C&D materials to be delivered to public fill reception facilities shall be materials consisting of soil, concrete, etc. The materials shall be free from plastics, chemical waste, industrial metals and other materials that are considered as C&D materials. A designated temporary storage area of inert C&D materials shall be provided on site.
- 6.3.9 Non-inert C&D materials comprise materials including mixture of topsoil and dead vegetative materials, timber, glass, steel and plastics, etc. arising from construction and demolition that are not suitable for backfilling. Non-inert C&D materials would be segregated on site to facilitate recycling as far as possible by designating specific areas/bins for the temporary storage of the segregated material. On the other hand, it should explore other disposal method such as the timber and woody materials to the Yard Waste Recycling Centre in Y-Park for recycling prior to disposal at the designated landfill site, to minimise the quantity sent to landfill disposal.

6.3.10 The Contractor should separate non-inert C&D materials from inert C&D materials on-site. All segregated recyclable materials (e.g. metal) should be collected by reputable licensed recyclers. The remaining non-inert C&D materials should be disposed of at designated landfill by dump trucks.

Table 6.1 Estimated Quantities of C&D Materials to be Generated

Type	Total Quantity Generated (m ³)	Disposal Method
Site Clearance	~13,185*	Recyclable C&D materials such as tree trunks and woody materials will be sent to Yard Waste Recycling Centre in Y-Park subject to availability and/or at landfill. Other non-inert C&D materials such as general refuse will be disposed of at landfill. Inert C&D materials to be reused as fill materials on site as far as practicable and any surplus amount to be sent to public fill reception facilities for reuse, e.g. in Tuen Mun Area 38 or designated location assigned by government.
Site formation & excavation, etc.	~73,000	Inert C&D materials will be reused on-site as fill material where practicable. Any surplus inert C&D materials to be sent to public fill reception facilities for reuse in Tuen Mun Area 38 or designated location assigned by government.
Building construction	~7,829**	Inert C&D materials to be sent to public fill reception facilities for reuse in Tuen Mun Area 38 or designated location assigned by government. C&D materials that cannot be reused or recycled, to be sent to landfill as last resort.

Remarks:

The above figures and disposal route are estimation only. The exact amount to be generated and disposal method will be subject later detailed design stage.

* Based on estimation of removal of top 300mm. Exact volume is subject to detailed design stage.

** Estimated based on the generation rate of 0.1m³ per 1m² of Gross Floor Area (GFA). The GFA of the Proposed Development is ~78,292m². The waste generated due to construction of building structures is estimated based on the generation rate of 0.1m³ per 1m² of GFA (similar waste generation rate was also adopted in the approved EIA Report in the "Agreement No. CE61/2007 (CE), North East New Territories New development Area Planning and Engineering Study – Investigation", Section 7.5.1.2).

General Refuse

6.3.11 Throughout the construction stage, the workforce would generate general refuse comprising food scraps, wastepaper, empty containers, etc. It has been estimated that the quantity of general refuse to be generated by the construction workforce is about 162.5 kg/ day, which is based on a general refuse generation rate of about 0.65 kg per worker per day and an assumed 250 workers on-site. The exact number of construction workers and quantity of general refuse to be generated will be subject to later detailed design stage. The following general waste management practices are proposed to minimise the amount of general refuse generated during construction phase.

6.3.12 Release of general refuse into the nearby storm drain should not be permitted. Effective collection of site wastes would be required to prevent waste materials being blown around by wind, flushed or leached into the surrounding environment.

- 6.3.13 Recyclable materials (i.e. paper, plastic bottles and aluminium cans) should be separated from other materials for recycling, in order to reduce the amount of general refuse to be disposed of at landfill. Adequate number of enclosed waste containers should be provided to avoid over-spillage of waste. The non-recyclable refuse should be placed in bags, stored in enclosed containers, and disposed of at designated landfill on a daily basis.
- 6.3.14 With the implementation of the recommended waste management practices on site, adverse environmental impacts would not arise from the storage, handling and transportation of general refuse.

Chemical Waste

- 6.3.15 The maintenance and servicing of construction plant and equipment may generate chemical wastes such as cleaning fluids, solvents, lubrication oil and fuel. Maintenance of vehicles may also involve the use of a variety of chemicals, oil and lubricants. It is recommended that Contractor(s) should avoid undertaking maintenance works of construction plants on-site as far as practicable, thus minimizing the potential of chemical waste generation. In case chemical waste is generated, it is estimated to be in the order of a few cubic metres per month or so. Nonetheless, proper handling of chemical waste is proposed to minimise the adverse impact from chemical waste. For instance, the Contractor will be required to register with the EPD as a Chemical Waste Producer and to follow the requirements stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Chemical waste should be collected by a licensed collector and to be disposed of at a licensed chemical waste treatment and disposal facility.
- 6.3.16 Provided that the handling, storage and disposal of chemical wastes are in accordance with these requirements, adverse environmental impacts are not expected.
- 6.3.17 With the implementation of aforementioned good practices and appropriate mitigation measures, no adverse waste management impact is envisaged.

Operation phase

- 6.3.18 It is anticipated that general refuse will be generated during operation of the proposed development. General refuse will be generated by residents during the operation of the proposed development.
- 6.3.19 With the domestic nature and scale of development, the amount of general refuse to be generated during operation phase is estimated to be about 5.2 tons/day, which is based on a per capita waste disposal rate at 0.93 kg/person/day in 2022 and a population of about 5,572. Standard refuse handling approach that is widely adopted in other residential development sites that is required by the government e.g. provision of refuse collection and storage facility as required under the Buildings Ordinance, will be adopted for the provision of facility for handling and disposal of collected waste. Refuse should be properly collected and stored at a designated location, and collection of waste will be arranged by a licensed contractor on regular basis. Other measures for instance, set up of recycling bins and recycling point shall be adopted to encourage segregation and recycling of aluminium and plastic wastes, and wastepaper in order to reduce general refuse generation. Subject to detailed design stage, the proposed development will consider feasibility of other appropriate recycling means for food waste, e.g. delivering food waste generated to Organic Resource Recovery Centre (ORRC) or installation of food waste recycling machines for composing treatment, etc.

7. LAND CONTAMINATION

7.1 Potential Land Contamination Due to Historical Land Uses

- 7.1.1 A review on site history and identification of potential land contamination due to historic and current land use, has been carried out. It is noted that the whole Application Site has already been covered in a land contamination assessment including review of historical land use and past aerial photos in the approved Tung Chung New Town Extension EIA (AEIAR-196/2016).
- 7.1.2 According to the findings in the said EIA⁴, it is noted that one location at the Application Site was previously identified as temporary structures (office and fuel drums storage) in the past (i.e. location the site TC-4 in the above-mentioned EIA study). The location of the above-mentioned identified location is also shown in **Appendix 7.1** of this EA report.
- 7.1.3 According to the historical aerial photos from the approved EIA (AEIAR-196/2016), the site TC-4 was a vacant land before 2004, and the above-mentioned temporary structure was then identified in 2004. The historic aerial photos of the site TC-4 are shown in **Appendix 7.1**. More recent aerial photo taken in year 2022 covering the Application Site (**Appendix 7.1**, refers) has also been reviewed which shows that the Application Site is mainly vacant with no particular use except an existing car parking use at the southern portion of the Application Site, and the concerned temporary structure identified in the EIA study has already been removed following the establishment of a private cars parking area. There are also other adjacent construction activities under the government proposed Tung Chung New Town Development Project. Field visit was also conducted in May 2023 and August 2024, the southern portion of the Application Site was partially paved and used as private car parking space (**Appendix 7.1** refers). No trace of land contamination was identified, and no such temporary structure identified in the EIA stage, was found on-site during the visit.
- 7.1.4 Although the temporary structure has been removed by now, the potential land contamination issues caused by the fuel drums storage in the past cannot be ruled out. In the said EIA, a further land contamination review to identify whether there is any land contamination issue at the identified location within the Application Site before commencement of development, was proposed. As the concerned location is currently occupied, further liaison with relevant department / parties will be carried out by the Project Proponent during later detailed design stage and prior to commencement of any construction for the proposed development to determine the need of detailed land contamination review and ground investigation, where required.

⁴ *Approved Tung Chung New Town Extension Development EIA (EIA-233/2015), section 8.2.3, figure 8-4, and Appendix 8.1*
(https://www.epd.gov.hk/eia/register/report/eiareport/eia_2332015/html/EIA/Text/General/Combined_html%20version.htm).

8. OVERALL CONCLUSION

- 8.1.1 The Application Site has been designated for residential use under the current OZP. The Applicant proposes to rezone the site from "R(C)2" to "R(B)" to facilitate a proposed development with a domestic plot ratio of 2.1 together with a covered transport layby and some local commercial facilities. To assess the environmental impact of the Proposed Development, traffic noise impact assessment, fixed noise assessment, noise impact due to planned SPS, and vehicular emission impact assessment have been conducted.
- 8.1.2 Appropriate precautionary measures (e.g. setback of the proposed buildings from the site boundaries, baffle type acoustic windows, baffle type acoustic balcony, fixed glazing/ blank facade, maintenance windows, and utility platform with self-close door) have been incorporated in the layout to alleviate potential noise impacts due to road traffic noise as well as fixed noise sources. With these measures, the Proposed Development will not be subject to unacceptable traffic noise impact, and 100% traffic noise compliance rate can be achieved. A noise impact assessment (NIA) should be prepared in later detailed design stage by the future developer and update relevant proposed noise mitigation measures to comply with the relevant noise criteria of HKPSG.
- 8.1.3 For air quality impact, no adverse vehicular emission impact from the nearby roads is anticipated. Sewage generated from the proposed development will be conveyed to an existing public SPS outside Application Site via a proposed sewer. With adequate buffer distance from the public SPS, no odour impact upon the Proposed Development is anticipated. With mitigation measures, such as peripheral setback from the site boundaries and provision of adequate buffer distances, incorporated into the design of the development, no adverse air quality impact to the proposed development is anticipated.
- 8.1.4 For water quality impact, sewerage and drainage impact assessments have been conducted and reported in separate reports. Proper sewerage and drainage systems are proposed so that the Proposed Development will be connected to public sewerage system during operation. The Proposed Development is to provide with a proper stormwater drainage system and screen facilities to properly treat surface runoff. Best management practices have been proposed which should be implemented as well. No adverse water quality impact due to the Proposed Development is anticipated.
- 8.1.5 For waste management, with the implementation of good construction site practices and appropriate mitigation measures, the generation of wastes from the Proposed Development could be minimised. General refuse will be generated during operation phase. Standard approach adopted in other similar residential development sites such as provision of refuse collection and storage facility as required under the Buildings Ordinance, regular collection of refuse by licensed contractor, and set up of recycling bins and recycling point that is widely adopted in other parts of Hong Kong will be adopted for the handling and disposal of domestic waste with proper refuse collection point. No adverse waste management impact is envisaged during the construction and operation of the Proposed Development.
- 8.1.6 For land contamination, the Application Site is partially vacant, the southern portion of the Site was paved and used as private car parking space. According to the land contamination review conducted by the approved EIA (AEIAR-196/2016), there was a potential land contamination issue due to a previous fuel drum storage in the past. Detailed land contamination review and ground investigation would be required in later detailed design stage to assess the potential land contamination impact when full access is available.

8.1.7 To this end, it can be concluded that the Proposed Development is considered sustainable in environmental terms.

Figures

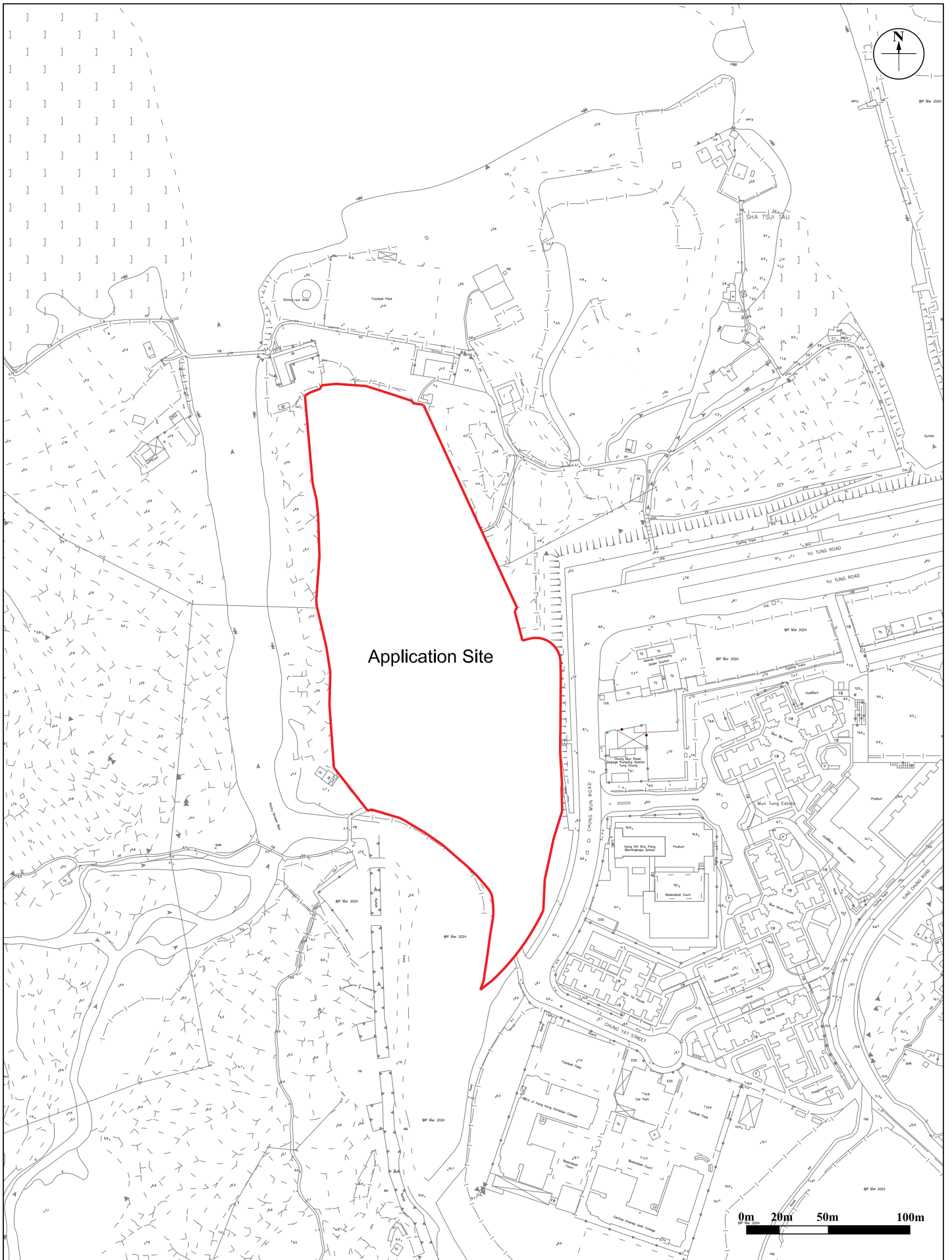


Figure: 1.1

Title: Application Site and Its Environs

Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone "Residential (Group C)2" Zone to "Residential (Group B)" Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island

RAMBOLL

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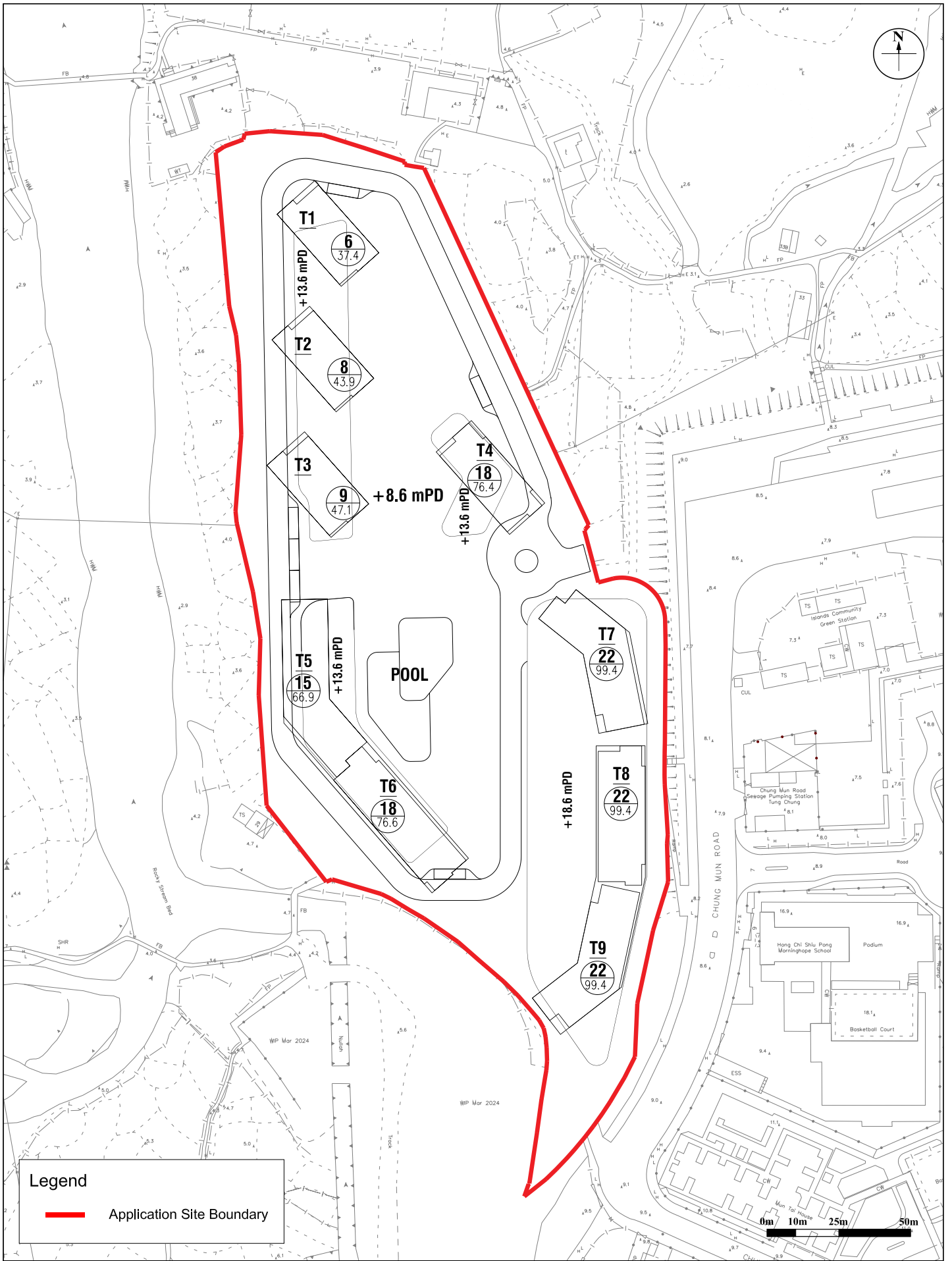


Figure: 1.2
Title: Master Layout Plan of the Proposed Development

Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone "Residential (Group C)2" Zone to "Residential (Group B)" Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island

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Drawn by:	EC
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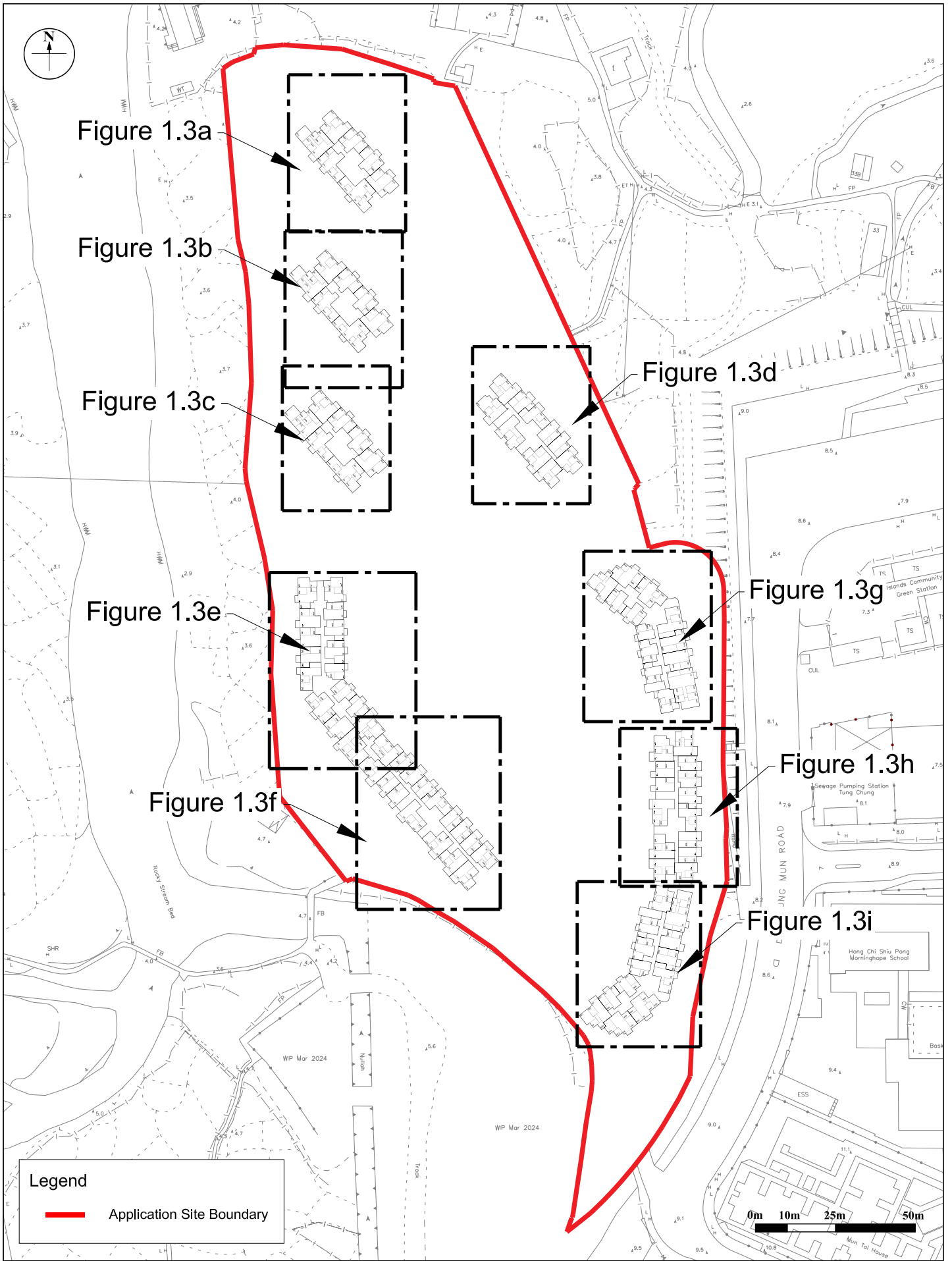


Figure: 1.3

Title: Typical Indicative Layout Plan of the Residential Towers

Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone "Residential (Group C)2" Zone to "Residential (Group B)" Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island

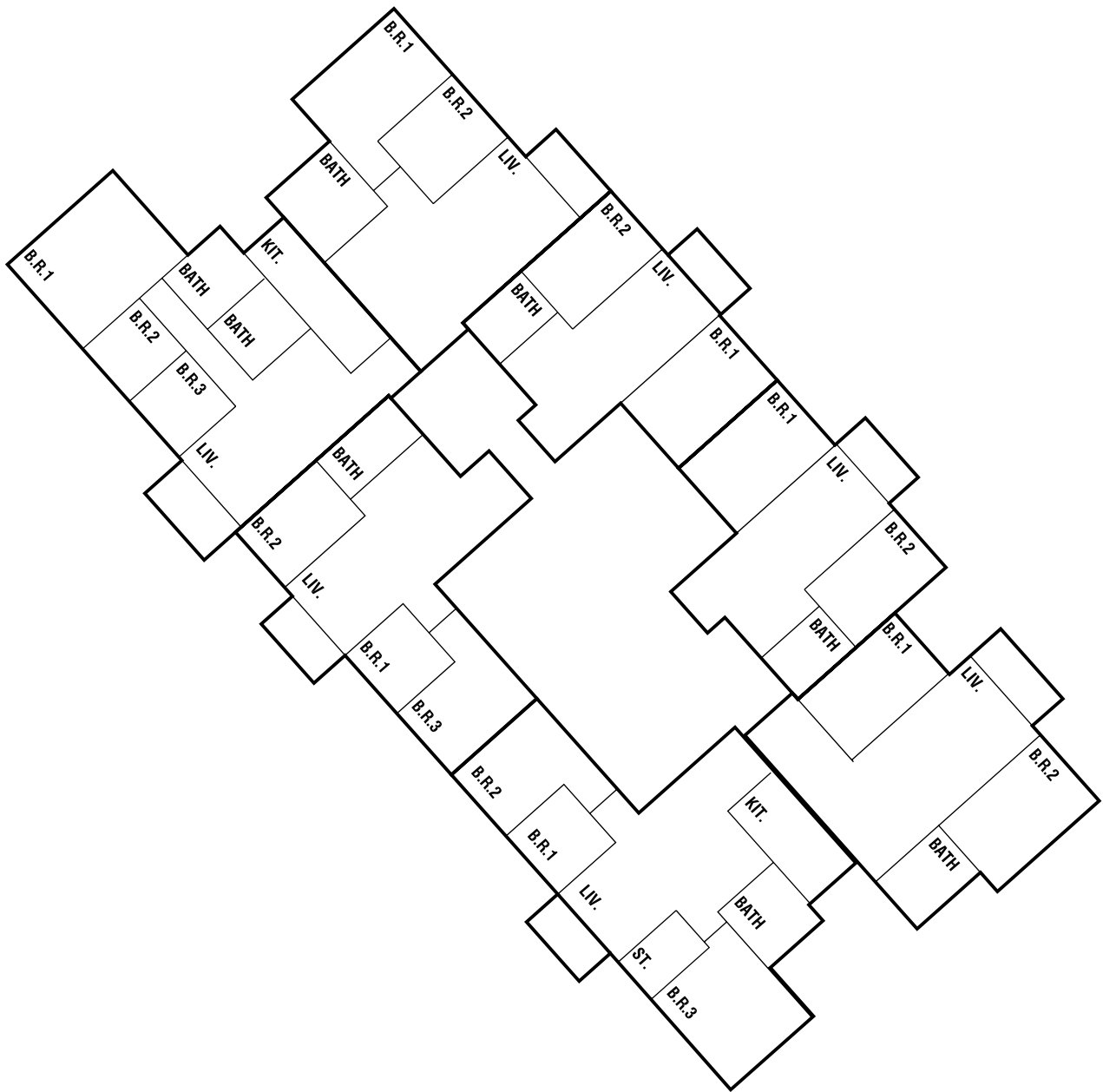
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Date: Aug 2024



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 Application Site Boundary

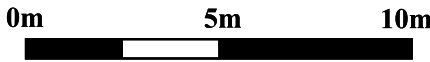


Figure: 1.3a

Title: Typical Indicative Layout Plan of the Residential Towers (Tower 1)



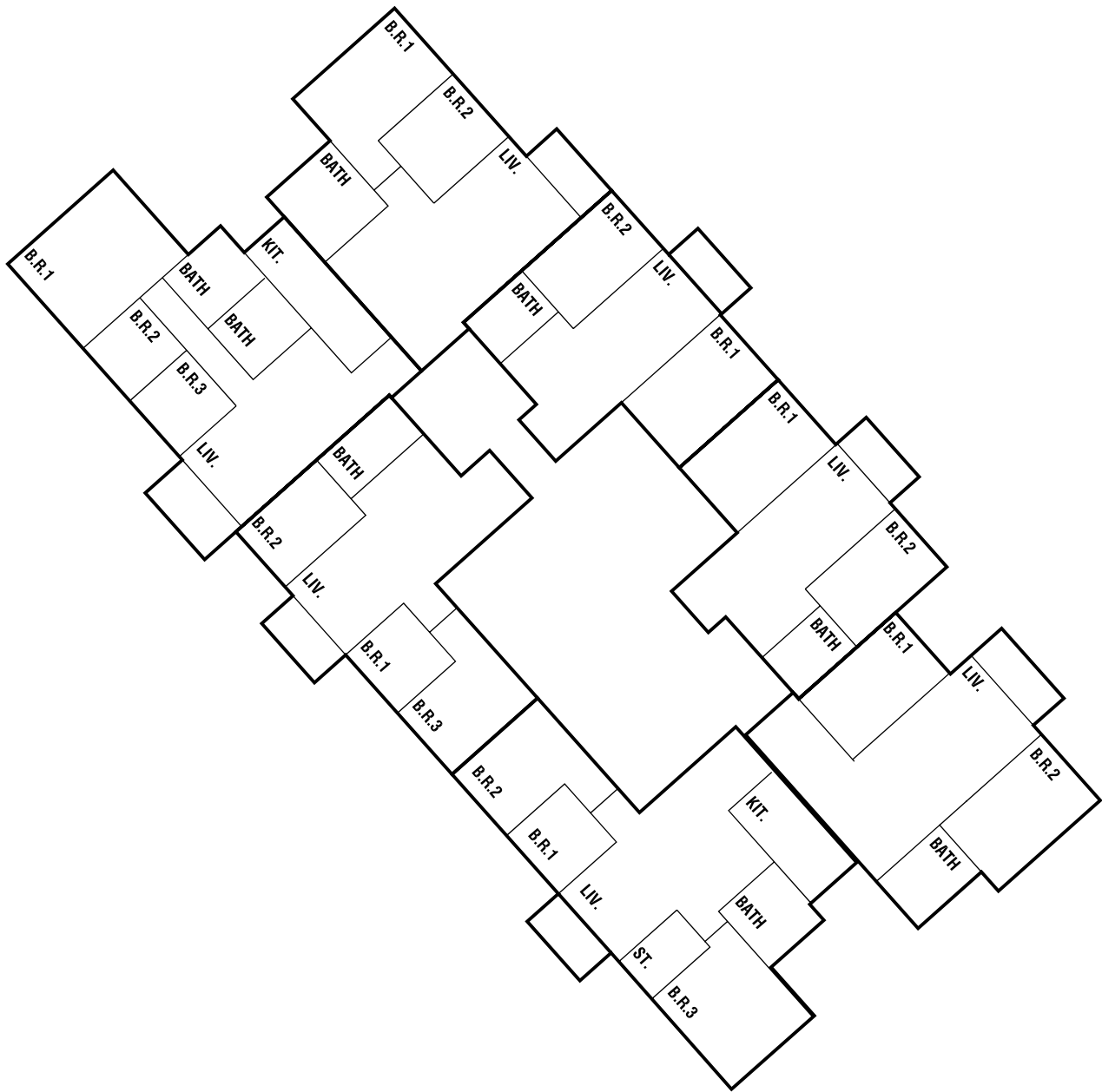
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Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone "Residential (Group C)2" Zone to "Residential (Group B)" Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island

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 Application Site Boundary

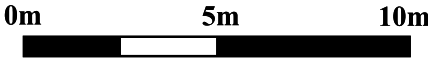


Figure: 1.3b

Title: Typical Indicative Layout Plan of the Residential Towers (Tower 2)



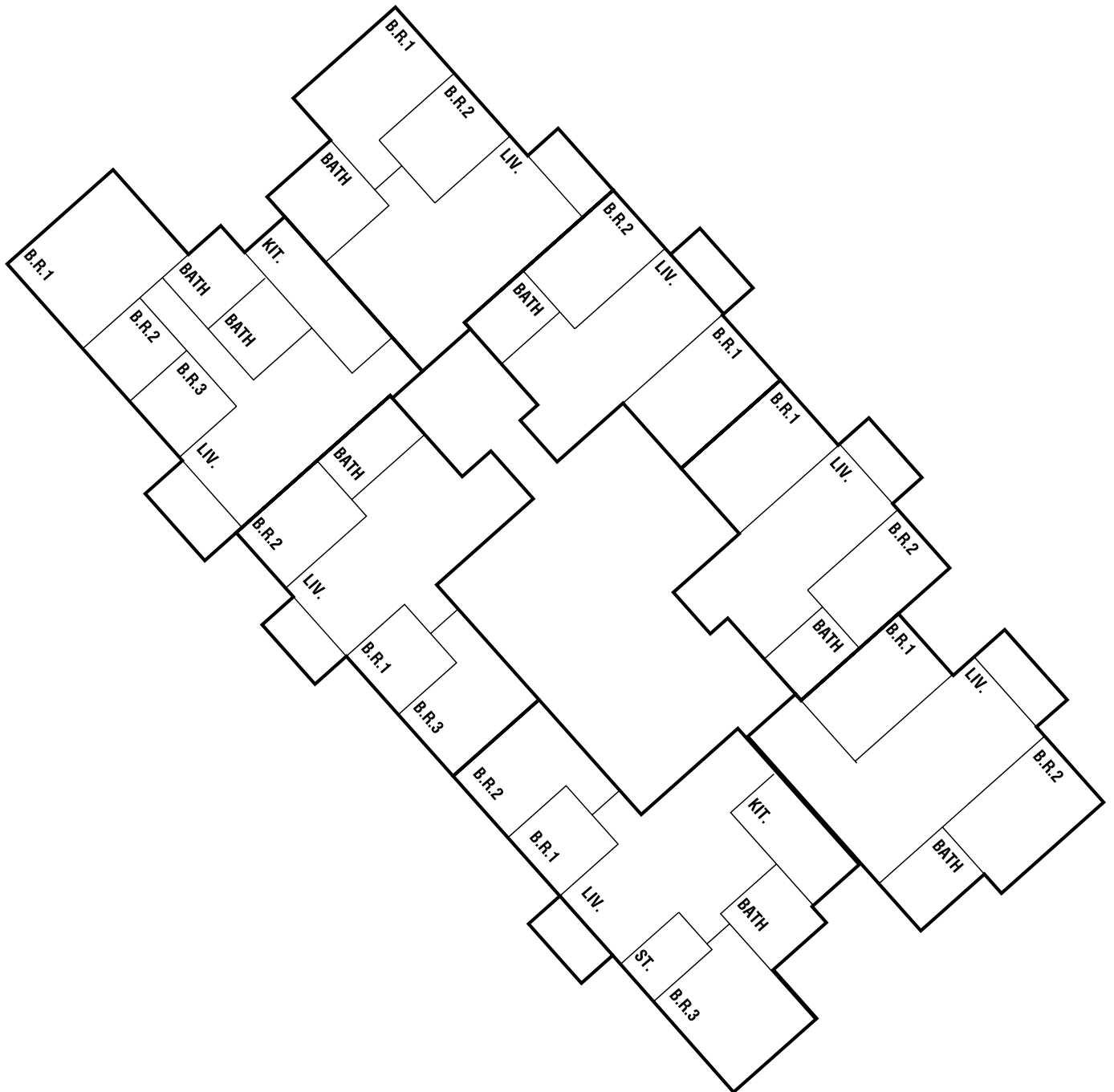
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Checked by: HN


Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone "Residential (Group C)2" Zone to "Residential (Group B)" Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island

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Legend

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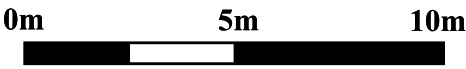


Figure: 1.3c

Title: Typical Indicative Layout Plan of the Residential Towers (Tower 3)



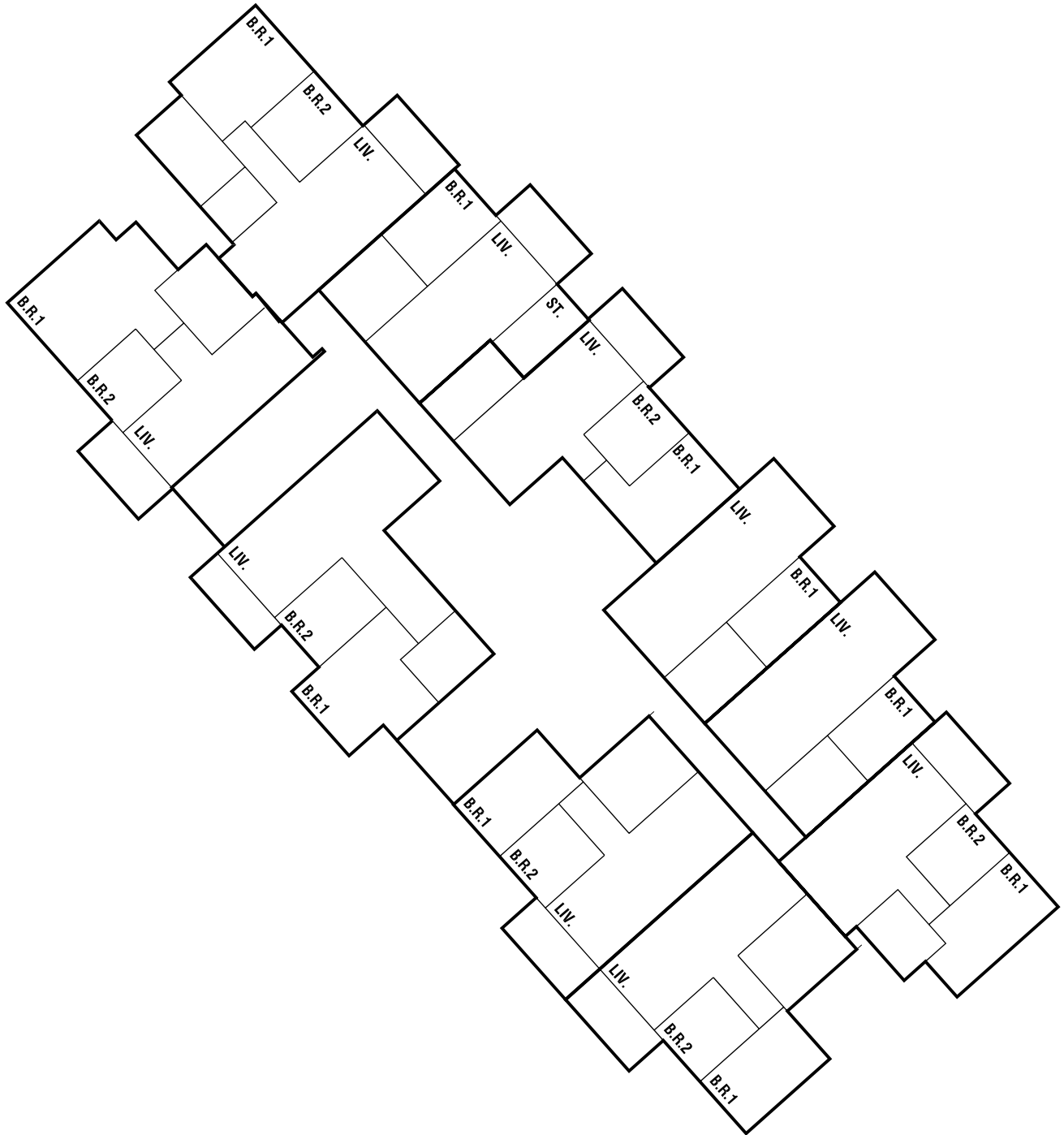
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Checked by: HN


Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone "Residential (Group C)2" Zone to "Residential (Group B)" Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island

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Legend

 Application Site Boundary

0m 5m 10m





Figure: 1.3d	
Title: Typical Indicative Layout Plan of the Residential Towers (Tower 4)	Drawn by: EC
Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone "Residential (Group C)2" Zone to "Residential (Group B)" Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island	Checked by: HN
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	Date: Aug 2024

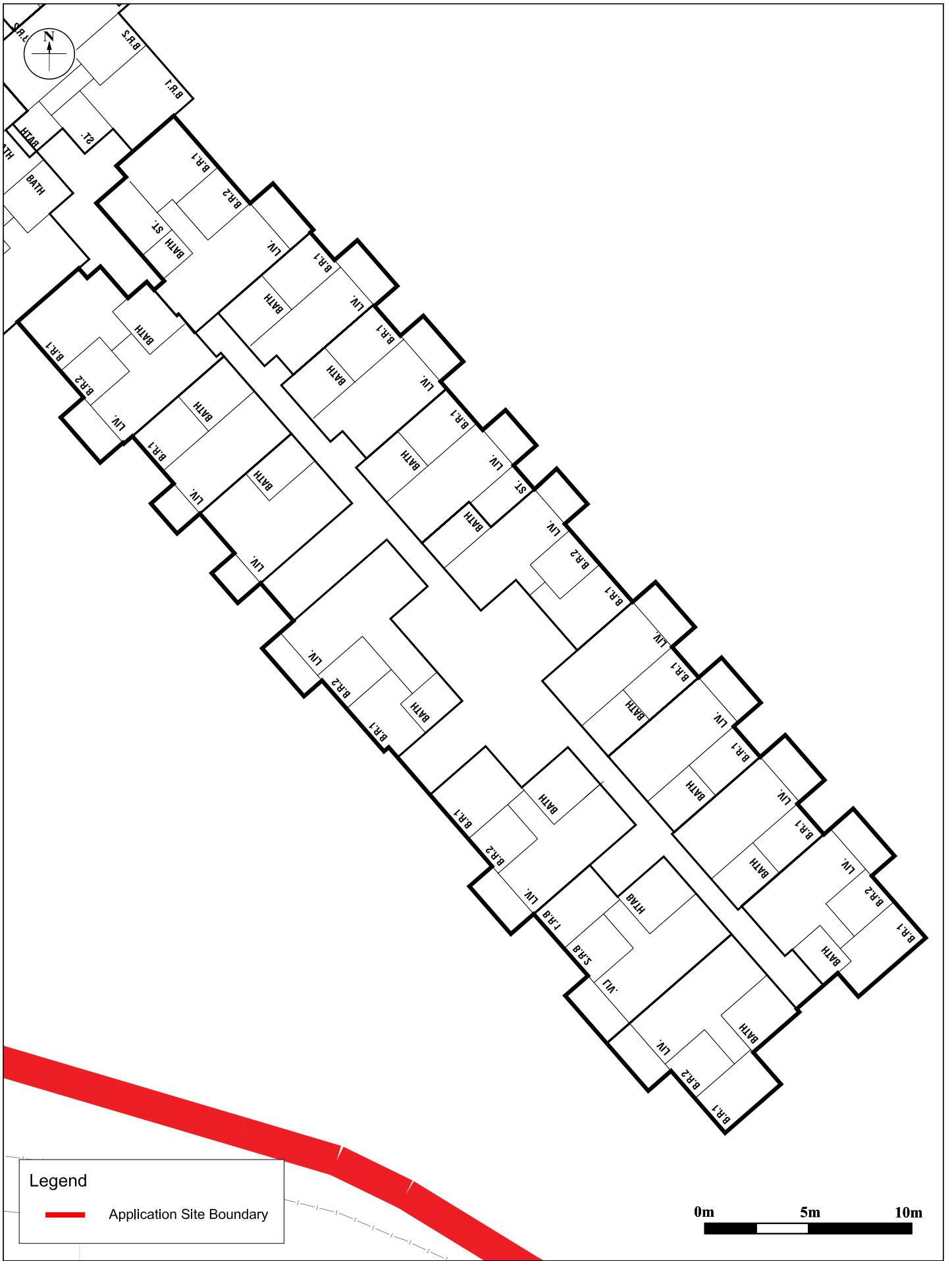


Figure: 1.3f

Title: Typical Indicative Layout Plan of the Residential Towers (Tower 6)

Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone "Residential (Group C)2" Zone to "Residential (Group B)" Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island

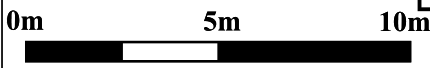
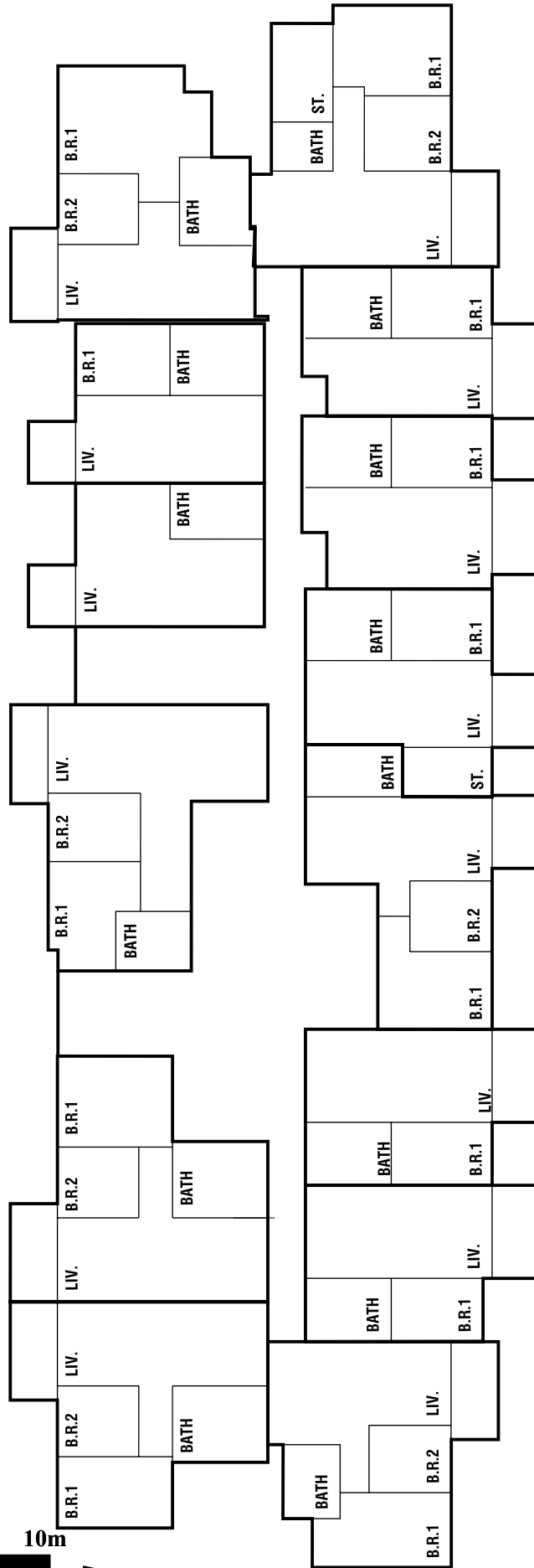


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Date: Aug 2024



Legend

— Application Site Boundary

Figure: 1.3h

Title: Typical Indicative Layout Plan of the Residential Towers (Tower 8)

Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone "Residential (Group C)2" Zone to "Residential (Group B)" Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island

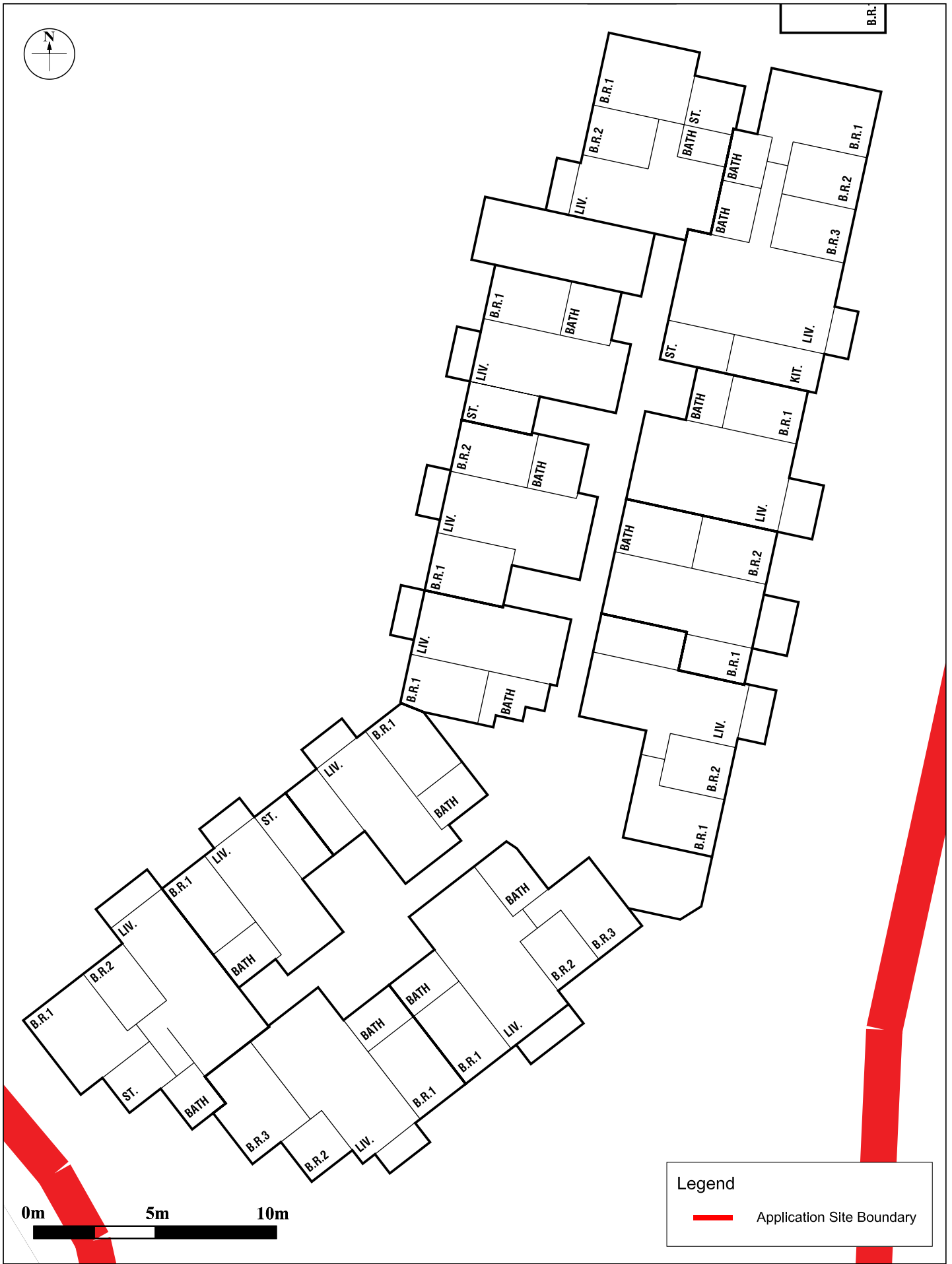


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Date: Aug 2024



Legend

 Application Site Boundary

Figure: 1.3i

Title: Typical Indicative Layout Plan of the Residential Towers (Tower 9)



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Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone "Residential (Group C)2" Zone to "Residential (Group B)" Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island

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Date: Aug 2024

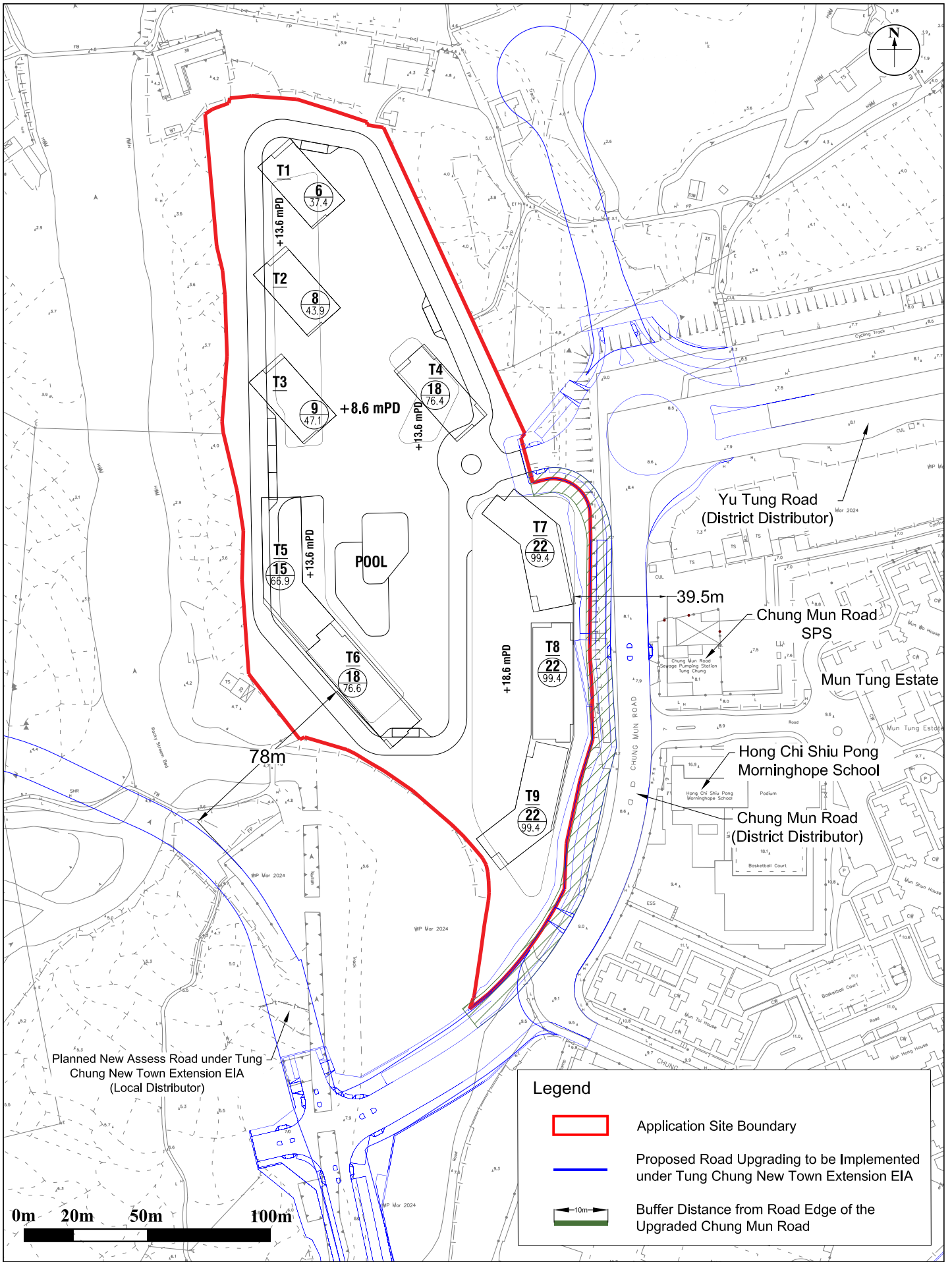


Figure: 2.1

Title: Buffer Distance between Application Site and nearby Road Network

Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone “Residential (Group C)2” Zone to “Residential (Group B)” Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island

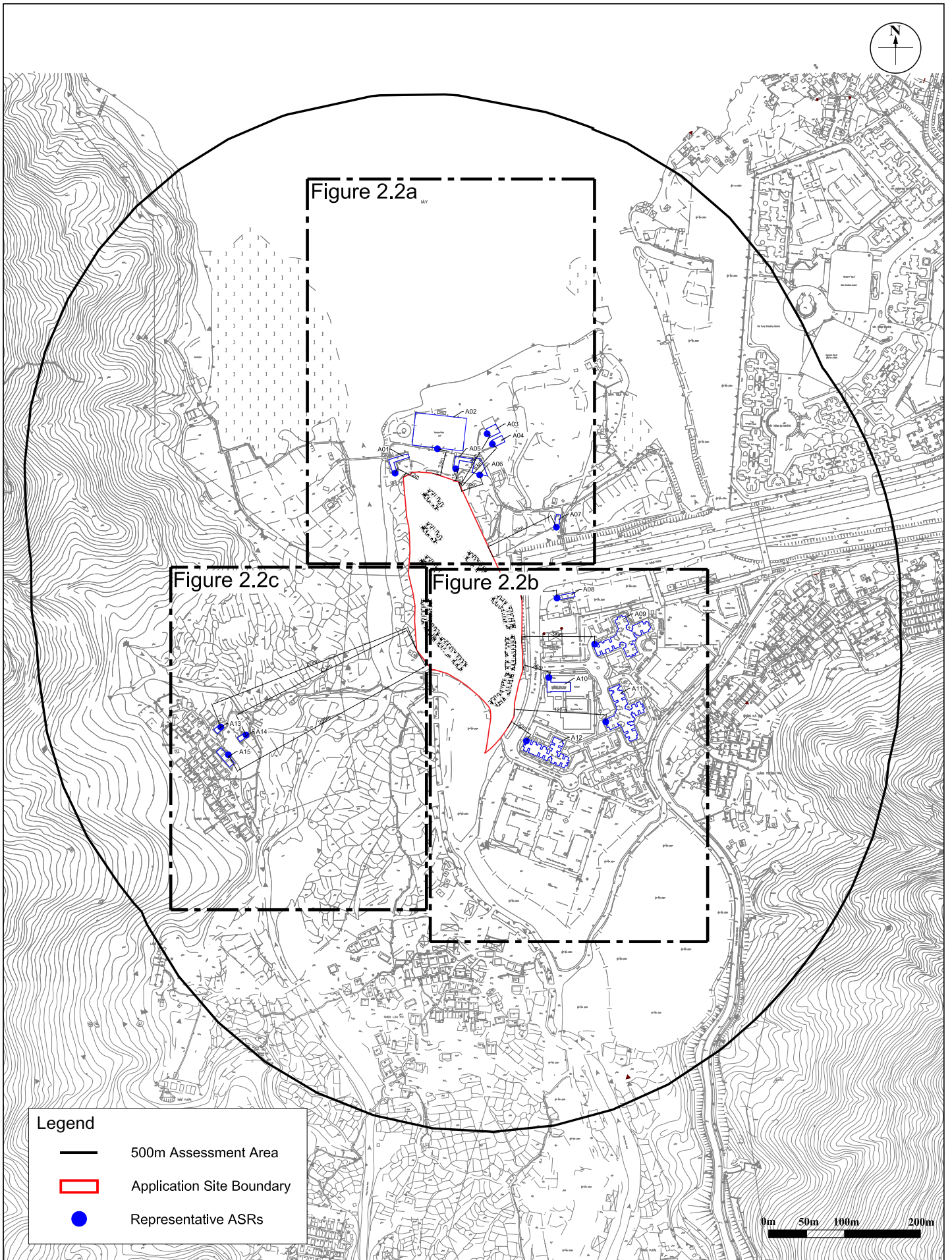
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Drawn by: EC




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Rev.: 2.9

Date: Aug 2024



Legend

-  500m Assessment Area
-  Application Site Boundary
-  Representative ASRs

0m 50m 100m 200m

Figure: 2.2



Title: Representative Air Sensitive Receivers for Air Quality Impact Assessment (Construction Phase)

Drawn by: EC

Checked by: HN

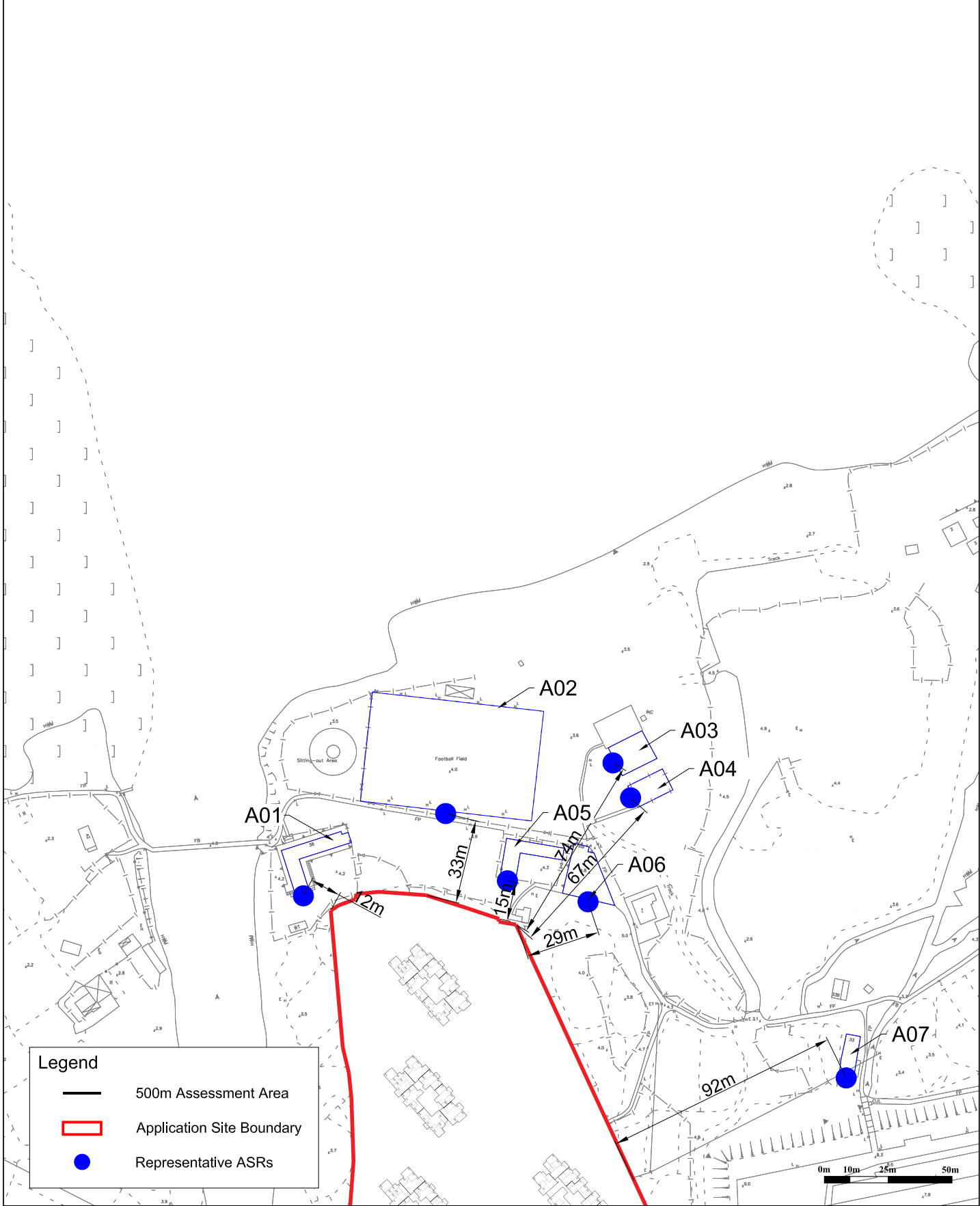
Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone "Residential (Group C)2" Zone to "Residential (Group B)" Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island

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Date: Aug 2024



TUNG CHUNG BAY



Legend




-  500m Assessment Area
-  Application Site Boundary
-  Representative ASRs

Figure: 2.2a

Title: Representative Air Sensitive Receivers for Air Quality Impact Assessment (Sheet 1 of 3)

Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone “Residential (Group C)2” Zone to “Residential (Group B)” Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island



Drawn by: EC

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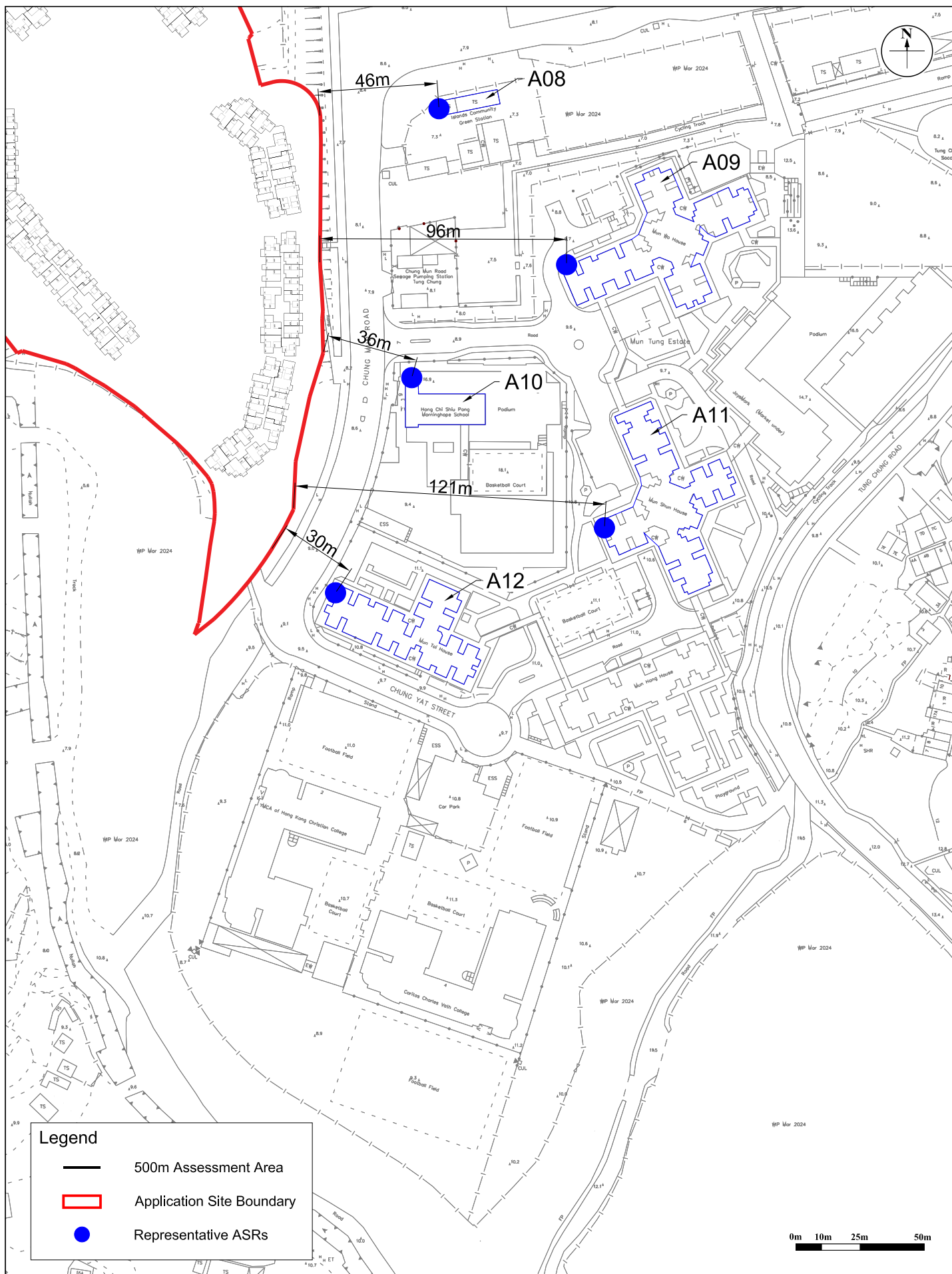


Figure: 2.2b

Title: Representative Air Sensitive Receivers for Air Quality Impact Assessment (Sheet 2 of 3)

Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone “Residential (Group C)2” Zone to “Residential (Group B)” Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island



Drawn by: EC

Checked by: HN

Rev.: 2.9

Date: Aug 2024

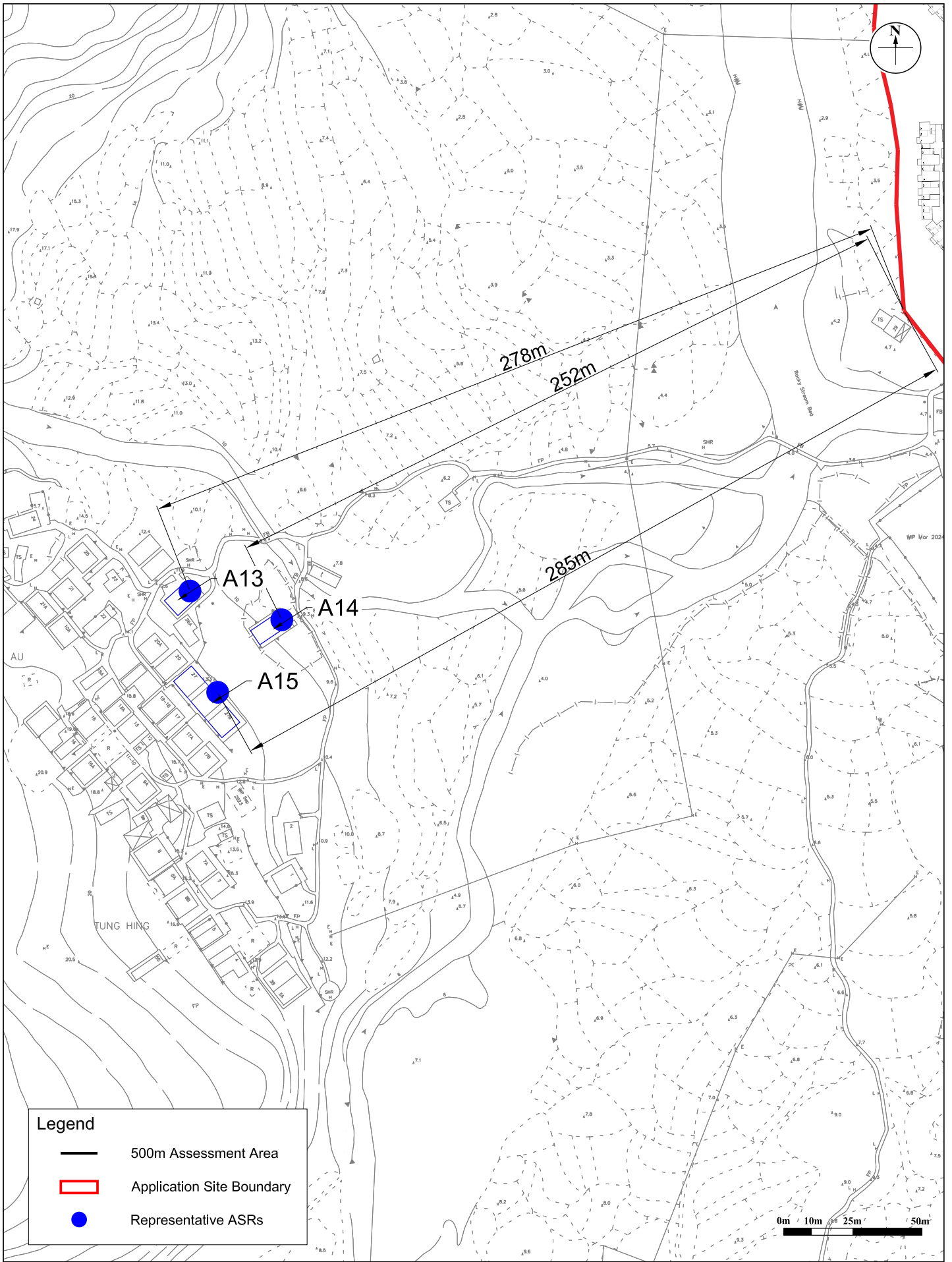


Figure: 2.2c

Title: Representative Air Sensitive Receivers for Air Quality Impact Assessment (Sheet 3 of 3)

Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone “Residential (Group C)2” Zone to “Residential (Group B)” Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island



Drawn by: EC

Checked by: HN

Rev.: 2.9

Date: Aug 2024

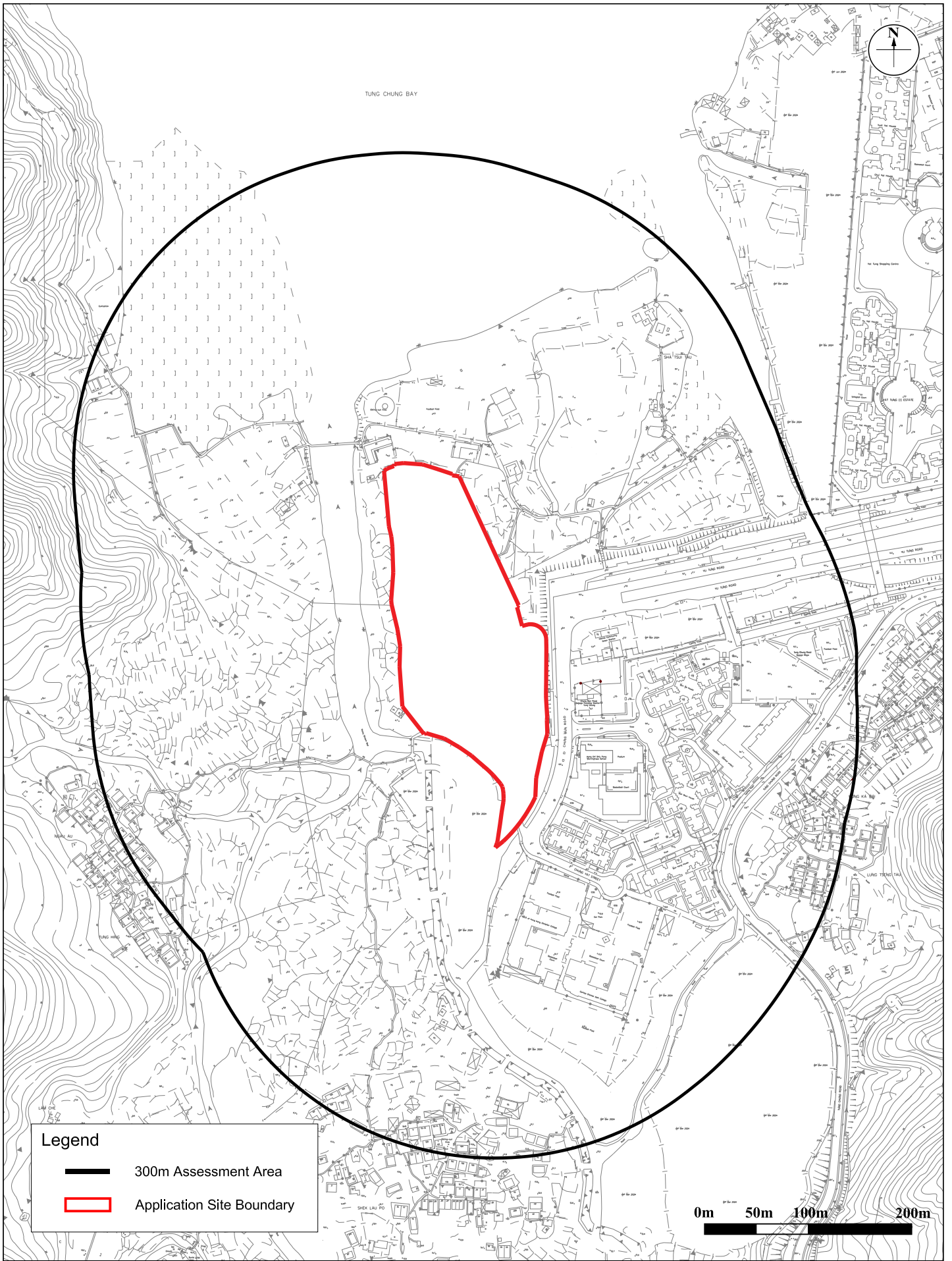


Figure: 3.1

Title: Traffic Noise Impact Assessment Area

Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone “Residential (Group C)2” Zone to “Residential (Group B)” Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island



Drawn by: EC

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Date: Aug 2024

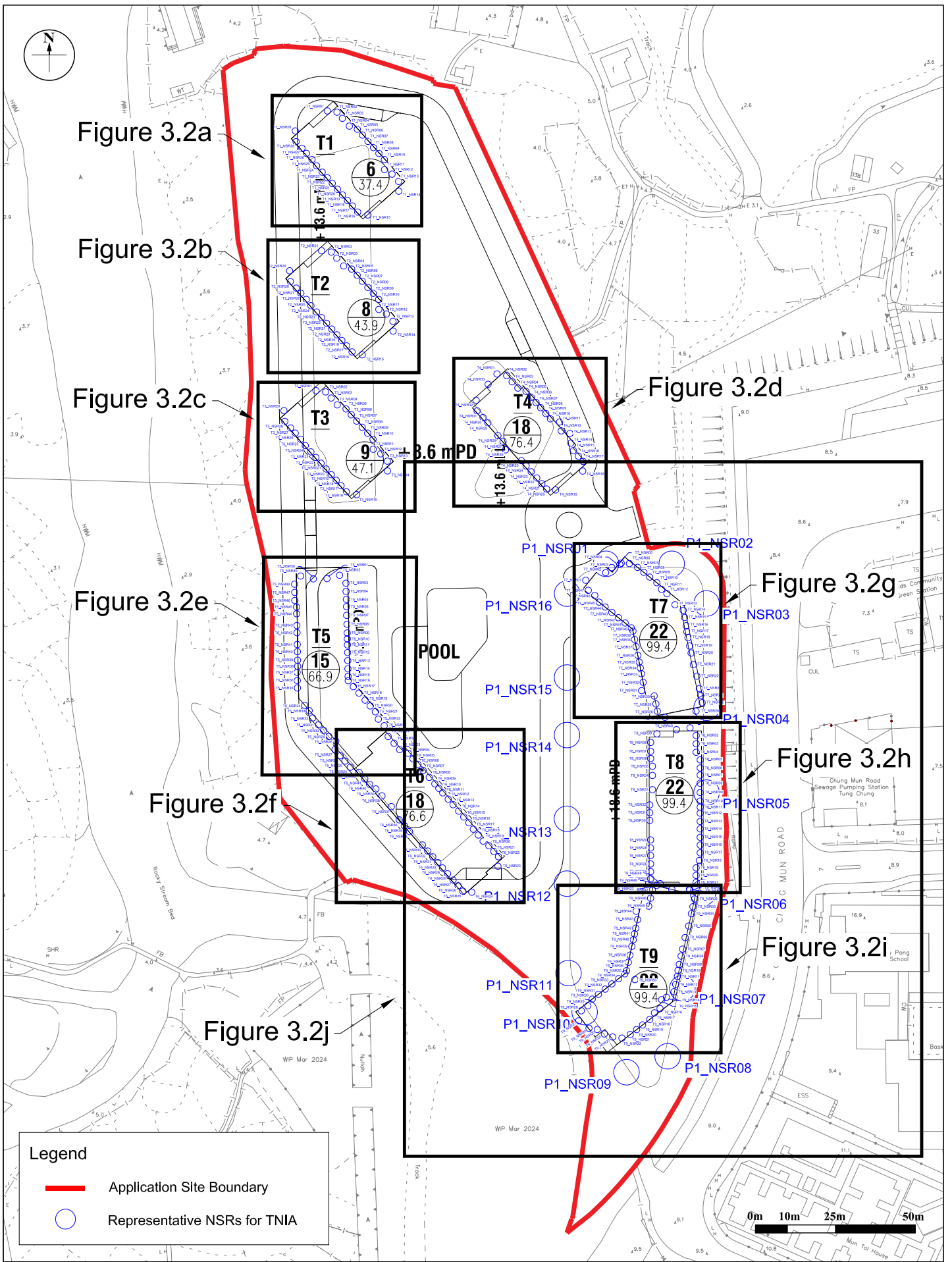


Figure: 3.2

Title: Representative Noise Sensitive Receivers for Traffic Noise Impact Assessment

Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone "Residential (Group C)" Zone to "Residential (Group B)" Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island

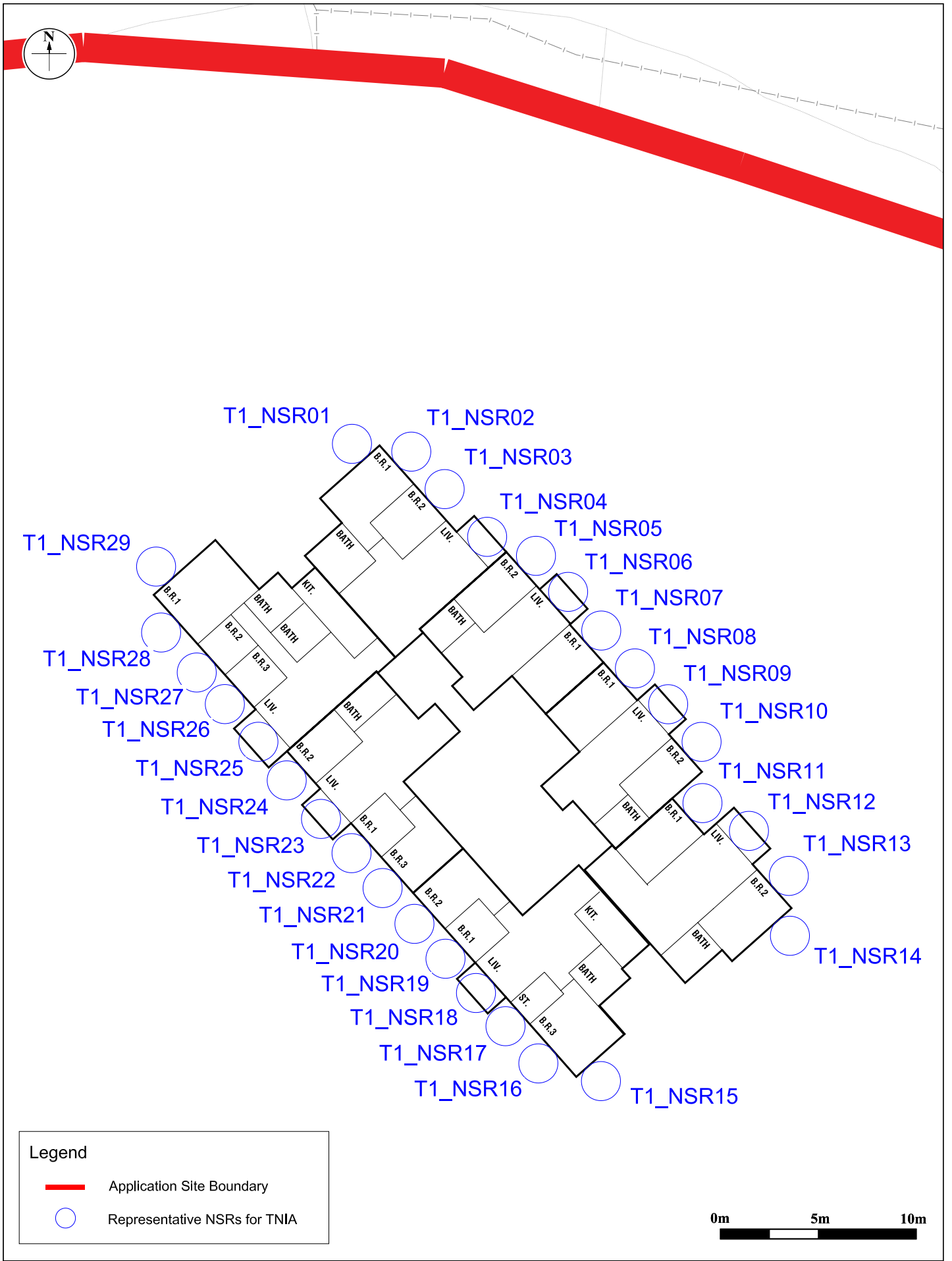


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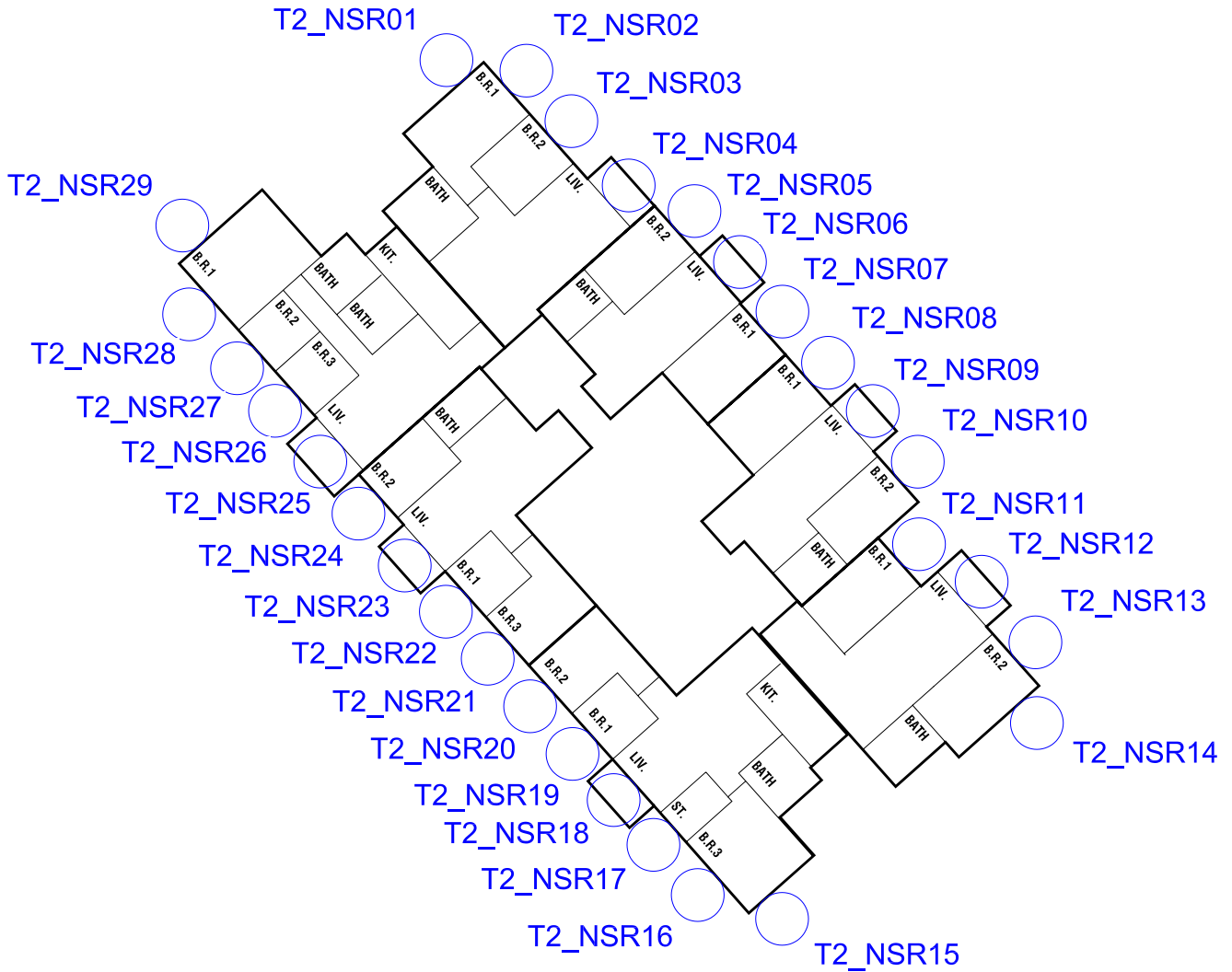


Legend

- Application Site Boundary
- Representative NSRs for TNIA

0m 5m 10m

Figure: 3.2a		
Title: Representative Noise Sensitive Receivers for Traffic Noise Impact Assessment (Tower 1)		Drawn by: EC
		Checked by: HN
Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone "Residential (Group C)2" Zone to "Residential (Group B)" Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island		Rev.: 2.9
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Legend

- Application Site Boundary
- Representative NSRs for TNIA

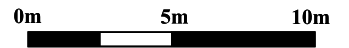


Figure: 3.2b



Title: Representative Noise Sensitive Receivers for Traffic Noise Impact Assessment (Tower 2)

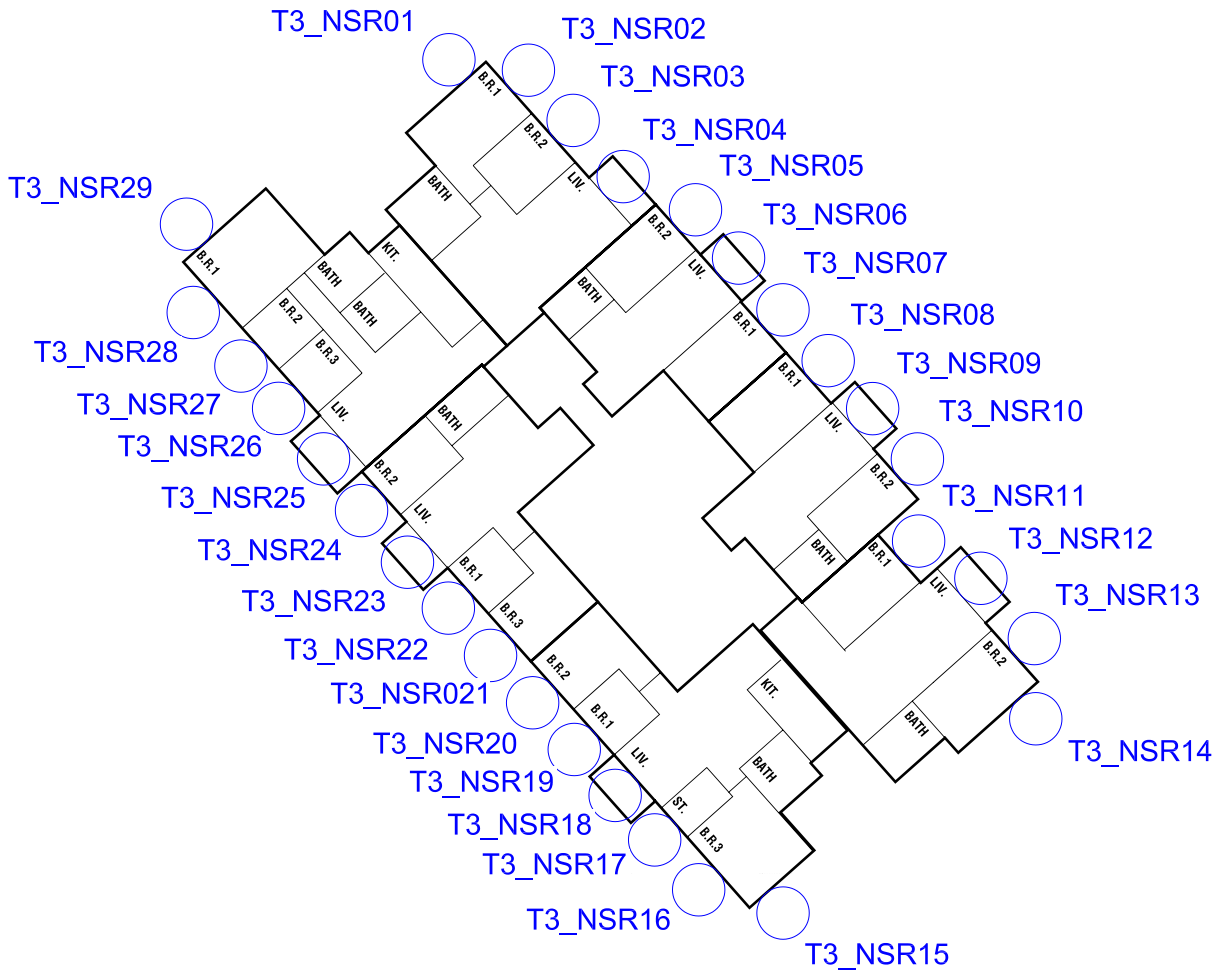
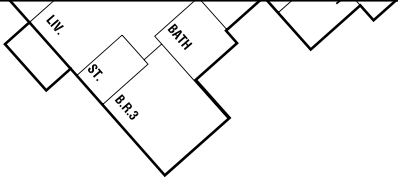
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Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone "Residential (Group C)2" Zone to "Residential (Group B)" Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island

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Legend

- Application Site Boundary
- Representative NSRs for TNIA

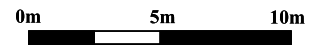
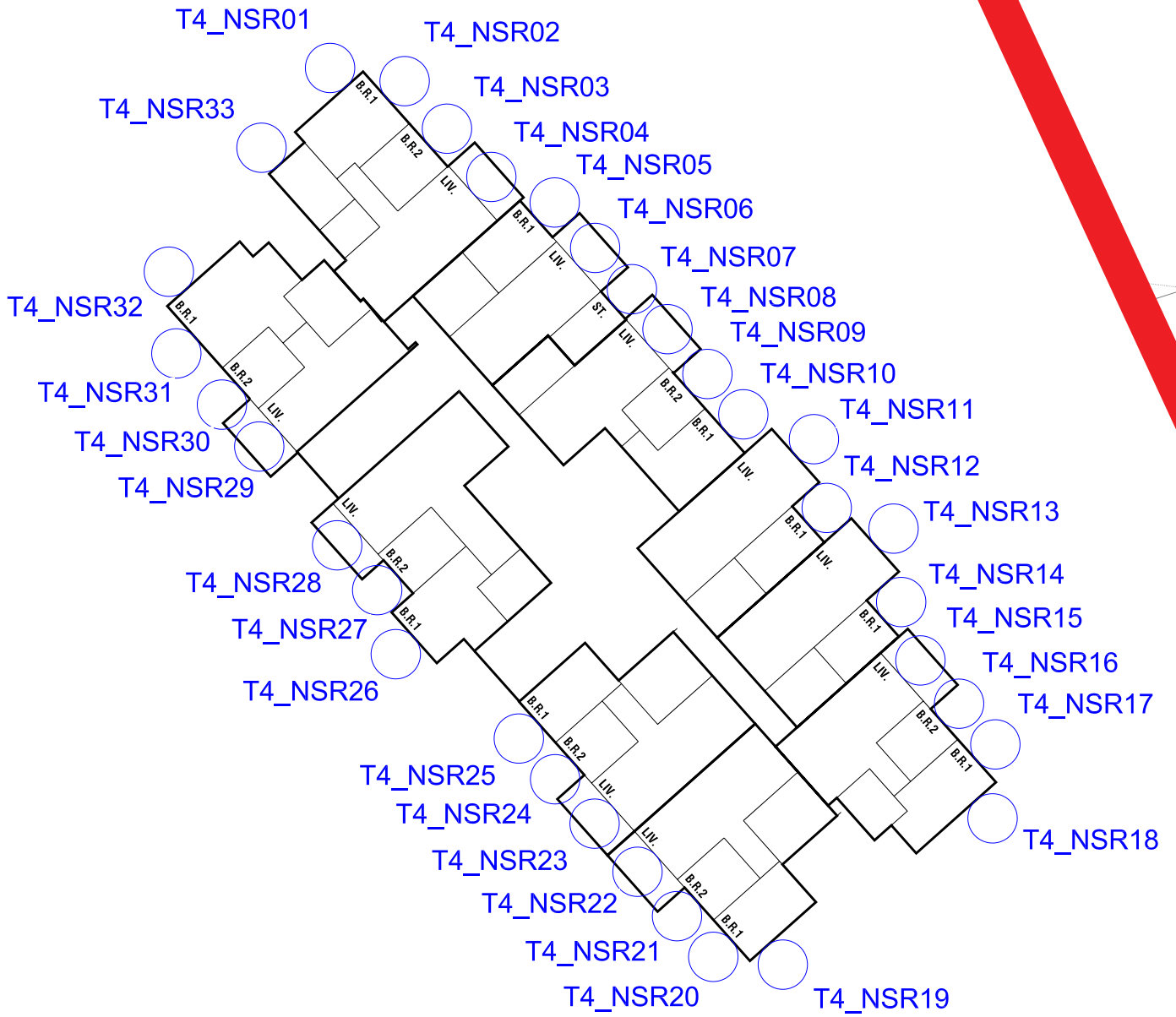


Figure: 3.2c		
Title: Representative Noise Sensitive Receivers for Traffic Noise Impact Assessment (Tower 3)		Drawn by: EC
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Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone "Residential (Group C)2" Zone to "Residential (Group B)" Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island		Rev.: 2.9
		Date: Aug 2024



Legend

-  Application Site Boundary
-  Representative NSRs for TNIA

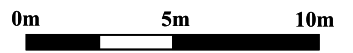



Figure: 3.2d	
Title: Representative Noise Sensitive Receivers for Traffic Noise Impact Assessment (Tower 4)	Drawn by: EC
Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone "Residential (Group C)2" Zone to "Residential (Group B)" Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island	Checked by: HN
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	Date: Aug 2024

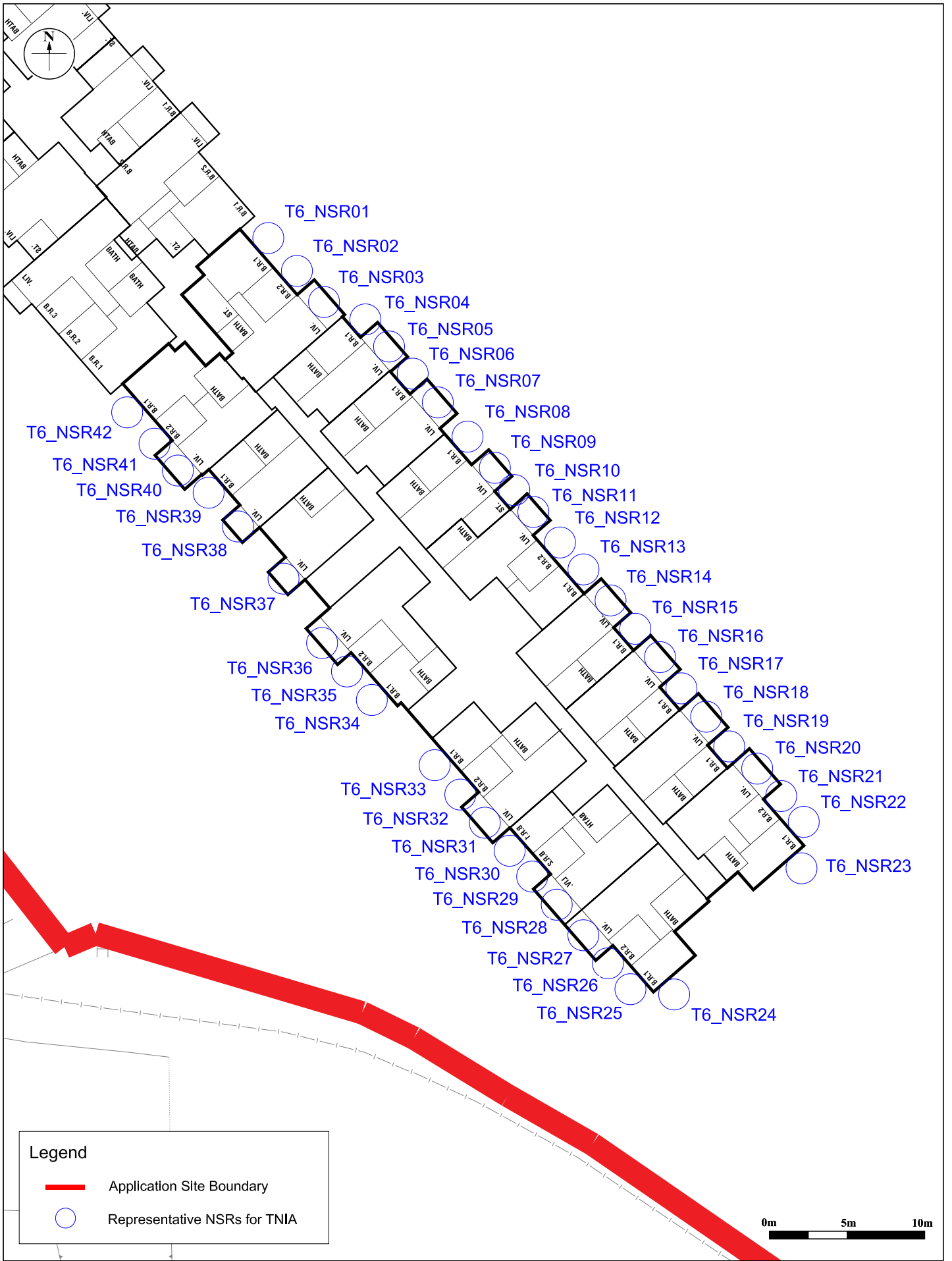


Figure: 3.2f

Title: Representative Noise Sensitive Receivers for Traffic Noise Impact Assessment (Tower 6)

Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone "Residential (Group C)2" Zone to "Residential (Group B)" Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island

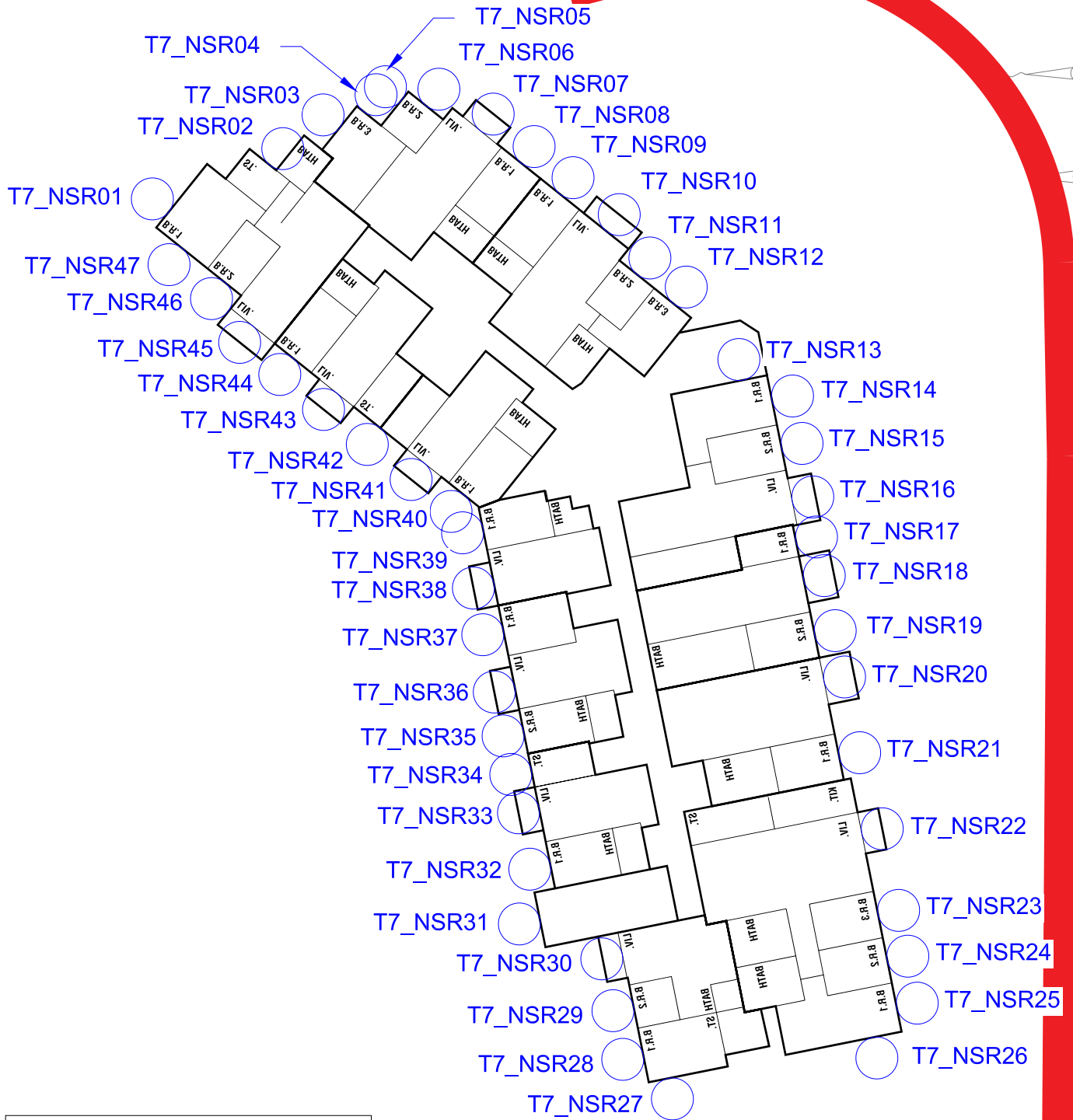


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Date: Aug 2024



Legend

- Application Site Boundary
- Representative NSRs for TNIA

Figure: 3.2g

Title: Representative Noise Sensitive Receivers for Traffic Noise Impact Assessment (Tower 7)

Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone "Residential (Group C)2" Zone to "Residential (Group B)" Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island

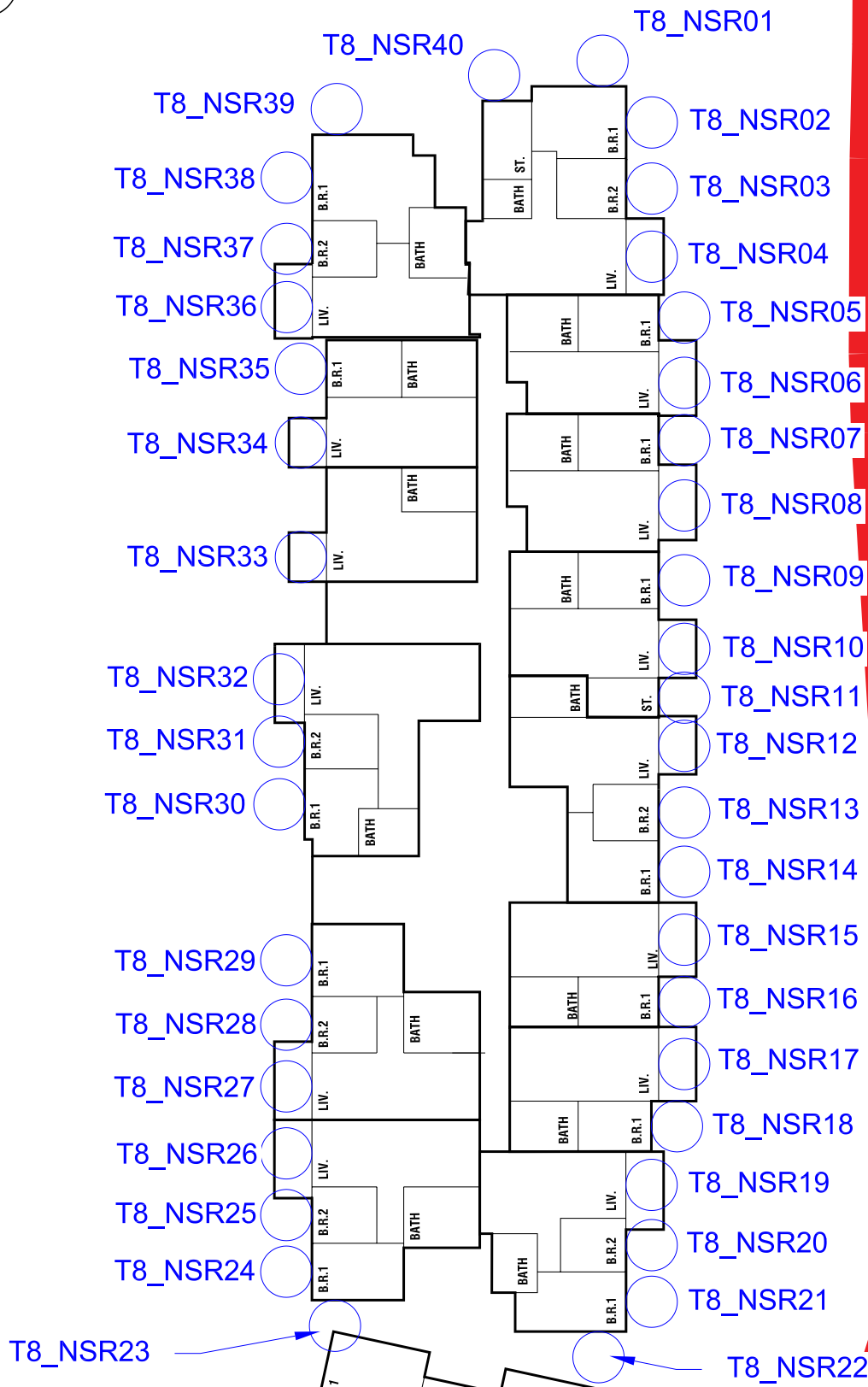


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0m 5m 10m

Legend

- Application Site Boundary
- Representative NSRs for TNIA

Figure: 3.2h



Title: Representative Noise Sensitive Receivers for Traffic Noise Impact Assessment (Tower 8)

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Checked by: HN

Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone "Residential (Group C)2" Zone to "Residential (Group B)" Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island

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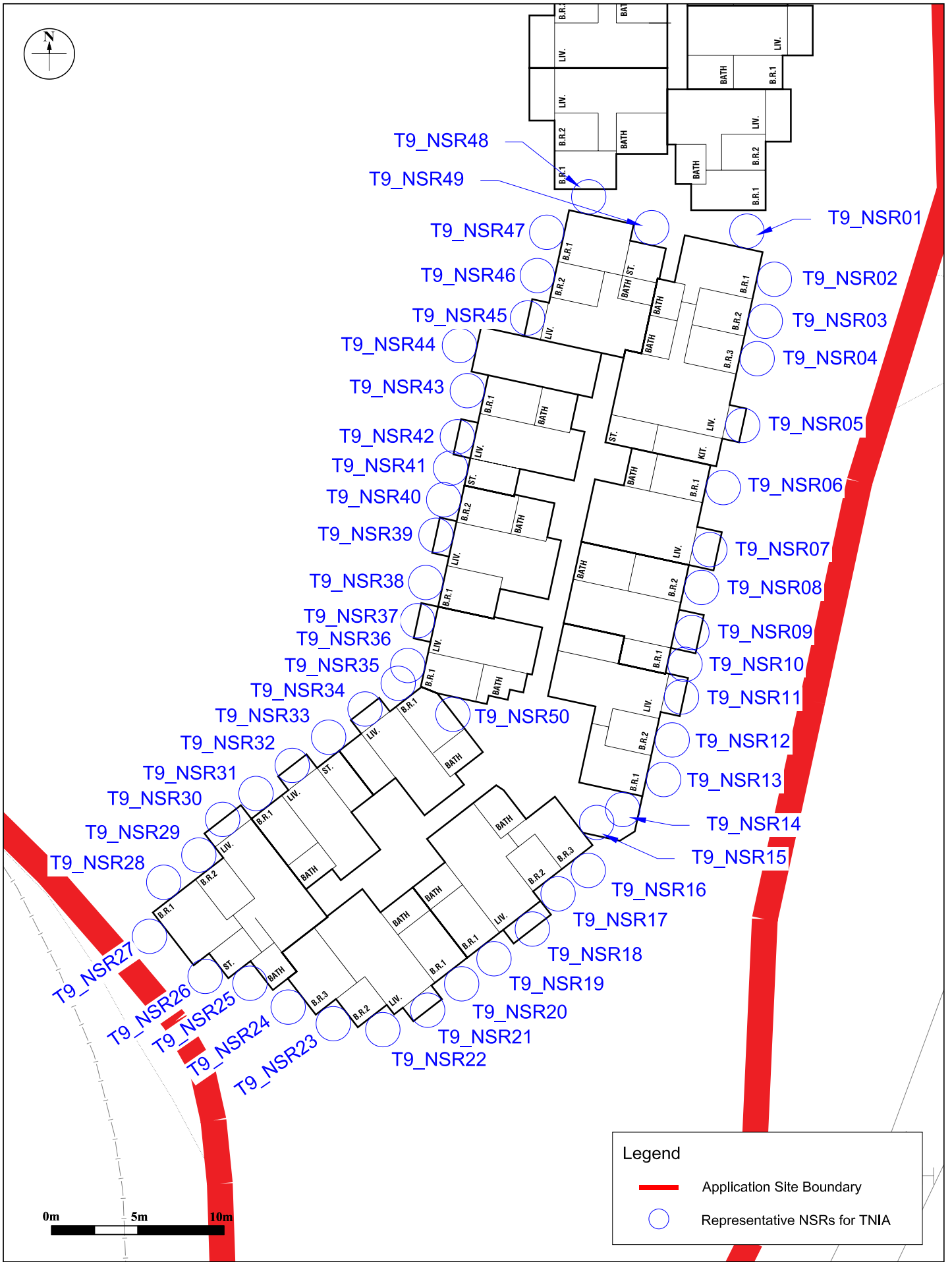


Figure: 3.2i

Title: Representative Noise Sensitive Receivers for Traffic Noise Impact Assessment (Tower 9)

Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone "Residential (Group C)2" Zone to "Residential (Group B)" Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island

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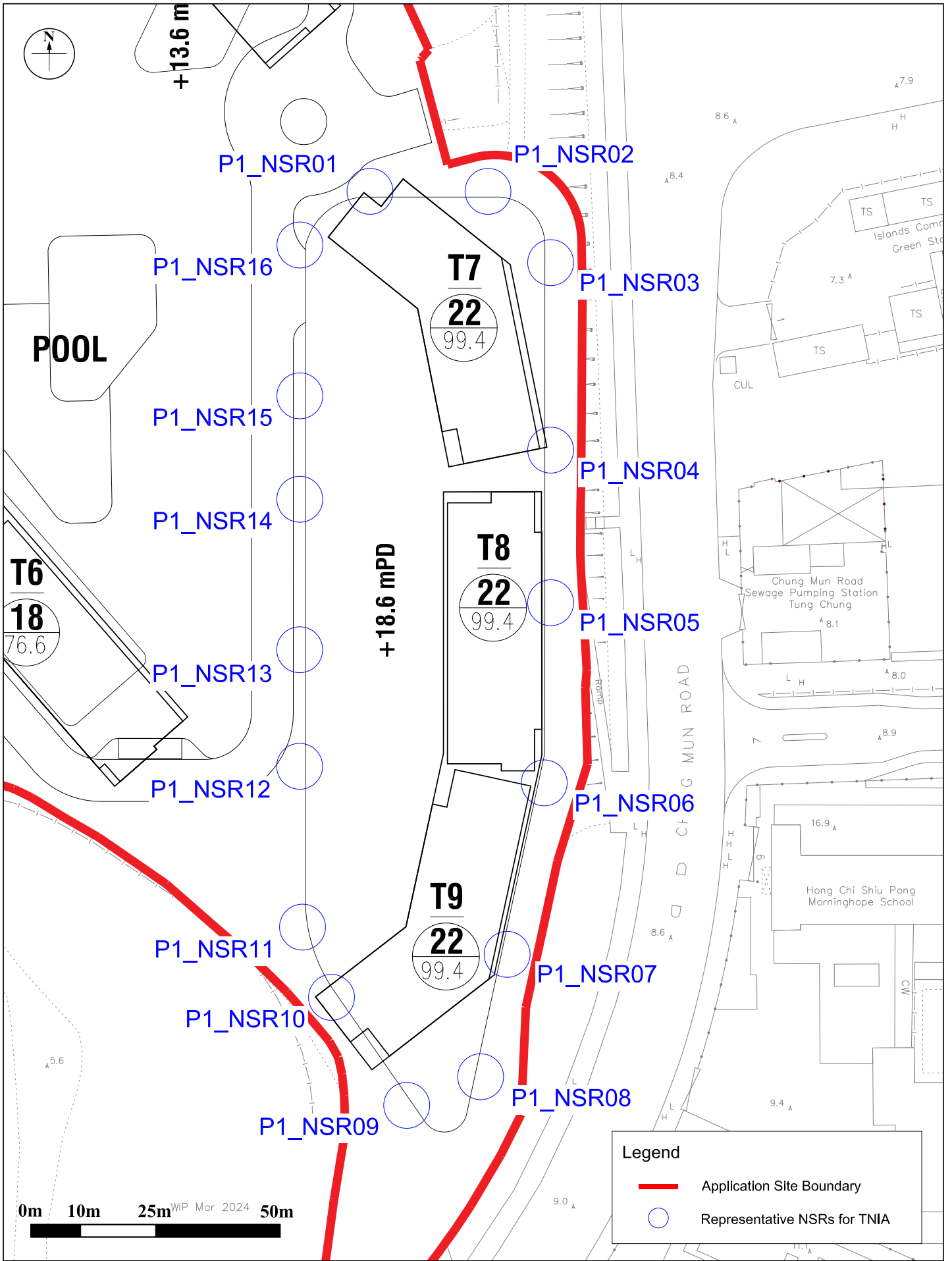


Figure: 3.2j

Title: Representative Noise Sensitive Receivers for Traffic Noise Impact Assessment (Kindergarten)

Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone "Residential (Group C)2" Zone to "Residential (Group B)" Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island



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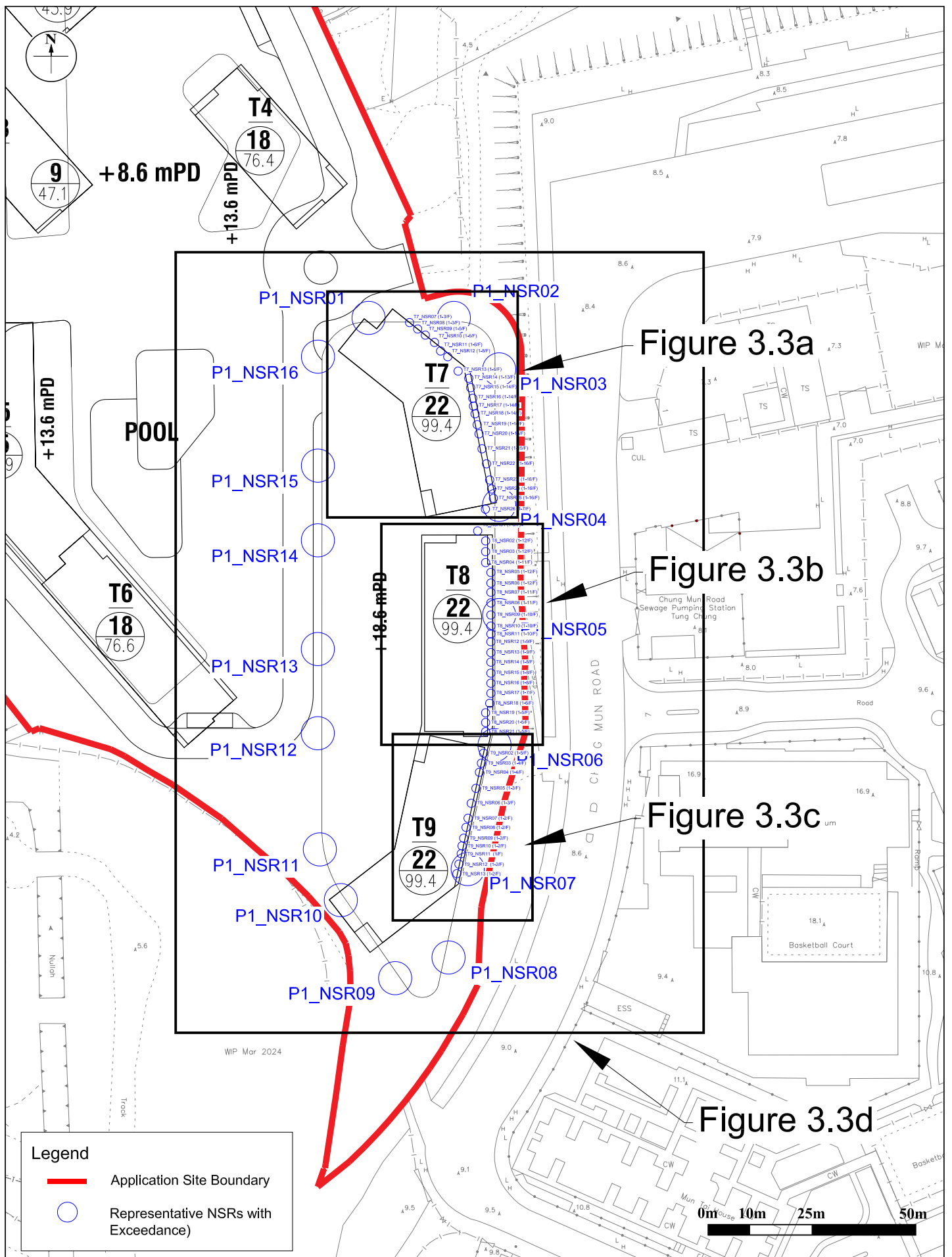


Figure: 3.3

Title: Location of Proposed Noise Mitigation Measures at Proposed Development

Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone "Residential (Group C)" Zone to "Residential (Group B)" Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island

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Date: Nov 2024

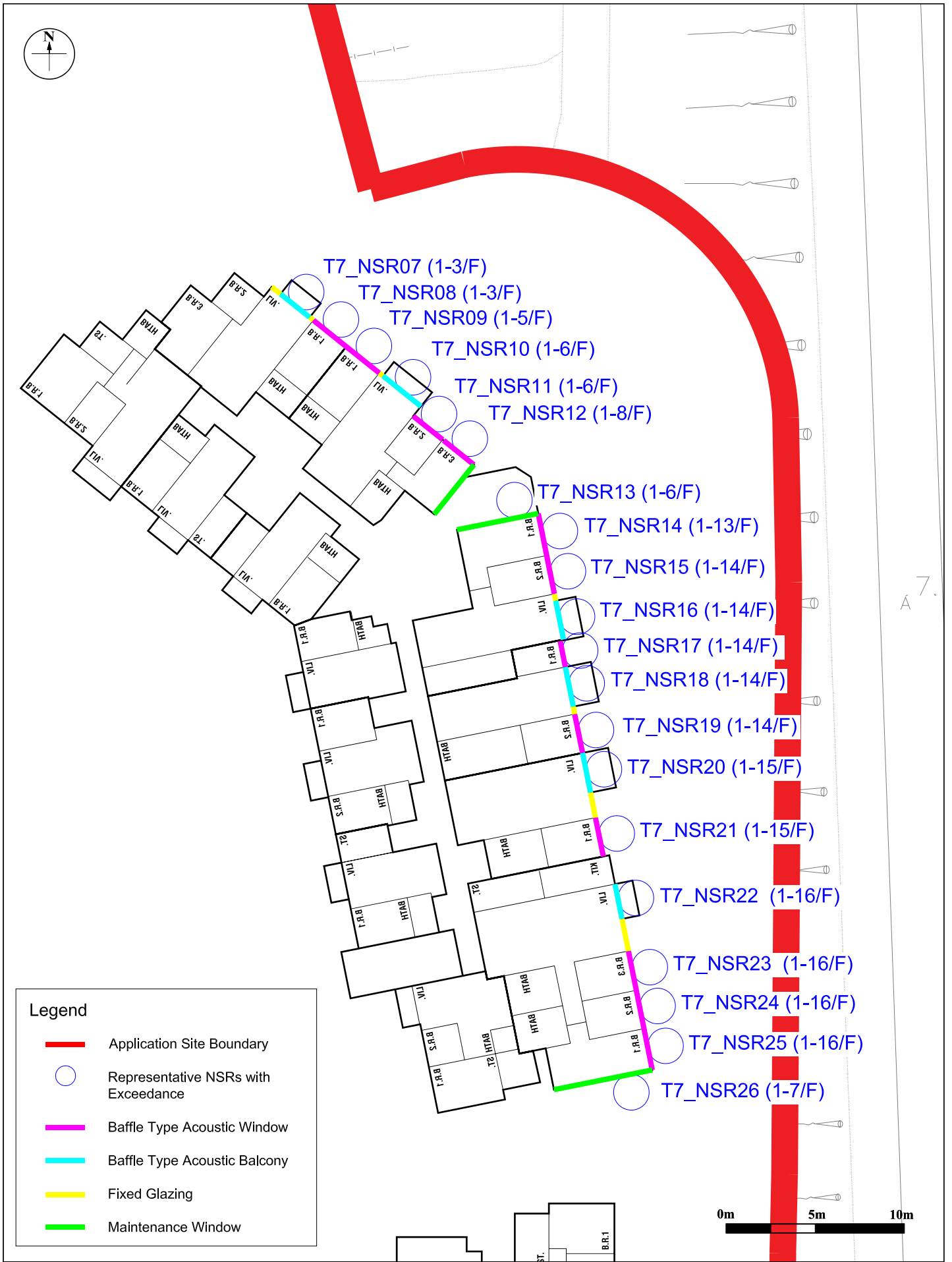


Figure: 3.3a

Title: Location of Proposed Noise Mitigation Measures at Proposed Development (Tower 7)

Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone "Residential (Group C)2" Zone to "Residential (Group B)" Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island

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Date: Nov 2024



T8_NSR01 (1-6/F)

T8_NSR02 (1-12/F)

T8_NSR03 (1-12/F)

T8_NSR04 (1-11/F)

T8_NSR05 (1-12/F)

T8_NSR06 (1-12/F)

T8_NSR07 (1-11/F)

T8_NSR08 (1-11/F)

T8_NSR09 (1-10/F)

T8_NSR10 (1-10/F)

T8_NSR11 (1-10/F)

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Legend








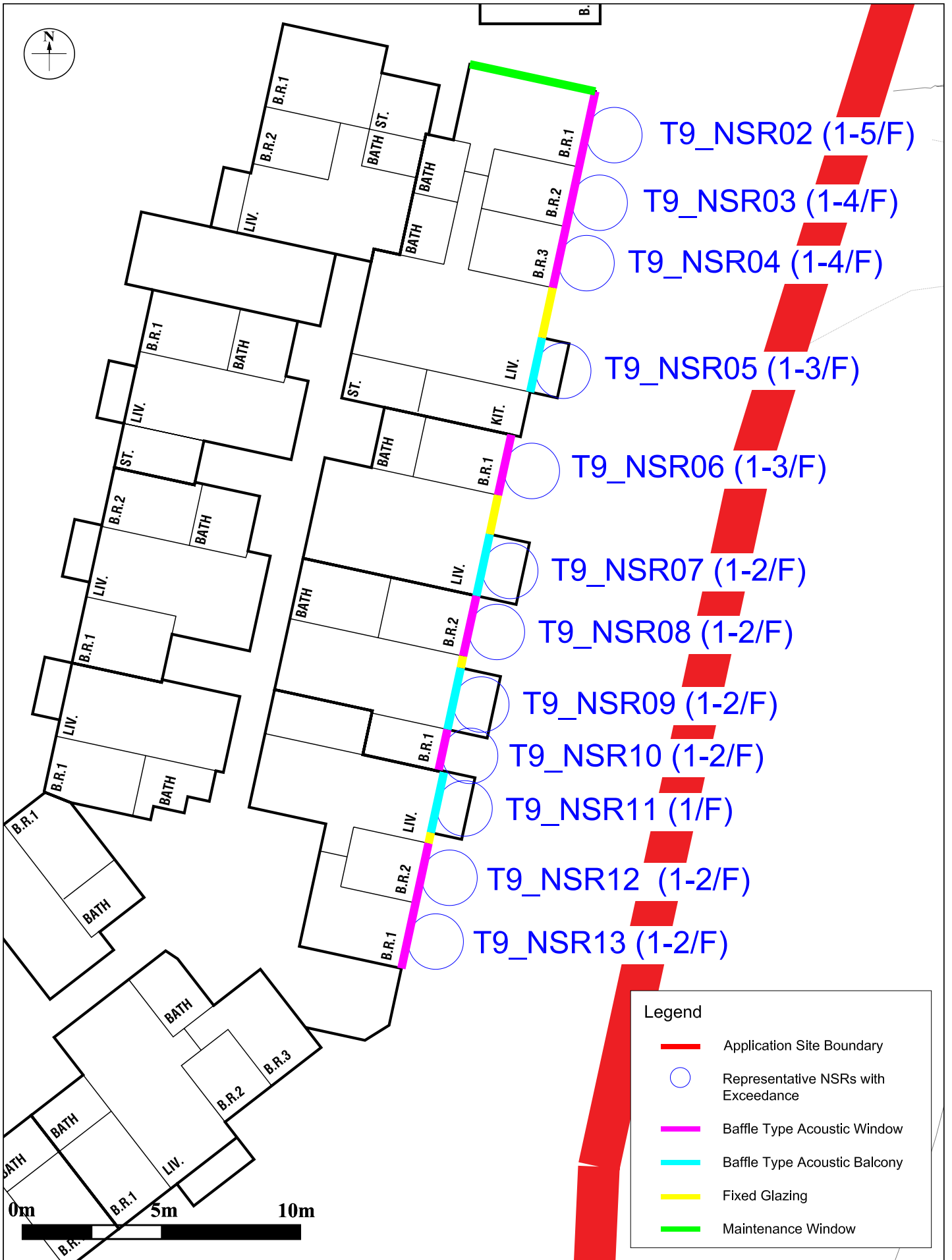
-  Application Site Boundary
-  Representative NSRs with Exceedance
-  Baffle Type Acoustic Window
-  Baffle Type Acoustic Balcony
-  Fixed Glazing
-  Maintenance Window



Figure: 3.3b	Title: Location of Proposed Noise Mitigation Measures at Proposed Development (Tower 8)	
		Drawn by: EC
		Checked by: HN
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Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone "Residential (Group C)2" Zone to "Residential (Group B)" Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island	Date: Nov 2024	



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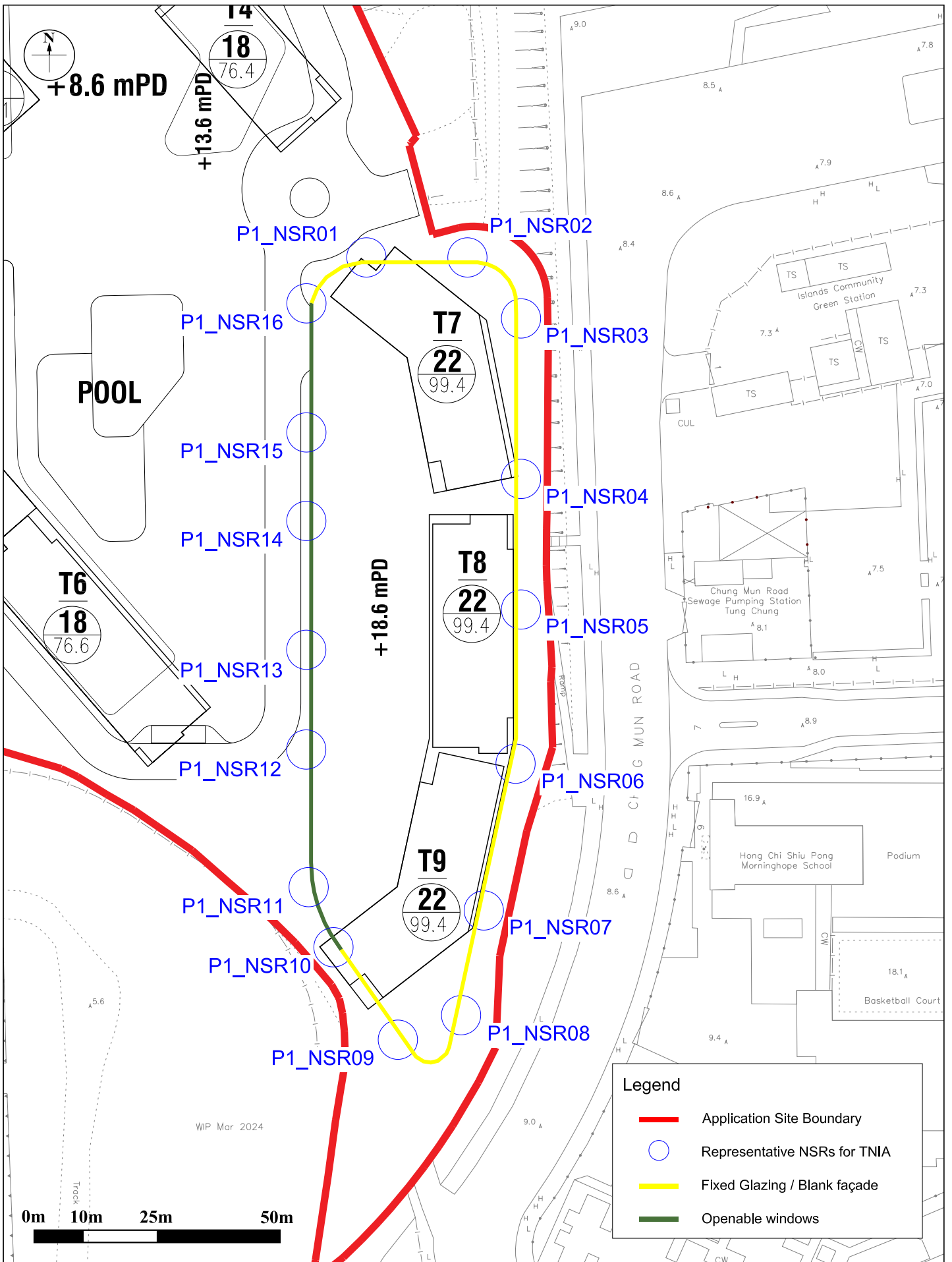


Figure: 3.3d

Title: Location of Proposed Noise Mitigation Measures at Proposed Development (Kindergarten)

Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone "Residential (Group C)2" Zone to "Residential (Group B)" Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island

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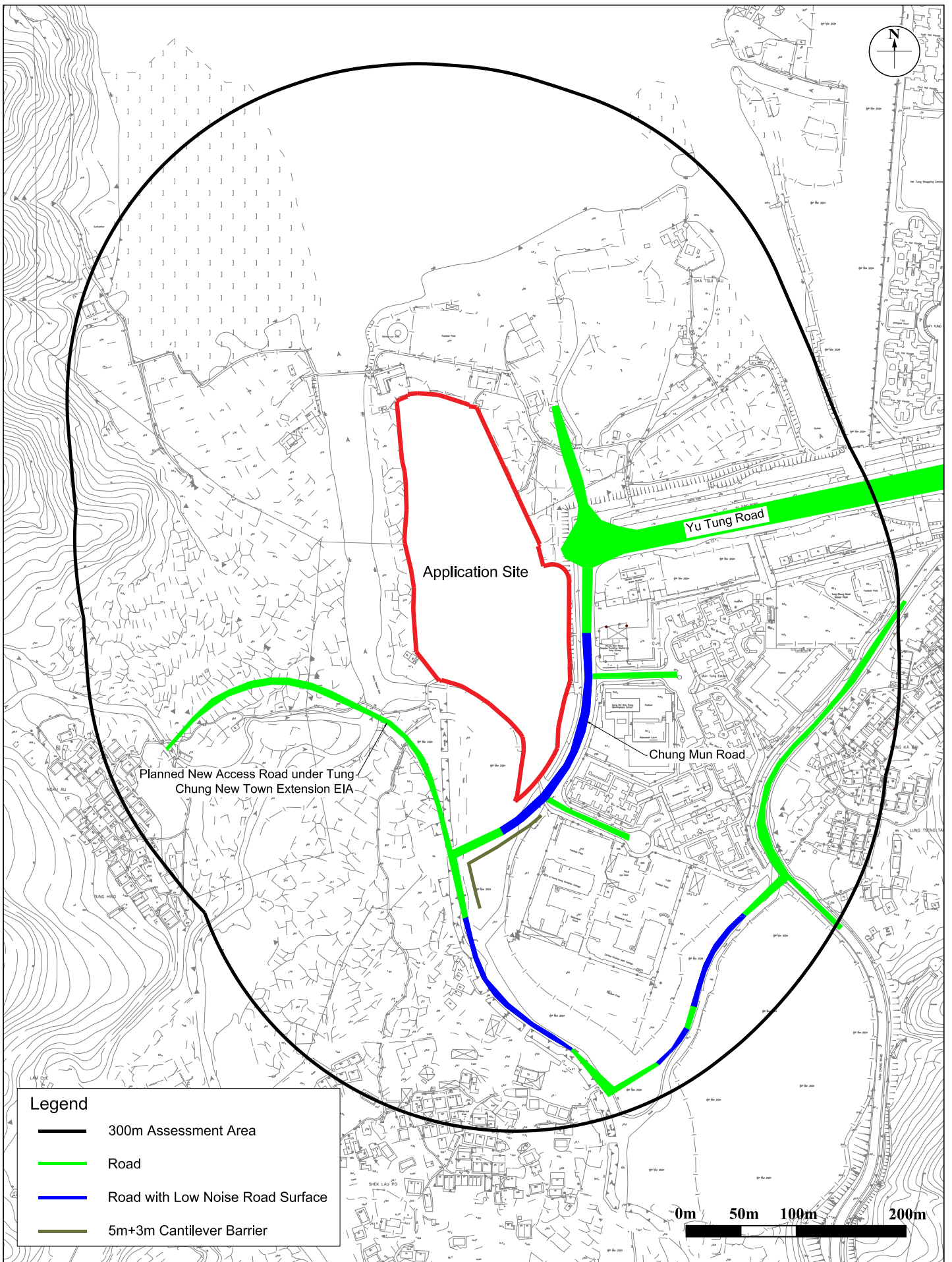


Figure: 3.4

Title: Location of Noise Barrier and Low Noise Road Surface

Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone “Residential (Group C)2” Zone to “Residential (Group B)” Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island



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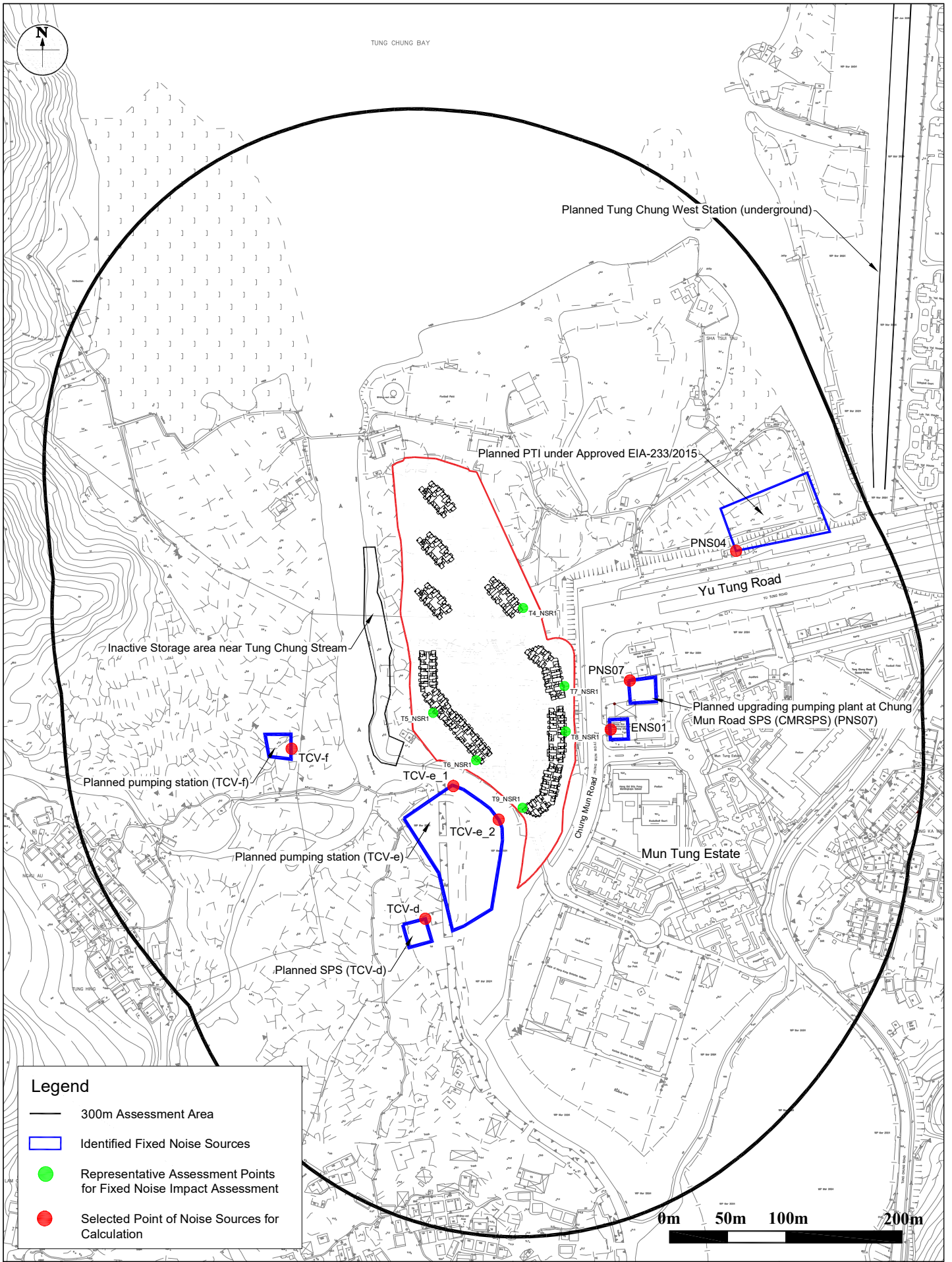


Figure: 4.1

Title: Location of Identified Industrial Noise Sources and Representative Assessment Points for Industrial Noise Impact Assessment

Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone “Residential (Group C)2” Zone to “Residential (Group B)” Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island



Drawn by: EC

Checked by: HN

Rev.: 2.9

Date: Sep 2024



Legend



Application Site Boundary



Location of Background Noise Measurement

Figure: 4.2

Title: Background Noise Measurement Location

Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone “Residential (Group C)2” Zone to “Residential (Group B)” Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island



Drawn by: EC

Checked by: HN

Rev.: 2.9

Date: Nov 2024

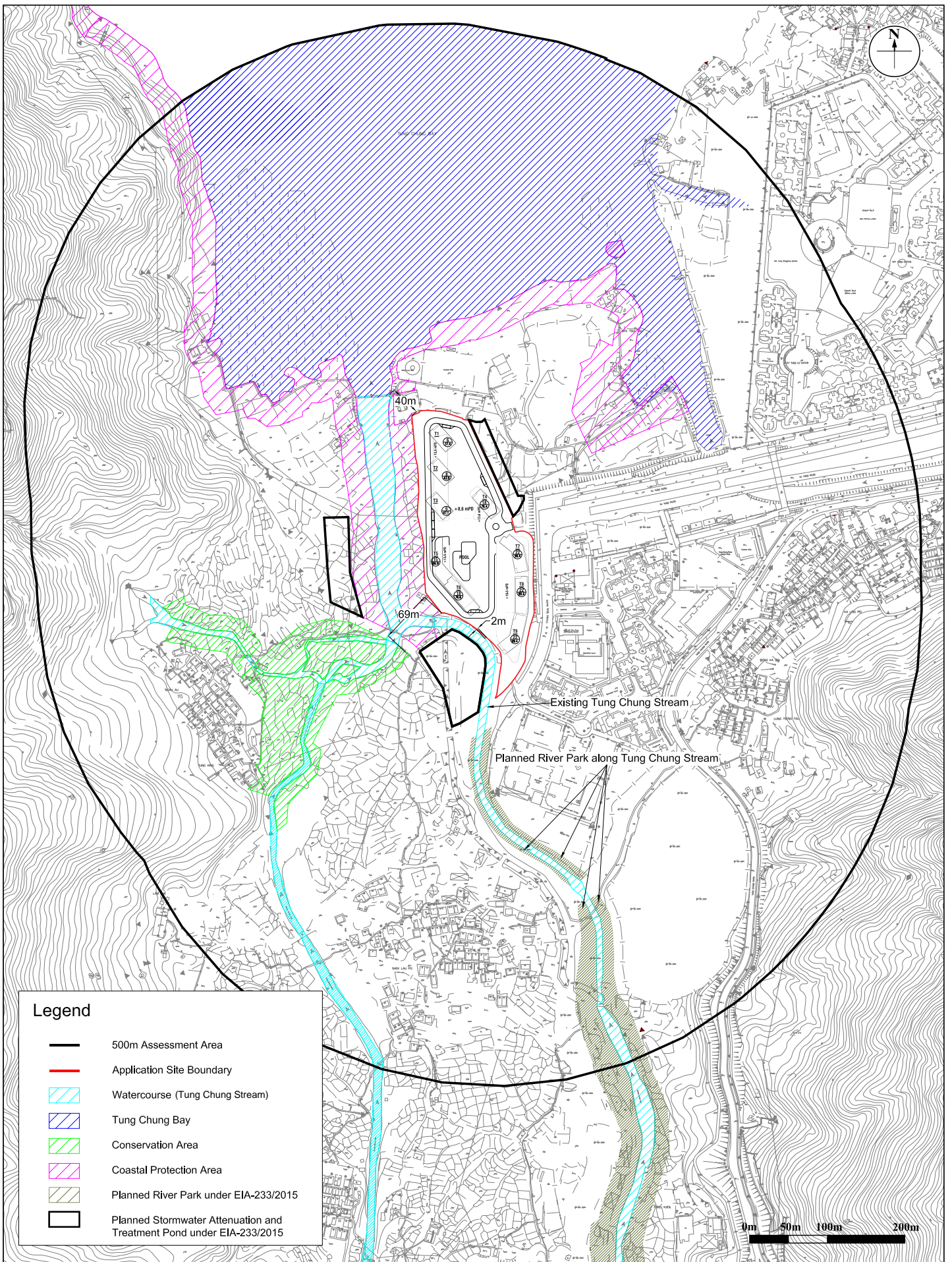


Figure: 5.1

Title: Location of Water Sensitive Receivers

Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone “Residential (Group C)2” Zone to “Residential (Group B)” Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island

RAMBOLL

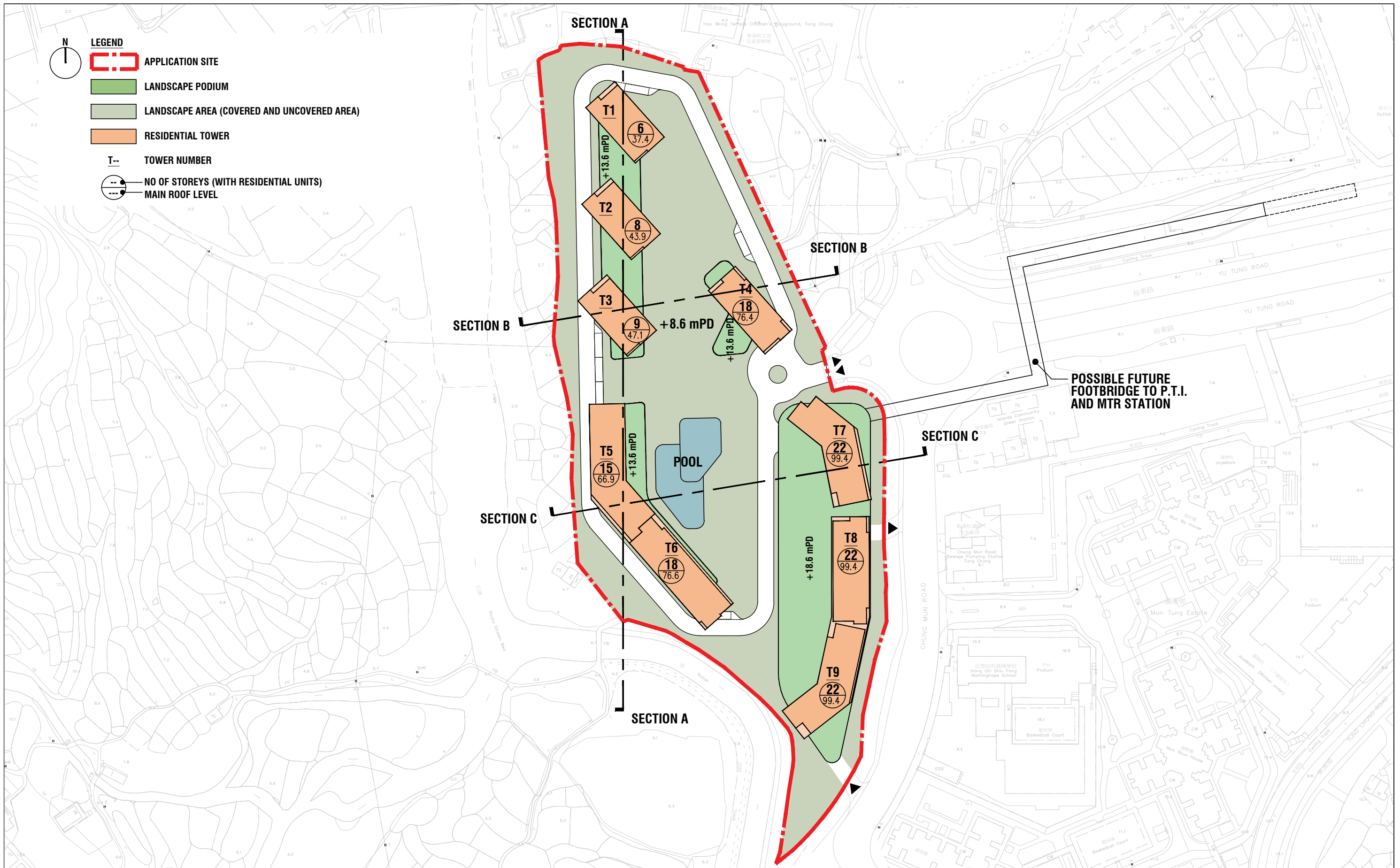
Drawn by: EC

Checked by: HN

Rev.: 2.9

Date: Aug 2024





**Appendix 1.1
Master Layout Plan**



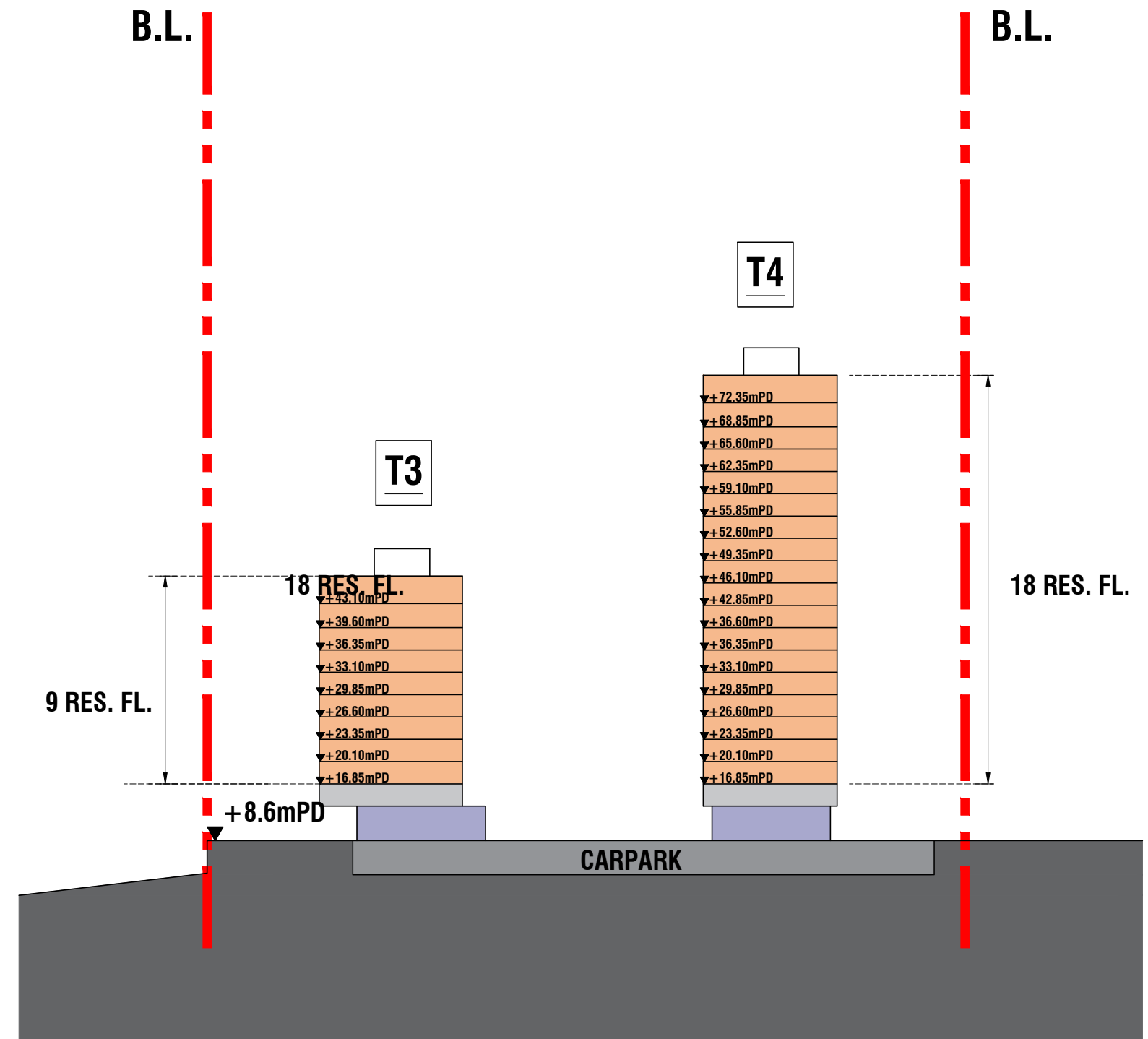
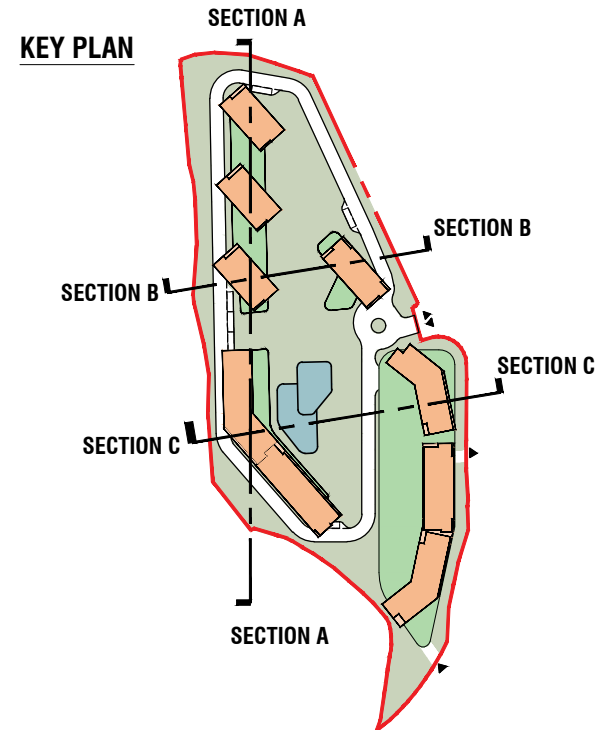
MASTER LAYOUT PLAN

SECTION 12A PLANNING APPLICATION FOR PROPOSED AMENDMENTS TO THE TUNG CHUNG VALLEY OUTLINE ZONING PLAN TO REZONE "RESIDENTIAL (GROUP C) 2" TO "RESIDENTIAL (GROUP B)" ZONE IN SUPPORT OF PRIVATE RESIDENTIAL DEVELOPMENT AT VARIOUS LOTS IN D.D. 1 TC AND ADJOINING GOVERNMENT LAND, TUNG CHUNG, LANTAU ISLAND.




LEGEND

-  APPLICATION SITE
-  RESIDENTIAL TOWER
-  PODIUM
(CLUBHOUSE/ RESIDENTIAL LOBBY/ E&M FACILITIES)
-  TRANSFER PLATE

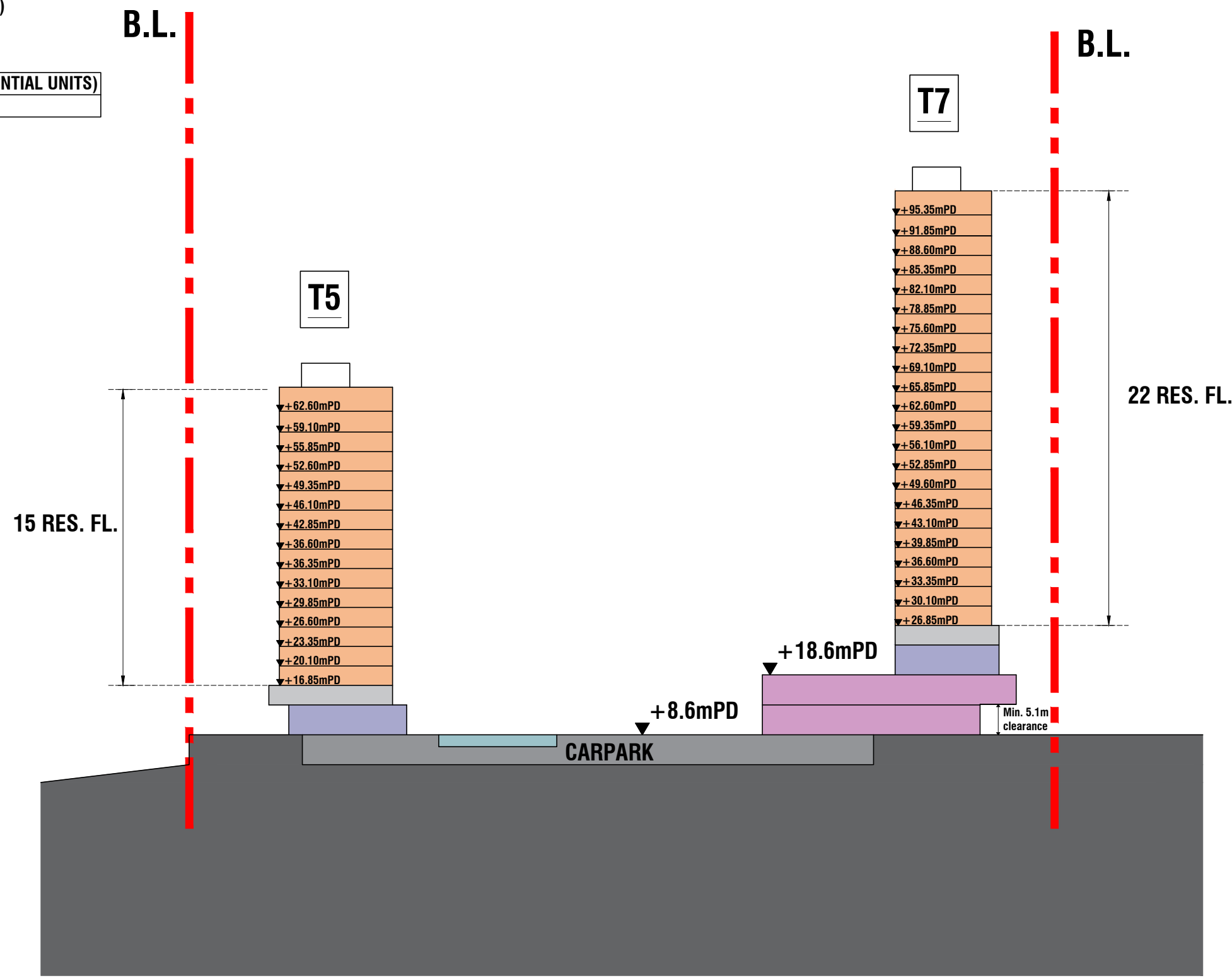
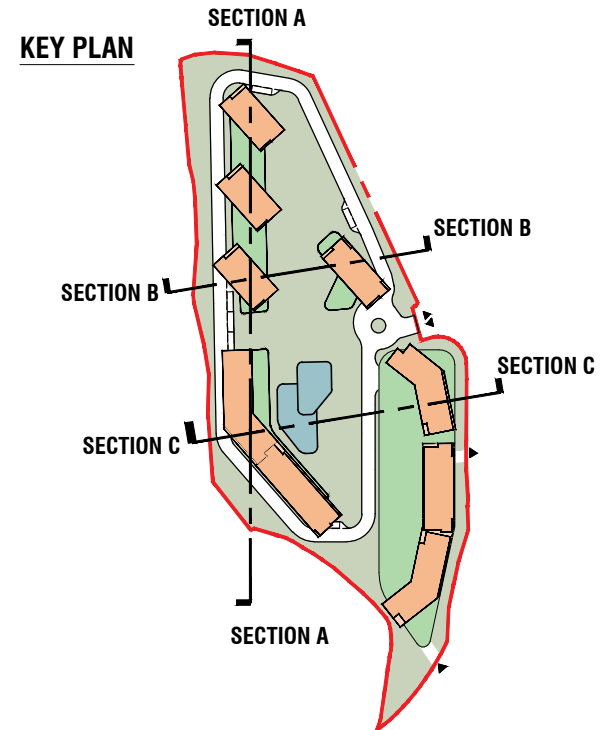
TOWER NO.	NO OF STOREYS (WITH RESIDENTIAL UNITS) MAIN ROOF LEVEL
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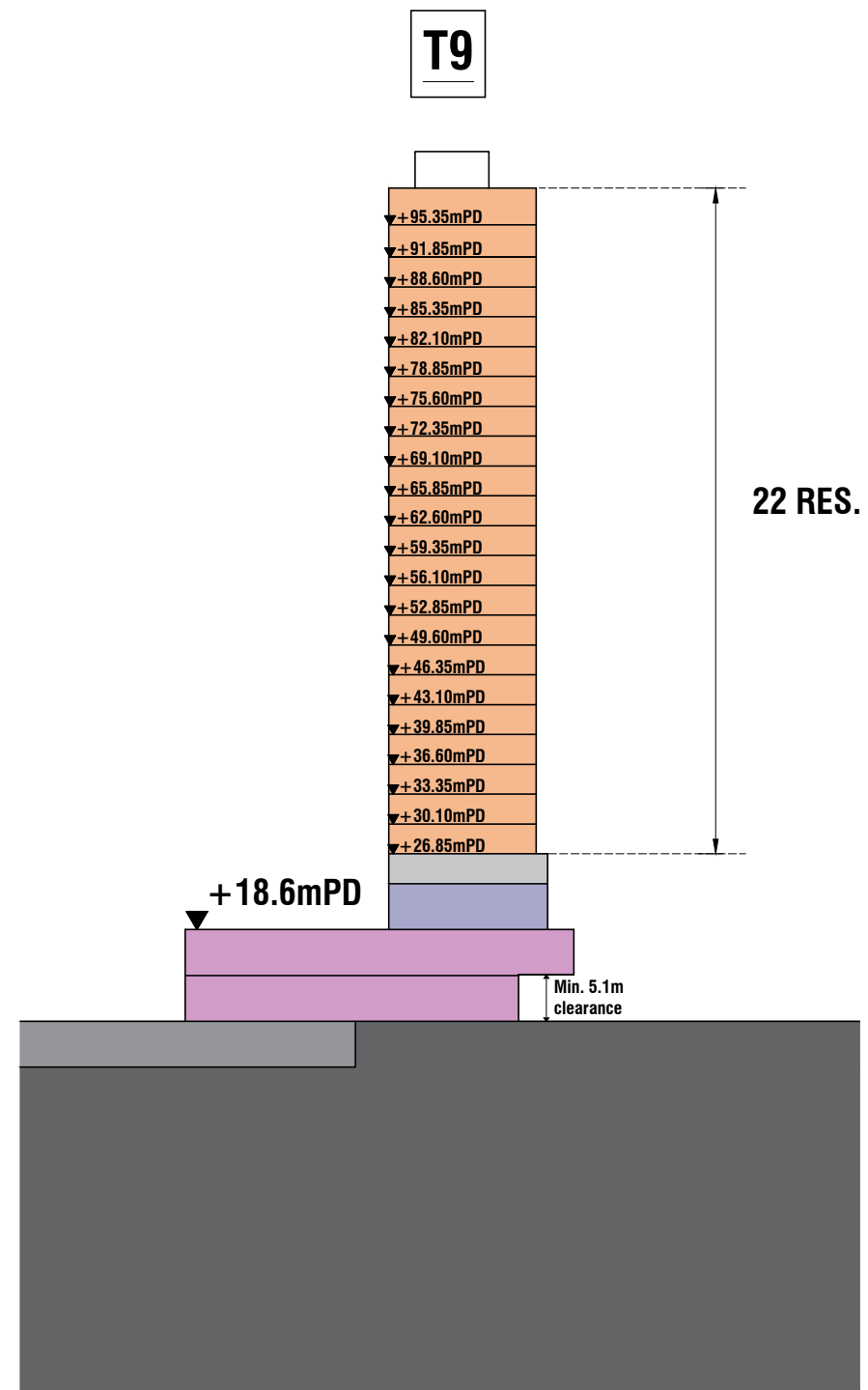
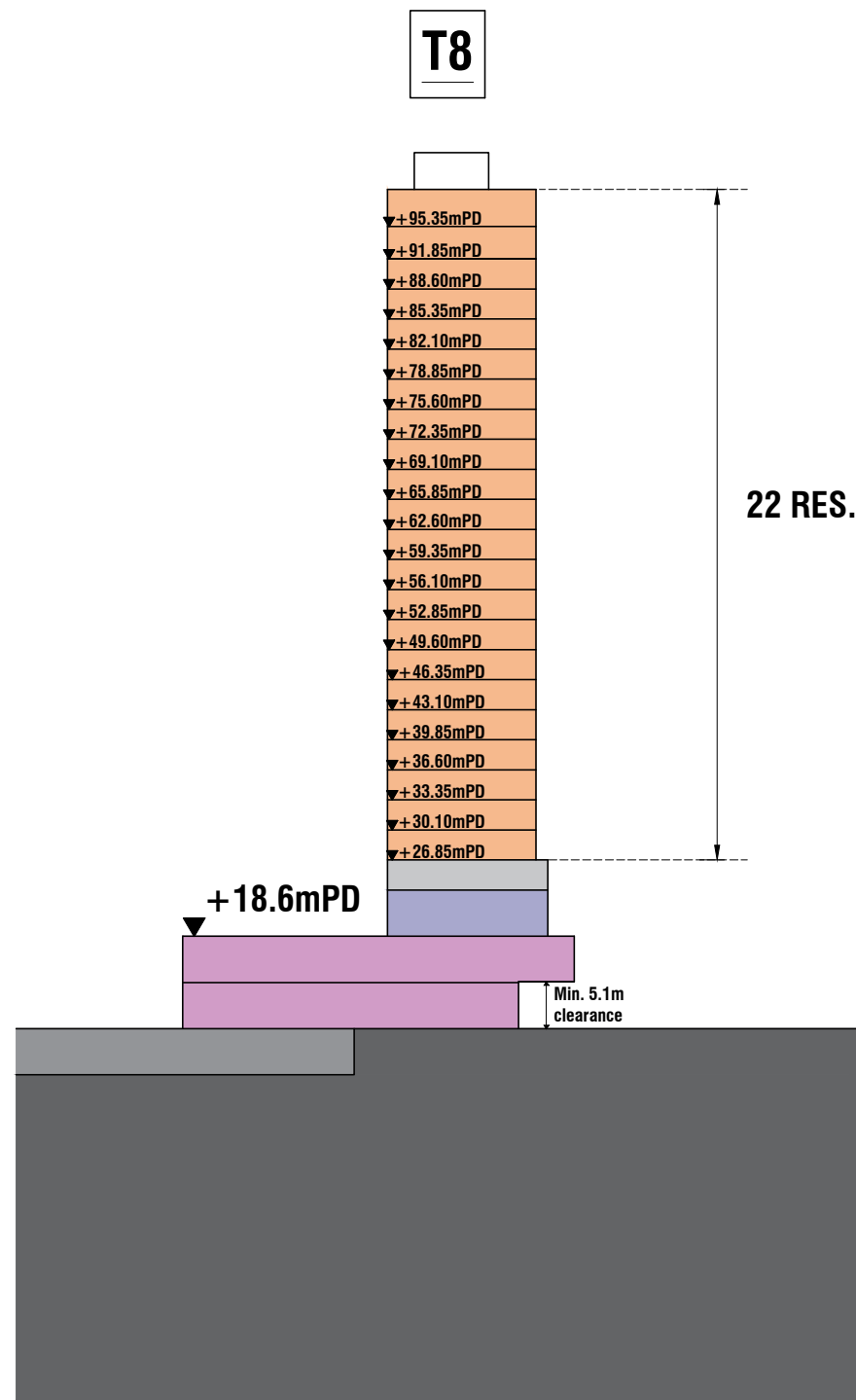
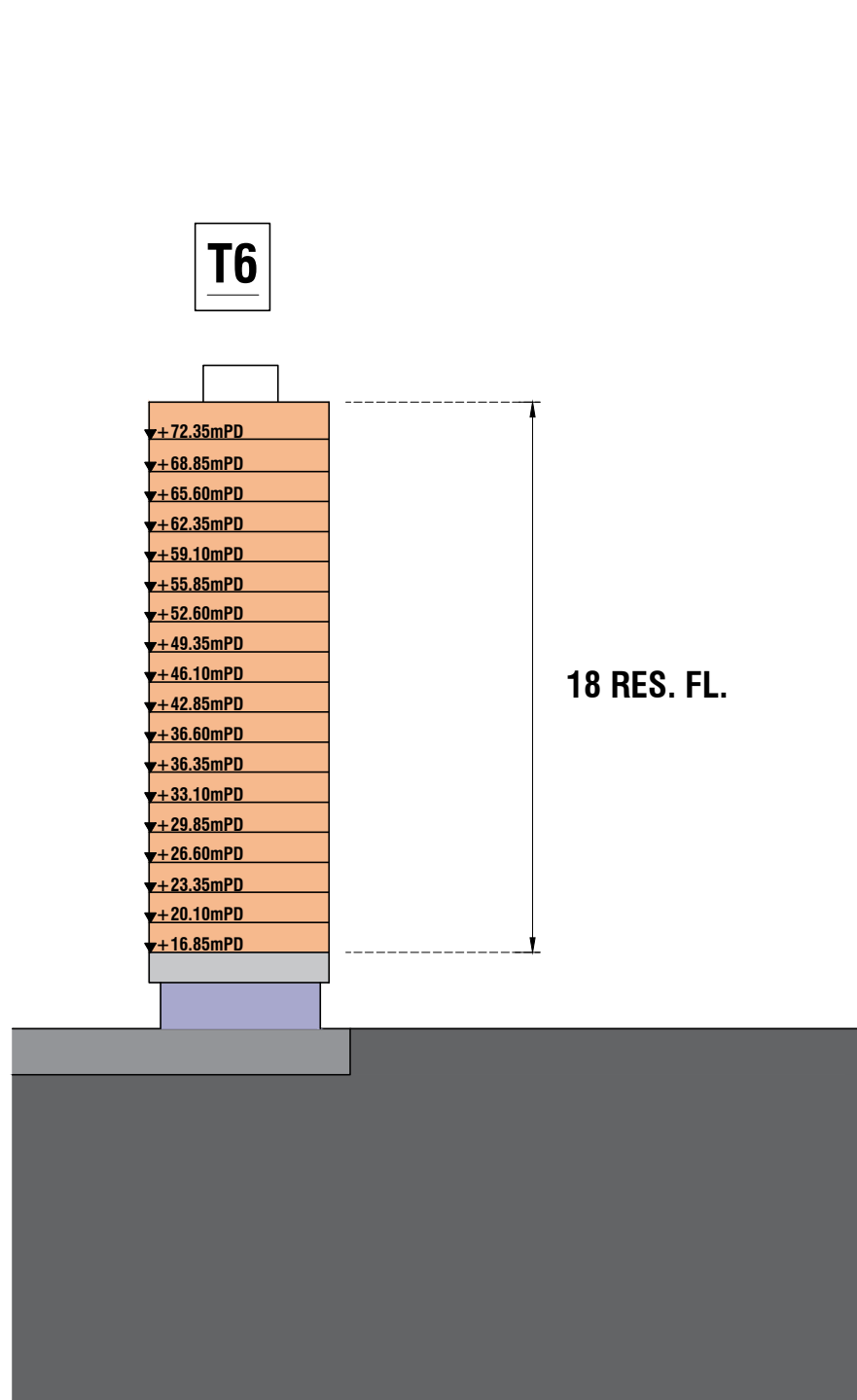


LEGEND





-  APPLICATION SITE
-  RESIDENTIAL TOWER
-  PODIUM
(CLUBHOUSE/ RESIDENTIAL LOBBY/ E&M FACILITIES)
-  PODIUM
(COMMERCIAL/ E&M FACILITIES)
-  TRANSFER PLATE

TOWER NO.	NO OF STOREYS (WITH RESIDENTIAL UNITS) MAIN ROOF LEVEL
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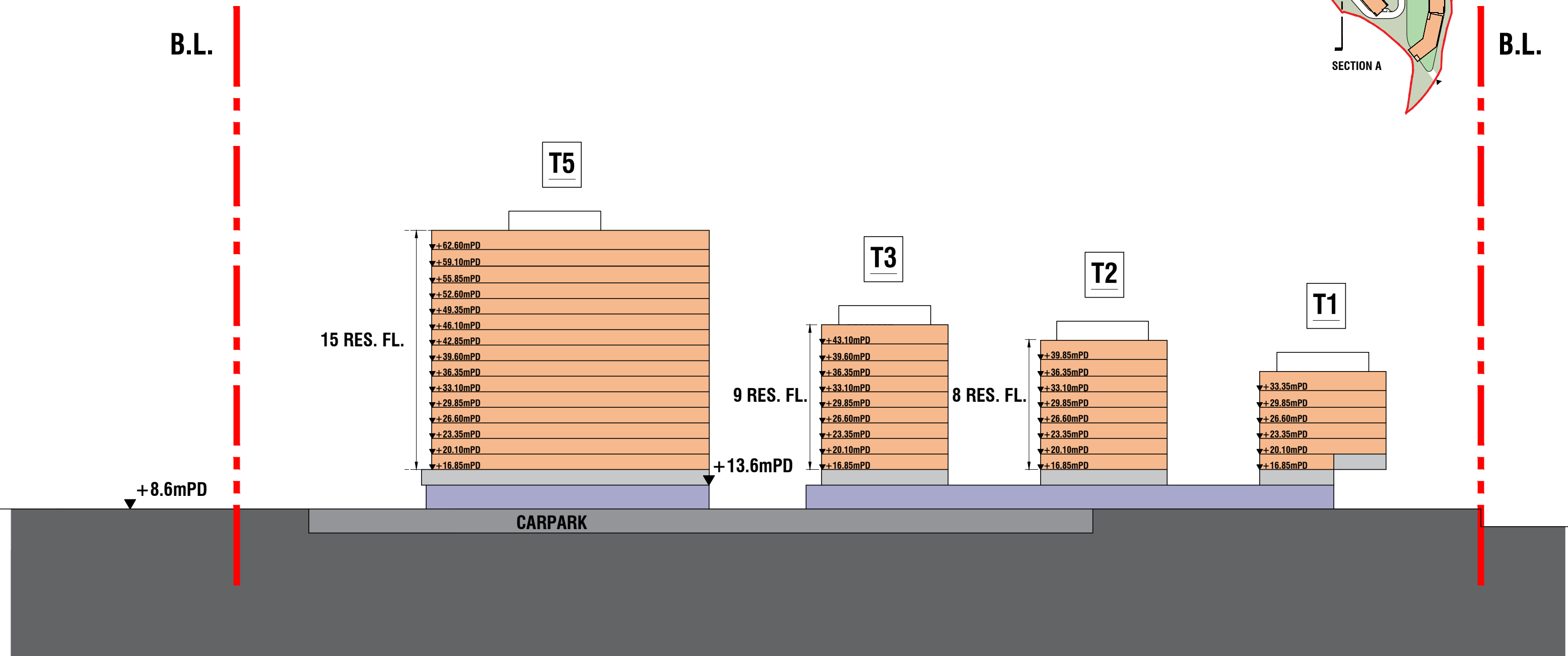
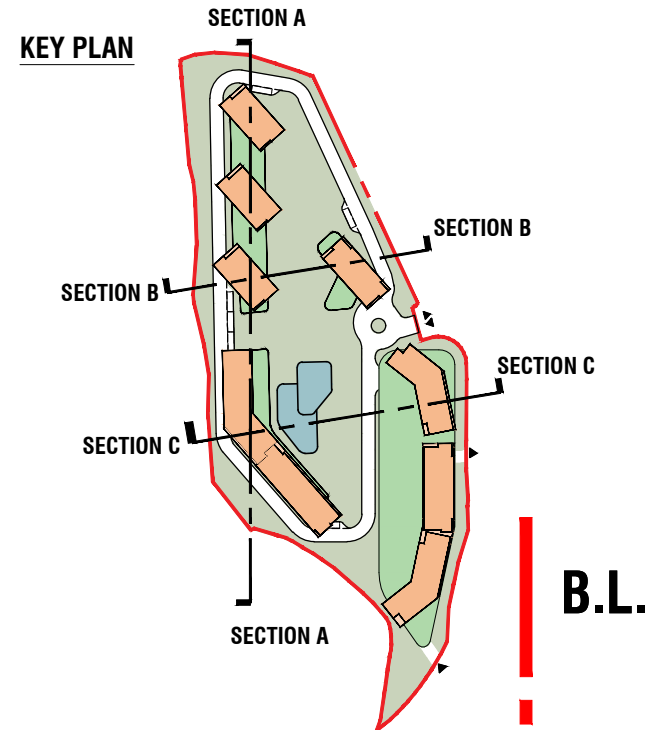




LEGEND

-  APPLICATION SITE
-  RESIDENTIAL TOWER
-  PODIUM
(CLUBHOUSE/ RESIDENTIAL LOBBY/ E&M FACILITIES)
-  TRANSFER PLATE

TOWER NO.	NO OF STOREYS (WITH RESIDENTIAL UNITS) MAIN ROOF LEVEL
-----------	---



**Appendix 2.1
Reply from ECD of EPD**

Remark: existing car parking use on-site would be phased out upon the proposed development.

Henry Ng

From: hng@ramboll.com
Subject: RE: Tung Chung West Proposed Residential Development - Enquiry on Odour Complaint

From: chowingwong@epd.gov.hk <chowingwong@epd.gov.hk>
Sent: Friday, August 23, 2024 2:24 PM
To: Henry Ng <hng@ramboll.com>
Subject: RE: Tung Chung West Proposed Residential Development - Enquiry on Odour Complaint

Dear Henry,

There was no received complaint due to the adjacent Chung Mun Road Sewage Pumping Station over the past three years. However, it is worthy to note that due to the current land usage of car park at the south tip of project site, there was a complaint received in 2022 regarding the dust nuisance and vehicles exhaust emission from car parking activities. Upon our investigation, no air nuisance was spotted during the inspection.

Should there be any questions, please feel free to contact me. Many thanks.

Regards,
Fiona WONG
RSG / EPD
Tel: 2187 3956

Henry Ng

From: hng@ramboll.com
Subject: RE: Tung Chung West Proposed Residential Development - Enquiry on Odour Complaint

From: chowingwong@epd.gov.hk <chowingwong@epd.gov.hk>
Sent: Thursday, August 22, 2024 2:53 PM
To: Henry Ng <hng@ramboll.com>
Subject: RE: Tung Chung West Proposed Residential Development - Enquiry on Odour Complaint

Dear Henry,

I refer to your emails below, requesting any odour or air quality complaint received with respect to Tung Chung Hau Wong Temple and the project site in your attached figure. Please note that we do not have related complaints over the past three years. You are also reminded that this information may not be exhaustive and you may also consider carrying out your assessment on air, if necessary.

Many thanks.

Regards,
Fiona WONG
RSG / EPD

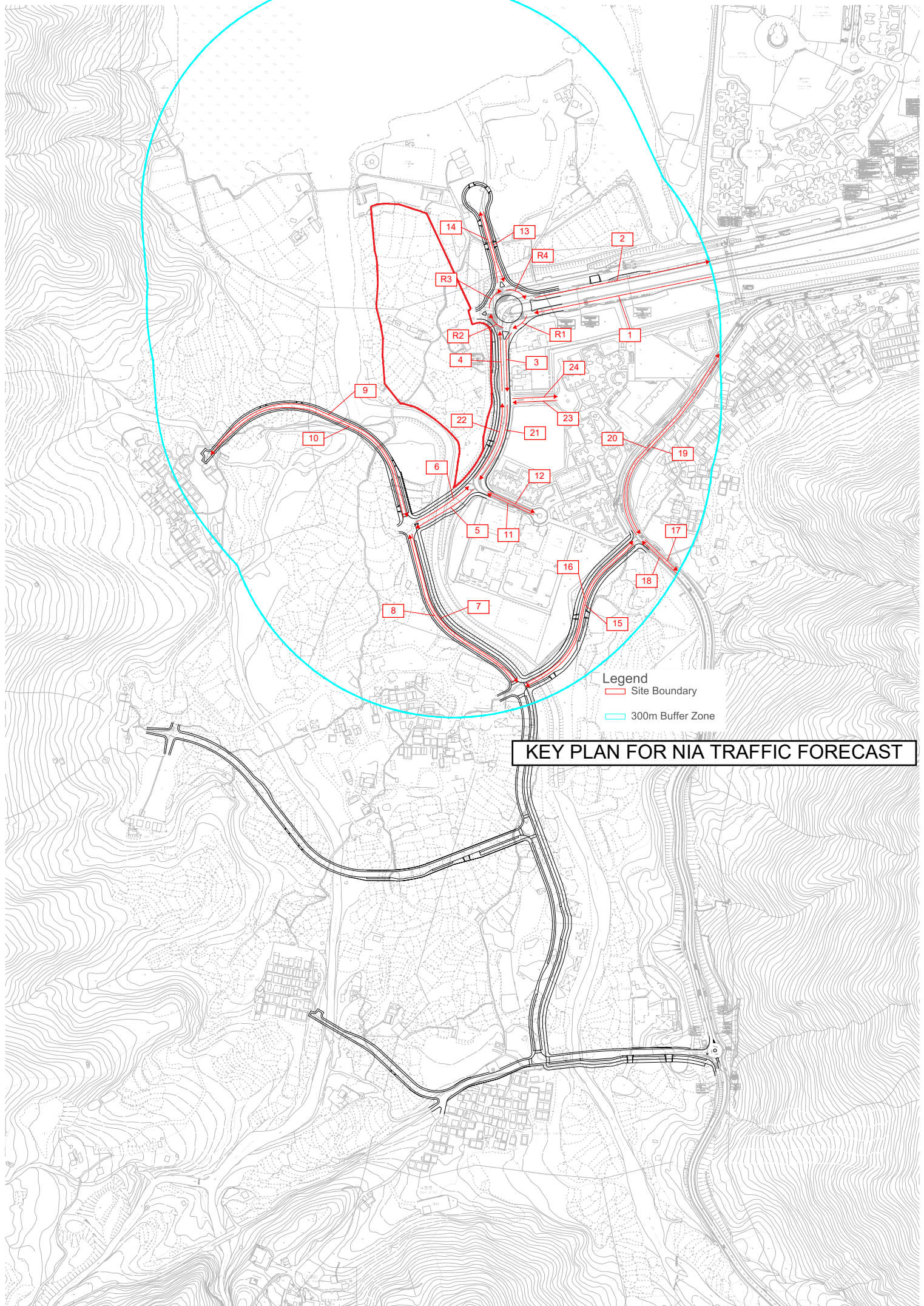
Appendix 3.1

Traffic Forecast Data

Section 12A Planning Application for Tung Chung West Study

Year 2045 Traffic Forecast for Noise Assessment (Proposed Case)						
Road ID	Road Name	Direction	2045 Traffic Flow (veh/hr)		Heavy Vehicles Percentage (1)	
			AM	PM	AM	PM
1	Yu Tung Road	WB	735	735	27%	23%
2	Yu Tung Road	EB	1020	705	29%	28%
3	Chung Mun Road	SB	425	420	17%	17%
4	Chung Mun Road	NB	670	385	25%	25%
5	Chung Mun Road	WB	240	310	10%	10%
6	Chung Mun Road	EB	475	270	19%	26%
7	Road L29	SB	180	270	10%	10%
8	Road L29	NB	395	240	21%	28%
9	Road L24	SB	55	55	10%	10%
10	Road L24	NB	55	55	10%	10%
11	Chung Mun Road	WB	140	55	32%	18%
12	Chung Mun Road	EB	140	55	20%	52%
13	Road L22	SB	55	55	10%	10%
14	Road L22	NB	55	55	10%	10%
15	Road L30	WB	100	140	10%	10%
16	Road L30	EB	175	125	10%	11%
17	Tung Chung Road	SB	315	330	40%	30%
18	Tung Chung Road	NB	370	325	21%	18%
19	Tung Chung Road	SB	405	495	34%	22%
20	Tung Chung Road	NB	540	405	18%	16%
21	Chung Mun Road	SB	375	365	14%	16%
22	Chung Mun Road	NB	610	330	22%	25%
23	Access Road to Mun Tung Estate	WB	55	55	48%	29%
24	Access Road to Mun Tung Estate	EB	55	55	38%	23%
R1	Yu Tung Rd / Chung Mun Rd Roundabout	SB	740	735	27%	23%
R2	Yu Tung Rd / Chung Mun Rd Roundabout	NB	980	710	30%	28%
R3	Yu Tung Rd / Chung Mun Rd Roundabout	SB	1020	705	29%	28%
R4	Yu Tung Rd / Chung Mun Rd Roundabout	NB	1020	705	29%	28%

(1) Heavy vehicles - all vehicles with an unladen weight exceeding 1525kg



Legend
— Site Boundary
— 300m Buffer Zone

KEY PLAN FOR NIA TRAFFIC FORECAST

Appendix 3.2

Unmitigated and Mitigated Road Traffic Noise Impact Assessment Result

Predicted Road Traffic Noise [L10(1h) dB(A)] at Representative Sensitive Receivers (Based on Year 2045 Traffic Forecast) - Unmitigated Scenario (AM)
Unmitigated Scenario (AM)

T1
Table with columns: Floor, NSR mPD, Noise Criteria, dB(A), NSR01 through NSR29. Rows include noise levels from 18.0 to 34.6 dB(A) and an Exceedance row.

T2
Table with columns: Floor, NSR mPD, Noise Criteria, dB(A), NSR01 through NSR29. Rows include noise levels from 18.0 to 41.0 dB(A) and an Exceedance row.

T3
Table with columns: Floor, NSR mPD, Noise Criteria, dB(A), NSR01 through NSR29. Rows include noise levels from 18.0 to 44.3 dB(A) and an Exceedance row.

T4
Table with columns: Floor, NSR mPD, Noise Criteria, dB(A), NSR01 through NSR33. Rows include noise levels from 18.0 to 73.6 dB(A) and an Exceedance row.

T5
Table with columns: Floor, NSR mPD, Noise Criteria, dB(A), NSR01 through NSR50. Rows include noise levels from 18.0 to 63.8 dB(A) and an Exceedance row.

T6
Table with columns: Floor, NSR mPD, Noise Criteria, dB(A), NSR01 through NSR42. Rows include noise levels from 18.0 to 73.6 dB(A) and an Exceedance row.

T7

Table T7: Noise criteria data for T7 floor. Columns include Floor, NSR mPD, Noise Criteria, dB(A), and NSR01-NSR47. Values range from 58 to 70 dB(A) across 47 noise receptors.

T8

Table T8: Noise criteria data for T8 floor. Columns include Floor, NSR mPD, Noise Criteria, dB(A), and NSR01-NSR40. Values range from 67 to 70 dB(A) across 40 noise receptors.

T9

Table T9: Noise criteria data for T9 floor. Columns include Floor, NSR mPD, Noise Criteria, dB(A), and NSR01-NSR50. Values range from 63 to 70 dB(A) across 50 noise receptors.

P1

Table P1: Noise criteria data for P1 floor. Columns include Floor, NSR mPD, Noise Criteria, dB(A), and NSR01-NSR16. Values range from 63 to 74 dB(A) across 16 noise receptors.

Summary statistics table for P1 floor: Max Noise Level (dB(A)) = 74, Total no. of Exceedance = 142, Total no. of Premises = 5813, % Compliance = 98%.

Remark: Figures highlighted in grey indicate exceedance of the relevant noise criteria for the concerned NSRs (i.e. 70dB(A) for domestic premises and 65dB(A) for educational institutions (including kindergartens))

Predicted Road Traffic Noise [L10(1h) dB(A)] at Representative Sensitive Receivers (Based on Year 2045 Traffic Forecast)

Mitigated Scenario (AM)

T1

Floor	NSR mPD	NSR01	NSR02	NSR03	NSR04	NSR05	NSR06	NSR07	NSR08	NSR09	NSR10	NSR11	NSR12	NSR13	NSR14	NSR15	NSR16	NSR17	NSR18	NSR19	NSR20	NSR21	NSR22	NSR23	NSR24	NSR25	NSR26	NSR27	NSR28	NSR29
1	18.0	44	63	63	62	64	64	64	64	64	64	64	64	64	64	64	62	58	57	51	51	50	49	49	48	48	47	47	47	46
2	21.3	44	63	63	62	64	64	64	64	64	64	64	64	64	64	64	62	58	57	51	51	50	49	48	48	47	47	47	47	46
3	24.6	44	63	63	62	64	64	64	64	64	64	64	64	64	64	64	62	58	57	51	51	50	49	48	48	47	47	47	47	46
4	27.8	44	63	63	62	64	64	64	64	64	64	64	64	64	64	64	62	58	57	52	51	50	49	49	48	47	47	47	47	46
5	31.0	44	63	63	62	64	64	64	64	64	64	64	64	64	64	64	62	58	57	52	51	50	49	49	48	48	48	48	48	46
6	34.6	46	63	63	62	64	64	64	64	64	64	64	64	64	64	64	62	58	57	52	51	51	50	49	49	49	49	49	49	47
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

T2

Floor	NSR mPD	NSR01	NSR02	NSR03	NSR04	NSR05	NSR06	NSR07	NSR08	NSR09	NSR10	NSR11	NSR12	NSR13	NSR14	NSR15	NSR16	NSR17	NSR18	NSR19	NSR20	NSR21	NSR22	NSR23	NSR24	NSR25	NSR26	NSR27	NSR28	NSR29
1	18.0	52	63	63	63	64	64	64	64	64	64	63	64	64	63	61	44	44	44	45	45	46	46	46	46	47	47	47	47	47
2	21.3	52	64	64	63	64	64	64	64	64	64	64	64	64	63	61	44	44	44	45	45	46	46	46	46	46	47	47	47	47
3	24.6	52	64	64	63	64	64	64	64	64	64	64	64	64	63	61	44	44	44	45	45	46	46	46	46	46	47	47	47	47
4	27.8	52	64	64	63	64	64	64	64	64	64	64	64	64	63	61	44	44	44	45	45	46	46	46	46	46	47	47	47	47
5	31.0	52	63	63	63	64	64	64	64	64	64	64	64	64	63	61	44	44	44	44	45	45	46	46	46	46	47	47	47	47
6	34.3	52	63	63	63	64	64	63	64	64	64	63	63	63	63	61	44	44	44	44	45	45	46	46	46	46	47	47	47	47
7	37.6	52	63	63	63	64	63	63	63	63	64	64	63	63	63	61	44	45	44	45	45	46	46	46	46	47	47	47	47	47
8	41.0	52	63	63	63	64	63	63	63	63	63	63	63	63	61	45	46	45	46	46	46	47	47	47	47	47	48	48	48	48
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

T3

Floor	NSR mPD	NSR01	NSR02	NSR03	NSR04	NSR05	NSR06	NSR07	NSR08	NSR09	NSR10	NSR11	NSR12	NSR13	NSR14	NSR15	NSR16	NSR17	NSR18	NSR19	NSR20	NSR21	NSR22	NSR23	NSR24	NSR25	NSR26	NSR27	NSR28	NSR29
1	18.0	49	49	49	35	49	50	50	50	50	52	56	56	57	59	60	49	49	49	49	49	49	49	50	50	50	50	50	50	49
2	21.3	50	50	50	35	51	52	52	52	53	53	54	58	58	59	60	61	49	49	49	49	49	50	50	50	50	50	50	50	49
3	24.6	50	51	51	35	52	52	52	53	53	54	58	58	59	60	61	49	49	49	49	49	50	50	50	50	50	50	50	50	49
4	27.8	50	51	51	35	52	52	52	53	53	54	57	58	59	60	61	49	49	49	49	49	50	50	50	50	50	50	50	50	49
5	31.0	50	51	51	35	52	52	52	53	53	54	57	58	59	60	60	49	49	49	49	49	49	49	50	50	50	50	50	50	49
6	34.3	50	51	51	35	52	52	52	53	53	54	57	58	59	60	49	49	49	49	49	49	49	49	50	50	50	50	50	50	49
7	37.6	50	51	51	35	52	52	52	53	53	54	57	58	59	60	49	49	49	49	49	49	49	49	50	50	50	50	50	50	49
8	40.8	49	51	51	36	52	52	52	53	53	54	57	58	59	60	49	49	49	49	49	49	49	49	49	50	50	50	50	50	49
9	44.3	50	51	51	38	52	52	52	53	53	54	57	58	59	60	49	49	49	49	49	49	49	49	50	50	50	50	50	50	49
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

T4

Floor	NSR mPD	NSR01	NSR02	NSR03	NSR04	NSR05	NSR06	NSR07	NSR08	NSR09	NSR10	NSR11	NSR12	NSR13	NSR14	NSR15	NSR16	NSR17	NSR18	NSR19	NSR20	NSR21	NSR22	NSR23	NSR24	NSR25	NSR26	NSR27	NSR28	NSR29	NSR30	NSR31	NSR32	NSR33	
01	18.0	61	67	68	68	68	68	69	69	68	69	68	70	70	70	70	70	70	69	64	50	50	50	49	49	49	49	49	49	49	48	45	48		
02	21.3	61	67	68	68	68	68	68	68	68	68	69	68	70	69	70	70	70	69	64	51	50	50	49	49	49	49	49	49	49	49	49	46	48	
03	24.6	61	67	67	67	68	68	68	68	68	68	69	68	69	69	69	69	70	69	63	51	50	50	49	49	49	49	49	49	49	49	49	46	48	
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10	47.3	60	66	66	67	67	67	67	67	67	67	67	67	68	68	68	68	68	67	63	55	53	51	50	50	50	49	49	49	49	49	48	45	48	
11	50.6	60	66	66	66	67	67	67	67	67	67	66	68	68	68	68	68	68	67	63	56	53	51	50	50	50	49	49	49	49	49	48	45	48	
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13	57.0	60	66	66	66	67	67	67	67	67	66	68	66	68	68	68	68	68	67	63	57	54	51	50	50	51	49	49	49	49	48	46	48		
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15	63.6	60	66	66	66	66	66	66	66	66	66	67	66	68	68	68	68																		

T6

Floor	NSR mPD	NSR01	NSR02	NSR03	NSR04	NSR05	NSR06	NSR07	NSR08	NSR09	NSR10	NSR11	NSR12	NSR13	NSR14	NSR15	NSR16	NSR17	NSR18	NSR19	NSR20	NSR21	NSR22	NSR23	NSR24	NSR25	NSR26	NSR27	NSR28	NSR29	NSR30	NSR31	NSR32	NSR33	NSR34	NSR35	NSR36	NSR37	NSR38	NSR39	NSR40	NSR41	NSR42		
01	18.0	54	51	46	45	45	45	45	44	44	44	44	44	44	45	44	43	43	42	41	49	57	60	61	61	61	61	61	61	61	61	61	61	60	60	60	60	60	60	60	60	60	60		
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07	37.6	54	53	52	51	48	46	46	45	45	45	48	50	52	53	52	51	49	47	43	49	57	60	61	61	61	61	61	61	61	61	61	61	60	60	60	60	60	60	60	60	60	60	60	
08	40.8	54	53	52	51	48	46	46	46	46	45	48	50	52	53	52	51	49	47	43	49	57	60	61	61	61	61	61	61	61	61	61	61	60	60	60	60	60	60	60	60	60	60	59	
09	44.0	54	53	53	51	48	46	46	46	46	46	46	49	50	52	53	52	51	49	47	44	49	57	60	61	61	61	61	61	61	61	61	61	61	60	60	60	60	60	60	60	60	60	60	59
10	47.3	54	53	52	51	48	46	46	46	46	46	46	49	51	52	53	52	51	50	48	44	49	57	60	61	61	61	61	61	61	61	61	61	60	60	60	60	60	60	60	60	60	59	59	
11	50.6	54	53	52	51	48	47	47	47	47	47	47	49	51	52	53	52	51	50	48	44	49	57	60	61	61	61	61	61	61	61	61	61	60	60	60	60	60	60	60	60	60	59	59	
12	53.8	54	53	52	51	49	47	47	47	47	47	47	49	51	52	53	52	51	50	48	45	49	57	60	61	61	61	61	61	61	61	61	61	60	60	60	60	60	60	60	60	59	59		
13	57.0	54	53	52	51	49	48	48	48	48	48	50	51	52	53	52	51	50	48	45	49	57	60	61	61	61	61	61	61	61	61	61	61	60	60	60	60	60	60	60	59	59	59	59	
14	60.3	54	53	52	51	49	49	49	49	49	49	49	50	51	52	53	52	51	50	48	45	49	57	60	61	61	61	61	61	61	61	61	61	60	60	60	60	60	60	60	60	59	59	59	59
15	63.6	54	53	52	51	50	49	49	49	49	49	49	50	52	53	53	53	51	50	48	45	49	57	60	61	61	61	61	61	61	61	61	60	60	60	60	60	60	60	60	59	59	59	59	
16	66.8	54	53	53	52	50	50	50	50	50	50	50	51	52	53	53	53	52	50	48	45	49	57	60	61	61	61	61	61	61	61	61	60	60	60	60	60	60	60	60	60	59	59	59	59
17	70.0	54	53	53	52	50	50	50	50	50	50	50	51	52	53	53	53	52	50	48	45	49	56	60	61	61	61	61	61	61	61	60	60	60	60	60	60	60	60	59	59	59	59	59	
18	73.6	54	53	53	52	51	51	51	51	51	51	51	51	52	53	53	53	52	50	49	46	50	56	60	61	61	61	61	61	61	60	60	60	60	60	60	60	60	60	59	59	59	59	59	
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	0	0	0	0	0	0	0	

T7

Floor	NSR mPD	NSR01	NSR02	NSR03	NSR04	NSR05	NSR06	NSR07	NSR08	NSR09	NSR10	NSR11	NSR12	NSR13	NSR14	NSR15	NSR16	NSR17	NSR18	NSR19	NSR20	NSR21	NSR22	NSR23	NSR24	NSR25	NSR26	NSR27	NSR28	NSR29	NSR30	NSR31	NSR32	NSR33	NSR34	NSR35	NSR36	NSR37	NSR38	NSR39	NSR40	NSR41	NSR42	NSR43	NSR44	NSR45	NSR46	NSR47					
01	28.0	63	64	68	69	70	70	64	64	64	65	66	65	M.W.	66	66	67	68	67	66	66	66	66	67	67	67	M.W.	65	52	52	52	53	53	52	52	52	52	52	52	52	52	52	52	52	52	53	53	53	53	53	53		
02	31.3	63	63	67	69	69	70	64	64	64	65	66	65	M.W.	66	66	67	68	67	66	66	66	65	66	66	66	M.W.	66	53	53	53	53	54	54	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	
03	34.6	63	63	67	69	69	70	64	64	64	65	65	65	M.W.	66	66	66	68	67	66	65	66	65	66	65	66	M.W.	65	53	53	53	53	54	54	54	54	54	54	54	53	53	53	53	53	53	53	53	53	53	53	53	53	53
04	37.8	62	63	67	68	69	70	70	70	64	65	65	64	M.W.	66	66	66	68	66	66	65	66	65	66	65	66	M.W.	65	53	53	53	54	54	54	54	54	54	54	54	54	53	53	53	53	53	54	54	54	54	54	54	54	
05	41.0	62	63	66	68	69	70	70	70	64	64	65	64	M.W.	65	65	66	68	66	66	65	66	65	66	65	66	M.W.	65	53	53	53	54	54	54	54	54	54	54	54	54	54	53	53	53	54	54	54	54	54	54	54	54	
06	44.3	62	62	66	68	68	70	70	70	64	65	64	M.W.	65	65	66	67	66	65	65	65	64	66	65	66	M.W.	65	53	53	53	54	54	54	54	54	54	54	54	54	54	54	53	53	53	54	54	54	54	54	54	54	54	
07	47.6	62	62	66	67	68	69	70	70	70	64	70	65	65	65	67	66	65	64	65	64	65	65	64	65	65	M.W.	65	53	53	53	54	54	54	54	54	54	54	54	54	54	54	53	53	53	54	54	54	54	54	54	54	
08	50.8	62	62	66	67	68	69	70	70	70	64	70	65	65	65	67	66	65	64	65	64	65	65	65	65	70	64	53	53	53	53	54	54	54	54	54	54	54	54	54	54	53	53	53	54	54	54	54	54	54			
09	54.0	61	62	66	67	68	69	69	69	70	70	70	70	64	64	65	67	65	65	64	65	64	65	65	65	65	70	64	53	53	53	53	54	54	54	54	54	54	54	54	54	53	53	53	54	54	54	54	54	54			
10	57.3	61	61	65	67	68	69	69	69	70	70	70	70	64	64	65	66	65	64	65	65	65	65	65	65	70	64	53	53	53	53	54	54	54	54	54	54	54	54	53	53	53	54	54	54	54	54	54	54				
11	60.6	61	61	65	67	67	69	69	69	69	70	70	70	64	64	65	66	65	64	64	63	64	64	64	70	64	53	53	53	53	54	54	54	54	54	54	54	54	53	53	53	54	54	54	54	54	54	54	54				
12	63.8	61	61	65	66	67	68	69	69	69	69	69	69	69	64	64	64	66	65	64	63	64	64	64	70	64	53	53	53	53	54	54	54	54	54	54	54	54	53	53	53	54	54	54	54	54	54	54	54				
13	67.0	61	61	65	66	67	68	68	69	69	69	69	69	69	64	64	66	64	63	64	63	64	64	69	63	53	53	53	53	54	54	54	54	54	54	54	54	53	53	53	54	54	54	54	54	54	54	54	54				
14	70.3	61	61	65	66	67	68	68	69	69	69	69	69	69	64	64	66	64	63	64	63	64	64	69	63	53	53	53	53	54	54	54	54	54	54	54	54	53	53	53	54	54	54	54	54	54	54	54	54				
15	73.6	60	61	64	66	67	68	68																																													

Predicted Road Traffic Noise [L10(1h) dB(A)] at Representative Sensitive Receivers (Based on Year 2045 Traffic Forecast)
 Mitigated Scenario (PM)

T1

Floor	NSR mPD	NSR01	NSR02	NSR03	NSR04	NSR05	NSR06	NSR07	NSR08	NSR09	NSR10	NSR11	NSR12	NSR13	NSR14	NSR15	NSR16	NSR17	NSR18	NSR19	NSR20	NSR21	NSR22	NSR23	NSR24	NSR25	NSR26	NSR27	NSR28	NSR29
1	18.0	43	62	62	61	62	63	63	63	63	63	63	63	63	63	63	61	57	55	50	50	49	49	48	48	47	47	47	47	46
2	21.3	43	62	61	61	62	63	63	63	63	63	63	63	63	63	63	61	57	55	50	50	49	49	48	48	47	47	47	47	46
3	24.6	44	62	61	61	62	63	63	63	63	63	63	63	63	63	63	61	57	55	50	50	49	49	48	48	47	47	47	47	46
4	27.8	44	62	61	61	62	63	63	63	63	63	63	63	63	63	63	60	57	55	50	50	49	49	48	48	47	47	47	47	46
5	31.0	44	62	61	61	62	62	63	63	63	63	63	63	63	63	63	60	57	55	50	50	49	49	48	48	47	47	47	47	46
6	34.6	46	62	61	61	62	62	63	63	63	63	63	63	63	63	60	57	55	51	51	50	50	49	49	48	48	48	48	48	47
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

T2

Floor	NSR mPD	NSR01	NSR02	NSR03	NSR04	NSR05	NSR06	NSR07	NSR08	NSR09	NSR10	NSR11	NSR12	NSR13	NSR14	NSR15	NSR16	NSR17	NSR18	NSR19	NSR20	NSR21	NSR22	NSR23	NSR24	NSR25	NSR26	NSR27	NSR28	NSR29
1	18.0	51	62	62	62	62	62	62	62	62	62	62	62	62	60	43	44	44	45	45	46	46	46	46	46	46	47	47	47	47
2	21.3	51	62	62	62	63	62	62	62	63	63	62	62	62	60	43	44	44	45	45	46	46	46	46	46	46	47	47	47	47
3	24.6	51	62	62	62	63	62	62	62	63	63	62	62	62	60	43	44	44	45	45	46	46	46	46	46	46	47	47	47	47
4	27.8	51	62	62	62	63	62	62	62	63	63	62	62	62	60	43	43	44	44	45	45	46	46	46	46	46	47	47	47	47
5	31.0	51	62	62	62	62	62	62	62	62	63	62	62	62	60	43	44	44	44	45	45	46	46	46	46	46	47	47	47	47
6	34.3	51	62	62	62	62	62	62	62	62	62	62	62	62	60	43	44	44	44	45	45	46	46	46	46	46	47	47	47	47
7	37.6	51	62	62	62	62	62	62	62	62	62	62	62	62	60	44	44	44	45	45	46	46	46	46	46	46	47	47	47	47
8	41.0	51	62	62	62	62	62	62	62	62	62	62	62	62	60	44	45	45	45	46	46	46	46	46	46	47	47	47	48	47
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

T3

Floor	NSR mPD	NSR01	NSR02	NSR03	NSR04	NSR05	NSR06	NSR07	NSR08	NSR09	NSR10	NSR11	NSR12	NSR13	NSR14	NSR15	NSR16	NSR17	NSR18	NSR19	NSR20	NSR21	NSR22	NSR23	NSR24	NSR25	NSR26	NSR27	NSR28	NSR29
1	18.0	49	48	49	34	49	49	49	49	51	54	55	56	57	59	48	49	49	49	49	49	49	49	49	49	49	50	50	50	49
2	21.3	49	50	50	34	50	50	51	51	52	56	56	57	58	60	48	49	49	49	49	49	49	49	49	49	49	50	50	50	49
3	24.6	49	50	50	34	51	51	51	52	52	53	56	57	59	60	48	49	49	49	49	49	49	49	49	49	50	50	50	50	49
4	27.8	49	50	51	34	51	51	51	52	52	53	56	57	58	59	48	49	49	49	49	49	49	49	49	49	49	50	50	50	49
5	31.0	49	50	51	34	51	51	51	52	52	53	56	57	58	59	48	48	49	49	49	49	49	49	49	49	49	49	49	49	49
6	34.3	49	50	51	34	51	51	51	52	52	53	56	57	58	59	48	48	49	49	49	49	49	49	49	49	49	49	49	49	49
7	37.6	49	50	51	34	51	51	51	52	52	53	56	57	58	59	48	48	49	49	49	49	49	49	49	49	49	49	49	49	49
8	40.8	49	50	51	35	51	51	51	52	52	53	56	57	58	59	48	48	49	49	49	49	49	49	49	49	49	49	49	49	49
9	44.3	49	50	51	37	51	51	51	52	52	53	56	57	58	59	48	49	49	49	49	49	49	49	49	49	49	49	49	49	49
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

T4

Floor	NSR mPD	NSR01	NSR02	NSR03	NSR04	NSR05	NSR06	NSR07	NSR08	NSR09	NSR10	NSR11	NSR12	NSR13	NSR14	NSR15	NSR16	NSR17	NSR18	NSR19	NSR20	NSR21	NSR22	NSR23	NSR24	NSR25	NSR26	NSR27	NSR28	NSR29	NSR30	NSR31	NSR32	NSR33	
01	18.0	60	66	66	66	67	67	67	67	67	67	68	67	68	68	68	68	69	69	68	63	49	49	49	49	48	48	49	48	48	48	48	48	45	48
02	21.3	60	66	66	66	67	67	67	67	67	66	68	66	68	68	68	68	68	69	68	62	50	49	49	49	48	48	49	49	48	48	48	48	46	48
03	24.6	60	66	66	66	67	67	67	67	67	66	68	66	68	68	68	68	68	68	67	62	50	49	49	49	48	48	49	48	48	48	48	46	48	
04	27.8	60	66	66	66	67	67	67	67	67	66	68	66	68	68	68	68	68	68	67	62	50	49	49	49	48	48	49	48	48	48	48	46	48	
05	31.0	60	66	66	66	66	66	67	67	67	66	67	66	68	68	68	68	68	68	67	62	51	50	49	49	48	48	48	48	48	48	46	48		
06	34.3	60	66	66	66	66	66	67	67	67	66	67	66	68	68	68	68	68	68	67	62	51	50	49	49	49	49	49	48	48	48	46	48		
07	37.6	60	66	66	66	66	66	66	66	66	66	67	66	67	67	68	68	68	68	67	61	52	51	49	49	49	49	49	48	48	48	45	48		
08	40.8	60	65	65	66	66	66	66	66	66	66	67	65	67	67	68	68	68	67	61	53	51	50	49	49	49	49	48	48	48	48	45	48		
09	44.0	59	65	65	65	66	66	66	66	66	66	65	67	65	67	67	68	68	66	62	54	52	50	49	49	49	49	48	48	48	48	45	48		
10	47.3	59	65	65	65	66	66	66	66	66	66	65	67	65	67	67	67	67	66	62	54	52	50	49	49	49	49	48	48	48	48	45	48		
11	50.6	59	65	65	65	66	66	66	66	66	65	67	65	67	67	67	67	67	66	62	55	52	50	49	49	49	49	48	48	48	48	45	48		
12	53.8	59	65	65	65	65	66	66	66	66	65	67	65	67	67	67	67	67	66	62	55	53	50	49	49	49	49	48	48	48	48	46	48		
13	57.0	59	65	65	65	65	65	66	66	66	65	66	65	67	67	67	67	67	66	61	55	53	50	49	49	49	49	48	48	48	48	46	48		
14	60.3	59	65	65	65	65	65	65	65	65	65	66	65	67	67	67	67	67	66	61	56	53	50	49	49	49	49	48	48	48	48	46	48		
15	63.6	59	65	65	65	65	65	65	65	65	65	66	64	66	66	66	66	66	67	66	61	56	53	50	49	49	49	48	48	48	48	46	48		
16	66.8	59	64	65	65	65	65	65	65	65	64	66	64	66	66	66	66	66	67	66	61	55	53	50	49	49	49	48	48	48	48	46	48		
17	70.0	59	64	64	64	65	65	65	65	65	64	66	64	66	66	66	66	66	65	61	55	53	51	49	49	49	48	48	48	48	46	48			
18	73.6	58	64	64	64	65	65	65	65	65	64	66	64	66	66	66	66	66	65	61	56	53	51	50	49	49	49	48	48	48	47	49			
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		

T5

Floor	NSR mPD	NSR01	NSR02	NSR03	NSR04	NSR05	NSR06	NSR07	NSR08	NSR09	NSR10	NSR11	NSR12	NSR13	NSR14	NSR15	NSR16	NSR17	NSR18	NSR19	NSR20	NSR21	NSR22	NSR23	NSR24	NSR25	NSR26	NSR27	NSR28	NSR29	NSR30	NSR31	NSR32	NSR33	NSR34	NS
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Appendix 3.3

Estimation of Maximum Allowed Sound Attenuation of Baffle Type Acoustic Window/ Balcony

Project Case								
Tower	NSR	Floor	NMM adopted	Room Area	Maximum Predicted Noise Level	Noise Exceedance Level	Overlap / Gap	Outer Opening Area
				sqm	L10,peak hr, dB(A)	L10,peak hr, dB(A)	mm/mm	sqm
T7	NSR07	1	Balcony	23.0	70.5	0.1	275 / 100	3.23
T7	NSR08	1	Window	8.4	70.7	0.3	253 / 100	0.70
T7	NSR09	1	Window	8.4	71.0	0.6	253 / 100	0.70
T7	NSR10	1	Balcony	22.6	71.4	1.0	275 / 100	3.23
T7	NSR11	1	Window	5.5	71.6	1.2	253 / 100	0.70
T7	NSR12	1	Window	9.2	71.9	1.5	253 / 100	0.70
T7	NSR13	1	Window	12.6	71.7	1.3	253 / 100	0.70
T7	NSR14	1	Window	12.6	73.3	2.9	253 / 100	0.70
T7	NSR15	1	Window	7.5	73.3	2.9	253 / 100	0.70
T7	NSR16	1	Balcony	22.9	73.3	2.9	275 / 100	3.23
T7	NSR17	1	Window	4.3	73.3	2.9	253 / 100	0.70
T7	NSR18	1	Balcony	21.0	73.3	2.9	275 / 100	3.23
T7	NSR19	1	Window	7.0	73.4	3.0	253 / 100	0.70
T7	NSR20	1	Balcony	29.3	73.4	3.0	275 / 100	3.23
T7	NSR21	1	Window	7.0	73.5	3.1	253 / 100	0.70
T7	NSR22	1	Balcony	31.1	73.6	3.2	275 / 100	3.23
T7	NSR23	1	Window	7.0	73.7	3.3	253 / 100	0.70
T7	NSR24	1	Window	6.8	73.7	3.3	253 / 100	0.70
T7	NSR25	1	Window	14.5	73.7	3.3	253 / 100	0.70
T7	NSR26	1	Window	14.5	72.0	1.6	253 / 100	0.70
T8	NSR01	1	Window	10.1	71.8	1.4	253 / 100	0.70
T8	NSR02	1	Window	10.1	72.8	2.4	253 / 100	0.70
T8	NSR03	1	Window	6.3	72.8	2.4	253 / 100	0.70
T8	NSR04	1	Balcony	20.8	72.6	2.2	275 / 100	3.23
T8	NSR05	1	Window	7.0	72.9	2.5	253 / 100	0.70
T8	NSR06	1	Balcony	13.4	72.8	2.4	275 / 100	3.23
T8	NSR07	1	Window	7.0	72.6	2.2	253 / 100	0.70
T8	NSR08	1	Balcony	17.3	72.5	2.1	275 / 100	3.23
T8	NSR09	1	Window	7.0	72.4	2.0	253 / 100	0.70
T8	NSR10	1	Balcony	15.4	72.4	2.0	275 / 100	3.23
T8	NSR11	1	Window	4.3	72.3	1.9	253 / 100	0.70
T8	NSR12	1	Balcony	16.5	72.2	1.8	275 / 100	3.23
T8	NSR13	1	Window	5.6	72.2	1.8	253 / 100	0.70
T8	NSR14	1	Window	9.7	72.1	1.7	253 / 100	0.70
T8	NSR15	1	Balcony	16.8	72.0	1.6	275 / 100	3.23
T8	NSR16	1	Window	6.1	71.9	1.5	253 / 100	0.70
T8	NSR17	1	Balcony	16.8	71.7	1.3	275 / 100	3.23
T8	NSR18	1	Window	5.6	71.6	1.2	253 / 100	0.70
T8	NSR19	1	Balcony	18.1	71.3	0.9	275 / 100	3.23
T8	NSR20	1	Window	5.3	71.3	0.9	253 / 100	0.70
T8	NSR21	1	Window	9.4	71.4	1.0	253 / 100	0.70
T9	NSR02	1	Window	13.8	71.3	0.9	253 / 100	0.70
T9	NSR03	1	Window	6.8	71.2	0.8	253 / 100	0.70
T9	NSR04	1	Window	7.0	71.1	0.7	253 / 100	0.70
T9	NSR05	1	Balcony	28.4	71.0	0.6	275 / 100	3.23
T9	NSR06	1	Window	7.0	70.8	0.4	253 / 100	0.70
T9	NSR07	1	Balcony	23.7	70.8	0.4	275 / 100	3.23
T9	NSR08	1	Window	7.0	70.7	0.3	253 / 100	0.70
T9	NSR09	1	Balcony	16.9	70.7	0.3	275 / 100	3.23
T9	NSR10	1	Window	4.3	70.7	0.3	253 / 100	0.70
T9	NSR11	1	Balcony	18.6	70.6	0.2	275 / 100	3.23
T9	NSR12	1	Window	6.1	70.7	0.3	253 / 100	0.70
T9	NSR13	1	Window	10.2	70.7	0.3	253 / 100	0.70

Reference Reduction			
Config	Outer Opening Area	Rm Adjustment	Sound Attenuation
	sqm	dB(A)	dB(A)
NPE-Liv-SD	3.23	-2.2	6.6
NPE-BR2-AW	0.70	0.0	6.9
NPE-BR2-AW	0.70	0.0	6.9
NPE-Liv-SD	3.23	-2.3	6.5
NPE-BR2-AW	0.70	-0.9	6.0
NPE-BR2-AW	0.70	0.0	6.9
NPE-BR2-AW	0.70	0.0	6.9
NPE-BR2-AW	0.70	0.0	6.9
NPE-BR2-AW	0.70	0.0	6.9
NPE-Liv-SD	3.23	-2.2	6.6
NPE-BR2-AW	0.70	-2.0	4.9
NPE-Liv-SD	3.23	-2.6	6.2
NPE-BR2-AW	0.70	0.0	6.9
NPE-Liv-SD	3.23	-1.2	7.7
NPE-BR2-AW	0.70	0.0	6.9
NPE-Liv-SD	3.23	-0.9	7.9
NPE-BR2-AW	0.70	0.0	6.9
NPE-BR2-AW	0.70	0.0	6.9
NPE-BR2-AW	0.70	0.0	6.9
NPE-BR2-AW	0.70	0.0	6.9
NPE-BR2-AW	0.70	0.0	6.9
NPE-BR2-AW	0.70	0.0	6.9
NPE-BR2-AW	0.70	0.0	6.9
NPE-BR2-AW	0.70	0.0	6.9
NPE-BR2-AW	0.70	-0.3	6.6
NPE-Liv-SD	3.23	-2.6	6.2
NPE-BR2-AW	0.70	0.0	6.9
NPE-Liv-SD	3.23	-4.6	4.2
NPE-BR2-AW	0.70	0.0	6.9
NPE-Liv-SD	3.23	-3.4	5.4
NPE-BR2-AW	0.70	0.0	6.9
NPE-Liv-SD	3.23	-3.9	4.9
NPE-BR2-AW	0.70	-2.0	4.9
NPE-Liv-SD	3.23	-3.7	5.2
NPE-BR2-AW	0.70	-0.8	6.1
NPE-BR2-AW	0.70	0.0	6.9
NPE-Liv-SD	3.23	-3.6	5.2
NPE-BR2-AW	0.70	-0.4	6.5
NPE-Liv-SD	3.23	-3.6	5.2
NPE-BR2-AW	0.70	-0.8	6.1
NPE-Liv-SD	3.23	-3.3	5.6
NPE-BR2-AW	0.70	-1.0	5.9
NPE-BR2-AW	0.70	0.0	6.9
NPE-BR2-AW	0.70	0.0	6.9
NPE-BR2-AW	0.70	0.0	6.9
NPE-Liv-SD	3.23	-1.3	7.5
NPE-BR2-AW	0.70	0.0	6.9
NPE-Liv-SD	3.23	-2.1	6.7
NPE-BR2-AW	0.70	0.0	6.9
NPE-Liv-SD	3.23	-3.6	5.3
NPE-BR2-AW	0.70	-2.0	4.9
NPE-Liv-SD	3.23	-3.1	5.7
NPE-BR2-AW	0.70	-0.5	6.5
NPE-BR2-AW	0.70	0.0	6.9

Summary	
Corrected Noise Reduction of NMM adopted (*)	
NPE-BR2-AW	NPE-Liv-SD
dB(A)	dB(A)
-	6.6
6.9	-
6.9	-
-	6.5
6.0	-
6.9	-
6.9	-
6.9	-
6.9	-
-	6.6
4.9	-
-	6.2
6.9	-
-	7.7
6.9	-
-	7.9
6.9	-
6.9	-
6.9	-
6.9	-
6.9	-
6.9	-
6.9	-
6.9	-
6.6	-
-	6.2
6.9	-
-	4.2
6.9	-
-	5.4
6.9	-
-	4.9
4.9	-
-	5.2
6.1	-
6.9	-
-	5.2
6.5	-
-	5.2
6.1	-
-	5.6
5.9	-
6.9	-
6.9	-
6.9	-
6.9	-
-	5.3
4.9	-
-	5.7
6.5	-
6.9	-

Note:
 *: For NSRs proposed with Noise Mitigation Measures (NMM), the presented noise level is not the actual noise level at the external façade after the application of NMM, and these noise level are only the equivalent noise level at 1m from the external facade after accounting the reduction in noise levels inside the flat offered by proposed NMM.
 Remark:
 The above figures are based on current typical internal layout plan, which are subject to review in later detailed design stage.

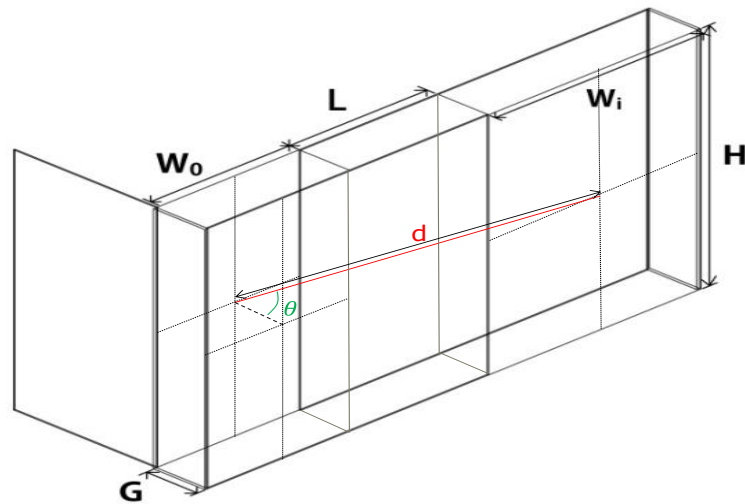
Ref Code	Ref	FLAT	MPA	RA (m ²)	PARAMETERS OF ACOUSTIC WINDOW (mm)			TNIA Sound Attenuation, dB(A)
					OOA (sqm)	G (mm)	O (mm)	
NPE-Liv-SD	North Point Estate	Living Room (Door)	no MPA at sliding panel	38.28	3.2	100	275	8.8
NPE-BR2-AW		BR2 (1 outer opening)	MPA	6.8	0.7	100	253	6.9

Abbreviations:

- G Gap Width between interior sliding panel and exterior glazing, or between exterior glazing and MPA on interior sliding panel
- O Overlapping Length
- OOA Outer Opening Area
- RA Room Area
- NPE Reference Case: Ex-North Point Estate

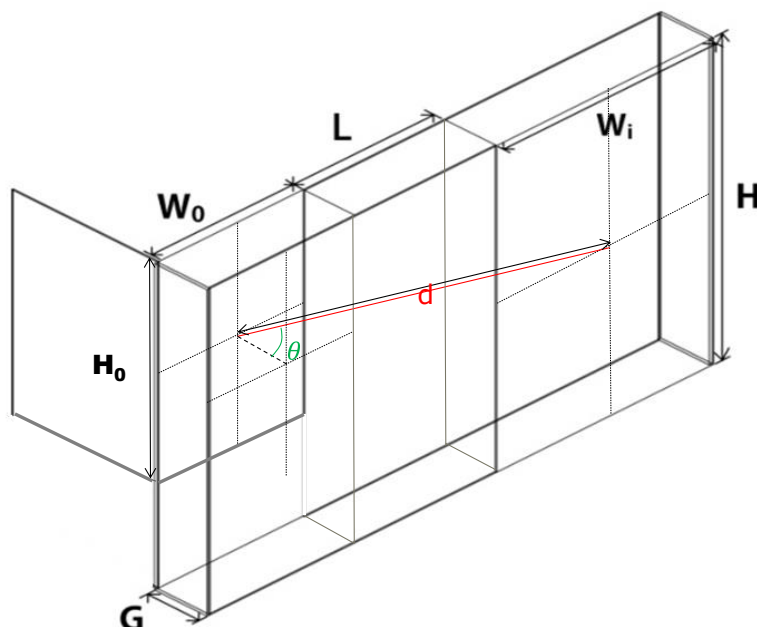
Justification on Road Traffic Noise Reduction Performance of Baffle Type Acoustic Window/Balcony

1. The Consultant was involved in a previous study to develop innovative noise mitigation measures in terms of baffle type acoustic window /balcony and applied to habitable rooms (e.g. for ex-North Point Estate redevelopment) for the purpose to mitigate road traffic noise impact. The schematic diagram of baffle type acoustic window is shown below. The baffle type acoustic balcony differs from baffle type acoustic window that the outer opening is the door opening to the balcony.



3D view (1)

(for case that inlet (outer) and outlet (inner) opening heights are the same, applicable to living room door with sliding panel behind (baffle type acoustic Window) for the proposed development)



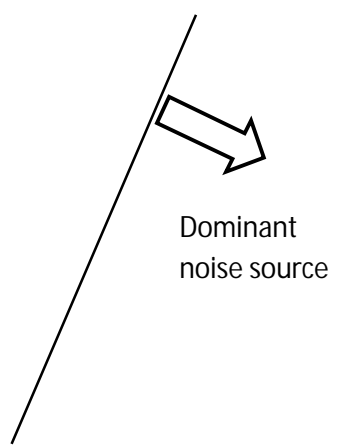
3D view (2)

(for case that inlet (outer) opening height is different from outlet (inner) opening height, applicable to window with sliding panel behind (baffle type acoustic Window) for the proposed development)

2. In the previous study, it was attempted to increase the noise reduction performance of the system by adding micro-perforated absorber (MPA) panel system at the front of the sliding panel (i.e. the side facing the outer window for baffle type acoustic window and door opening for baffle type acoustic balcony).
3. The sound attenuation of baffle type acoustic window /balcony actually refers to the additional insertion loss (difference of noise level outdoors and indoors after propagating through the window/balcony system) of the window/balcony system when compared with the insertion loss of the corresponding conventional case.
4. Onsite noise measurement is generally considered with highest accuracy to reflect the actual performance of the baffle type acoustic window/balcony and preferred over other methods such as mock-up test, laboratory test or computer simulation. Onsite noise measurement was conducted after the building structure of the proposed residential development has been constructed in 2016.
5. According to the onsite noise measurement result, the sound attenuation of baffle type acoustic window /balcony would be 6.9 dB(A) for small bedroom with use of MPA panel system for the sliding panel behind; and 8.8 dB(A) for living room with balcony without use of MPA panel.
6. It is understood that the insertion loss performance of baffle type acoustic window/balcony depends on the configuration (key parameters and use of sound absorption material). Regarding the key parameters of the baffle type acoustic window/balcony, the smaller the gap width (between outer glazing or façade and inner sliding panel)/ outer window area/ inner window area, the higher will be the insertion loss (less sound energy can enter to indoor area). Similarly, the larger the overlapping length (i.e. the overlapped portion of inner sliding panel and glazing or façade aside the outer opening when the inner sliding panel is shifted to the position behind the outer opening), the higher will be the insertion loss as well.
7. In other words, under situation when the dimension of each major parameter of the baffle type acoustic window/balcony is designed so that it would not be less favorable to insertion loss performance when compared to reference case, the insertion loss performance of the system should at least be comparable to the reference case as well. As a conservative approach, even the major parameter of the baffle type acoustic window/balcony would result in more favorable insertion loss performance, there will be no further adjustment to the sound attenuation of the reference case. That is, the sound attenuation of the reference case will not be increased for adoption to the proposed development.
8. As discussed above, sound attenuation of baffle type acoustic window/balcony refers to the additional insertion loss indoors when compared with case using conventional window. Therefore, the sound attenuation also depends on the size of conventional window and in turn the size of the habitable room (note: it is required under Buildings (Planning) Regulations that the size of window opening is at least 1/10 and 1/16 of the size of the room to fulfil prescribed natural lighting and ventilation requirement respectively). For instance, if the size of room A is smaller than room B, the corresponding conventional window size should be smaller in room A. Noise level indoors when using conventional window is expected to be lower in room A (or the insertion loss is higher in room A). Therefore, even the baffle type acoustic window/balcony of same configuration (i.e. key parameters and use of sound absorption material) is adopted for room A and room B so that the amount of sound entry to indoor location or the insertion loss is comparable for two rooms, the sound attenuation of 2 rooms with different size should be different as well. Sound attenuation of room A using baffle type acoustic window is expected to be lower because the insertion loss of room A with conventional window is expected to be higher (due to smaller window size). To take this into

consideration when adopting the sound attenuation of baffle type acoustic window/balcony of the configuration of the reference project, the sound attenuation would be adjusted if the room size of the development is different from (and smaller than) reference project.

9. It is considered that the amount of sound energy that can enter to room indoors should be proportional to the area of the window opening. The adjustment is therefore proposed by using ratio of room size of proposed case and reference case (which represents the ratio of sound energy that can enter indoor area) and then converted to decibel scale using $10 \times \log$ function.
10. For a conservative approach, if the room size of the proposed development is larger than the reference case, sound attenuation of the corresponding reference case is adopted. In other words, the sound attenuation adopted in the proposed development will be the same as the reference case or adjusted downward only.
11. It is noted that the noise level indoors will be affected by the reverberation characteristics in general. Therefore, the reverberation effect would affect the insertion loss. As the reverberation effect will vary with the room size, it means that the room size would affect the insertion loss as well. Yet, it is worth mentioned that the sound attenuation is the difference of insertion loss between the scenarios with baffle type acoustic window/balcony and conventional window. With change in room size, the insertion loss of the scenarios with baffle type acoustic window/balcony and conventional window will change at the same time. The reverberation effect will nearly cancel out each other when calculating the sound attenuation. Therefore, the change in reverberation characteristic due to variation of room size would not have any significant effect to the sound attenuation.
12. Based on the approach and methodology above, the dimensions of major parameters and room size of reference cases and individual habitable rooms in the proposed development are tabulated. As shown in the table, all major parameters of individual habitable rooms in the proposed development would not result in unfavorable sound attenuation performance when compared to the corresponding reference case.
13. In addition, the sound attenuation of individual habitable rooms in the proposed development is calculated by considering different room size and is equal to or adjusted downward when compared to the reference case.
14. The table below shows the dimensions of major parameters and room size of the habitable room in the proposed development with baffle type acoustic window adopted, and the reference case. 1mm thick MPA will be applied at the sliding panel similar to the reference case quoted above. The position of the outer fixed glazing and opened window of baffle type acoustic window/ balcony has been designed in favourable setting to avoid air gap opening towards the dominant noise sources (Figure F-2 refers). Drawings based on current proposed baffle type acoustic window/ balcony are provided for illustration (Figure F-2,3 refers). The ventilation requirement for proposed acoustic windows has been checked for compliance. The sound attenuation of reference case, adjustment factor and maximum allowed sound attenuation is tabulated in the same table. As observed, major parameters of the system adopted in the proposed development would not result in less favorable sound attenuation performance. On the other hand, the sound attenuation is adjusted downward when difference in room size is accounted.
15. It is noted that the presented predicted noise level after adopting baffle type acoustic window/balcony (i.e. mitigated noise level) does not necessarily represent the noise level at 1m away from the baffle type acoustic window of the proposed development, but the "equivalent" noise level at 1m away when conventional window is used.



KEY ACOUSTIC WINDOW PARAMETERS:

- OUTER OPENING AREA (OOA): <0.699 sqm
- OVERLAPPING LENGTH (O): >253 mm
- GAP WIDTH (G): 100 mm

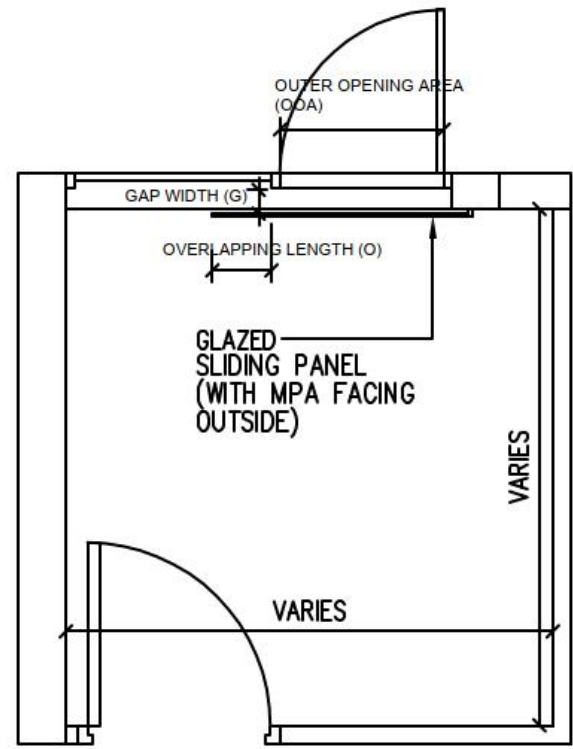
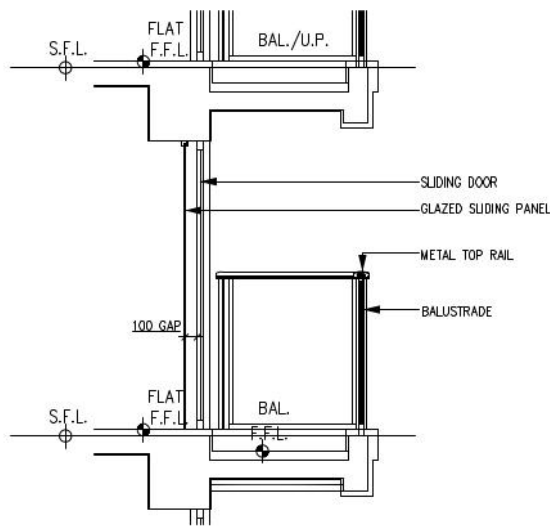
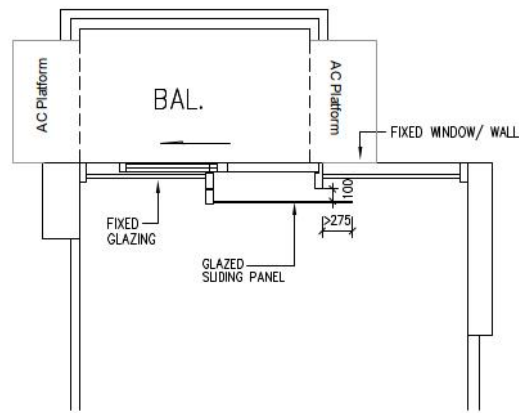


Figure: F-2	RAMBOLL
Title: Favourable Setting of Baffle Type Acoustic Window/ Balcony	Drawn by: SC Checked by: SLo
Project: Section 12A Planning Application for Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone "Residential (Group C)2" Zone to "Residential (Group B)" Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island	Rev.: 1.0 Date: 01 Aug., 2023

**Acoustic Balcony
(Baffle Type)
(NPE-Liv-SD)**



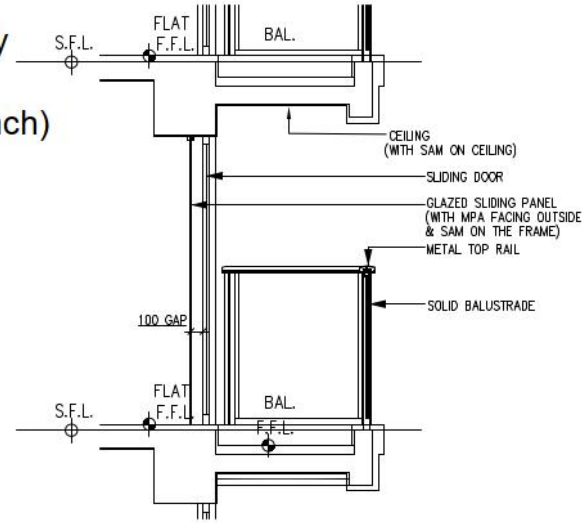
TYPICAL SECTION



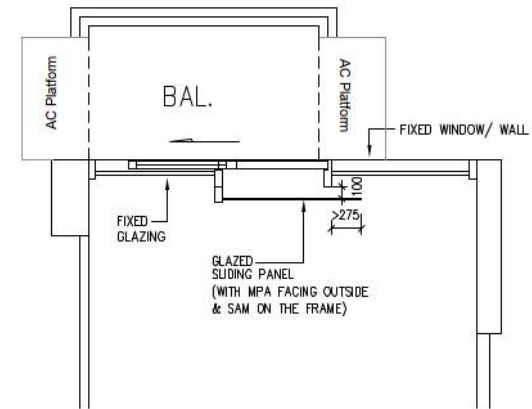
TYPICAL PLAN

Note:
The design is made reference to the reference case, it will be subject to further refinement at the detailed design stage.

**Enhanced
Acoustic Balcony
(Baffle Type)
(NPE-Liv-SD_Ench)**



TYPICAL SECTION



TYPICAL PLAN

Note:
The design is made reference to the reference case, it will be subject to further refinement at the detailed design stage.

Figure: F-3

Title: Drawing of Baffle Type Acoustic Window/ Balcony of the Reference Case



Drawn by: SC

Checked by: SLo

Project: Section 12A Planning Application for Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone "Residential (Group C)2" Zone to "Residential (Group B)" Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island

Rev.: 1.0

Date: 01 Aug., 2023

Appendix 4.1

Fixed Noise Impact Assessment Result

Appendix 4.1a - Sources of Fixed Noise

ID	Description	Activity	Coordinates			Sound Power Level (SWL), (dB(A))	Tonality Corr., dB(A) * & **
			x	y	Z		
Day and Evening-time							
TCV-d	planned pumping station at TCV-d	Pumping station	810869.4	815282.5	6.0	78	* 3.0
TCV-e 1	planned pumping station at TCV-e	Pumping station	810897.4	815377.6	6.0	67	* 3.0
TCV-e 2	planned pumping station at TCV-e	Pumping station	810917.4	815360.3	6.0	67	* 3.0
TCV-f	planned pumping station at TCV-f	Pumping station	810699.9	815441.1	6.0	75	* 3.0
PNS04	Planned PTI	Mechanical ventilation	811133.4	815592.4	6.0	86	** 3.0
PNS07	planned upgrading sewage pumping plant at CMRSPS	Pumping station	811041.9	815480.8	8.0	81	* 3.0
ENS01	Existing pumping station	Pumping station	811025.3	815434.3	8.0	77	# 3.0
Night Time							
TCV-d(night)	planned pumping station at TCV-d	Pumping station	810869.4	815282.5	6.0	78	* 3.0
TCV-e 1(night)	planned pumping station at TCV-e	Pumping station	810897.4	815377.6	6.0	67	* 3.0
TCV-e 2(night)	planned pumping station at TCV-e	Pumping station	810917.4	815360.3	6.0	67	* 3.0
TCV-f(night)	planned pumping station at TCV-f	Pumping station	810699.9	815441.1	6.0	75	* 3.0
PNS04(night)	Planned PTI	Mechanical ventilation	811133.4	815592.4	6.0	86	** 3.0
PNS07(night)	planned upgrading sewage pumping plant at CMRSPS	Pumping station	811041.9	815480.8	8.0	81	* 3.0
ENS01(night)	Existing pumping station	Pumping station	811025.3	815434.3	8.0	77	# 3.0

Noise Measurement Data for existing pumping station :

ID	Description	Activity	measured SPL, dB(A) (free-field)	Distance from Source (m)	Distance Correction, dB(A)	Calculated SWL, dB(A)
ENS01	Existing pumping station	Pumping station	56.6	4	20	77

Remark:

* For fixed noise sources at TCV-d to TCV-f, & PNS07, reference has been made to approved Tung Chung New Town Extension EIA (EIA-233/2015). Sound Power Levels (SWL) of fixed noise sources are based on maximum allowable SWLs in Table 4.29, except PNS07 which is based on Table 4.30b, of approved Tung Chung New Town Extension EIA (EIA-233/2015).

** For fixed noise sources at PNS04, reference has been made to approved Tung Chung Line Extension EIA (EIA-277/2021). Sound Power Levels (SWL) of fixed noise sources are based on maximum allowable SWLs in Appendix 4.8.1 of approved Tung Chung Line Extension EIA (EIA-277/2021).

SWL of fixed noise source is determined based on site measurement and general acoustic principal.

Appendix 4.1b - Industrial Noise Impact Assessment (day and evening time)

Assessment Point (AP)		Noise Source (NS)						Corrections, dB(A)			Unmitigated Noise Level, dB(A) [2][3]	Noise Criteria, dB(A) **	
NSR ID	Height, mPD	Fixed Noise Source ID	Description	x	y	SWL, dB(A)	Height, mPD	Slant Distance, m	Distance	Façade			Tonality
T4_NSR1	18.00	PNS04	Planned PTI	811133	815592	86.0	6.0	190.3	-53.6	3.0	3.0	38	65
		PNS07	planned upgrading sewage pumping plant at CMRSPS	811042	815481	81.0	8.0	111.6	-49.0	3.0	3.0	38	65
		ENS01	Existing pumping station	811025	815434	77.0	8.0	132.8	-50.5	3.0	3.0	33	65
		Total SPL, dB(A) [4]:											42
T5_NSR1	18.00	TCV-e_1	* planned pumping station at TCV-e	810897	815378	67.0	6.0	80.4	-46.1	3.0	3.0	27	65
		TCV-f	planned pumping station at TCV-f	810700	815441	75.0	6.0	173.1	-52.8	3.0	3.0	28	65
		TCV-d	planned pumping station at TCV-d	810869	815283	78.0	6.0	170.9	-52.7	3.0	3.0	31	65
Total SPL, dB(A) [4]:											34	65	
T6_NSR1	18.00	TCV-e_1	* planned pumping station at TCV-e	810897	815378	67.0	6.0	38.4	-39.7	3.0	3.0	33	65
		TCV-f	planned pumping station at TCV-f	810700	815441	75.0	6.0	211.8	-54.5	3.0	3.0	26	65
		TCV-d	planned pumping station at TCV-d	810869	815283	78.0	6.0	136.0	-50.7	3.0	3.0	33	65
Total SPL, dB(A) [4]:											37	65	
T7_NSR1	28.00	PNS07	planned upgrading sewage pumping plant at CMRSPS	811042	815481	81.0	8.0	60.0	-43.6	3.0	3.0	43	65
		ENS01	Existing pumping station	811025	815434	77.0	8.0	61.0	-43.7	3.0	3.0	39	65
		PNS04	Planned PTI	811133	815592	86.0	6.0	189.5	-53.6	3.0	3.0	38	65
Total SPL, dB(A) [4]:											46	65	
T8_NSR1	28.00	PNS07	planned upgrading sewage pumping plant at CMRSPS	811042	815481	81.0	8.0	73.4	-45.3	3.0	3.0	42	65
		ENS01	Existing pumping station	811025	815434	77.0	8.0	43.7	-40.8	3.0	3.0	42	65
Total SPL, dB(A) [4]:											45	65	
T9_NSR1	28.00	TCV-e_2	* planned pumping station at TCV-e	810917	815360	67.0	6.0	40.3	-40.1	3.0	3.0	33	65
		TCV-d	planned pumping station at TCV-d	810869	815283	78.0	6.0	121.4	-49.7	3.0	3.0	34	65
		TCV-f	planned pumping station at TCV-f	810700	815441	75.0	6.0	260.0	-56.3	3.0	3.0	25	65
Total SPL, dB(A) [4]:											37	65	

Notes:
 [1] The slant distance is adopted in the calculation.
 [2] Assessment is not conducted for NS with no line of sight to the AP (i.e. completely shielded by building structures, or AP is completely not facing the NS), or the whole area of the NS is located more than 300m away from the AP.
 [3] Unmitigated Noise Level = Sound Power Level of Noise Source + Distance Correction + Façade Correction + tonal correction
 Values in red exceed the daytime noise criteria of 65 dB(A).
 [4] Calculation is based on general acoustic principle using the equation = 10 x log ((L1/10)+(L2/10)+(L3/10)...+(Ln/10)); where, L1, L2, L3, Ln are the respective noise level at the receiver due to individual noise source.
 * TCV-e_1 & TCV-e_2 refer to the same planned noise source. Since the exact location of such planned noise source is subject to its detailed design, to be conservative, TCV-e_1 and TCV-e_2 that are nearest to planned NSRs at T6_NSR1 and T9_NSR1, respectively, are adopted for noise assessment purpose.
 ** According to approved Tung Chung New Town Extension EIA (EIA-233/2015), the noise criteria for future planned NSRs in this area should be 65dB(A) (day-time & evening-time) and 55dB(A)(night-time) for Area Sensitive Rating of "B".

Appendix 4.1c - Industrial Noise Impact Assessment (night-time)

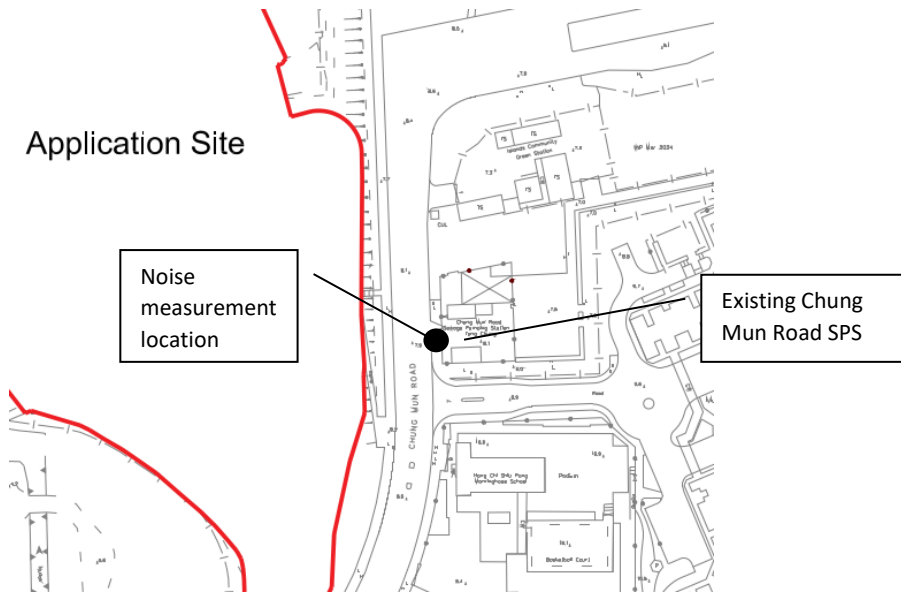
Assessment Point (AP)		Noise Source (NS)							Corrections, dB(A)			Unmitigated Noise Level, dB(A) ^{[2][3]}	Noise Criteria, dB(A) **
NSR ID	Height, mPD	Fixed Noise Source ID	Description	x	y	SWL, dB(A)	Height, mPD	Slant Distance, m	Distance	Facade	Tonality		
T4_NSR1	18.00	PNS04(night)	Planned PTI	811133	815592	86.0	6.0	190.3	-53.6	3.0	3.0	38	55
		PNS07(night)	planned upgrading sewage pumping plant at CMRSPS	811042	815481	81.0	8.0	111.6	-49.0	3.0	3.0	38	55
		ENS01(night)	Existing pumping station	811025	815434	77.0	8.0	132.8	-50.5	3.0	3.0	33	55
		Total SPL, dB(A) ^[4]:											42
T5_NSR1	18.00	TCV-e_1(night)	* planned pumping station at TCV-e	810897	815378	67.0	6.0	80.4	-46.1	3.0	3.0	27	55
		TCV-F(night)	planned pumping station at TCV-f	810700	815441	75.0	6.0	173.1	-52.8	3.0	3.0	28	55
		TCV-d(night)	planned pumping station at TCV-d	810869	815283	78.0	6.0	170.9	-52.7	3.0	3.0	31	55
Total SPL, dB(A) ^[4]:											34	55	
T6_NSR1	18.00	TCV-e_1(night)	* planned pumping station at TCV-e	810897	815378	67.0	6.0	38.4	-39.7	3.0	3.0	33	55
		TCV-F(night)	planned pumping station at TCV-f	810700	815441	75.0	6.0	211.8	-54.5	3.0	3.0	26	55
		TCV-d(night)	planned pumping station at TCV-d	810869	815283	78.0	6.0	136.0	-50.7	3.0	3.0	33	55
Total SPL, dB(A) ^[4]:											37	55	
T7_NSR1	28.00	PNS07(night)	planned upgrading sewage pumping plant at CMRSPS	811042	815481	81.0	8.0	60.0	-43.6	3.0	3.0	43	55
		ENS01(night)	Existing pumping station	811025	815434	77.0	8.0	61.0	-43.7	3.0	3.0	39	55
		PNS04(night)	Planned PTI	811133	815592	86.0	6.0	189.5	-53.6	3.0	3.0	38	55
Total SPL, dB(A) ^[4]:											46	55	
T8_NSR1	28.00	PNS07(night)	planned upgrading sewage pumping plant at CMRSPS	811042	815481	81.0	8.0	73.4	-45.3	3.0	3.0	42	55
		ENS01(night)	Existing pumping station	811025	815434	77.0	8.0	43.7	-40.8	3.0	3.0	42	55
Total SPL, dB(A) ^[4]:											45	55	
T9_NSR1	28.00	TCV-e_2(night)	* planned pumping station at TCV-e	810917	815360	67.0	6.0	40.3	-40.1	3.0	3.0	33	55
		TCV-d(night)	planned pumping station at TCV-d	810869	815283	78.0	6.0	121.4	-49.7	3.0	3.0	34	55
		TCV-f(night)	planned pumping station at TCV-f	810700	815441	75.0	6.0	260.0	-56.3	3.0	3.0	25	55
Total SPL, dB(A) ^[4]:											37	55	

Notes:

- [1] The slant distance is adopted in the calculation.
 - [2] Assessment is not conducted for NS with no line of sight to the AP (i.e. completely shielded by building structures, or AP is completely not facing the NS), or the whole area of the NS is located more than 300m away from the AP.
 - [3] Unmitigated Noise Level = Sound Power Level of Noise Source + Distance Correction + Facade Correction + tonal correction
Values in red exceed the night-time noise criteria of 55 dB(A).
 - [4] Calculation is based on general acoustic principle using the equation = $10 \times \log ((L1/10)+(L2/10)+(L3/10)...+(Ln/10))$; where, L1, L2, L3, Ln are the respective noise level at the receiver due to individual noise source.
- * TCVe_1 & TCV-e_2 refer to the same planned noise source. Since the exact location of such planned noise source is subject to its detailed design, to be conservative, TCVe_1 and TCV-e_2 that are nearest to planned NSRs at T6_NSR1 and T9_NSR1, respectively, are adopted for noise assessment purpose.

** According to approved Tung Chung New Town Extension EIA (EIA-233/2015), the noise criteria for future planned NSRs in this area should be 65dB(A) (day-time & evening-time) and 55dB(A)(night-time) for Area Sensitive Rating of "B".

Noise measurement at SPS was conducted on 22 May 2023 during day-time (9:50am) and on 23 May 2023 during night-time (12:50am)



day-time



night-time

Appendix 7.1

Previous Identified Temporary Structure for Storage and Current Aerial Photo

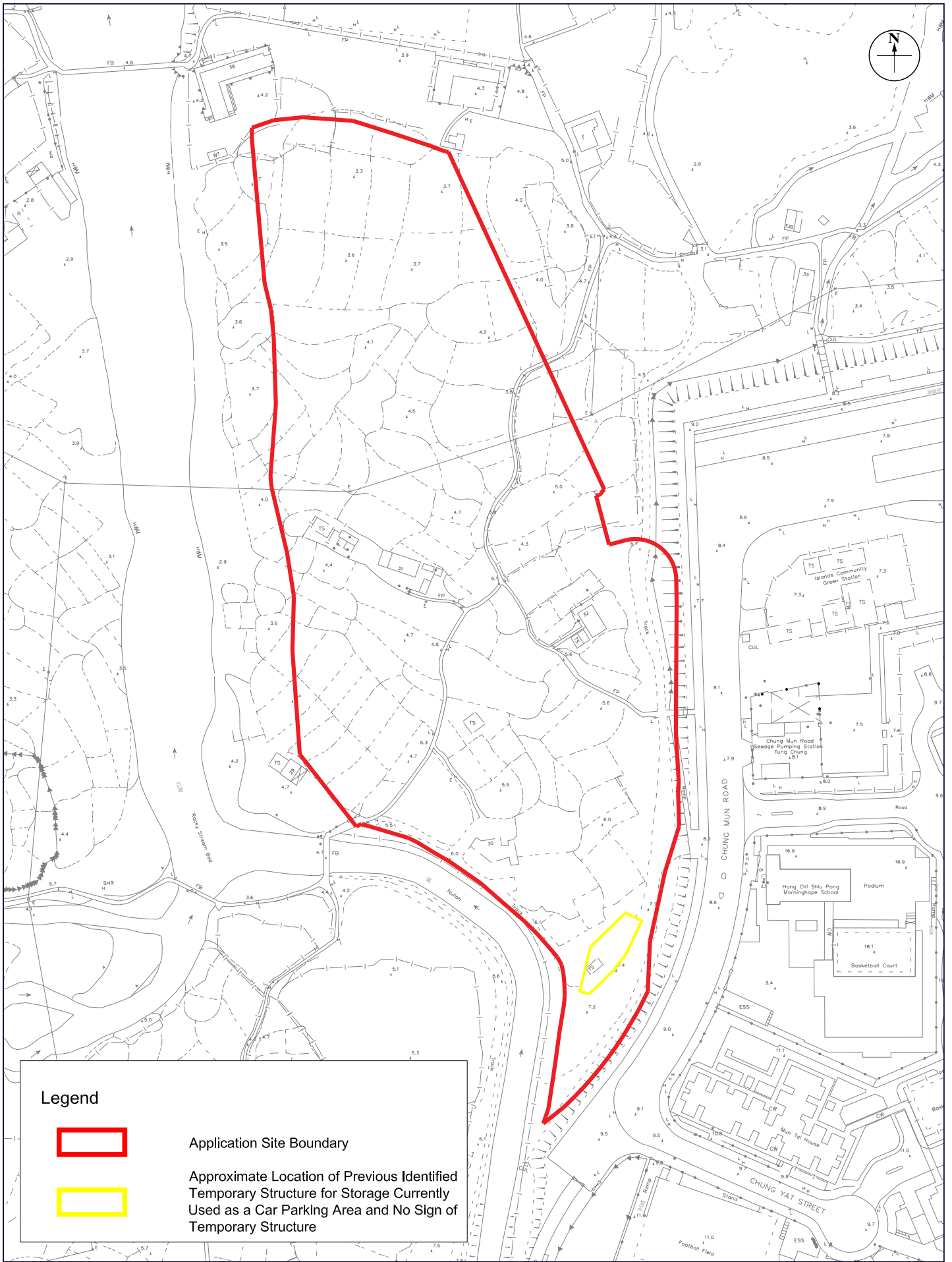


Figure: 7.1

Title: Location of Previous Identified Temporary Structure for Storage

Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone “Residential (Group C)2” Zone to “Residential (Group B)” Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island



Drawn by: EC

Checked by: HN

Rev.: 2.8

Date: Aug 2024



Legend

- Application Site Boundary
- Approximate Location of Previous Identified Temporary Structure for Storage Currently Used as a Car Parking Area and No Sign of Temporary Structure

Figure: 7.1a	RAMBOLL	
	Title: Location of Previous Identified Temporary Structure for Storage-2001	Drawn by: EC
Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone "Residential (Group C)2" Zone to "Residential (Group B)" Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island	Checked by: HN	
	Rev.: 2.8	
	Date: Aug 2024	



Figure: 7.1b

Title: Location of Previous Identified Temporary Structure for Storage-2004

Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone “Residential (Group C)2” Zone to “Residential (Group B)” Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island

RAMBOLL

Drawn by: EC

Checked by: HN

Rev.: 2.8

Date: Aug 2024



Legend

Application Site Boundary

Approximate Location of Previous Identified Temporary Structure for Storage Currently Used as a Car Parking Area and No Sign of Temporary Structure

Figure: 7.1c

Title: Location of Previous Identified Temporary Structure for Storage-2022

Project: Proposed Amendments to the Tung Chung Valley Outline Zoning Plan to Rezone “Residential (Group C)2” Zone to “Residential (Group B)” Zone in Support of Private Residential Development at Various Lots in D.D. 1 TC and Adjoining Government Land, Tung Chung, Lantau Island

RAMBOLL

Drawn by: EC

Checked by: HN

Rev.: 2.8

Date: Aug 2024



Photo 01 existing paved car parking area



Photo 02 existing car parking area is fenced off from adjacent access road



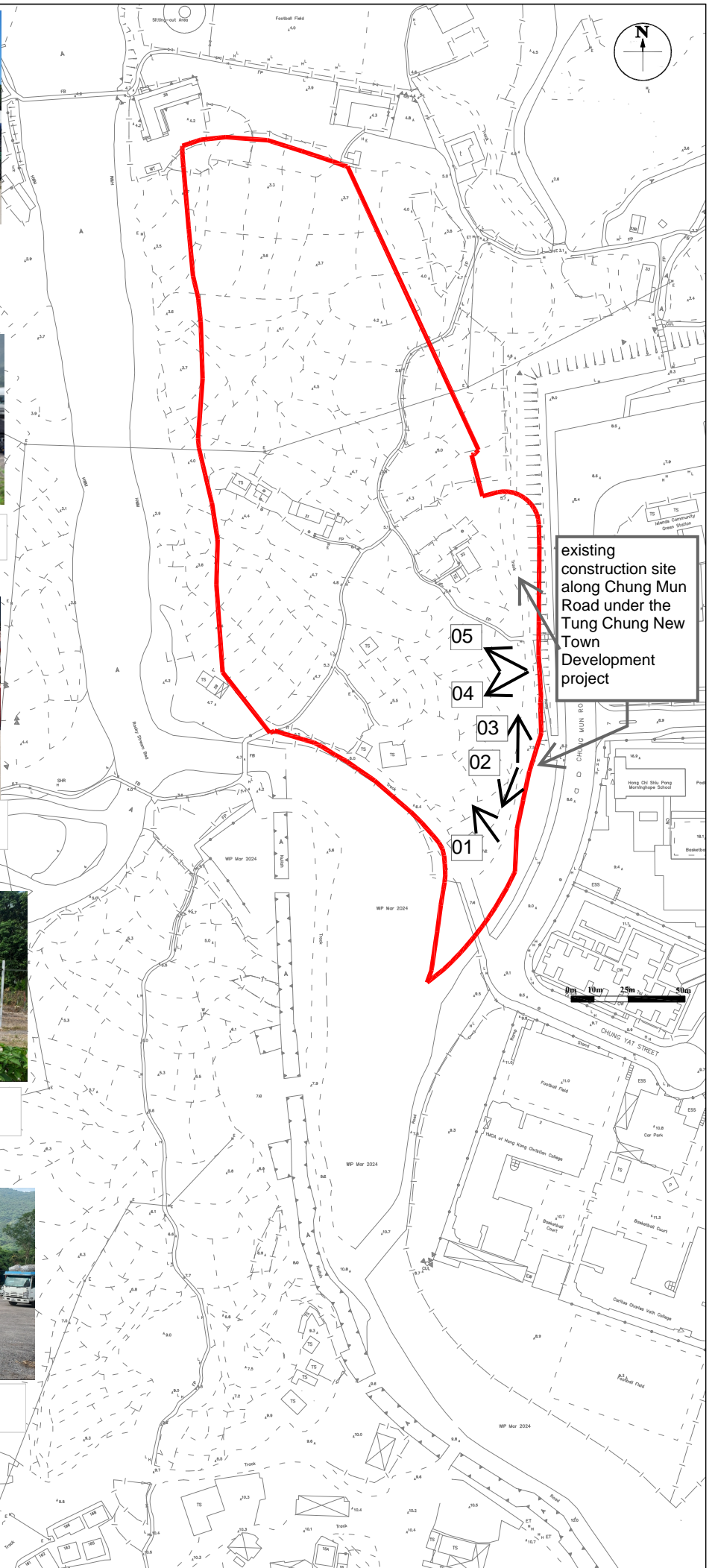
Photo 03 existing car parking area is fenced off from adjacent access road



Photo 05 existing paved car parking area



Photo 04 existing paved car parking area



existing construction site along Chung Mun Road under the Tung Chung New Town Development project

05

04

03

02

01