

Appendix D Environmental Assessment

Success Cosmos Development Limited

Proposed Residential cum Social Welfare Facilities Development at Sha Tin Town Lot (STTL) 310, Sha Tin under Section 12A of the Town Planning Ordinance (Cap. 131)

Environmental Assessment

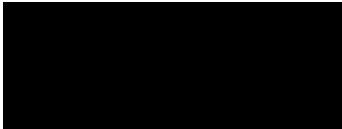
Reference: REP-01-001

Issue 02 | July 2026

This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 304537

Ove Arup & Partners Hong Kong Limited



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Executive Summary

This Environmental Assessment Study (EAS) was prepared in support of the Planning Application under Section 12A of the Town Planning Ordinance (TPO) for Proposed Residential cum Social Welfare Facilities at Sha Tin Town Lot (STTL) 310, Sha Tin. The total area of the Application Site (the Site) is about 5,225 m².

The Application Site is located to the north of Tai Chung Kiu Road and east of Lion Rock Tunnel Road. In addition, the planned Revised Trunk Road T4 is located to the west of the Site. Road traffic noise assessment for existing NSRs has estimated that a total number of 170 flats will be exposed to noise levels in excess of the 70 dB(A) criterion under the base scenario (i.e. without mitigation). The maximum noise level is 74dB(A) and the overall noise compliance rate is 62.2%. Various forms of noise mitigation measures have therefore been investigated. In order to alleviate potential road traffic noise impact, acoustic window (baffle type) and conventional acoustic balcony are recommended to mitigate the affected residential units. With this mitigation measures in place, a 100% noise compliance rate could be achieved.

A number of existing and planned fixed plants are identified within 300m of the subject site. In consideration of the large separation distances and substantial influence of road traffic noise, noise impact from these identified fixed noise sources is not anticipated. With appropriate noise mitigation measures, adverse noise impact from the planned fixed plant noise sources due to the operation of the proposed development is not anticipated.

The Tuen Ma Line (TML) is located at about 110m to the south of the Application Site. In consideration of the large separation distance and substantial influence of road traffic noise from the heavily trafficked Lion Rock Tunnel Road and Tai Chung Kiu Road, adverse rail noise impact on the proposed development is not anticipated.

The current scheme has allowed for sufficient setback distances from the nearby roads to meet the minimum requirement as stipulated in HKPSG. No existing chimney is identified within 500m of the study area. Hence, no adverse air quality impact on the proposed development is anticipated.

A preliminary land contamination site appraisal through desktop research and site survey has been conducted. Results indicate that land contamination within the Application Site is not anticipated.

Adverse waste management implications due to construction and operational phases are not anticipated provided good practices and other appropriate mitigation measures are in place.

Potential water pollution sources have been identified and mitigation measures have been recommended to mitigate any potential water quality impacts during the construction phase. With the implementation of good site practices and mitigation measures, adverse water quality impacts are not anticipated. Operational impacts associated with runoff and sewage from the development would be insignificant with proper management practices in place. The proposed development will be properly sewered and adverse water quality impact is not anticipated.

It is concluded that there are no adverse environmental impacts on the Application Site at Sha Tin Town Lot (STTL) 310 for the Application under Section 12A of the TPO.

1. Introduction

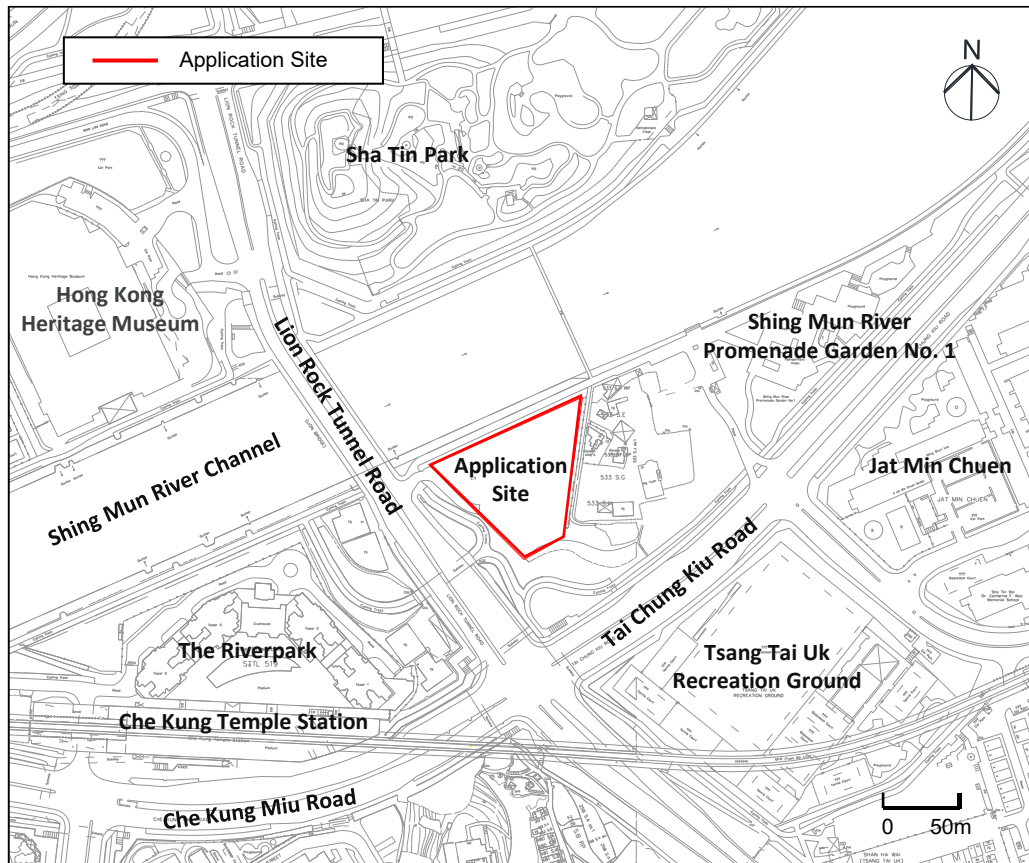
- 1.1.1.1 This Environmental Assessment Study (EAS) was prepared in support of the Application under Section 12A of the Town Planning Ordinance (Cap. 131) for Proposed Residential cum Social Welfare Facilities at Sha Tin Town Lot (STTL) 310, Sha Tin.
- 1.1.1.2 The Application Site is located to the north of Tai Chung Kiu Road and east of Lion Rock Tunnel Road. It has a total site area of about 5,225m². In accordance with the Approved Sha Tin Outline Zoning Plan (OZP) No. S/ST/38 gazetted on 16 January 2026, the current land use zoning of the Site is “Open Space” (“O”).
- 1.1.1.3 This EAS is conducted to evaluate the potential environmental impacts on the proposed development with respect to the guidance for environmental considerations provided in Chapter 9 – Environment of the Hong Kong Planning Standards & Guidelines (HKPSG). The major potential environmental impacts on the Site include:
- traffic noise impact from the nearby road network; and
 - air quality impact due to nearby road network.

2. Site Location and Building Design

2.1 Site Location and Description

- 2.1.1.1 The Application Site is located to the east of Lion Rock Tunnel Road, north of Tai Chung Kiu Road, and south of Shing Mun River. Surrounding the Site are village type houses and medium to high-rise residential developments. The location of the Application Site is illustrated in **Figure 2.1**.

Figure 2.1: Site location



- 2.1.1.2 In accordance with the Approved Sha Tin Outline Zoning Plan (OZP) No. S/ST/38, the Site is currently zoned as “Open Space” (“O”). The areas in the vicinity are mainly zoned as “Residential (Group A)” (“R(A)”), “Residential (Group A)7” (“R(A)7”), “Open Space” (“O”), “Government, Institution or Community” (“G/IC”) and “Village Type Development” (“V”).

2.2 Building Design

- 2.2.1.1 The proposed development consists of two 25 storey residential blocks set on a podium block with a total number of 450 residential flats. The reprovision of Hong Kong Bible Research and Education Centre is planned on 1/F and 2/F, while 3/F and 4/F are planned for Residential Care Home for the Elderly (RCHE). A club house is planned on the 5/F. An underground car park is planned in the basement floors of the proposed development. The anticipated population intake year of the whole development is Year 2032.

- 2.2.1.2 The latest indicative scheme, typical floor plans and schematic sections of the proposed development are provided in the Planning Statement. The internal layout plans of non-domestic floors are yet to be available at this planning application stage.
- 2.2.1.3 The key development parameters for the Application Site are given in **Table 2.1**.

Table 2.1: Key domestic development parameters for the proposed development

Parameters	Block 1	Block 2
No. of residential storeys	25	
Floor to floor height (m)	3.0	
First NSR level (mPD)	35.2	
Main roof level (mPD)	109.0	
Number of flats per floor	9	
Total number of flats	450	
Anticipated Total Population	1,125	
Tentative population intake year	2032	

2.3 EIAO Implication

- 2.3.1.1 The proposed Application Site involves a residential development with an area less than 50ha (i.e. about 5,225 m²), and hence does not constitute a designated project (DP) under Schedule 3 of the Environmental Impact Assessment Ordinance (the EIAO). Besides, the proposed works for the site does not involve any DP elements under Schedule 2 of Part I of the EIAO and hence does not constitute a DP under the EIAO.

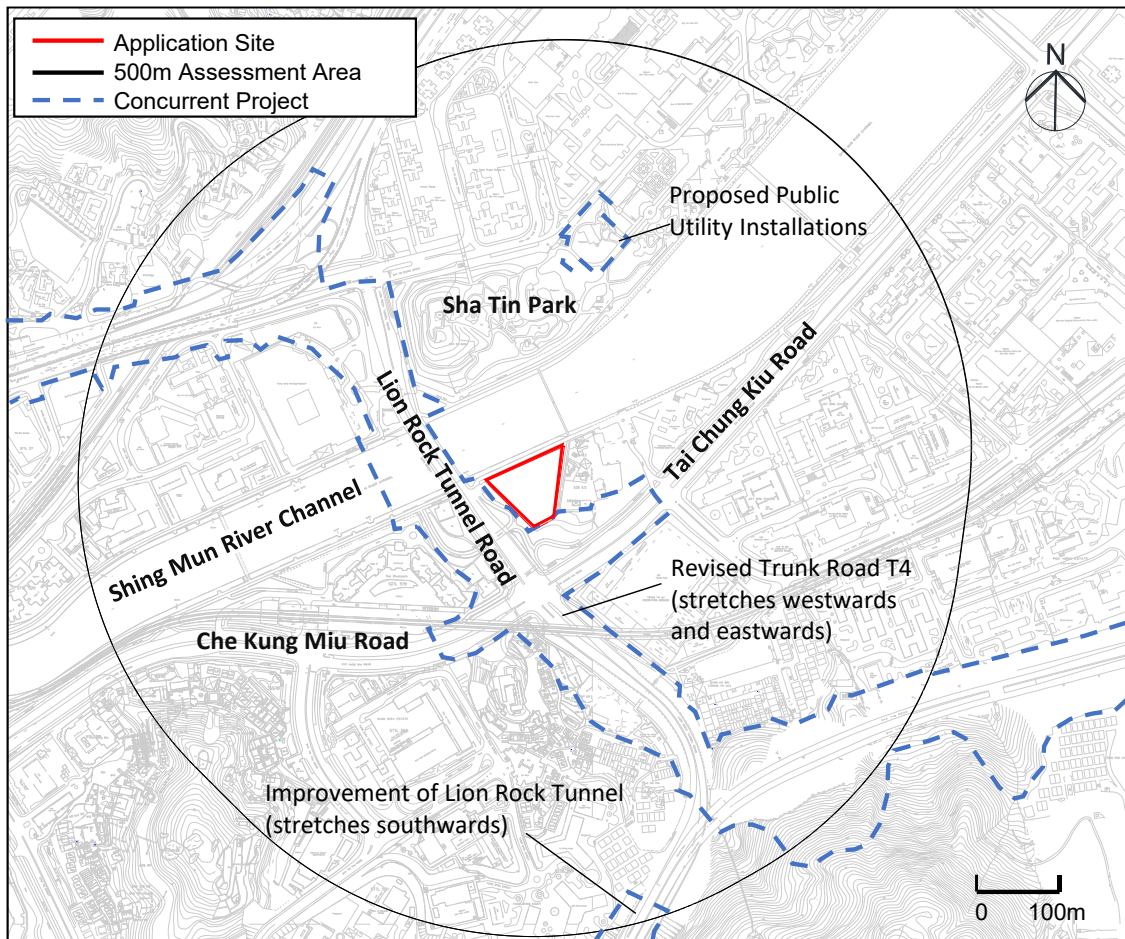
2.4 Interaction with Other Projects

- 2.4.1.1 Based on review of concurrent projects in the vicinity, three concurrent projects are identified within 500m from the boundary of the Project. The concurrent project is summarized in **Table 2.2** and shown in **Figure 2.2** below.

Table 2.2: Summary of Concurrent Project

Concurrent Project	Potential Cumulative Impacts	
	Construction Phase	Operational Phase
Proposed Public Utility Installations (Stormwater Storage and Pumping Facility) in “Open Space” Zone, Government Land at Sha Tin Park near Yi Ching Lane, Sha Tin	Cumulative impacts were addressed in this report.	The concurrent project is planned for public utility installations; no potential cumulative impacts are anticipated.
Revised Trunk Road T4 in Sha Tin	Cumulative impacts were addressed in this report.	Cumulative road traffic noise impacts were addressed in this report.
Improvement of Lion Rock Tunnel	Due to large separation distance, no potential cumulative construction impacts are anticipated.	The proposed road is more than 300m from the boundary of the Project, no potential cumulative road traffic noise impact is anticipated.

Figure 2.2: Location of Concurrent Project



3. Site Inspection

- 3.1.1.1 Site visit was carried out in February 2025. Photographs taken at the Application Site and the neighbouring areas are given in **Photo 3.1** to **Photo 3.8** below.
- 3.1.1.2 The Application Site (**Photo 3.1**) is currently occupied by Hong Kong Bible Research and Education Centre. The Application Site is bounded by Lion Rock Tunnel Road (**Photo 3.2**) to the west and Tai Chung Kiu Road (**Photo 3.3**) to the south. A farmhouse (**Photo 3.4**) is located immediately to the east of the Application Site. Tsang Tai Uk Recreation Ground (**Photo 3.5**) is located to the south, and The River Park (**Photo 3.6**) and Che Kung Temple Station (**Photo 3.7**) are located to the southwest of the Application Site. Chun Shek Bus Terminus (**Photo 3.8**) is found further away to the southwest of the Application Site.
- 3.1.1.3 Based on site observation, the noise climate in the vicinity of the Application Site was dominated by road traffic noise from Lion Rock Tunnel Road and Tai Chung Kiu Road.

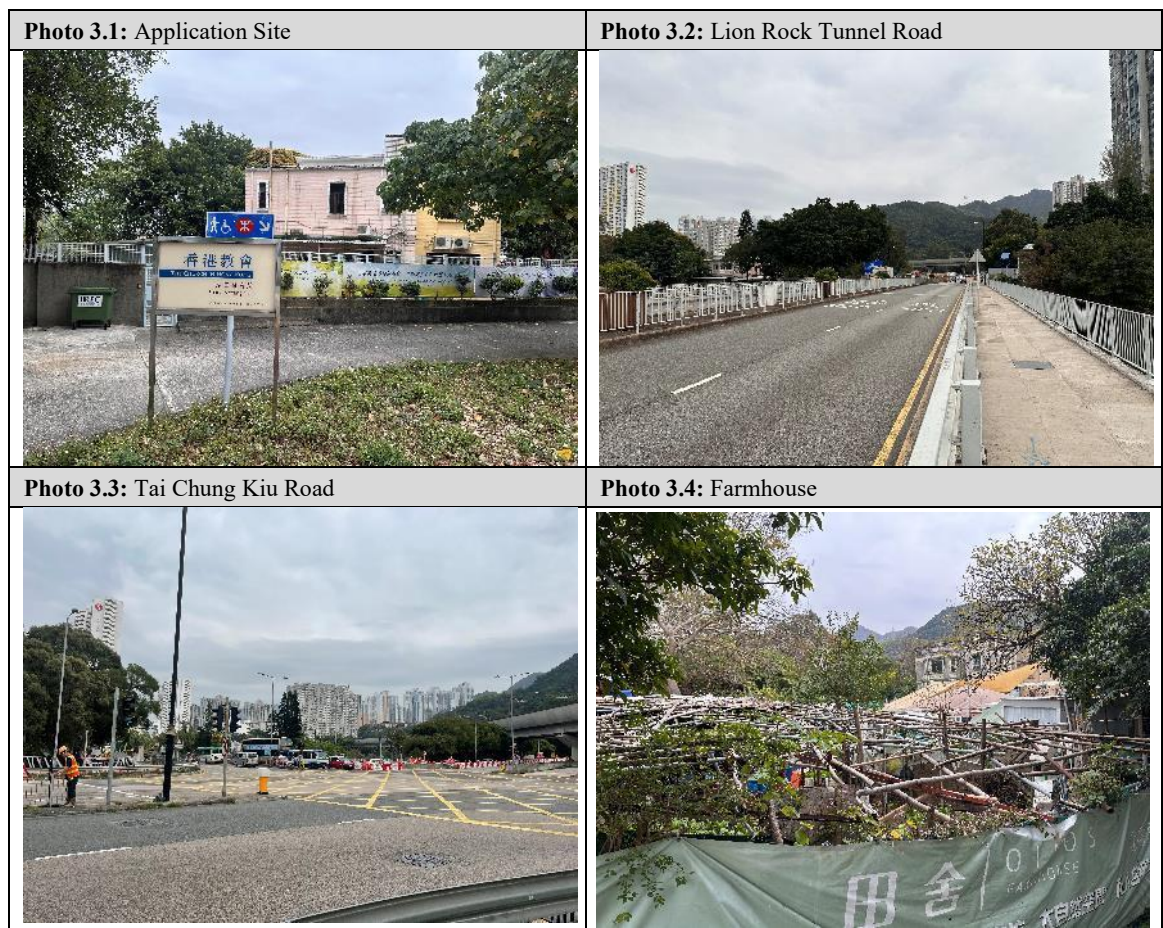
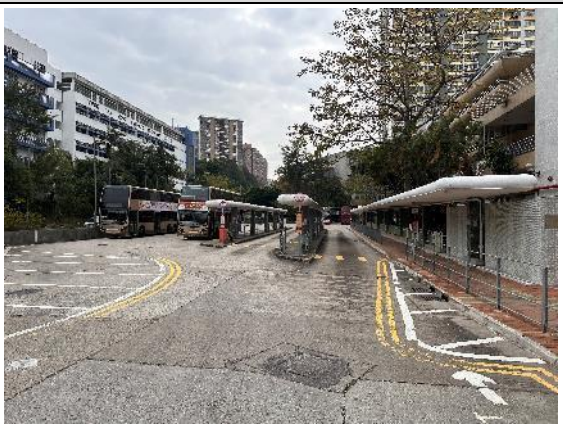


Photo 3.5: Tsang Tai Uk Recreation Ground	Photo 3.6: The River Park
 A photograph of the Tsang Tai Uk Recreation Ground. In the foreground, there is a green metal fence and a paved path where a few people are walking. In the background, several high-rise residential buildings are visible under a cloudy sky.	 A photograph of The River Park, showing two tall, modern high-rise buildings with a distinctive architectural design. The buildings are surrounded by greenery, and the sky is overcast.
Photo 3.7: Che Kung Temple Station	Photo 3.8: Chun Shek Bus Terminus
 A photograph of the Che Kung Temple Station. The station is a large, modern building with a prominent, curved, light-colored facade. It is situated next to a road with palm trees and other landscaping. High-rise buildings are visible in the background.	 A photograph of the Chun Shek Bus Terminus. The image shows a paved road with yellow markings leading to a bus stop area. Several buses are parked at the terminus. The surrounding area includes trees and buildings.

4. Road Traffic Noise Impact Assessment

4.1 Concerned Road Sections and Noise Sensitive Receivers

4.1.1.1 The noise climate in the vicinity of the Site was generally dominated by road traffic noise from Lion Rock Tunnel Road and Tai Chung Kiu Road. In addition, the planned Revised Trunk Road T4 is located to the west of the Site. With reference to CEDD's webpage¹, the target commissioning date of it will be in 2030 tentatively. Hence, it will be considered in this EAS for road traffic noise impact assessment according to the available information presented in the EIA. The road alignment is extracted from the approved EIA Report and is presented in **Appendix 4.1**.

4.1.1.2 With reference to the HKPSG, Noise Sensitive Receivers (NSRs) shall include residential uses (all domestic premises including temporary housing accommodation), institutional uses (educational institutions including kindergarten, child care centres and all others where unaided voice communication is required), hotels, hostels, offices, places of public worship, courts of law, hospitals, clinics, convalescences, residential care homes for the elderly, amphitheatres, auditoria, libraries, performing arts centres and country parks. Based on the current development plan, the proposed residential towers and proposed non-domestic facilities including the reprovisioned Hong Kong Bible Research and Education Centre and RCHE are regarded as NSRs.

4.2 Noise Criteria

4.2.1.1 In accordance with the HKPSG, the maximum permissible hourly road traffic noise levels at the external facades of different uses of NSRs for the proposed development are summarized in **Table 4.1**. These criteria apply to premises relying on opened windows as a primary means for ventilation.

4.2.1.2 As described in **Section 2.1**, the internal layout plans of non-domestic facilities are yet to be available at this Section 12A planning application stage. For the reprovisioned Hong Kong Bible Research and Education Centre on 1/F and 2/F, openable windows may be provided for the educational/ place of public worship uses. For RCHE on 3/F and 4/F, openable windows shall be provided for the domestic uses. According to HKPSG Table 4.1, the road traffic noise criteria for normal domestic uses of RCHE is 70 dB(A) L_{10(1 hour)} while for diagnostic rooms and wards of RCHE is 55 dB(A) L_{10(1 hour)}. Based on the latest indicative scheme, the proposed RCHE are provided with domestic rooms. Subject to detailed design stage, if there are any diagnostic rooms and wards within the proposed RCHE, they should be provided with central air-conditioning system and not rely on openable window for ventilation in view of heavy traffic noise impacts.

Table 4.1: Summary of noise criteria for road traffic noise

Proposed/Developments Facilities	Noise Sensitive Room with Openable Windows for Ventilation ^[1]	Uses	Noise Standards for Road Traffic Noise, L _{10(1 hour)} dB(A)
Residential Blocks	Residential Units	Domestic	70
Reprovisioned Hong Kong Bible Research and	Classrooms/ Church	Educational / Place of Public Worship	65

¹ <https://www.cedd.gov.hk/eng/our-projects/major-projects/index-id-143.html>

Proposed/Developments Facilities	Noise Sensitive Room with Openable Windows for Ventilation ^[1]	Uses	Noise Standards for Road Traffic Noise, L ₁₀ (1 hour) dB(A)
Education Centre			
Residential Care Home for the Elderly	Domestic Rooms	Domestic	70

Note:

[1] The type of facilities and use of noise sensitive rooms are generally determined with respect to with reference to Table 4.1 of HKPSG, unless otherwise specified. All sensitive rooms which rely on opened windows for ventilation are identified.

4.3 Noise Assessment Points

- 4.3.1.1 Noise assessment points for the proposed residential blocks have been assigned to all openable windows of the NSRs for ventilation. For the reprovisioned Hong Kong Bible Research and Education Centre and RCHE, as the internal layout plans are yet to be available at this planning application stage, representative noise assessment points have been assigned to the external facades of the community facilities. The locations of the selected assessment points are illustrated in **Figures 4.1 – 4.6**.

Figure 4.1: Selected assessment points for Block 1 (road traffic noise assessment)

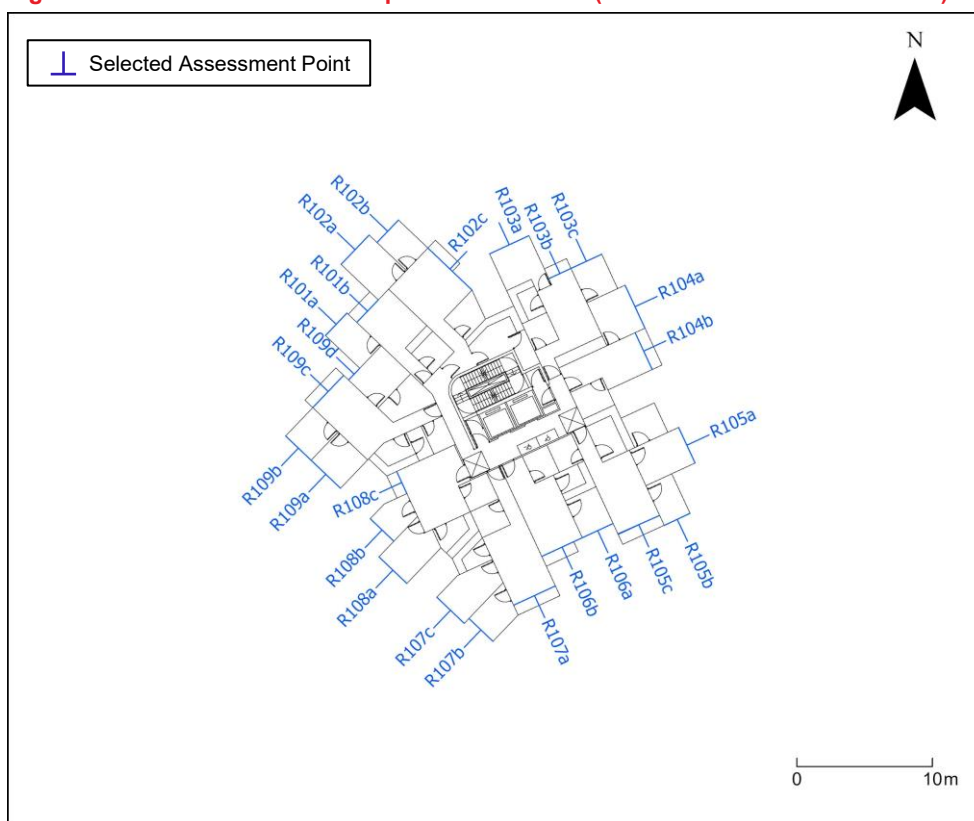


Figure 4.2: Selected assessment points for Block 2 (road traffic noise assessment)

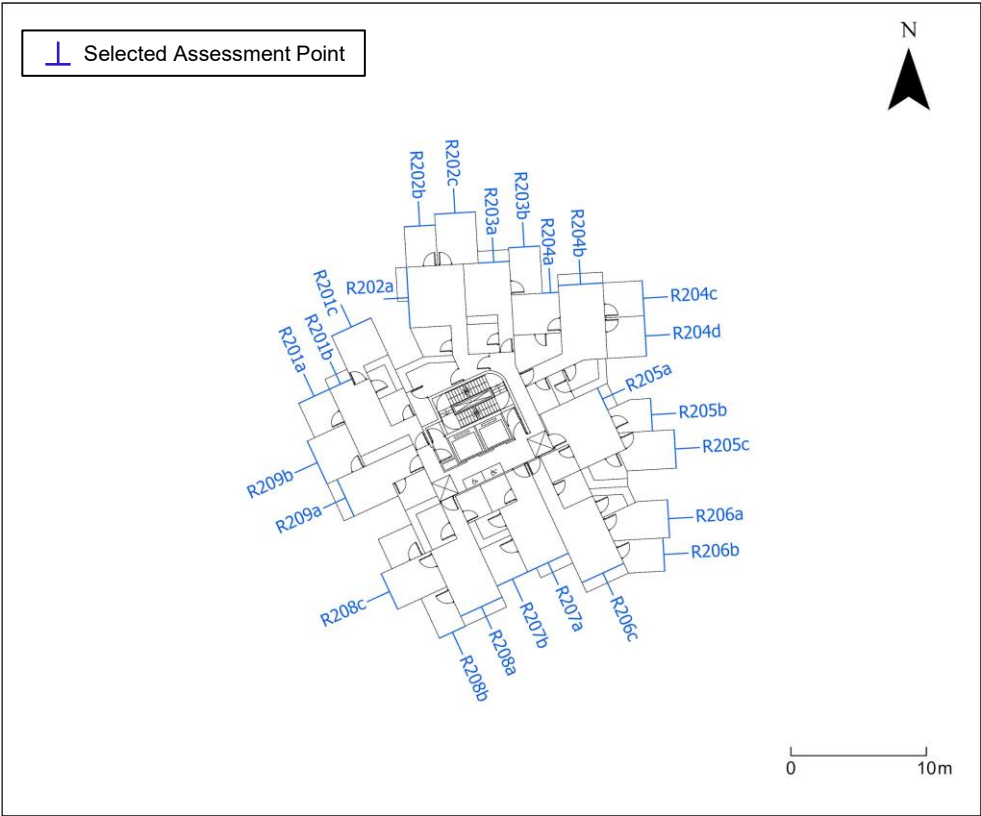


Figure 4.3: Selected assessment points for Reprovisioned Hong Kong Bible Research and Education Centre on 1/F (road traffic noise assessment)

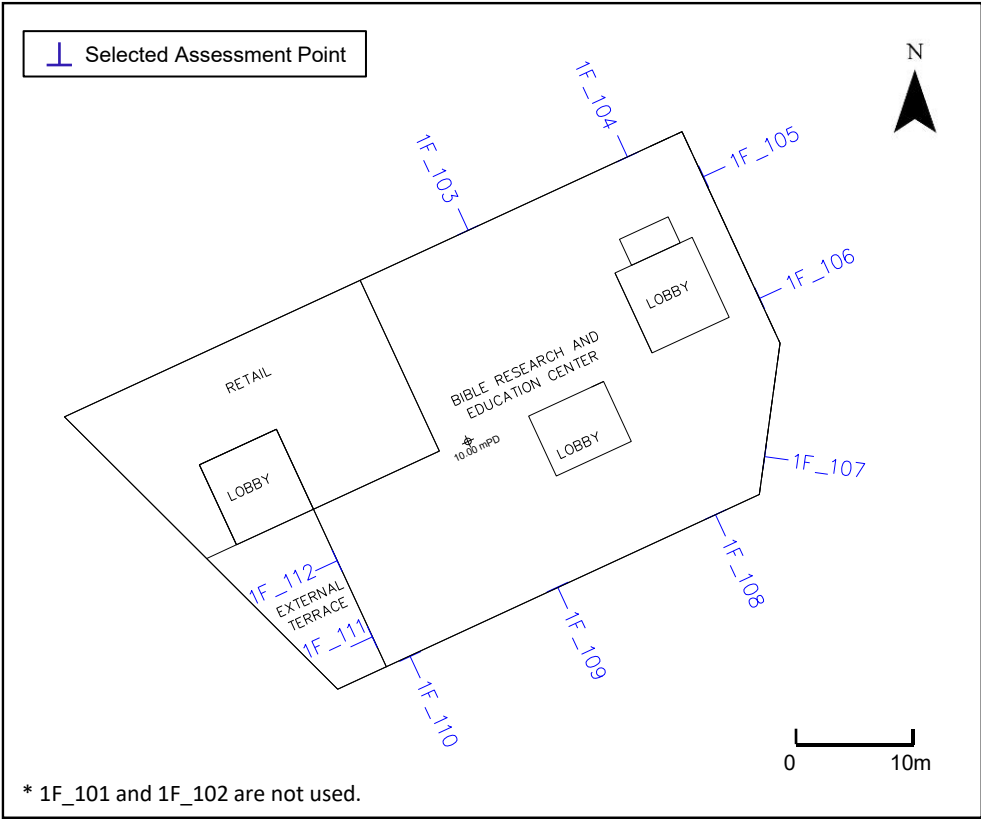


Figure 4.4: Selected assessment points for Reprovisioned Hong Kong Bible Research and Education Centre on 2/F (road traffic noise assessment)

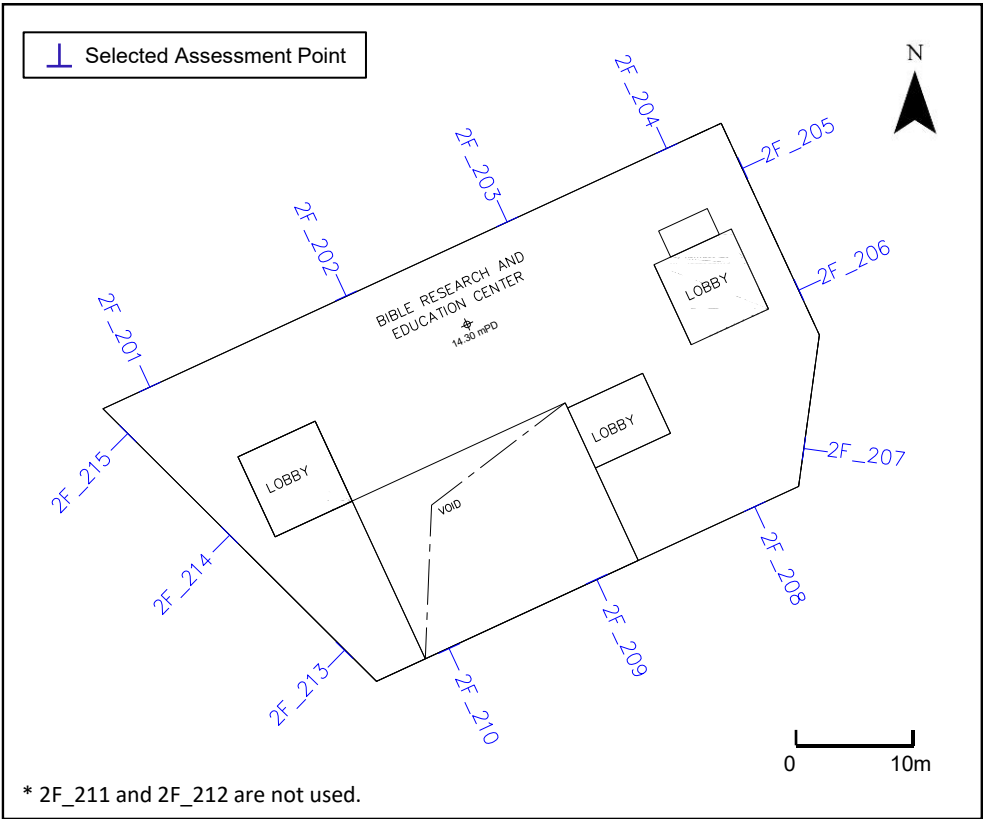


Figure 4.5: Selected assessment points for RCHE on 3/F (road traffic noise assessment)

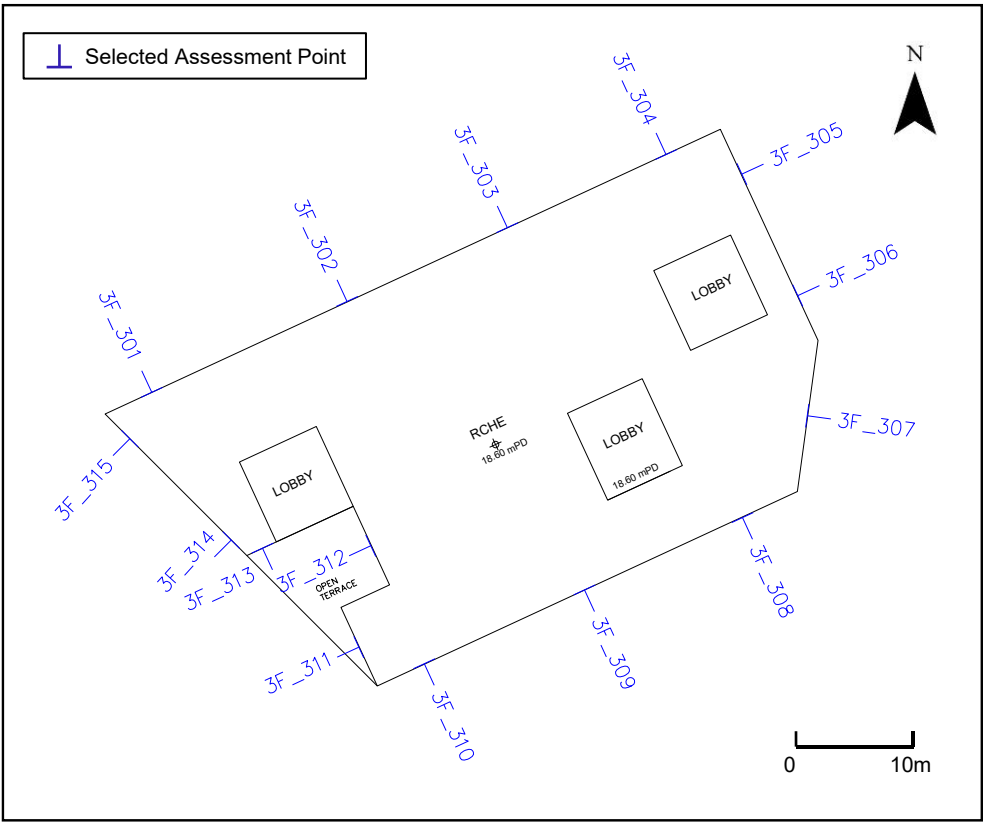
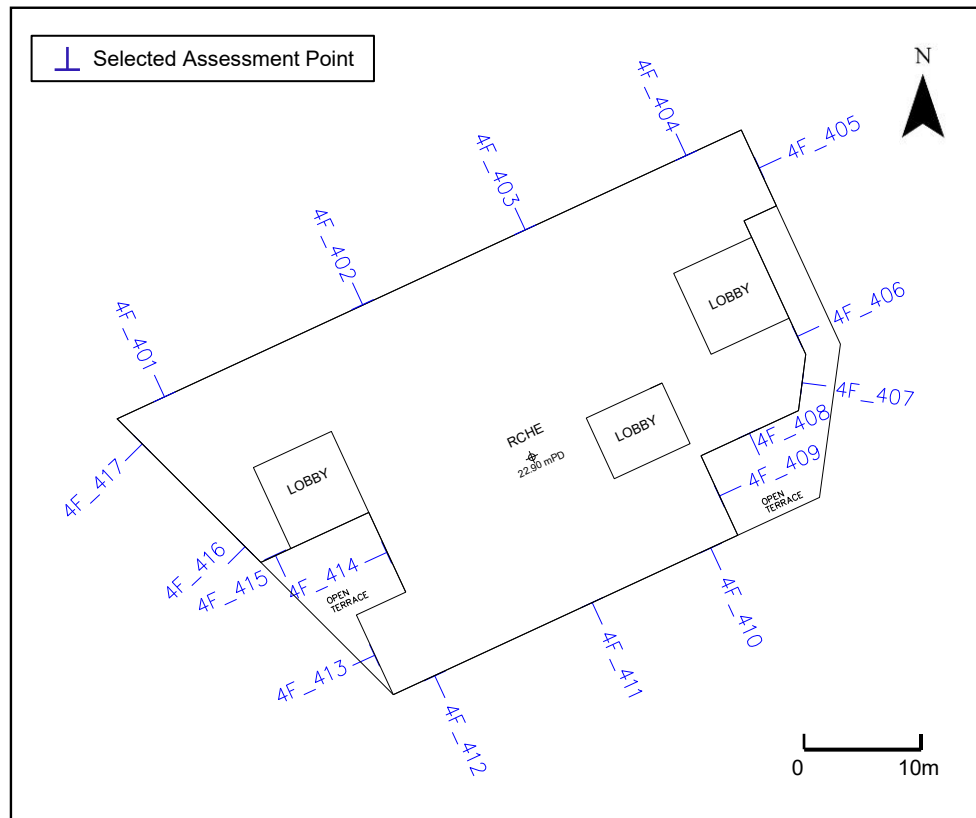


Figure 4.6: Selected assessment points for RCHE on 4/F (road traffic noise assessment)



4.4 Assessment Methodology

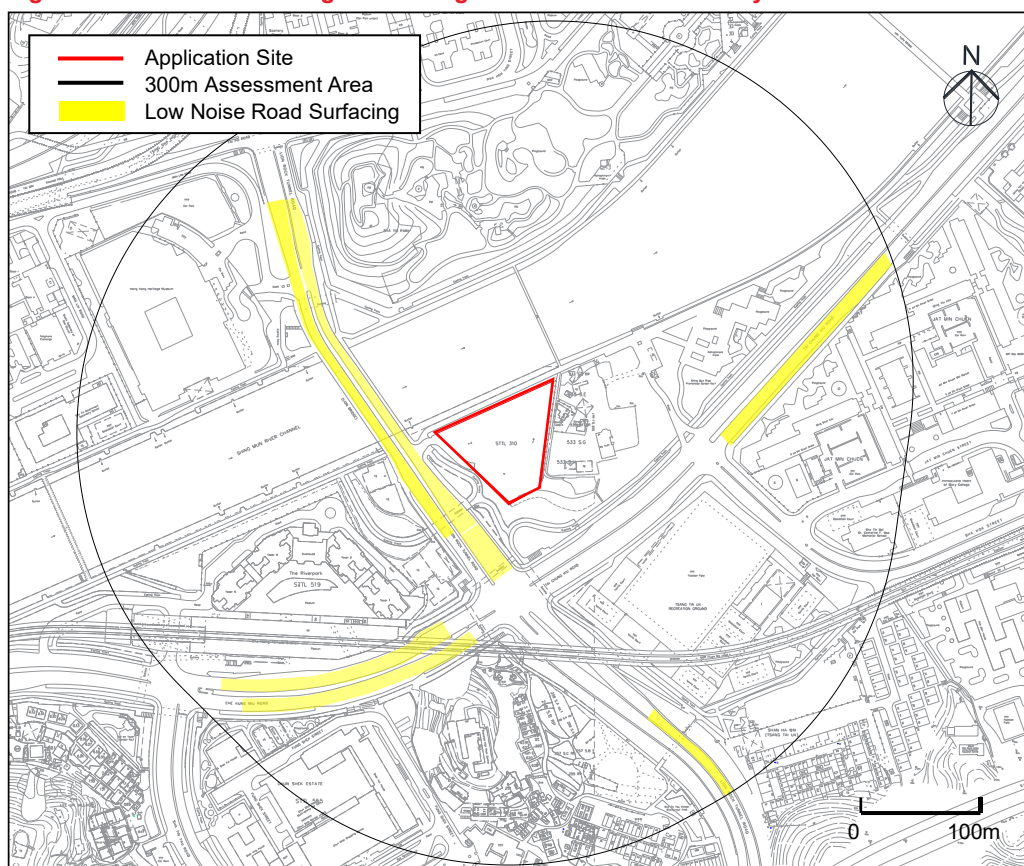
- 4.4.1.1 Traffic noise levels at the facades of the selected assessment points have been predicted. The prediction is based on the maximum traffic projection within 15 years upon the population intake of the development and calculation method in accordance with the UK Department of the Transport "Calculation of Road Traffic Noise" (CRTN).

4.5 Existing and Planned Noise Mitigation Measures on Nearby Road

4.5.1 Existing Noise Mitigation Measures

- 4.5.1.1 Low noise road surfacing (LNRS) is in place along Che Kung Miu Road, Lion Rock Tunnel Road and Tai Chung Kiu Road respectively, as advised by the Environmental Protection Department (EPD) and according to the approved EIA Report of the Revised Trunk Road T4 (AEIAR-231/2022). No existing noise barriers are in place on road sections within the 300m assessment area. The extent of existing noise mitigation measures within 300m assessment area is shown in **Figure 4.7** below.

Figure 4.7: Extent of existing noise mitigation measures on nearby roads



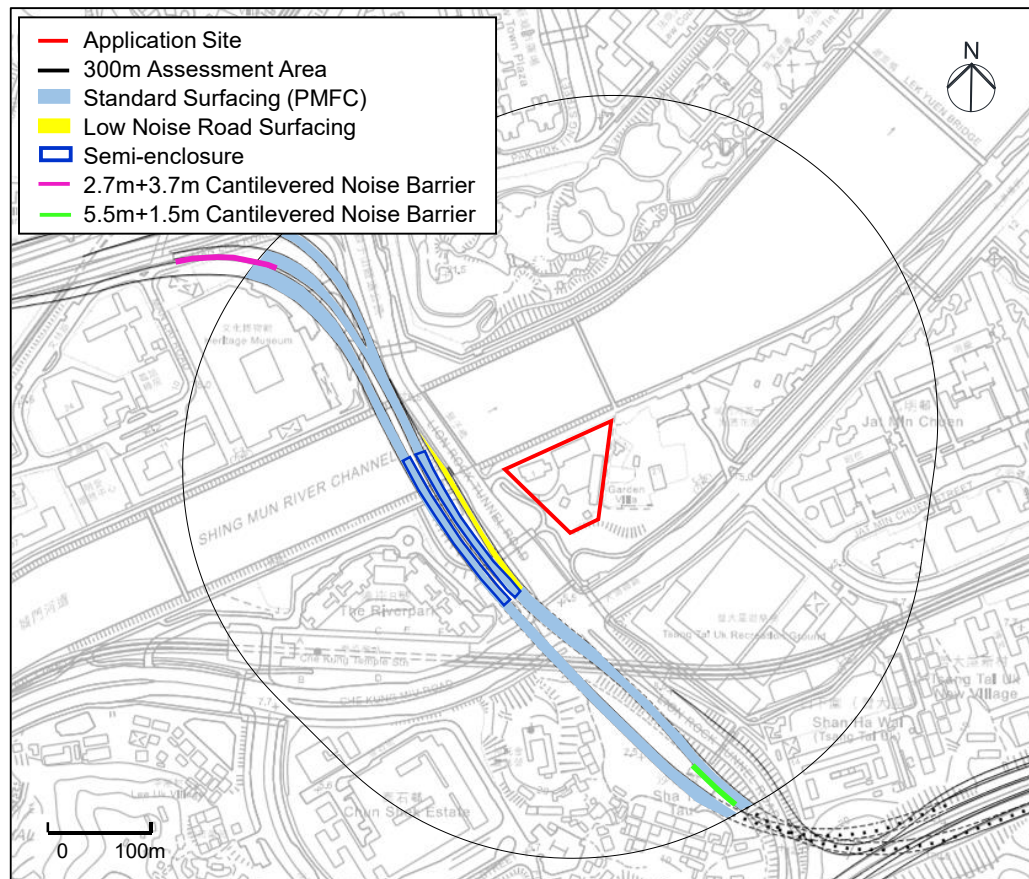
4.5.2 Planned Noise Mitigation Measures on Revised Trunk Road T4

4.5.2.1 The approved EIA Report of the Revised Trunk Road T4 (AEIAR-231/2022) has proposed at-source noise mitigation measures on the planned roads to relieve the noise impacts caused by its new road infrastructure works. The proposed noise mitigation measures on the Revised Trunk Road T4 which are within 300m assessment area of the Site are described below.

- Standard surfacing material (Polymer Modified Friction Course, PMFC) along the proposed roads with design speed of 70km/h or above;
- Low noise road surfacing of about 210m in length along the proposed slip road nearby The River Park;
- Two sections of semi-enclosure (at least 6m high) of about 160m in length along a section of the proposed road nearby The River Park;
- One section of cantilevered noise barrier (2.7m high with 3.7 cantilever arm) of about 50m in length along a section of the proposed road nearby Sha Tin Tau Village; and
- One section of cantilevered noise barrier (5.5m high with 1.5m cantilever arm) of about 100m in length along a section of the proposed road nearby Hong Kong Heritage Museum.

4.5.2.2 The extent of planned noise mitigation measures on revised trunk road T4 within 300m assessment area is shown in **Figure 4.8** below. Details extracted from the approved EIA Report to be referred to **Appendix 4.1**.

Figure 4.8: Extent of proposed noise mitigation measures on revised trunk road T4 within 300m assessment area



- 4.5.2.3 The existing and planned noise mitigation measures on road sections within the 300m assessment area of the proposed development as described above have been incorporated into the base case of the traffic noise model of the present study.

4.6 Traffic Flow Data for Assessment

- 4.6.1.1 As advised by the Traffic Consultant, the maximum traffic flow within 15 years upon population intake of the residential development will occur in Year 2047. Traffic Impact Assessment (TIA) including the methodology on the traffic forecast for the EAS has been submitted to Transport Department (TD) for endorsement. Reply from TD is yet to be provided at the time of preparing this report and will be supplemented in later stage. The traffic consultant had checked and confirmed the validity of the traffic data, which was derived based on the traffic forecast methodology submitted to TD.
- 4.6.1.2 The roads surrounding the Site and the predicted peak hourly traffic flows are presented in **Figure 4.9** and **Table 4.2** respectively. The traffic flow data for all roads is given in **Appendix 4.2**.

Figure 4.9: Traffic ID for major road in the vicinity

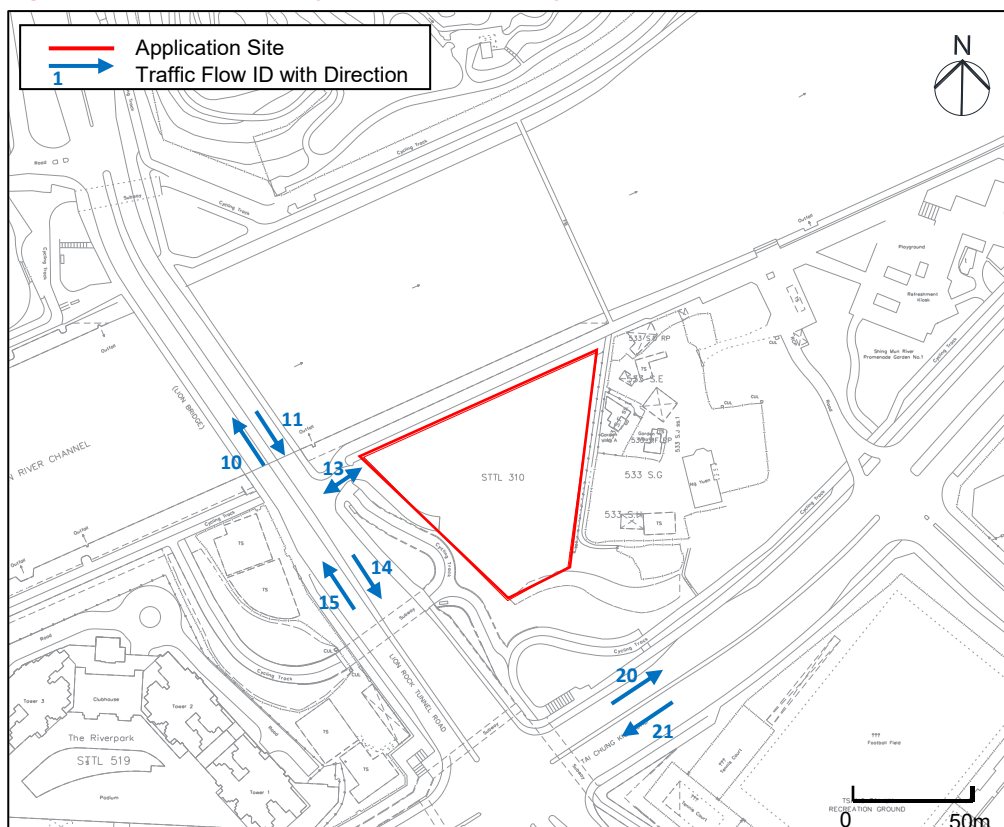


Table 4.2: Predicted peak hourly traffic flow data on major roads

Road ID ^[1]	Road Description	Direction ^[2]	Speed Limit (km/hr)	Year 2047	
				Traffic Flow (veh/hr)	% of Heavy Vehicles
10	Lion Rock Tunnel Road	NB	50	1,000	16%
11	Lion Rock Tunnel Road	SB	50	1,200	20%
13	Local Access Road	EB/WB	50	200	20%
14	Lion Rock Tunnel Road	SB	50	1,250	18%
15	Lion Rock Tunnel Road	NB	50	650	16%
20	Tai Chung Kiu Road	EB	50	900	23%
21	Tai Chung Kiu Road	WB	50	850	21%

Note:

[1] Only the major roads are shown in the table above. Hence, the flow ID is not in sequential order.

[2] EB – Eastbound; SB – Southbound; WB – Westbound; NB – Northbound.

4.7 Optimized Building Design

4.7.1.1 Optimized building design and orientation have already been incorporated into the current layout scheme for the base scenario, as described below:

4.7.2 Building Block Design, Layout and Orientation

4.7.2.1 The current scheme is found to be the optimal option from the perspective of development efficiency, flat production, noise performance, scenery and angle of view, etc.

4.7.3 Podium

- 4.7.3.1 Approximately 26.5m high podiums have been designed for the current scheme which can increase the separation between the residential units and Lion Rock Tunnel Road and Tai Chung Kiu Road to achieve noise reduction, in particular for units on lower floors.

4.7.4 Building Setback

- 4.7.4.1 The Site is very small and has limited space available for building setback to reduce the noise impact effectively. Nonetheless, the building block has been deposited with optimised setback distance from Lion Rock Tunnel Road and Tai Chung Kiu Road as far as practicable to minimize the traffic noise impact.

4.8 Assessment Results

- 4.8.1.1 With the above optimised design, it is estimated that a total of 170 flats will be exposed to the noise level in excess of the 70dB(A) criterion with an overall noise compliance rate of 62.2%. Results of the road traffic noise assessments for the proposed residential development are summarised in **Table 4.3**. Details are presented in **Appendix 4.3**.

Table 4.3: Road noise assessment results (Base Scenario)

Scenario	Total No. of Flats	No. of Flats Exceeding the Noise Criteria	Max. Predicted Noise Levels, dB(A)	Compliance Rate
Basecase Scenario	450	170	73.8	62.2%

- 4.8.1.2 Results indicate that the predicted exceedances are located on the western façade of Block 1 and the southern façades of Block 1 and Block 2 which are primarily affected by Lion Rock Tunnel Road and Tai Chung Kiu Road. The locations of exceedances are shown in **Figures 4.10 - 4.11** below.

Figure 4.10: Locations of predicted exceedances in Block 1

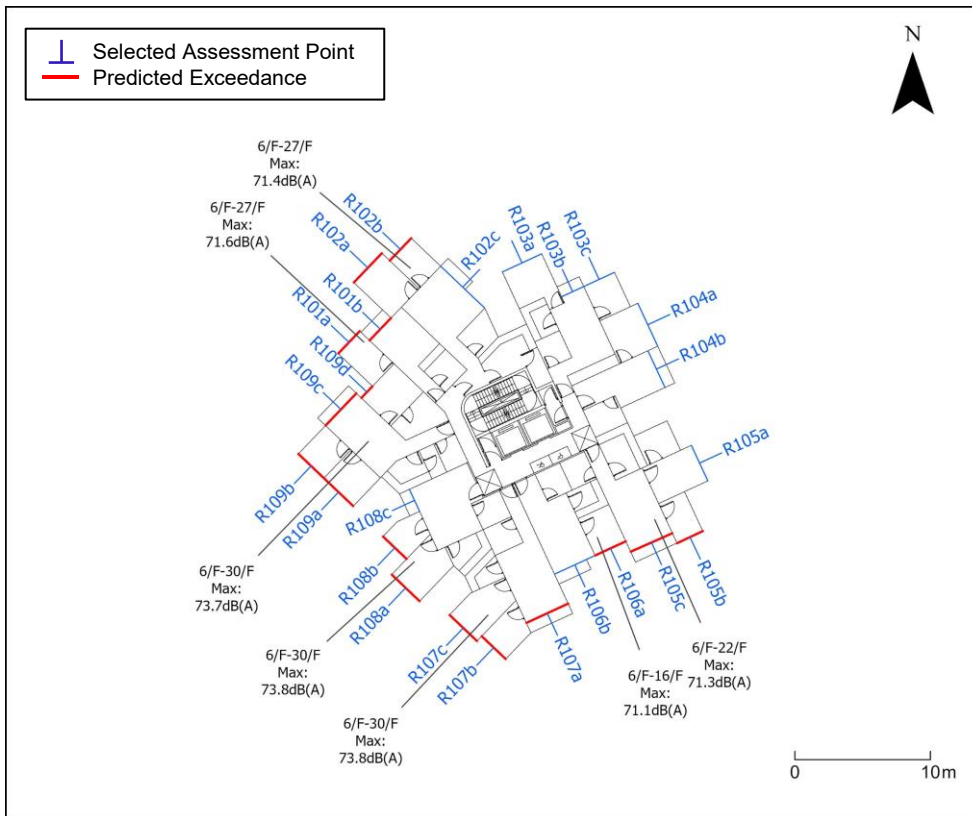
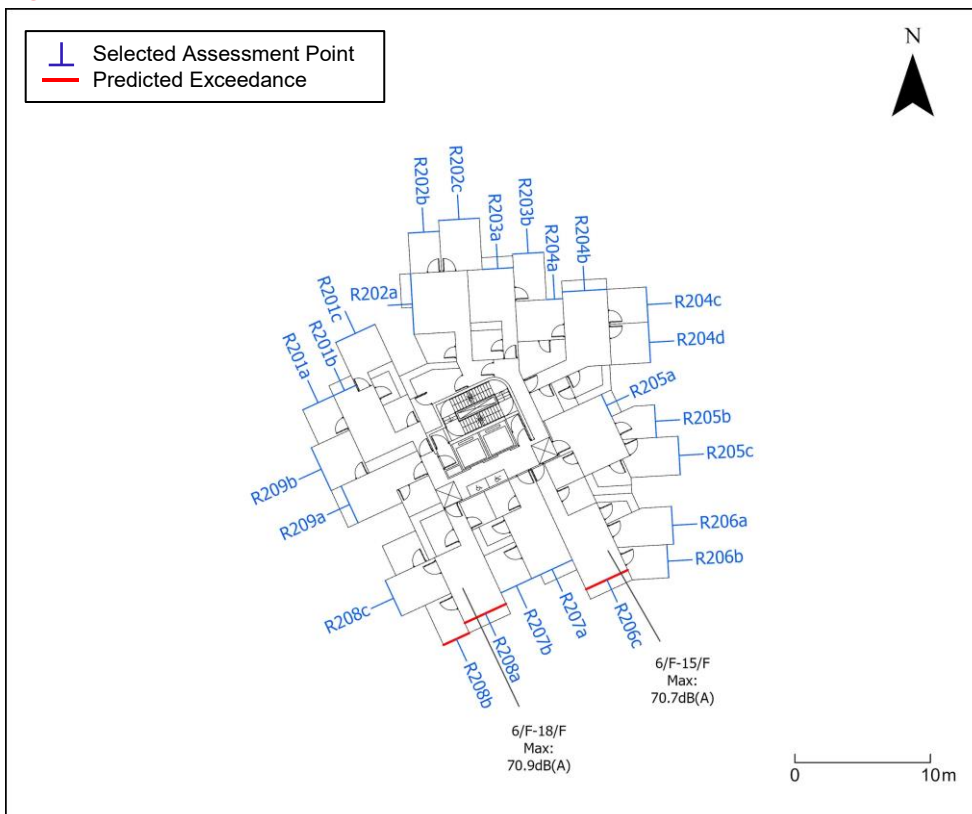


Figure 4.11: Locations of predicted exceedances in Block 2



4.9 Noise Mitigation Measures for Residential Block

4.9.1.1 Optimized building design has been adopted in the current scheme as described in the above sections. Other practicable noise mitigation measures have also been investigated and the findings are discussed as follows:

4.9.2 Acoustic Windows Design (Baffle Type)

4.9.2.1 Based on the assessment results of base scenario, acoustic window (baffle type) is proposed as mitigation measure. The acoustic window is designed with two layers of window including push open window at outer layer and sliding window at inner layer. The opening and gap between the two layers of window allows sufficient air flow to satisfy ventilation requirement; while at the same time, direct transmitted noise to the room is obstructed by inner slide window and hence noise reduction could be achieved. In order to achieve the intended noise reduction, the sliding window should be behind the opened side-hung window while the fixed glazing should be kept close. Special locking device (e.g. allen key) would be installed to the fixed glazing at the outer layer for keeping them in the above setting. The fixed glazing at the outer layer needs not to be opened for ventilation. The schematic and sectional drawing of the proposed acoustic window (baffle type) is extracted from Practice Note on Application of Acoustic Windows (Baffle Type) in Planning Residential Developments against Road Traffic Noise Impact and shown in **Figure 4.12**. The locations of the proposed acoustic window (baffle type) are summarised in **Table 4.4** and indicated in **Figure 4.14** and **Figure 4.15**. On referencing to EPD's Practice Note on Application of Innovative Noise Mitigation Designs in Planning Private Residential Developments against Road Traffic Noise Impact (PN), noise attenuation by the acoustic window (baffle type) is taken as 4dB(A) for this assessment.

Figure 4.12: Schematic and sectional drawing of acoustic window

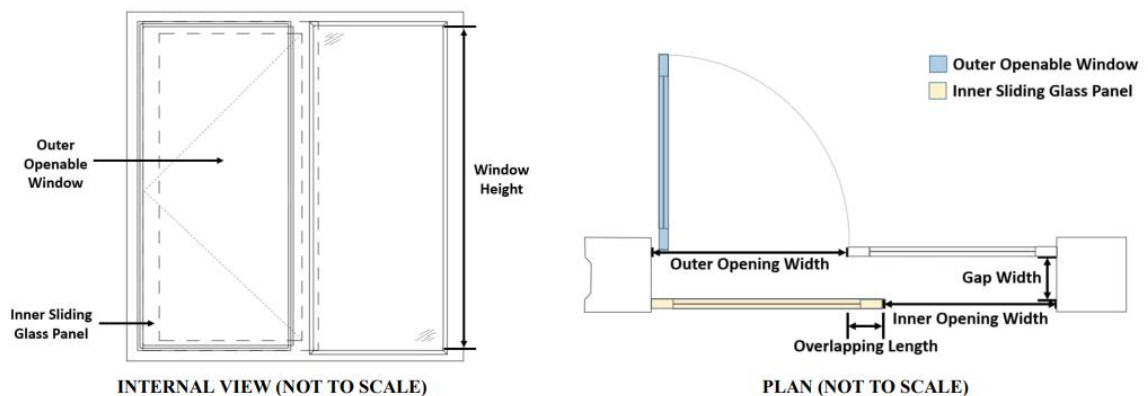


Table 4.4: Locations of proposed acoustic windows for mitigating road traffic noise

Acoustic Window at NSR	Floors Requiring Acoustic Window ^[1]
R101a	6/F to 27/F
R102a	6/F to 27/F
R102b	6/F to 11/F
R105b	6/F to 22/F
R106a	6/F to 16/F
R107b	6/F to 30/F
R107c	6/F to 30/F
R108a	6/F to 30/F
R108b	6/F to 30/F
R109a	6/F to 30/F
R109b	6/F to 30/F
R109d	6/F to 15/F
R208b	6/F to 18/F

Note:

[1] The first domestic floor starts on 6/F.

- 4.9.2.2 Detailed design of the proposed acoustic window (baffle type) is not available at this stage yet and therefore, the design (i.e. window opening size, overlapping length, gap width between window panel, etc.) will be referenced to EPD's PN. Besides, the proposed acoustic window (baffle type) is parallel and in 30° - 60° to the dominant line source, which could comply with the PN.
- 4.9.2.3 According to the PN, while the noise attenuation of acoustic window (baffle type) would vary with room sizes and window opening size, the following ranges of variations would not significantly affect the noise attenuation of acoustic window (baffle type):
- Variations of room size within $\pm 10\%$;
 - Variations of floor-to-ceiling height within $\pm 5\%$; and
 - Variations of window opening size $\pm 5\%$.
- 4.9.2.4 Should there be any variation on the room size and window opening size is required, justifications with technical documents such as corrections, laboratory testing reports, in-situ measurement reports, etc. should be submitted to EPD for consideration. The principal and set-up of the laboratory and in-situ measurements should be agreed with EPD.

4.9.3 Conventional Acoustic Balcony Design

- 4.9.3.1 Acoustic balcony with specific configurations is proposed as a mitigation measure for R101b, R105c, R107a, R109c at Block 1, and R206c, R208a at Block 2, where about 0.1 to 1.2 dB(A) exceedance of traffic noise criterion is predicted. The conventional acoustic balcony is designed with a depth of 1.15m, and solid parapet of about 1.45 m high along the edge of balcony. Sound absorptive material will be applied on the ceiling and the inner side of the side wall. The sectional drawing of the proposed acoustic balcony is reference to EPD's website and shown in **Figure 4.13**. The locations of the proposed acoustic balconies are summarised in **Table 4.5** and indicated in **Figure 4.14** and **Figure 4.15**. On referencing to EPD's website², noise attenuation by the acoustic balcony is taken as 2.5dB(A) for this assessment.

² https://www.epd.gov.hk/epd/Innovative/greeny/eng/balcony_soild.html

Table 4.5: Proposed locations of conventional acoustic balcony design as mitigation measure for road traffic noise

Conventional Acoustic Balcony at NSR	Floors Requiring Conventional Acoustic Balcony ^[1]
R101b	6/F to 9/F
R105c	6/F to 20/F
R107a	6/F to 22/F
R109c	6/F to 22/F
R206c	6/F to 15/F
R208a	6/F to 15/F

Note:

[1] The first domestic floor starts on 6/F

Figure 4.13: Sectional drawing of acoustic balcony

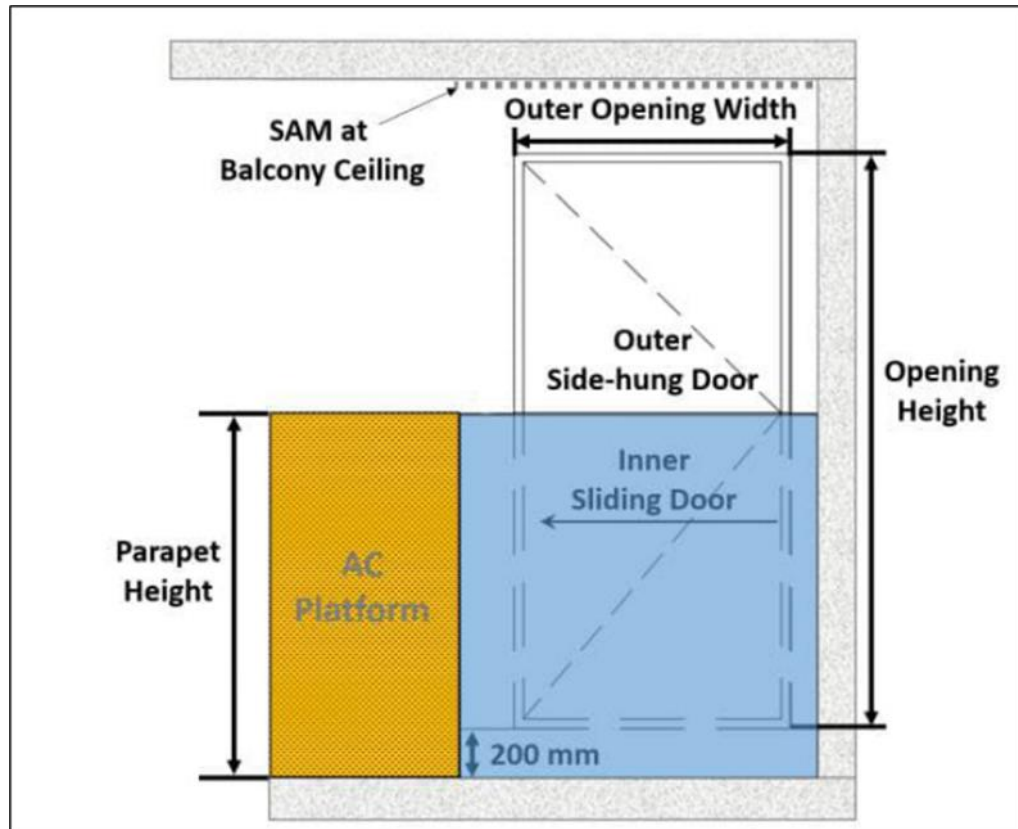


Figure 4.14: Proposed mitigation measures for Block 1

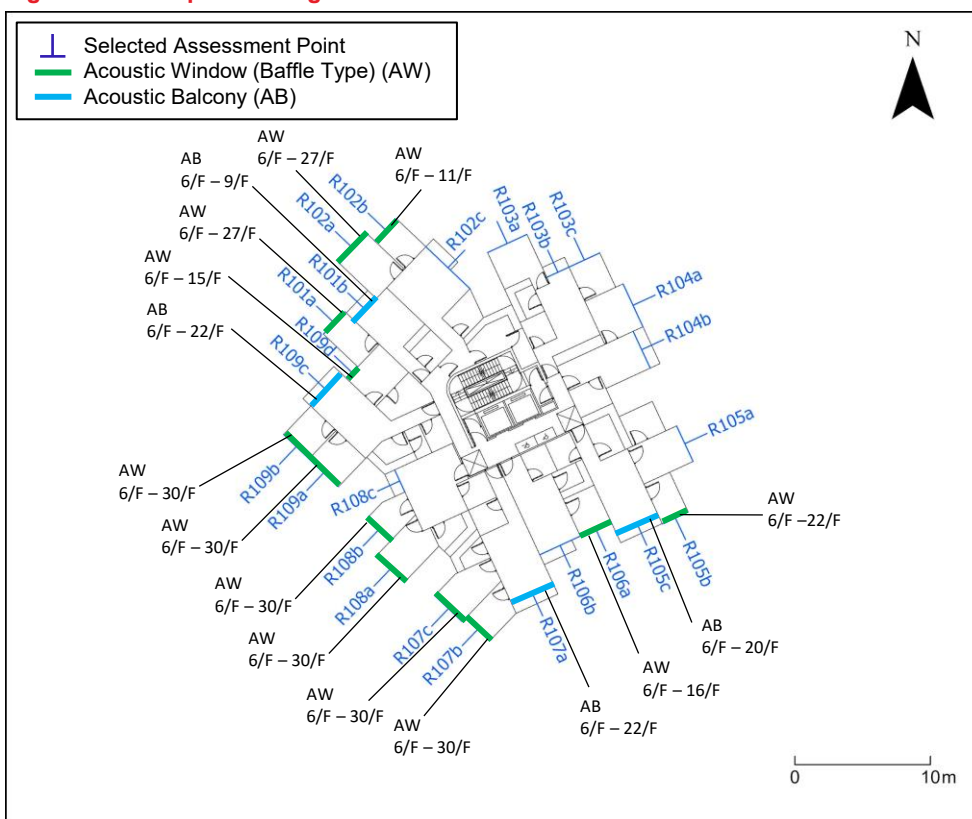
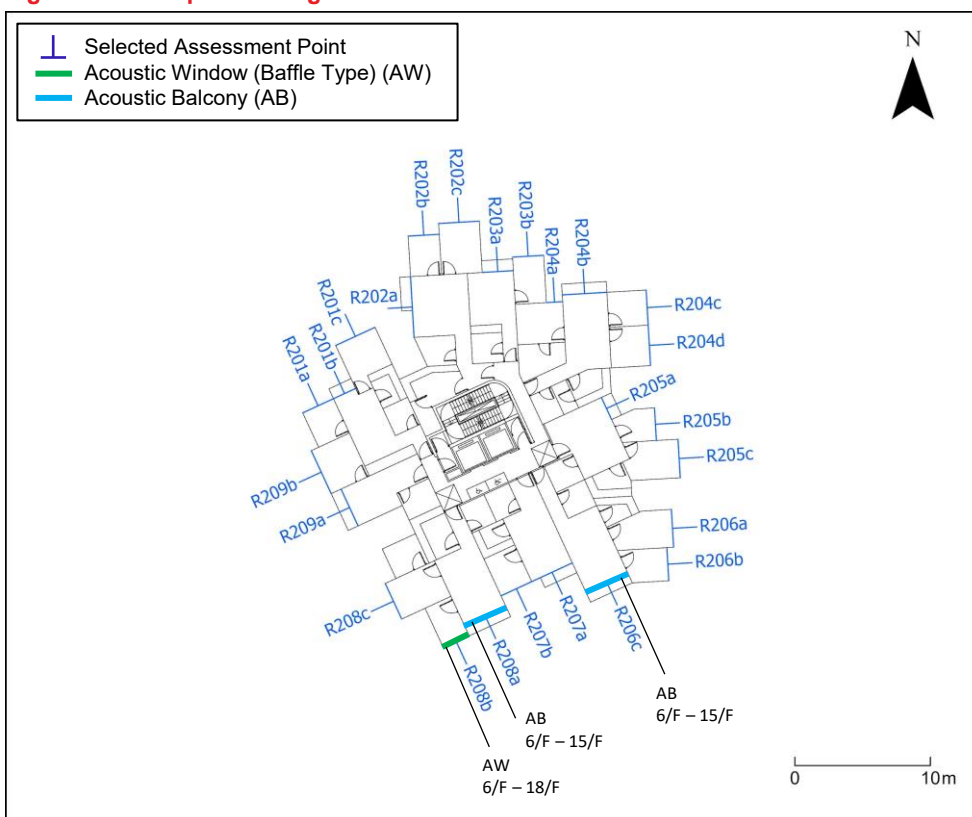


Figure 4.15: Proposed mitigation measures for Block 2



- 4.9.3.2 With the provision of the recommended acoustic windows (baffle type) and conventional acoustic balconies, all residential flats will comply with the criterion of 70 dB(A) and a compliance rate of 100% could be achieved. Detailed results are attached in **Appendix 4.4**. Therefore, adverse road traffic noise impact is not anticipated. A summary is tabulated in **Table 4.6**.

Table 4.6: Road noise assessment results (Mitigated Scenario)

Scenario	Total No. of Flats	No. of Flats Exceeding the Noise Criteria	Max. Predicted Noise Levels, dB(A)	Compliance Rate
Mitigated Scenario	450	0	70.4	100%

4.10 Assessment Results for Non-domestic Facilities

- 4.10.1.1 Results of the road traffic noise assessment for the reprovisioned Hong Kong Bible Research and Education Centre and the RCHE are summarised in **Table 4.7**.

Table 4.7: Road traffic noise assessment results – non-domestic facilities

Location	NSRs	Uses ^[1]	Noise Criterion, dB(A)	Max. Predicted Noise Levels, dB(A)	Comply [Y/N]
Reprovisioned Hong Kong Bible Research and Education Centre on 1/F	1F_103	E / PW	65	67	N
	1F_104	E / PW	65	66	N
	1F_105	E / PW	65	64	Y
	1F_106	E / PW	65	66	N
	1F_107	E / PW	65	70	N
	1F_108	E / PW	65	71	N
	1F_109	E / PW	65	71	N
	1F_110	E / PW	65	72	N
	1F_111	E / PW	65	71	N
	1F_112	E / PW	65	69	N
Reprovisioned Hong Kong Bible Research and Education Centre on 2/F	2F_201	E / PW	65	70	N
	2F_202	E / PW	65	68	N
	2F_203	E / PW	65	67	N
	2F_204	E / PW	65	67	N
	2F_205	E / PW	65	66	N
	2F_206	E / PW	65	67	N
	2F_207	E / PW	65	70	N
	2F_208	E / PW	65	71	N
	2F_209	E / PW	65	71	N
	2F_210	E / PW	65	72	N
	2F_213	E / PW	65	73	N
	2F_214	E / PW	65	73	N
	2F_215	E / PW	65	73	N
RCHE on 3/F	3F_301	D	70	70	Y
	3F_302	D	70	68	Y
	3F_303	D	70	67	Y
	3F_304	D	70	67	Y
	3F_305	D	70	66	Y

Location	NSRs	Uses ^[1]	Noise Criterion, dB(A)	Max. Predicted Noise Levels, dB(A)	Comply [Y/N]
	3F_306	D	70	67	Y
	3F_307	D	70	69	Y
	3F_308	D	70	71	N
	3F_309	D	70	71	N
	3F_310	D	70	72	N
	3F_311	D	70	73	N
	3F_312	D	70	62	Y
	3F_313	D	70	71	N
	3F_314	D	70	73	N
	3F_315	D	70	73	N
RCHE on 4/F	4F_401	D	70	70	Y
	4F_402	D	70	69	Y
	4F_403	D	70	68	Y
	4F_404	D	70	67	Y
	4F_405	D	70	67	Y
	4F_406	D	70	67	Y
	4F_407	D	70	68	Y
	4F_408	D	70	66	Y
	4F_409	D	70	66	Y
	4F_410	D	70	71	N
	4F_411	D	70	72	N
	4F_412	D	70	72	N
	4F_413	D	70	73	N
	4F_414	D	70	60	Y
	4F_415	D	70	71	N
	4F_416	D	70	73	N
	4F_417	D	70	73	N

Note:

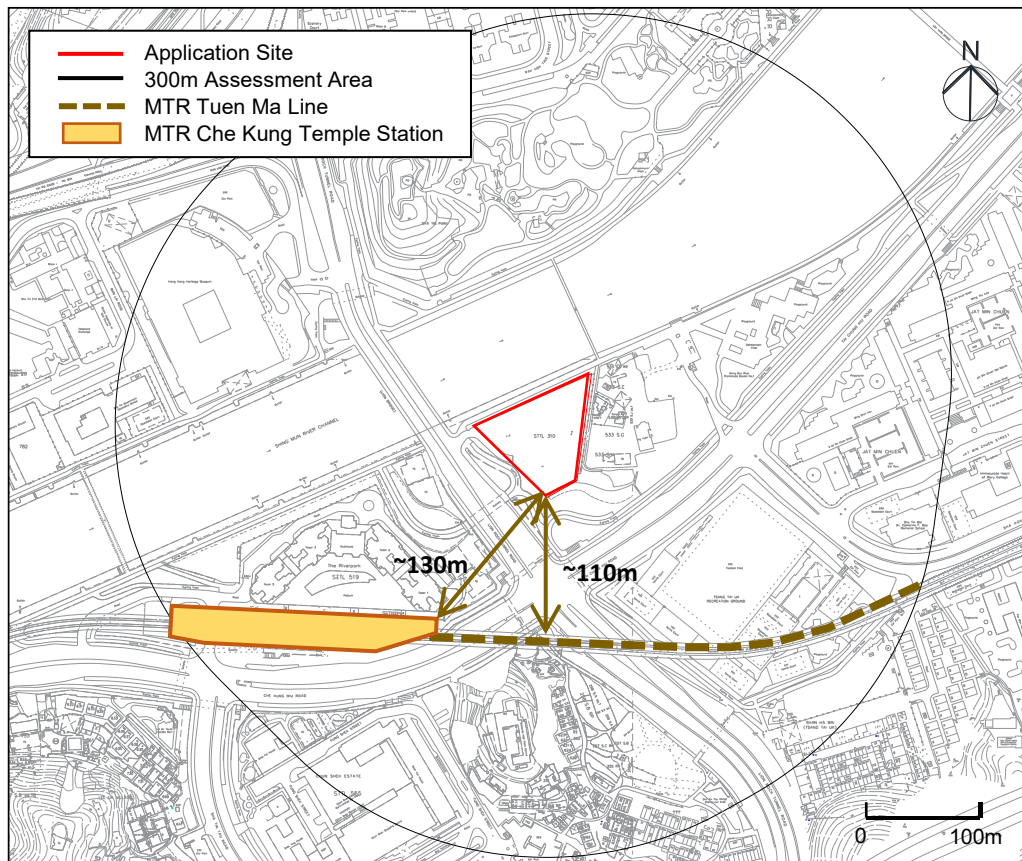
[1] D – Domestic; E – Educational; PW – Place of Public Worship.

4.10.1.2 Results indicate that the predicted exceedances are primarily affected by Lion Rock Tunnel Road and Tai Chung Kiu Road. Traffic noise level of up to 73 dB(A) was observed, against the noise criteria of 70dB(A) for domestic uses of the proposed RCHE and 65 dB(A) for education/ place of public worship uses of the reprovisioned Hong Kong Bible Research and Education Centre. It is recommended that for the reprovisioned Hong Kong Bible Research and Education Centre should be provided with central air-conditioning system and not rely on openable window for ventilation. For the RCHE, noise tolerant uses should be planned at the locations with exceedances to avoid potential road traffic noise impact; while provision of direct noise mitigation measures such as acoustic windows shall be considered for domestic uses within the RCHE that rely on openable windows for ventilation.

5. Review of Rail Noise Impact

5.1.1.1 The Tuen Ma Line (TML) and Che Kung Temple (CKT) Station are located at about 110m and 140m to the south and southwest of the Application Site, respectively. is illustrated in **Figure 5.1**.

Figure 5.1: Location of potential rail noise source



5.1.1.2 Lion Rock Tunnel Road and Tai Chung Kiu Road, located between the TML and the Application Site, are the primary sources of noise affecting the area. A site inspection in February 2025 confirmed that road traffic was the main contributor to the noise environment, while noise from TML operations was not detectable.

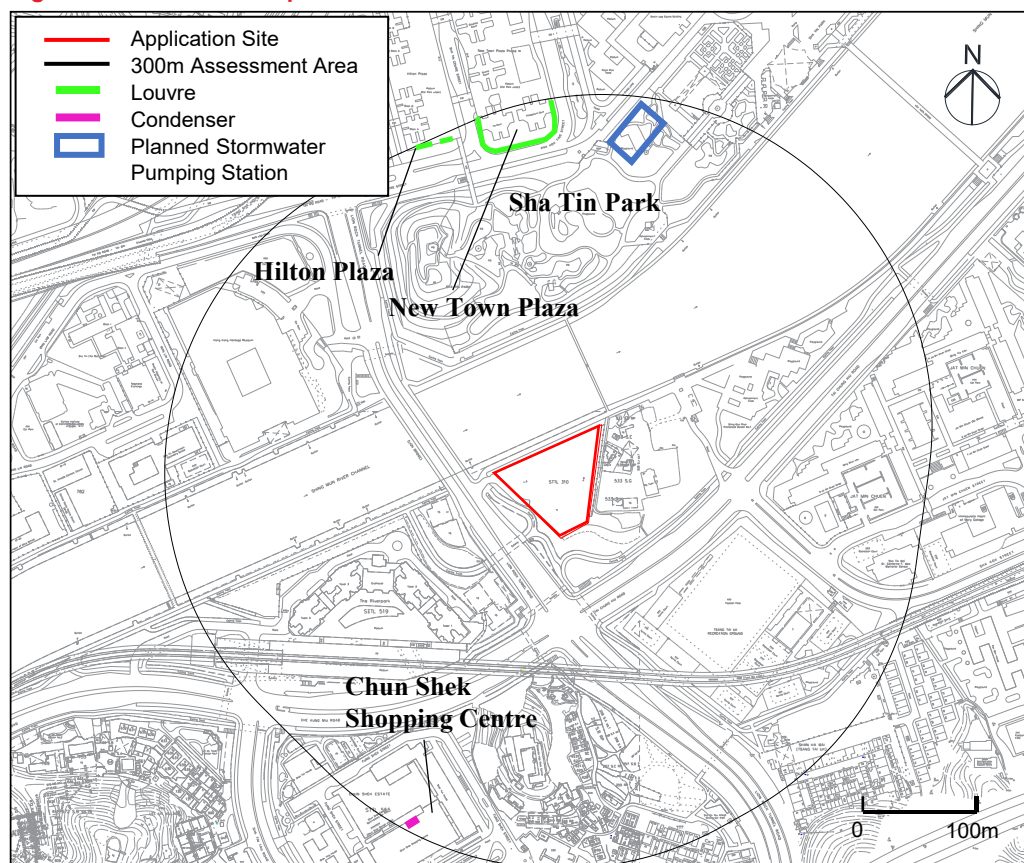
5.1.1.3 In consideration of the large separation distance and substantial influence of road traffic noise from the heavily trafficked Lion Rock Tunnel Road and Tai Chung Kiu Road, adverse rail noise impact on the proposed development is not anticipated

6. Review of Fixed Noise Impact

6.1 Review of Existing Fixed Noise Sources

- 6.1.1.1 Desktop study and site inspections have been carried out at both day and evening time and night-time periods in February 2025 to identify any potential fixed noise sources within 300m assessment area of the Application Site. **Figure 6.1** indicates the locations of the identified potential fixed noise sources.

Figure 6.1: Locations of potential fixed noise sources



- 6.1.1.2 The nearest potential existing fixed noise sources are the louvres on the southern facades of New Town Plaza Phase 3 and Hilton Plaza, which are located about 270m to the north of the Application Site. The existing noise climate is dominated by traffic noise during daytime and night-time. Based on site inspections, noise generated from the louvres of New Town Plaza Phase 3 and Hilton Plaza was not noticeable at Sha Tin Park along Sha Tin Centre Street. In consideration of the separation distances, noise impact from these louvres is not anticipated.
- 6.1.1.3 Condensers are also identified on the rooftop of Chun Shek Shopping Centre. These condensers are located at about 290m to the southwest of the Application Site. Considering that there is a large separation distance and the condensers are completely screened by buildings (i.e. Shek Yuk House), noise impact from these condensers is not anticipated.

- 6.1.1.4 Based on site inspections, the noise climate is dominated by road traffic noise from Lion Rock Tunnel Road and Tai Chung Kiu Road. Significant noise from identified fixed noise sources was not perceived at the Application Site. It is considered that adverse fixed plant noise impact on the proposed development is not anticipated.

6.2 Review of Potential Fixed Plants Noise Impact Arising from the Planned Stormwater Pumping Station Sha Tin Park near Yi Ching Lane, Sha Tin

- 6.2.1.1 **Figure 6.1** indicates the location of the planned stormwater pumping station in “Open Space” Zone, Government Land at Sha Tin Park near Yi Ching Lane, Sha Tin. According to the Preliminary Environmental Review conducted under Agreement No. CE 44/2021(DS), the proposed fixed plants will be properly designed to meet the maximum allowable sound power levels determined at the nearest NSR (i.e. New Town Plaza Phase III Block 2) with a horizontal separation distance of 46m. Considering that the proposed development has a larger separation distance (i.e. approximately 220m), adverse fixed plant noise impact from this planned stormwater pumping station is not anticipated.

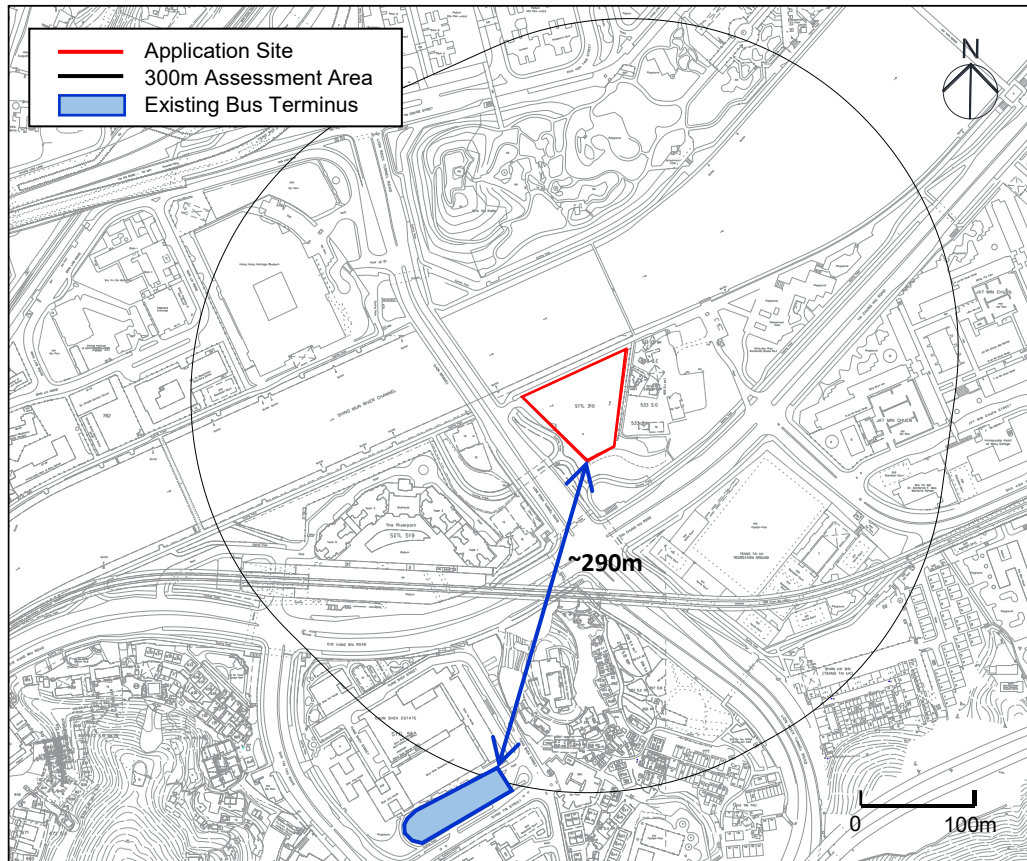
6.3 Review of Potential Fixed Plant Noise Impact Arising from the Proposed House Development

- 6.3.1.1 Fixed plants, including air-conditioning units, primary air-handling units and water pumps will be provided within the proposed development. These fixed plants may have potential noise impact on the nearby NSRs. However, detailed information and specifications of these fixed plants are not available at the time of noise assessment. All fixed plants will be enclosed in the plant rooms with the intakes/exhausts located on the podium facades, where the noise sensitive uses on the podium floors such as the proposed RCHE will not be adversely impacted by the planned fixed noise sources on the podium. It is suggested that the plant room intakes/exhausts should be installed at the facades facing away from the nearby existing NSRs such as Garden Villa, The Riverpark (including Zenith Kindergarten), etc. as far as practicable. If necessary, installation of silencers/acoustic louvres at the intakes/exhausts will be considered to further minimise the noise impact. The Contractor is required to carry out a noise commissioning test for the fixed plant sources before the operation of the proposed development to ensure that the operational noise levels are in compliance with the relevant noise criteria stipulated in HKPSG and NCO.
- 6.3.1.2 With appropriate noise mitigation measures, adverse noise impact from the planned fixed plant noise sources due to the operation of the proposed development is not anticipated.

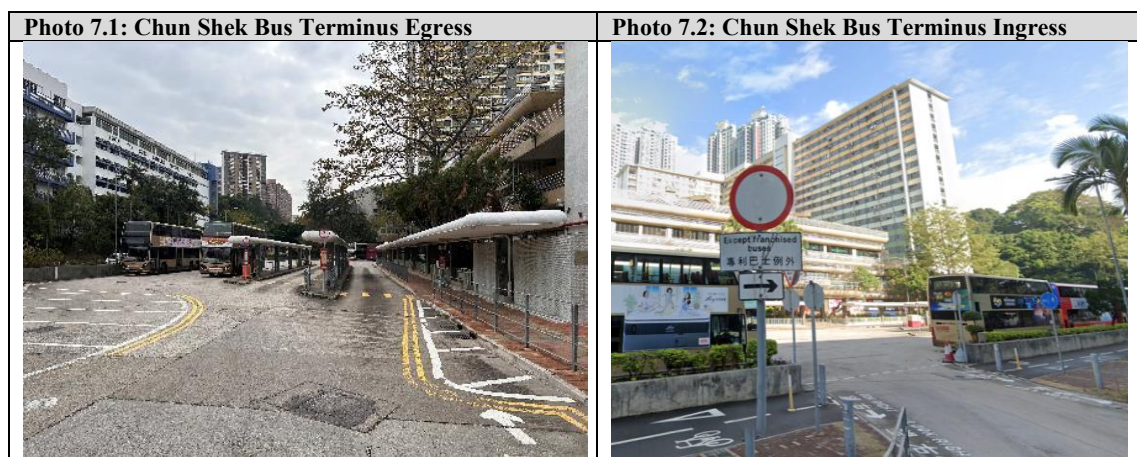
7. Review of Noise Nuisance Arising from Existing Bus Terminus

7.1.1.1 A bus terminus (i.e. Chun Shek Bus Terminus) is currently located approximately 280m to the southwest of the Application Site. The potential noise nuisance arising from bus terminus has been reviewed. Location of the bus terminus is shown in **Figure 7.1**.

Figure 7.1: Location of bus terminus



7.1.1.2 The bus terminus is separated from the Site by Lion Rock Tunnel Road, Che Kung Miu Road and residential blocks of Chun Shek Estate. Based on site observation, from the direction of the Application Site, the bus terminus is completely screened by Shek Yuk House. Photos taken on site are shown in **Photo 7.1 – 7.2**:



- 7.1.1.3 In addition, the noise climate in the vicinity of the Application Site was dominated by road traffic noise from Lion Rock Tunnel Road and Tai Chung Kiu Road. Given the large separation distance, screening of buildings and high background traffic noise, noise nuisance arising from the bus terminus on the proposed development Site is not anticipated.

8. Review of Construction Noise Impact

8.1 Legislation, Standards and Guidelines

8.1.1 General

- 8.1.1.1 The relevant legislation and associated guidance applicable to the present study for the assessment of noise impact include: Noise Control Ordinance (NCO) (Cap. 400);
- TM on Noise from Construction Work other than Percussive Piling (TM-GW);
 - TM on Noise from Percussive Piling (TM-PP); and
 - TM on Noise from Construction Work in Designated Areas (TM- DA).

8.1.2 Construction Noise Standards

- 8.1.2.1 There is no statutory noise limit for general construction works during daytime (i.e. 0700 to 1900 hours on any day not being a Sunday or general holiday) under the Noise Control Ordinance (NCO) and related Technical Memoranda (TMs) while the NCO provides statutory control of general construction works during restricted hours (i.e. 1900 to 0700 hours (of the next day) from Monday to Saturday and at any time on Sundays or general holidays). Nevertheless, ProPECC PN1/24 “Minimizing Noise from Construction Activities” stipulates criteria of 65 to 75dB(A) for daytime construction activities. **Table 8.1** below shows the criteria as stipulated in ProPECC PN1/24 “Minimizing Noise from Construction Activities”.

Table 8.1: Noise standards for construction activities

Uses	Noise Standards ^[1] , L _{eq} (30mins)
	0700-1900 hours on any day not being a Sunday or general Holiday
• All domestic premises, • Temporary housing accommodation, • Hostels • Convalescent homes, and • Homes for the aged	75
• Places of public worship, • Courts of law, and • Hospitals and medical clinics	70
• Educational institutions (including kindergartens and nurseries)	70 65 (During Examination)

Notes:

[1] The above standards apply to uses that rely on opened windows for ventilation.

[2] The standards shall be viewed as the maximum permissible noise levels assessed at 1m from the external façade.

8.2 Evaluation of Construction Phase Impact

- 8.2.1.1 Potential source of noise impact during construction phase would be construction noise generated from the use of Powered Mechanical Equipment (PME) for various construction activities. The key construction activities include site clearance, demolition, soil excavation for basement, piling works and superstructure works, which would involve the use of excavator, breaker, dump truck, etc.

- 8.2.1.2 The shortest horizontal separation distance between the site and the nearest NSR (i.e., Garden Villa) is less than 5m. The Contractor would be required to implement the mitigation measures mentioned in ProPECC PN 1/24 “Minimizing Noise from Construction Activities” as good practices. By adopting appropriate mitigation measures and good site practices, the construction noise impact can be minimised.
- 8.2.1.3 As mentioned in **Section 2.4**, two concurrent projects have been identified within 300m from the boundary of the Project. For the Proposed Public Utility Installations, with reference to the RNTPC Paper No. A/ST/1025³, it is expected to commence in 2025 and complete in 2028. For Revised Trunk Road T4 in Sha Tin, with reference to CEDD’s webpage⁴, it is expected to commence in 2024 and complete in 2030. As the Project will tentatively start construction works in 2027, overlapping of works are anticipated. However, close liaison will be made with the corresponding parties of the concurrent projects to avoid any overlapping of noisy works as far as practicable. Besides, for the Proposed Public Utility Installations, considering the relatively large separation distance (i.e. approximately 220m), cumulative construction noise impacts are anticipated to be limited. It is anticipated the concurrent projects will also implement all the best practices to minimise construction noise impacts where practicable, adverse cumulative construction noise impacts are therefore not anticipated.

8.3 Recommended Mitigation Measures

- 8.3.1.1 In accordance with ProPECC PN 1/24 “Minimizing Noise from Construction Activities”, the following mitigation measures should be given wherever practicable:
- Implementation of good site practices to limit noise emissions at source;
 - Use of quiet plant and working methods (e.g. Quality Powered Mechanical Equipment (QPME), silent piling by press-in method);
 - Installation of temporary noise barriers, panels or enclosures around the site boundary;
 - Siting noisy equipment, such as emergency generators, water pumps, as far as possible from the NSR; and
 - Scheduling of work to avoid simultaneous operations of noisy equipment.
- 8.3.1.2 The above recommended practices would need to be implemented in worksite as good practices whenever possible. Reference shall also be made to EPD’s recommended pollution control clauses for construction contracts. With the implementation of the recommended mitigation measures, no insurmountable construction noise impact is therefore anticipated.

³ https://www.tpb.gov.hk/uploads/page/meetings/RNTPC/A_ST_1025/A_ST_1025_MainPaper.pdf

⁴ <https://www.cedd.gov.hk/eng/our-projects/major-projects/index-id-143.html>

9. Review of Potential Air Quality Impact

9.1 Legislation, Standards and Guidelines

9.1.1 General

9.1.1.1 The relevant legislations, standards and guidelines applicable to the present study for the assessment of air quality impacts include:

- Air Pollution Control Ordinance (APCO) (Cap. 311);
- Air Pollution Control (Construction Dust) Regulation;
- Air Pollution Control (Non-road Machinery) (Emission) Regulation;
- Air Pollution Control (Fuel Restriction) Regulations;
- Recommended Pollution Control Clauses for Construction Contracts;
- Hong Kong Planning Standards and Guidelines (HKPSG); and
- ProPECC PN 2/96 – Control of Air Pollution in Car Parks.

9.1.2 Air Pollution Control Ordinance

9.1.2.1 The principal legislation for controlling air pollutants is the APCO (Cap. 311) and its subsidiary regulations, which defines statutory Air Quality Objectives (AQOs).

9.1.2.2 The APCO (Cap. 311) provides the power for controlling air pollutants from a variety of stationary and mobile sources and encompasses a number of AQOs. In addition to the APCO, the following overall policy objectives are laid down in Chapter 9 of the HKPSG as follows:

- Limit the contamination of the air in Hong Kong, through land use planning and through the enforcement of the APCO to safeguard the health and well-being of the community; and
- Ensure that the AQOs for 7 common air pollutants are met as soon as possible.

9.1.2.3 The prevailing AQOs, which took effect on 11 April 2025, are listed in **Table 9.1** below.

Table 9.1: Hong Kong air quality objectives

Pollutant	Limits on Concentration, $\mu\text{g}/\text{m}^3$ ^[1] (Number of Exceedance per calendar year allowed in brackets)					
	Peak Season	10-min	1-hr	8-hr	24-hr ^[2]	Annual ^[2]
Sulphur Dioxide (SO ₂)		500 (3)	-	-	40 (3)	-
Respirable Suspended Particulates (RSP, or PM ₁₀) ^[3]		-	-	-	75 (9)	30
Fine Suspended Particulates (FSP, or PM _{2.5}) ^[4]		-	-	-	37.5 (18) ^[5]	15
Carbon Monoxide (CO)		-	30,000 (0)	10,000 (0)	-	-

Pollutant	Limits on Concentration, $\mu\text{g}/\text{m}^3$ ^[1] (Number of Exceedance per calendar year allowed in brackets)					
	Peak Season	10-min	1-hr	8-hr	24-hr ^[2]	Annual ^[2]
Nitrogen Dioxide (NO ₂)		-	200 (18)	-	-	40
Ozone (O ₃)	100 (N.A)	-	-	160 (9)	-	-
Lead (Pb)		-	-	-	-	0.5

Note:

[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 293 Kelvin and a reference pressure of 101.325 kilopascal.

[2] Arithmetic mean.

[3] RSP means suspended particulates in air with a nominal aerodynamic diameter of 10 micrometres or smaller.

[4] FSP means suspended particulates in air with a nominal aerodynamic diameter of 2.5 micrometres or smaller.

- 9.1.2.4 The APCO (Cap. 311) also specifies that for premises that contain asbestos containing materials (ACM), the owner/occupier of the premises shall hire a registered asbestos contractor to carry out the removal of the ACM. They shall give a written notice to the Environmental Protection Department (EPD) not less than 28 days prior to the commencement of the work.

9.1.3 Air Pollution Control (Construction Dust) Regulation

- 9.1.3.1 The Air Pollution Control (Construction Dust) Regulation specifies processes that require special dust control. The Contractors are required to inform the Environmental Protection Department (EPD) and adopt proper dust suppression measures while carrying out “Notifiable Works” (which requires prior notification by the regulation) and “Regulatory Works” to meet the requirements as defined under the regulation.

9.1.4 Air Pollution Control (Non-road mobile Machinery) (Emission) Regulation

- 9.1.4.1 Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation specifies that all Non-road Mobile Machinery (NRMMS), except those exempted, used in specified activities and locations including construction sites, container terminals and back up facilities, restricted areas of the airport, designated waste disposal facilities and specified processes are required to comply with the prescribed emission standards.

9.1.5 Air Pollution Control (Fuel Restriction) Regulations

- 9.1.5.1 Air Pollution Control (Fuel Restriction) Regulations controls the types of fuel allowed for use and their sulphur contents in commercial and industrial processes to reduce SO₂ emissions. Under Air Pollution Control (Fuel Restriction) Regulations, it is restricted to use any liquid fuel that has a sulphur content of more than 0.001% by weight.

9.1.6 Recommended Pollution Control Clauses for Construction Contracts

- 9.1.6.1 The recommended pollution control clauses are generally good engineering practice to minimise inconvenience and environmental nuisance to nearby residents and other sensitive receivers. The Contractors shall design, construct, operate and maintain pollution control measures to ensure compliance with the contract provisions as well as the environmental ordinances and their regulations.

9.1.7 Hong Kong Planning Standards and Guidelines

9.1.7.1 Chapter 9 of HKPSG outlines the environmental requirements that need to be considered in land use planning. The recommended guidelines, standards and guidance cover the selection of suitable locations for the developments and sensitive uses, provision of environmental facilities, and design, layout, phasing and operational controls to minimise adverse environmental impacts. It also lists out environmental factors influencing land use planning and recommends buffer distances for land uses. The HKPSG also recommends minimum setback distance from different categories of air pollution sources, as summarised in **Table 9.2**.

Table 9.2: Guidelines on buffer distance between air pollution sources and different land uses

Pollution Source	Parameter	Buffer Distance	Permitted Uses
Road and Highways	<i>Type of Road</i>		
	Trunk Road and Primary Distributor	> 20m	Active and passive recreational uses
		3 – 20m	Passive recreational uses
		< 3m	Amenity areas
	District Distributor	> 10m	Active and passive recreational uses
		< 10m	Passive recreational uses
	Local Distributor	> 5m	Active and passive recreational uses
		< 5m	Passive recreational uses
Industrial Areas	<i>Difference in Height between Industrial Chimney Exit and the Site</i>		
	< 20m	> 200m	Active and passive recreational uses
		5 – 200m	Passive recreational uses
	20 – 30m (*)	> 100m	Active and passive recreational uses
		5 – 100m	Passive recreational uses
	30m – 40m	> 50m	Active and passive recreational uses
		5 – 50m	Passive recreational uses
	> 40m	> 10m	Active and passive recreational uses
Construction and Earth Moving Activities	-	< 50m	Passive recreational uses
		> 50m	Active and passive recreational uses
Odour Sources	-	200m	Sensitive uses

Notes:

- [1] 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.
- [2] 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.
- [3] The guidelines are generally applicable to major industrial areas but NOT individual large industrial establishments which are likely to be significant air pollution sources. EPD shall be consulted when planning open space sites close to such establishments.
- [4] Amenity areas are permitted in any situation.

9.1.8 ProPECC PN 2/96 – Control of Air Pollution in Car Parks

- 9.1.8.1 This Practice Note provides guidance on the control of air pollution in car parks including air quality guidelines required for the protection of public health, and factors that should be considered in the design and operation of car parks in order to achieve the required air quality.

9.2 Identification of Representative Air Sensitive Receivers

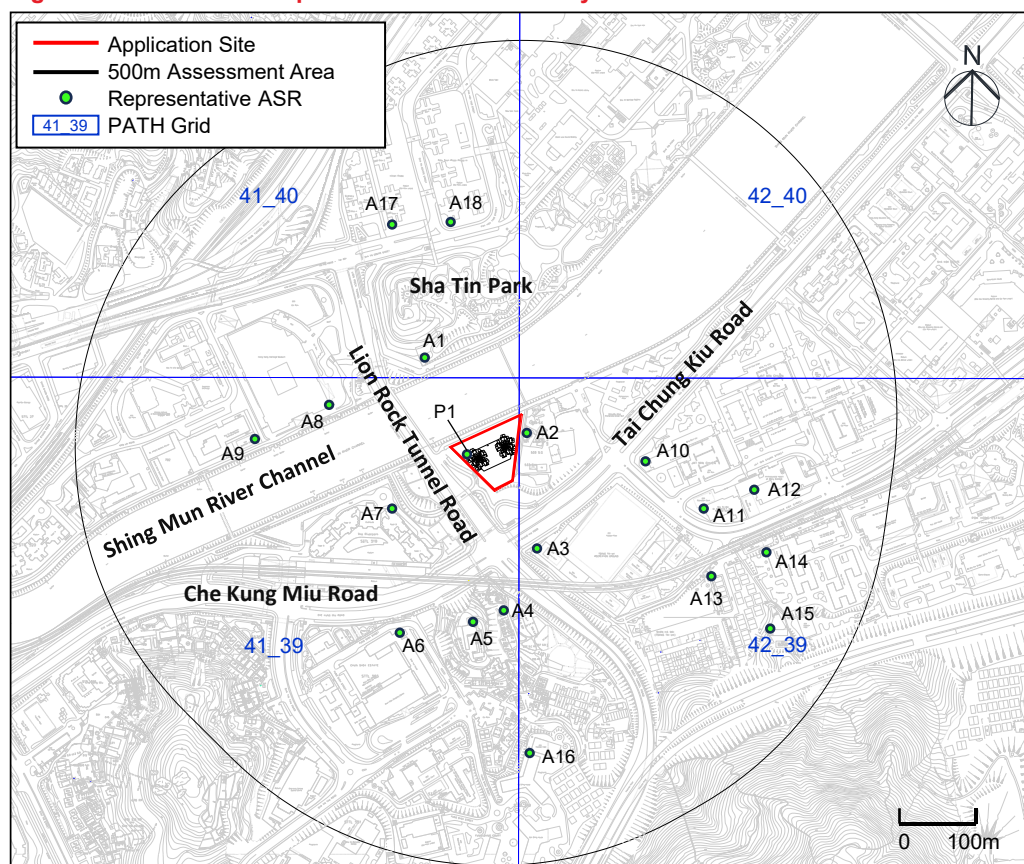
- 9.2.1.1 In accordance with Annex 12 of the EIAO-TM, Air Sensitive Receivers (ASRs) include any domestic premises, hotel, hostel, hospital, clinic, nursery, temporary housing accommodation, school, educational institution, office, factory, shop, shopping centre, place of public worship, library, court of law, sports stadium or performing arts centre. Any other premises or places with which, in terms of duration or number of people affected, have a similar sensitivity to the air pollutant as the aforelisted premises and places would also be considered as a sensitive receiver.
- 9.2.1.2 Existing ASRs are identified by means of reviewing topographic maps, aerial photos, land status plans and supplemented by site inspections, whilst planned/ committed ASRs are reviewed by making reference to relevant Outline Zoning Plans (OZP), Outline Development Plans, Layout Plans and other published plans in the vicinity of the site.
- 9.2.1.3 Representative ASRs have been reviewed. Details of the identified ASRs are summarised in **Table 9.3.** and its corresponding location is illustrated in **Figure 9.1.**

Table 9.3: Representative ASR within 500m study area

ASR ID	Location	Land Use	Approx. Distance from Site (m)	Assessment Height (mPD)	ASR for Construction Phase	ASR for Operational Phase
Existing ASR						
A1	Sha Tin Park	Recreational	120	8.8	✓	✗
A2	Oikos Farm	Recreational	5	4.3	✓	✗
A3	Tsang Tai Uk Playground	Recreational	90	5.5	✓	✗
A4	Sha Tin Tau Village	Residential	160	5	✓	✗
A5	Stewards High Rock Center	Residential	180	29.9	✓	✗
A6	Chun Shek Estate	Residential	225	7.2	✓	✗
A7	The Riverpark	Residential	115	7.8	✓	✗
A8	Hong Kong Heritage Museum	Government/ Institution or Community	170	6.7	✓	✗
A9	Sha Tin Government Secondary School	Educational	265	6.3	✓	✗
A10	Jat Min Chuen	Residential	175	7.2	✓	✗

ASR ID	Location	Land Use	Approx. Distance from Site (m)	Assessment Height (mPD)	ASR for Construction Phase	ASR for Operational Phase
A11	Sha Tin Wai Dr. Catherine F. Woo Memorial School	Educational	255	7.4	✓	✗
A12	Immaculate Heart of Mary College	Educational	315	7.4	✓	✗
A13	Tsang Tai Uk	Residential	295	7.1	✓	✗
A14	Pok Hong Estate	Residential	350	9.4	✓	✗
A15	SRACP Teen Guard Valley Crime Prevention Education	Educational	395	14.8	✓	✗
A16	Fung Shing Court	Residential	350	19.6	✓	✗
A17	New Town Plaza	Residential	275	18.9	✓	✗
A18	Hilton Plaza	Residential	300	18.6	✓	✗
Planned ASR						
P1	Proposed Residential Development	Residential	Within the Site	35.5	✗	✓

Figure 9.1: Location of representative ASRs nearby



9.3 Description of Environment

9.3.1 Existing Ambient Air Quality Conditions

- 9.3.1.1 Currently, there are 18 Air Quality Monitoring Stations (AQMS) in Hong Kong, including 15 General Monitoring Stations and 3 Roadside Monitoring Stations, operated by EPD to monitor the air quality in Hong Kong.
- 9.3.1.2 The nearest AQMS operated by EPD to the project is located at Sha Tin AQMS, which is approximate 310m away from the Project Site. The latest air quality monitoring data in the recent 5 years of various air pollutants monitored at Sha Tin AQMS is presented in **Table 9.4** and compared with the AQOs.

Table 9.4: Air Quality Monitoring Data (Sha Tin AQMS, 2021 - 2025)

Pollutant	Parameter	Concentrations ($\mu\text{g}/\text{m}^3$) [1] [2] [3] [4]						AQOs ($\mu\text{g}/\text{m}^3$)
		2021	2022	2023	2024	2025	5-year mean	
SO ₂	4 th highest 10-minute	33	23	57	21	28	32 [7%]	500(3)
	4 th highest 24-hour	11	11	8	6	7	9 [22%]	40 (3)
NO ₂	19 th highest 1-hour	159	112	133	122	131	131 [66%]	200 (18)
	10 th highest 24-hour	74	55	62	53	66	62 [52%]	120 (9)
	Annual	32	26	27	26	29	28 [70%]	40 (N/A)
CO	Max. 1-hour	N/M	N/M	N/M	N/M	N/M	N/M	30,000 (0)
	Max. 8-hour	N/M	N/M	N/M	N/M	N/M	N/M	10,000 (0)

Pollutant	Parameter	Concentrations (µg/m ³) ^{[1] [2] [3] [4]}						AQOs (µg/m ³)
		2021	2022	2023	2024	2025	5-year mean	
Ozone (O ₃)	10 th highest 8-hour	157	177	159	167	164	165 [103%]	160 (9)
	Peak Season	94	103	101	109	104	102 [102%]	100 (N/A)
RSP	10 th highest 24-hour	58	46	51	53	50	52 [69%]	75 (9)
	Annual	25	21	22	21	20	22 [73%]	30 (N/A)
FSP	19 th highest 24-hour	31	30	26	31	28	29 [78%]	37.5 (18)
	Annual	14	13	13	13	12	13 [87%]	15 (N/A)

Note:

[1] Number of exceedance allowed under the AQO is shown in (), % of the AQO is shown in []

[2] Monitoring results exceeding the AQO are bolded.

[3] N/M = Not Measured.

[4] The concentrations shown in the table are rounded values. If the rounded value remains within the AQO, the value will not be shown in bold

9.3.2 Future Ambient Air Quality

9.3.2.1 In order to predict the future ambient air quality taking into account the emission reduction plan for Pearl River Delta (PRD) region up to Year 2030, PATH v3.0 (Pollutants in the Atmosphere and their Transport over Hong Kong), a regional air quality model, has been developed by EPD to simulate air quality over Hong Kong against the PRD as background. The proposed development would tentatively operate by Year 2035. The pollutant concentrations predicted by PATH v3.0 for Year for 2035 for Level 1 (0-17m) for the concerned PATH grids are summarised in **Table 9.5**. It is predicted all AQO parameters would be below the AQOs, except for O₃ which is a regional air pollutant not directly emitted from any pollution source.

Table 9.5: Summary of Year 2035 background from PATH v3.0

Pollutant	Parameter	Concentrations in various PATH grids (µg/m ³) ^[1]				AQOs ^[2] (µg/m ³)
		41_39	41_40	42_39	42_40	
RSP	10 th highest 24-hour	48	48	49	49	75 (9)
	Annual	19	19	19	19	30
FSP	19 th highest 24-hour	28	28	28	29	37.5 (18)
	Annual	12	12	11	12	15
NO ₂	19 th highest 1-hour	61	56	55	59	200 (18)
	10 th highest 24-hour	27	25	25	26	120 (9)
	Annual	12	12	10	12	40
SO ₂	4 th highest 10-minute	23	23	23	22	500 (3)
	4 th highest 24-hour	7	7	7	7	40 (3)
O ₃	10 th highest 8-hour	170	171	167	170	160 (9)
	Peak season	120	120	119	120	N/A
CO	Max. 1-hour	526	525	525	528	30,000 (0)
	Max. 8-hour	484	488	478	488	10,000 (0)
	Max 24-hour	453	452	449	454	4,000 (0)

Note:

[1] Concentration in PATH grid exceeding the AQO are bolded.

[2] Values in () indicate numbers of exceedances allowed under the AQOs.

9.4 Evaluation of Construction Phase Impact

9.4.1 Identification and Evaluation of Impact

- 9.4.1.1 The key sources of potential air quality impact during construction phase would be the dust emission generated from the construction activities associated with the Project, including site clearance, demolition, piling works, soil excavation for basement and superstructure, loading and unloading dusty material, and wind erosion of open sites. Based on the latest available information at the time of preparing this Report, the size of site formation and amount of excavated materials would be about 5,225m² and 41,800m³ respectively. The nearest ASR identified (i.e. Oceanaire) is located immediately adjacent to the Application Site. Nevertheless, given the proper implementation of recommended good site practices in **Section 9.4.2** as stipulated in Air Pollution Control (Construction Dust) Regulation in place, any potential construction dust impact is expected to be minimized.
- 9.4.1.2 Fuel combustion from the use of Powered Mechanical Equipment (PME) during construction works could be a source of NO₂, SO₂ and CO. Information regarding the number of machinery anticipated on site during construction stage is unavailable at the time of preparing this Report. Nevertheless, in order to improve air quality and protect public health, EPD has introduced the Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation, which came in effect on 1 June 2015, to regulate emissions from machines and non-road vehicles. Starting from 1 December 2015, only approved or exempted non-road mobile machinery are allowed to be used in construction sites. Hence, the emissions from PMEs are considered relatively small and will not cause insurmountable adverse air quality impact to nearby ASRs with the effect of the Regulation.
- 9.4.1.3 As mentioned in **Section 2.4**, three concurrent projects have been identified within 500m from the boundary of the Project. For Improvement of Lion Rock Tunnel, no potential cumulative air quality impacts during construction phase are anticipated in view of the large separation distance, i.e. approximately 470m. For the Proposed Public Utility Installations, with reference to the RNTPC Paper No. A/ST/1025⁵, it is expected to commence in 2025 and complete in 2028. For Revised Trunk Road T4 in Sha Tin, with reference to CEDD's webpage⁶, it is expected to commence in 2024 and complete in 2030. As the Project will tentatively start construction works in 2027, overlapping of works are anticipated. However, close liaison will be made with the corresponding parties of the concurrent projects to avoid any overlapping of dusty works as far as practicable. Besides, referring to the tentative construction programme of Revised Trunk Road T4 in Sha Tin, most dusty works, i.e. site clearance works, would be completed by 2027. For the Proposed Public Utility Installations, considering the limited area (around 0.45ha) and scale of construction works, and relatively large separation distance (i.e. approximately 220m), cumulative air quality impacts are anticipated to be limited. It is anticipated the concurrent projects will also implement all the best practices to abate air quality impacts where practicable, adverse cumulative air quality impacts are therefore not anticipated.

⁵ https://www.tpb.gov.hk/uploads/page/meetings/RNTPC/A_ST_1025/A_ST_1025_MainPaper.pdf

⁶ <https://www.cedd.gov.hk/eng/our-projects/major-projects/index-id-143.html>

9.4.2 Recommended Practices

9.4.2.1 The Contractor is recommended to follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation. It stipulates the construction dust control requirements for both Notifiable and Regulatory Works to be carried out by the Contractor. The following dust suppression measures should be incorporated by the Contractor to monitor and control the dust nuisance throughout the construction phase:

- Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading;
- Any dusty material remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads;
- A stockpile of dusty material should not extend beyond the pedestrian barriers, fencing or traffic cones;
- The load of dusty materials on vehicles leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle;
- Where practicable, vehicles washing facilities including a high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores;
- When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided as far as practicable along the site boundary with provision for public crossing. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period;
- The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials;
- Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation take place should be sprayed with water or a dust suppression chemical continuously;
- Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet;
- For any wall of the building to be demolished that abuts or fronts upon a street, service lane or other open area accessible to the public, impervious dust screens or sheeting shall be used to enclose the whole wall to a height of at least 1 m higher than the highest level of the structure being demolished;
- Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding;
- Any skip hoist for material transport should be totally enclosed by impervious sheeting;

- Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the three sides;
- Immediately before leaving a construction site, all vehicles shall be washed to remove any dusty materials from its body and wheels;
- Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed; and
- Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shortcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies.
- Connecting construction plant and equipment to mains electricity supply should be considered and use of diesel generators and diesel-powered equipment should be avoided as far as possible.

9.4.2.2 Fuel combustion from the use of PME during construction works would be a source of air emission. Ultra-low sulphur diesel (ULSD) with a sulphur content of not more than 0.001% by weight and a viscosity of not more than 6 centistokes at 40°C will be used to minimise SO₂ emissions in accordance with Air Pollution Control (Fuel Restriction) Regulations. Under the Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation, NRMMs, except those exempted, are required to comply with the prescribed emission standards. All regulated machines sold or leased for use in Hong Kong must be approved or exempted with a proper label in a prescribed format issued by EPD. Only approved or exempted NRMMs with a proper label are allowed to be used in specified activities and locations including construction sites.

9.4.2.3 To further control and reduce the emission from the use of NRMM from the Project, the following good site practices are recommended:

- Regulated machines shall be used and exempted NRMMs should be avoided where practicable;
- Use cleaner fuel such as ultra-low sulphur diesel in diesel-operated construction plant to reduce sulphur dioxide emission;
- Zero emission or clean fuels shall be considered as far as practicable for transportation activities;
- Use of electric PMEs where practicable;
- Connect construction plant and equipment to main electricity supply and avoid use of diesel generators and diesel-powered equipment as far as practicable;
- Switch off the engine of PMEs when idling;
- Implement regular and proper maintenance for plant and equipment; and
- Employ plant and equipment of adequate size and power output and avoid overloading of the plant.

9.4.2.4 Given that some ASRs are located close to the Application Site, the following measures shall be considered near those ASRs during construction phase to further minimize the dust impact:

- Adopt site hoarding at sufficient height close to those concerned ASRs;
- Locate the haul road away from those concerned ASRs;
- Avoid dusty works or placing stockpiles near to those concerned ASRs; and
- Minimization of unpaved, exposed earth by immediate covering/ permanent paving as soon as the works have been completed.

9.4.2.5 Furthermore, guidelines stipulated in EPD's Recommended Pollution Control Clauses for Construction Contracts should also be incorporated in the contract documents to abate dust impacts. The clauses include:

- The Contractor shall observe and comply with the Air Pollution Control Ordinance and its subsidiary regulations, particularly the Air Pollution Control (Open Burning) Regulation, Air Pollution Control (Construction Dust) Regulation, Air Pollution Control (Non-road Mobile Machinery)(Emission) Regulation, Air Pollution Control (Fuel Restriction) Regulations and Air Pollution Control (Smoke) Regulation;
- In addition to the statutory requirements of the Regulations, the Contractor of the public works contracts shall also observe the requirements as set out in the government circulars, including DEVB's TC No, 13/2020 (Timely Application of Temporary Electricity and Water Supply for Public Works Contracts and Wider Use of Electric Vehicles in Public Works Contracts) and DEVB's TC No. 1/2015 (Emissions Control of NRMM in Capital Works Contracts of Public Works);
- The Contractor shall undertake at all times to prevent dust nuisance and smoke as a result of his activities, and minimise the emission of air pollutants from construction plant and equipment;
- The Contractor shall ensure that there will be adequate water supply/storage for dust suppression;
- The Contractor shall devise, arrange methods of working and carrying out the works in such a manner so as to minimise dust impacts on the surrounding environment, and shall provide experienced personnel with suitable training to ensure that these methods are implemented;
- For better smoke control, the Contractor shall not use diesel hammer for percussive piling; and
- Before the commencement of any work, the Engineer may require the methods of working, plant, equipment and air pollution control system to be used on the site to be made available for inspection and approval to ensure that they are suitable for the project.

9.4.2.6 With the implementation of these good practice and measures, adverse construction dust impacts on the ASRs are not anticipated. Construction dust impacts are therefore not insurmountable.

9.5 Evaluation of Operational Phase Impact

9.5.1 Vehicular Emissions

9.5.1.1 Hong Kong Planning Standards and Guidelines (HKPSG) provides environmental guidance for residential developments on air quality. The guidelines recommend the minimum buffer distance required for active and passive recreational uses.

- 9.5.1.2 The buffer distances between the sensitive uses of the current development scheme and the surrounding major roads are summarized in **Table 9.6** and illustrated in **Figures 9.2-9.3** below.
- 9.5.1.3 The current scheme can satisfy the setback distance requirements as stipulated in the HKPSG. No sensitive active and passive uses have been planned within the recommended setback distance of 20m from the road kerbs of Lion Rock Tunnel Road, Tai Chung Kiu Road and planned Revised Trunk Road T4, respectively. Besides, no pedestrian area (i.e. seating place) have been planned within the recommended buffer zone. Adverse vehicular emission impact on the proposed residential development is therefore not anticipated.
- 9.5.1.4 The proposed car park will be located in the basement and hence no adverse air quality impact is anticipated due to the enclosed environment. Nevertheless, for the detailed design of the basement car park, the ventilation exhaust of the car park shall be located away from any ASRs as far as possible and the Air Quality Guidelines and Design Considerations specified in EPD ProPECC PN 2/96 – Control of Air Pollution in Car Parks will be followed to minimise air quality impacts from the proposed car park.

Table 9.6: Separation distances between sensitive uses and nearby major roads

Name of Road	Type of Road ^[1]	HKPSG Recommended Setback Distance	Shortest Horizontal Setback Distance from the Nearest Air Sensitive Uses to Road Kerb
Existing Road			
Lion Rock Tunnel Road	PD	> 20m	30m
Tai Chung Kiu Road	PD	> 20m	90m
Planned Road			
Revised Trunk Road T4	PD	>20m	57m

Note:

[1] In accordance with Annual Traffic Census (ATC) 2023: PD – Primary Distributor.

Figure 9.2: Separation distances between sensitive uses and existing roads

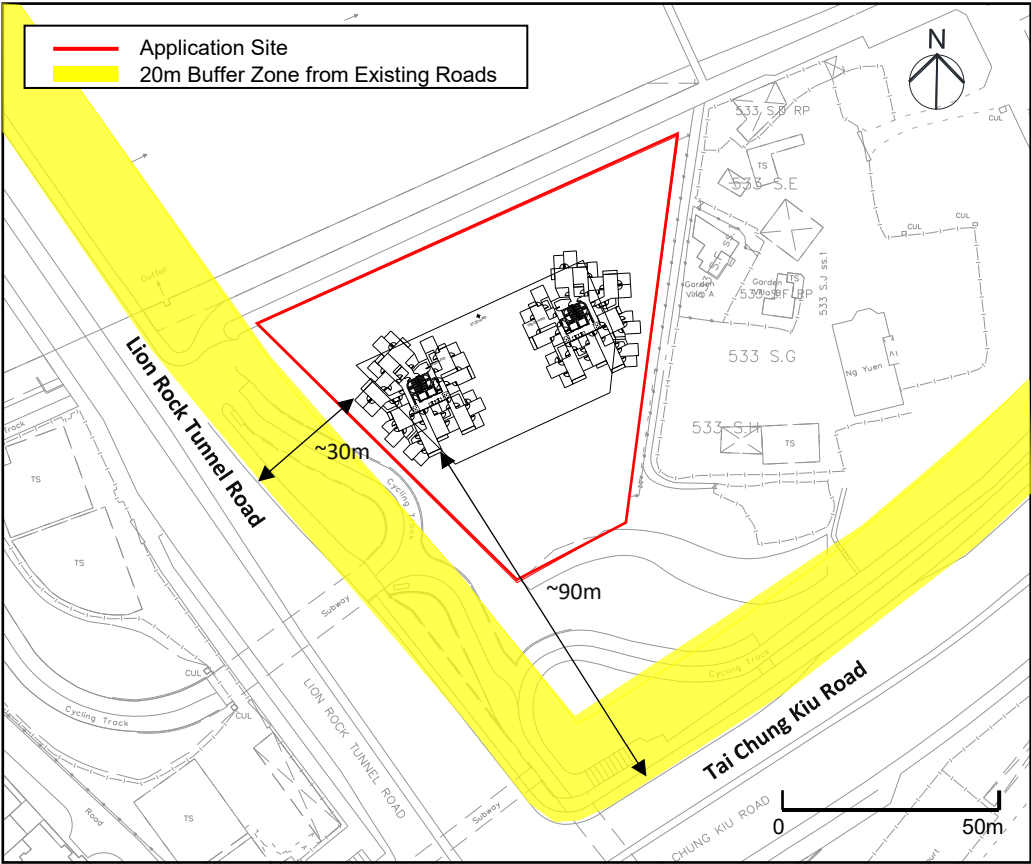
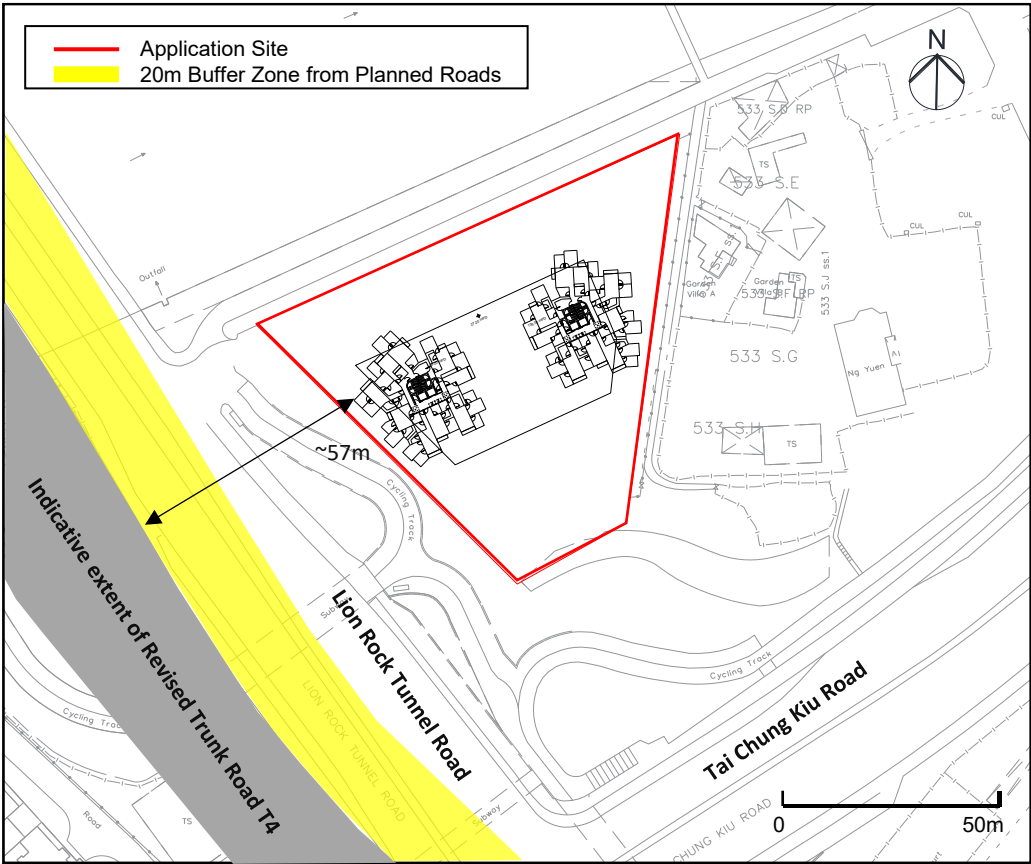


Figure 9.3: Separation distances between sensitive uses and planned roads



9.6 Chimney Emissions

- 9.6.1.1 According to the HKPSG, the recommended minimum buffer distance required for active and passive recreational uses depends on the difference in height between industrial chimney exit and the site as indicated in **Table 9.2**.
- 9.6.1.2 A chimney survey was conducted on a walk-over basis within the 500m of the boundary of the Application site where site access was allowed and practicable in February 2025. No existing chimneys were found within 500m of the subject site. Besides, there will be no chimneys for the proposed development. Air quality impacts from chimney emissions are therefore not anticipated.

10. Land Contamination Appraisal

10.1 Site Description

- 10.1.1.1 The Site is situated at Sha Tin, New Territories. The Site is currently occupied by low-rise buildings operated by a religious institution. The Site is immediately adjacent to existing village type houses, roads, and Shing Mun River. The location of the Site is indicated in **Figure 2.1**.

10.2 Review of Aerial Photographs and Historical Land Uses

- 10.2.1.1 Selected historical aerial photographs between 1963 to 2023 (i.e. 1963, 1973, 1983, 1993, 2003, 2014, 2018, and 2023) have been reviewed to identify any past land uses which may have the potential for causing land contamination. The historical aerial photographs are given in **Appendix 10.1**. The key findings are summarised in **Table 10.1** below.

Table 10.1: Description of historical land uses

Year	Description
1963	• The Application Site was occupied with low rise structures located at the eastern, southern, and western side of site. • An open area was observed at the centre of the Site. • Areas with village houses and vegetated open area are located to the east and south of the site.
1973	• No significant change in historical land use was observed as compared with that in Year 1963 within and in the vicinity of the Site.
1983	• No significant change in historical land use was observed as compared with that in Year 1973 within and in the vicinity of the Site.
1993	• A new low-rise structure was constructed at the northern part of the Site, which was previously occupied by an open area. • The low-rise structures at the southern part of the Site have been replaced with land with vegetation.
2003	• The density of vegetation observed at the southern part of the Site has increase. • No significant change in historical land use was observed at the rest of the Site. • The village houses and open area to the east of the site has been replaced by a parking area.
2014	• The land with vegetation at the southern side of the site has been replaced with several new-low rise structures. • A new access road connecting the Site to Lion Rock Tunnel Road has been constructed at the western part of the Site. The access road leads to the open area the centre of the site. • No significant change in historical land use was observed at the rest of the Site. • The parking area to the east of the site has been reverted to village houses and open area. • A new cycling path has been constructed to the west of the Site.
2018	• Further modifications to the low-rise structures at the southern side of the site was observed.

Year	Description
	No significant change in historical land use was observed at the rest of the Site.
2023	- New low-rise structures were added to the cluster of low-rise structures at the southern side of the Site. - No significant change in historical land use was observed at the rest of the Site. - New low-rise structures has been constructed near the village houses and open area to the east of the Site.

- 10.2.1.2 Based on review of historical aerial photographs, no historical land use/ activities which may cause land contamination was identified.

10.3 Site Survey Findings

- 10.3.1.1 Site survey was conducted in February 2025 to identify any existing land uses within the Site and the adjoining sites which may have potential for causing land contamination. During the site survey, site access was restricted. Photo record of the site survey is given in **Appendix 10.2**, and the site walkover checklist is given in **Appendix 10.3**. The site is primarily occupied by Hong Kong Bible Research and Education Center with several low-rise structures and open space based on site observation. The site has been used for religious institutions across decades since 1953. Considering the operations and activities of religious institutions, potential land contamination activities were not identified. By site observation, chemicals and dangerous goods (DGs) were not found within the site. No potential land contamination issue was observed during the site visits.

10.4 Information from Relevant Government Departments

10.4.1 Fire Services Department

- 10.4.1.1 An information request was sent to FSD regarding any Dangerous Goods (DGs) licenses registered and any records of DGs spillage/leakage incidents within the Site. As per FSD's response in March 2025, there are no records of DGs licenses nor spillage/leakage incidents within the Site. The correspondence with FSD is enclosed in **Appendix 10.4**.

10.4.2 Environmental Protection Department

- 10.4.2.1 An information request was sent to EPD regarding any registered Chemical Waste Producers (CWP), and any record of chemical spillage/leakage incidents recorded within the Site. As per EPD's response in March 2025, there are no records of chemical spillage/leakage incidents within the Site. In addition, the register of CWPs was inspected in March 2025, no CWPs are registered within the Site. The correspondence with EPD is enclosed in **Appendix 10.5**.

10.5 Identification of Potentially Contaminated Site

- 10.5.1.1 Review of desktop data and site visits have been conducted. In addition, as confirmed through site visits, potentially land contamination activities, such as car repairing and car scraping were not observed within the Application Site. Chemicals/DGs and relevant spillages/incidents were not found within the Application Site. It is therefore concluded that land contamination is not anticipated in the Application Site.

11. Waste Management

11.1 Evaluation of Constructional Phase Impact

11.1.1 Identification and Evaluation of Impact

11.1.1.1 During the construction phase, key construction activities which would potentially result in the generation of waste include minor site clearance including any temporary structure, piling works, soil excavation for basement and superstructure, etc. within the site area. These activities would result in the generation of wastes including both inert and non-inert construction and demolition (C&D) materials, chemical wastes and general refuse from on-site workforce.

11.1.1.2 However, in general, the handling and disposal of these materials and wastes will require proper management in order not to cause environmental impacts and nuisance. It is anticipated that there would not be any insurmountable impacts provided good site practices and other appropriate mitigation measures are implemented.

11.1.2 C&D Materials

11.1.2.1 Based on the preliminary design, it is estimated that about 68,800m³ of inert soft C&D materials (e.g. excavated soil, demolition C&D materials) and 16,700m³ non-inert C&D materials will be generated during the construction phase of the site clearance and site formation works. All C&D materials arising from the construction will be sorted on-site to recover the inert C&D materials as well as the reusable and recyclable materials.

11.1.2.2 Any surplus C&D materials will become the property of the Contractor once they are removed from the site. The Contractor will be responsible for devising a system to work for on-site sorting of C&D materials and to promptly remove all sorted and processed material arising from the construction activities to optimise temporary stockpiling on-site. It is recommended that the system should include the identification of the source of generation, estimated quantity, arrangement for on-site sorting and/or collection, temporary storage areas, and frequency of collection by recycling contractors or frequency of removal off-site.

11.1.2.3 Disposal of C&D materials can be minimized through careful planning during the detailed design stage and with good site practice during construction. This includes the use of non-timber formwork and temporary works and on-site sorting of the C&D materials for reuse and recycling as far as practicable. For the inert C&D materials, it would be reused on-site as far as possible or else it would be delivered to public fill reception facilities. The opportunity of reusing excavated C&D materials would be investigated in the Waste Management Plan, which will be derived in later detailed design stage.

11.1.2.4 With the proper implementation of good construction site practice and recommended mitigation measures, the on-site handling, reuse, transportation and disposal of C&D materials would not cause adverse environmental impacts.

11.1.3 Chemical Waste

- 11.1.3.1 Chemical wastes likely to be generated from the construction activities and associated facilities may include:
- scrap batteries or spent acid/alkali from their maintenance;
 - used paint, engine oils, hydraulic fluids and waste fuel;
 - spent mineral oils/cleansing fluids from mechanical machinery; and
 - spent solvents/solutions, some of which may be halogenated, from equipment cleansing activities.
- 11.1.3.2 Chemical wastes may pose environmental, health and safety hazards if not stored and disposed of in an appropriate manner as outlined in the Waste Disposal (Chemical Waste) (General) Regulation and the Code of Practice on the Packaging, Labelling and Storage of Chemical Waste. These hazards may include:
- toxic effects to workers;
 - adverse effects on air, water and land from spills; and
 - fire hazards.
- 11.1.3.3 It is difficult to quantify the amount of chemical waste as it will be highly dependent on the contractor's on-site maintenance practice the number of plant and vehicles utilized. Nevertheless, it is anticipated that the quantity of chemical wastes would be small and in the order of few hundred litres per month. The estimated amount of chemical waste to be generated during construction phase is summarized in **Table 11.1**.

Table 11.1 Summary of chemical waste during construction phase

Waste type	Total amount generated
Scrap batteries	A few hundred kilograms per month
Spend hydraulic oil and waste fuel	A few hundred litres per month
Spent lubrication oil and cleaning fluids	
Spend solvent	

- 11.1.3.4 Suitable arrangements for the storage, handling, transport and disposal of chemical wastes shall be made in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Waste and Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C). Wherever possible opportunities should be taken to reuse and recycle materials. The chemical wastes shall be collected by a licensed chemical waste collector for subsequent disposal at the Chemical Waste Treatment Centre at Tsing Yi or other licensed facility. Given that the quantity of chemical wastes would be small and that the regulations as stipulated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Waste and Cap. 354C would be strictly followed, adverse impacts brought by the generation of chemical waste is not anticipated.

11.1.4 General Refuse

- 11.1.4.1 The general refuse generated by the construction workforces mainly consists of food waste, aluminium cans and wastepaper. These general refuses will require off-site disposal. The number of workforce (clerical and workers) to be employed for the Project is not available at this stage, but is anticipated not to be over 500 staff. Based on the generation rate of 0.65kg/person/day, the total refuse generated per day would be less than 325kg/day. Therefore, it is estimated that less than 600 tonnes of general refuse would be generated during construction phase. The breakdown of estimated amount of general refuse to be generated during construction phase is summarised in **Table 11.2** below.

Table 11.2 Summary of general refuse during construction phase

Activities	Period	Daily Waste Generation (kg/day)	Total Amount Generated (tonne)
Construction phase	Approx. 5 years	< 325	< 600

- 11.1.4.2 Effective collection of site waste will be required to prevent waste materials being blown around by wind, flushed or leached into the marine environment, or creating an odour nuisance or pest and vermin problem. Waste storage areas shall be well maintained and cleaned regularly. In addition, disposal of waste at sites other than approved waste transfer or disposal facilities shall be prohibited. All collected waste shall be properly disposed of at public landfills (i.e. WENT Landfill). Windblown litter could be minimised during transportation of waste by covering trucks or by transporting wastes in enclosed containers.
- 11.1.4.3 With the implementation of good waste management practices as mentioned in **Section 11.2**, adverse environmental impacts are not expected to arise from the storage handling and transportation of general refuse generated from the site.

11.2 Recommended Practices for Construction Phase

- 11.2.1.1 Good site practice to avoid or reduce potential adverse environmental impacts associated with handling, collection and disposal of waste are proposed. These recommendations are based on the waste management hierarchy principles. The waste management options considered to be most preferable have the least environmental impacts and are more sustainable in the long term. The hierarchy is as follows (the priority follows descending order):
- avoidance and minimization,
 - separation of inert C&D materials, reusable and recyclable materials from other wastes,
 - reuse of materials,
 - recovery and recycling, and
 - treatment and disposal.
- 11.2.1.2 Prior to the commencement of the construction works, the contractors should incorporate these recommendations into a Waste Management Plan to provide an overall framework for waste management and reduction. Recommended good site practice, waste reduction measures as well as the waste transportation, storage and collection are as follows:

11.2.2 Good Site Practices

- 11.2.2.1 Adverse waste management implications are not expected, provided that good site practices are strictly implemented. The following good site practices are recommended throughout the construction phase of the Project:
- 11.2.2.2 Nomination of an approved personnel to be responsible for the implementation of good site practices, arrangements for collection and effective disposal to an appropriate facility of all wastes generated at the site;
- training of site personnel in proper waste management and chemical handling procedures;
 - provision of sufficient waste disposal points and regular collection for disposal;
 - separation of chemical wastes for special handling and appropriate treatment at the Chemical Waste Treatment Centre;
 - regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors;
 - implementation of a recording system for the amount of wastes generated/recycled and disposal sites. and
 - Waste Management Plan (WMP) should be prepared and implemented by the Contractor in accordance with the Building Department's "Practice Note for Authorized Persons and Registered Structural Engineers (PN for AP & RSE) No. 243 (ADV – 19) – Construction and Demolition Waste". The WMP will be submitted to the Architect/Engineer for approval.

11.2.3 Waste Reduction Measures

- 11.2.3.1 The amount of waste generated can be significantly reduced through good management and control. Waste reduction is best achieved at the site planning and design phase, as well as by ensuring the implementation of good site practices when the works are in progress. Recommendations for achieving waste reduction include:
- on-site reuse of any material excavated as far as practicable;
 - segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of material and their proper disposal;
 - collection of aluminium cans and waste paper by individual collectors during construction should be encouraged. Separately labelled recycling bins should also be provided to segregate these wastes from other general refuse by the workforce;
 - recycling of any unused chemicals and those with remaining functional capacity as far as possible;
 - prevention of potential damage or contamination to the construction materials through proper storage and good site practices;
 - planning and stocking of construction materials should be made carefully to minimise amount of waste generated and to avoid unnecessary generation of waste; and
 - training on the importance of appropriate waste management procedures, including waste reduction, reuse and recycling should be provided to workers.

11.2.4 Storage, Collection and Transportation of Waste

- 11.2.4.1 Storage of waste on site may induce adverse environmental implications if not properly managed. The following recommendations should be implemented to minimise the impacts:
- waste such as soil should be handled and stored well to ensure secure containment;
 - stockpiling area should be provided with covers and water spraying system to prevent materials from being washed away and to reduce wind-blown litter
 - different locations should be designated to stockpile each material to enhance reuse.
- 11.2.4.2 With respect to the collection and transportation of waste from the construction works area to respective disposal sites, the following recommendations should be implemented to minimise the potential adverse environmental impacts:
- remove waste in timely manner;
 - employ trucks with cover or enclosed containers for waste transportations;
 - obtain relevant waste disposal permits from the appropriate authorities; and
 - disposal of waste should be done at licensed waste disposal facilities.
- 11.2.4.3 In addition to the above measures, other specific mitigation measures on handling other specific waste generated from construction phase are recommended in the following subsections

11.2.5 C&D Materials

- 11.2.5.1 Wherever practicable, C&D materials should be segregated from other wastes to avoid contamination and ensure acceptability at public filling areas or reclamation sites. The following mitigation measures should be implemented in handling the waste:
- maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement;
 - carry out on-site sorting;
 - make provisions in the contract documents to allow and promote the use of recycled aggregates where appropriate; and
 - implement a trip-ticket system for each works contract with reference to DEVB TC(W) No. 6/2010 to ensure that the disposal of C&D materials are properly documented and verified.
- 11.2.5.2 In addition, disposal of the C&D materials onto any sensitive location such as agricultural land, etc. should be avoided. Disposal of C&D materials or any other wastes at unauthorized locations and sites other than approved waste transfer or disposal facilities shall be prohibited.
- 11.2.5.3 Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works should be considered. Metal hoarding should be used to enhance the possibility of recycling. The purchasing of construction materials should be carefully planned in order to avoid over ordering and wastage.

- 11.2.5.4 The contractor should recycle as much of the C&D materials as possible on-site. Public fill and C&D waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the construction site should be considered for such segregation and storage.
- 11.2.5.5 To enhance management of C&D materials and minimise C&D materials generation at source, Building Department's "Practice Notes for Authorised Persons and Registered Structural Engineers" (PNAPs) ADV-19 has introduced enhancement measures such as requiring the contractor to prepare Waste Management Plan (WMP) and submit to Project Proponent for agreement. For private projects that produce more than 300,000m³ of C&D materials, the project proponent may consult EPD for advice prior to accepting the WMP. Besides, the Public Fill Committee (PFC) is also prepared to offer advice to the Authorised Person (AP) and Resident Site Engineer (RSE) on the management and beneficial reuse of C&D material.

11.2.6 Chemical Waste

- 11.2.6.1 The contractor shall identify any alternatives for the use of chemical to minimise the generation of chemical waste. The ordering of chemicals should be well planned to avoid excess inventory.
- 11.2.6.2 If chemical wastes are produced at the construction site, the contractors should register with EPD as chemical waste producers. Chemical wastes should be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes. Containers used for storage of chemical wastes should:
- be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed;
 - have a capacity of less than 450 L unless the specification has been approved by EPD; and
 - display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the Regulations.
- 11.2.6.3 The storage area for chemical wastes should:
- be clearly labelled and used solely for the storage of chemical wastes;
 - be enclosed on at least 3 sides;
 - has an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical wastes stored in the area, whichever is greatest;
 - have adequate ventilation;
 - be covered to prevent rainfall entering (water collected within the bund must be tested and disposed as chemical wastes, if necessary); and
 - be arranged so that incompatible materials are adequately separated.
- 11.2.6.4 Disposal of chemical wastes should:
- be via a licensed waste collector; and

- be to a facility licensed to receive chemical wastes, such as the CWTC which also offers a chemical waste collection service and can supply the necessary storage containers; or
- be recycled by a licensed chemical waste recycler under EPD's directory or at a licensed recycling facility.

11.2.7 General Refuse

- 11.2.7.1 General refuse generated on-site should be stored in enclosed bins or compaction units separated from construction and chemical wastes. Recycling bins should also be provided to encourage recycling. A reputable waste collector should be employed by the contractor to remove general refuse from the site on a daily basis separate from the construction and chemical wastes. Burning of refuse on construction sites or fly tipping is prohibited by law.

11.3 Evaluation of Operational Phase Impact

11.3.1 Identification and Evaluation of Impact

- 11.3.1.1 The operational phase of the proposed development would generate municipal solid waste. With reference to the latest data from “Monitoring of Solid Waste in Hong Kong 2024” by EPD, the MSW disposal rate was 1.40 kg/person/day in Year 2024, and the recovery rate for recycling was 34% of the MSW generation. By calculation, the MSW generation rate, disposal rate and recycled rate were 2.12 kg/person/day, 1.40 kg/person/day and 0.72 kg/person/day in 2024 respectively. The estimated MSW based on planned residential and employment populations respectively is summarized in **Table 11.3**.

Table 11.3 Estimated quantities of MSW from planned Residential and Employment Population during operation phase

Estimated MSW from Residential Population (tpd) ^[1]			
Residential Population	Generated ^[2]	Required Disposal ^[2]	Recycled ^[2]
1125	2.4	1.6	0.8

Note:

[1] tpd: tonne per day

[2] MSW disposal rate was 1.40kg/person/day according to “Monitoring of Solid Waste in Hong Kong 2024” by EPD. By calculation, the MSW generation rate was 2.12kg/person/day. MSW recovery rate for recycling was 34% of the MSW generation. By calculation, the MSW recycling rate was 0.72kg/person/day.

[3] The estimated values are rounded to the nearest 1 decimal place.

- 11.3.1.2 A reputable waste collector should be employed to provide routine cleaning of the proposed development to minimize odour, pest and litter impacts associated with the generation of general refuse. Recycling bins should also be provided to encourage recycling.
- 11.3.1.3 With the implementation of the recommended mitigation measures for the handling, transportation and disposal of the identified waste, adverse residual waste management implications are not anticipated for the operational phase.

11.4 Recommended Practices for Operational Phase

11.4.1 Waste Collection and Disposal

- 11.4.1.1 An effective and efficient waste handling system is essential in order to minimize potential adverse environmental impacts during waste storage, collection and transport, such impacts may include odour if waste is not collected frequently; water quality if waste enters storm water drains; aesthetics and vermin problems if the waste storage area is not well maintained and cleaned regularly. The waste handling system may also facilitate materials recovery and recycling.
- 11.4.1.2 A refuse collection room would be installed at the ground floor for localized refuse collection and the waste would be transported to a refuse transfer station (RFS). To avoid potential odour nuisance during transport of waste, enclosed waste collection trucks should be used and the collection route and time should be properly planned. At least daily collection should be arranged by the waste collector. The collected waste should be ultimately disposed to the EPD's landfills such as the West New Territories (WENT) or North East Territories (NENT) landfills.

11.4.2 Waste Recycling

- 11.4.2.1 In order to facilitate recycling, a 4-bin recycling system for paper, metals, plastics and glass should be adopted together with a general refuse bin. They should be placed in prominent places to promote waste separation at source. All recyclable materials should be collected by recyclers. Food waste recycling bins should be set up at a designated location to collect food waste during operational phase. The collected food waste should be delivered to the EPD's food waste recycling facilities (i.e. Organic Resources Recovery Centre (ORRC)) for turning into energy or resources.

12. Water Quality Impact

12.1 Legislation and Standards

12.1.1 General

12.1.1.1 The relevant legislation, standards, and guidelines applicable to the present study for the assessment of water quality impacts include:

- Water Pollution Control Ordinance (WPCO) (Cap. 358);
- Technical Memorandum on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (TM-DSS);
- Practice Note for Professional Persons on Construction Site Drainage (ProPECC) PN 2/24;
- Practice Note for Professional Persons on Drainage Plan Subject to Comment by the Environmental Protection Department (ProPECC) PN 1/23; and
- HKPSG.

12.1.2 Water Pollution Control Ordinance (Cap. 358)

12.1.2.1 WPCO (Cap. 358) provides the major statutory framework for the protection and control of water quality in Hong Kong. According to the Ordinance and its subsidiary legislation, the entire Hong Kong waters are divided into ten Water Control Zones (WCZs) and four supplementary WCZs. Each WCZ has a designated set of statutory Water Quality Objectives (WQOs) designed to protect the inland and/ or marine environment and its users. The Project is located within the Tolo Harbour & Channel WCZ with corresponding WQOs as summarised in **Table 12.1**.

Table 12.1: Water Quality Objectives for Tolo Harbour and Channel Water Control Zone

Parameters	Objectives	Sub-Zone
Aesthetic appearance	No noxious or offensive odour or offensive taint or colour in either waters or edible aquatic organisms in the subzone to be present in concentrations detectable by bioassay or organoleptic tests.	Marine Waters in Whole Zone
	No visible foam, oil, grease, scum, litter or other objectionable matter.	Marine Waters in Whole Zone
	Shall not cause waters of the subzone to contain substances that — (a) settle to form objectionable deposits; (b) float as debris, scum, oil or other matter to form nuisances; (c) produce objectionable colour, odour, taste or turbidity; (d) injure or are toxic or produce adverse physiological responses in humans, animals or plants; or (e) are conducive to undesirable aquatic life or a nuisance to aquatic life.	All Inland Watercourses
Bacteria	The level of <i>Escherichia coli</i> (<i>E. coli</i>) should not exceed 610/100 mL, calculated as the geometric mean of all samples collected in one calendar year.	Marine Waters in Secondary contact

Parameters	Objectives	Sub-Zone
		recreation subzone and Fish culture subzones
	The level of <i>E. coli</i> shall not exceed 1000 per 100 mL, calculated as a running median of the most recent 5 consecutive samples taken at intervals of between 7 and 21 days (or 14 and 42 days).	Inland Waters in Shing Mun (A, C, D, E, H, I) and Tai Po (B, C) subzones and other watercourses
	The level of <i>E. coli</i> should not exceed 0 per 100 mL, calculated as a running median of the most recent 5 consecutive samples taken at intervals of between 7 and 21 days (or 14 and 42 days).	Inland Waters in Shing Mun (B, F, G), Lam Tsuen (C, D) and Tai Po (A) subzones
Chlorophyll-a	The level of chlorophyll-a in waters of the subzone shall not exceed 20 milligrams per cubic metre, calculated as a running arithmetic mean of 5 daily measurements for any single location and depth.	Marine Waters in Harbour subzone
	The level of chlorophyll-a in waters of the subzone shall not exceed 10 milligrams per cubic metre, calculated as a running arithmetic mean of 5 daily measurements for any single location and depth.	Marine Waters in Buffer subzone
	The level of chlorophyll-a in waters of the subzone shall not exceed 6 milligrams per cubic metre, calculated as a running arithmetic mean of 5 daily measurements for any single location and depth.	Marine Waters in Channel subzone
Colour	Colour of waters of the subzone to not exceed 50 Hazen units at any time.	Inland Waters in Shing Mun (A, C, D, E, H, I) and Tai Po (B, C) subzones and other watercourses
	Colour of waters of the subzone to not exceed 30 Hazen units at any time.	Inland Waters in Shing Mun (B, F, G), Lam Tsuen (C, D) and Tai Po (A) subzones
Dissolved oxygen (DO)	The level of dissolved oxygen in waters of the subzone to shall not be less than 2 milligrams per litre within 2 metres of the bottom, or to be less than 4 milligrams per litre in the remainder of the water column.	Marine Waters in Harbour subzone
	The level of dissolved oxygen in waters of the subzone shall not be less than 3 milligrams per litre within 2 metres of the bottom, or to be less than 4 milligrams per litre in the remainder of the water column.	Marine Waters in Buffer subzone
	The level of dissolved oxygen in waters of the subzone shall not be less than 4 milligrams per litre at any point in the water column.	Marine Waters in Channel subzone
	The level of dissolved oxygen in waters of the subzone shall not be less than 4 milligrams per litre or 40% saturation (at 15 degrees Celsius) at any time.	All Inland Watercourses
Light penetration	No changes in turbidity, suspended material, colour or other parameters arising from waste discharges shall reduce light transmission by more than 20 per cent of the normal level in the subzone at any location or any time.	Marine Waters in Harbour subzone
	No changes in turbidity, suspended material, colour or other parameters arising from waste discharges shall reduce light transmission by more than 15 per cent of the normal level in the subzone at any location or any time.	Marine Waters in Buffer subzone
	No changes in turbidity, suspended material, colour or other parameters arising from waste discharges shall reduce light transmission by more than 10 per cent of the normal level in the subzone at any location or any time.	Marine Waters in Channel subzone

Parameters	Objectives	Sub-Zone
pH	Shall not cause the normal pH range of any waters of the subzone to be extended by greater than ± 0.5 pH units at any time.	Marine Waters in Harbour subzone
	Shall not cause the normal pH range of any waters of the subzone to be extended by greater than ± 0.3 pH units at any time.	Marine Waters in Buffer subzone
	Shall not cause the normal pH range of any waters of the subzone to be extended by greater than ± 0.1 pH units at any time.	Marine Waters in Channel subzone
	Shall not cause the pH of waters of the subzone to exceed the range of 6.0 to 9.0 at any time.	Inland Waters in Shing Mun (D, E, I) subzones and other watercourses
	Shall not cause the pH of waters of the subzone to exceed the range of 6.5 to 8.5 at any time.	Inland Waters in Shing Mun (A, B, C, F, G, H), Lam Tsuen (C, D) and Tai Po (A, B, C) subzones
Salinity	Shall not cause the normal salinity range of any waters of the subzone to be extended by greater than ± 3 parts per thousand at any time.	All Marine Waters subzone
Settleable Material	Shall give rise to no bottom deposits or submerged objects which adversely influence bottom-living communities, alter the basic Harbour geometry or shipping channels, present any hazard to shipping or diving activities, or affect any other beneficial use of the waters of the subzone.	All Marine Waters subzone
Temperature	Shall not cause the natural daily temperature range in waters of the subzone to be extended by greater than ± 1.0 degree Celsius at any location or time. The rate of temperature change shall not exceed 0.5 degrees Celsius per hour at any location, unless due to natural phenomena.	All Marine Waters subzone
	Shall not cause the natural daily temperature range in waters of the subzone to be extended by greater than ± 2.0 degrees Celsius at any location or time.	All Inland Watercourses
Suspended solids (SS)	Shall not cause the annual median of SS in waters of the subzone to exceed 25 milligrams per litre.	Inland Waters in Shing Mun (D, E, I) subzones and other watercourses
	Shall not cause the annual median of SS in waters of the subzone to exceed 20 milligrams per litre.	Inland Waters in Shing Mun (A, B, C, F, G, H), Lam Tsuen (C, D) and Tai Po (A, B, C) subzones
5-Day biochemical oxygen demand (BOD5)	Not to exceed 5 mg/L at any time.	Inland Waters in Shing Mun (A, C, D, E, H, I), Tai Po (B, C) subzones and other watercourses
	Not to exceed 3 mg/L at any time.	Inland Waters in Shing Mun (B, F, G), Lam Tsuen (C, D) and Tai Po (A) subzones
Chemical oxygen demand (COD)	Not to exceed 30 mg/L at any time.	Inland Waters in Shing Mun (A, C, D, E, H, I), Tai Po (B, C) subzones and other watercourses
	Not to exceed 15 mg/L at any time.	Inland Waters in Shing Mun (B, F, G), Lam Tsuen (C, D) and Tai Po (A) subzones

Parameters	Objectives	Sub-Zone
Ammoniacal Nitrogen	Shall not cause the ammoniacal nitrogen in waters of the subzone to exceed 0.5 milligrams per litre at any time.	All Inland Watercourses
Toxicants	Shall not cause the toxicants in waters of the subzone to attain such a level as to produce significant toxic effects in humans, fish or any other aquatic organism, with due regard to biologically cumulative effects in food chains and to toxicant inter-actions with each other.	Whole Zone

12.1.3 Technical Memorandum on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland & Coastal Waters (TM-DSS)

12.1.3.1 TM-DSS sets the limits for the effluent to foul sewers, storm water drains, inland and coastal water. The limits control the physical, chemical and microbial quality of effluent discharges into foul sewers leading into Government's sewage treatment plants. Any effluent discharge from the proposed construction and operation activities must comply with the relevant requirements and standards stipulated in the TM-DSS.

12.1.4 Practice Note for Professional Persons on Construction Site Drainage (ProPECC) PN 2/24

12.1.4.1 The Practice Note for Professional Persons (ProPECC Note PN2/24) on Construction Site Drainage provides guidelines for the handling and disposal of construction discharges. It is applicable to this study for the control of site runoff and wastewater generated during the construction phase of the Project. The types of discharges from construction sites outlined in the ProPECC Note PN 2/24 include:

- surface runoff;
- groundwater;
- boring and drilling water;
- wastewater from concrete batching and precast concrete casting;
- wheel washing water;
- bentonite slurries;
- water for testing and sterilization of water retaining structures and water pipes;
- wastewater from building construction and site facilities; and
- acid cleaning, etching and pickling wastewater.

12.1.5 Practice Note for Professional Persons on Drainage Plan Subject to Comment by the Environmental Protection Department (ProPECC) PN 1/23

12.1.5.1 The Practice Note for Professional Persons (ProPECC Note PN1/23) on Drainage Plans subject to Comment by the Environmental Protection Department provides non-statutory guidelines in preparing drainage plans for the operational phase of the Project. It suggests that drainage plans submitted to the Building Authority should be referred to the Environmental Protection Department (EPD) for comment whenever there is a concern for pollution control.

12.1.6 Hong Kong Planning Standards and Guidelines (HKPSG)

- 12.1.6.1 Chapter 9 of the HKPSG outlines environmental requirements that need to be considered in land use planning. The recommended guidelines, standards and guidance cover the selection of suitable locations for the developments and sensitive uses, provision of environmental facilities, and design, layout, phasing and operational controls to minimize the adverse environmental impacts. It also lists out environmental factors influencing land use planning and recommended buffer distances for land uses.

12.2 Description of the Environment

12.2.1 Marine Water

- 12.2.1.1 The baseline conditions of marine water were referred to the marine water quality monitoring data routinely collected by EPD. The closest marine water quality monitoring station would be Tolo Harbour & Channel WCZ (Station TM2), which is located around 5km away from the Project Site.

- 12.2.1.2 The details of the recent water quality monitoring data from the nearest monitoring station in that WCZ (Station TM2) in Year 2025 are presented in **Table 12.3**.

Table 12.2: Summary of EPD's Routine Marine Water Quality Data for Tolo Harbour & Channel Water Control Zone in Year 2025

Parameters		Tolo Harbour & Channel WCZ
		TM2
Temperature (°C)		24.7 (17.6 - 31.5)
Salinity		29.8 (24.5 - 32.7)
Dissolved Oxygen (mg/L)	Depth Averaged	7.4 (3.8 - 10.2)
	Bottom	7.4 (3.0 - 10.3)
Dissolved Oxygen (% Saturation)	Depth Averaged	105 (55 - 150)
	Bottom	104 (45 - 151)
pH		8.0 (7.4 - 8.3)
Secchi Disc Depth (m)		1.8 (1.0 - 2.8)
Turbidity (NTU)		1.5 (0.3 - 5.3)
Suspended Solids (mg/L)		4.0 (1.5 - 8.4)
5-day Biochemical Oxygen Demand (mg/L)		2.0 (0.2 - 4.0)
Ammonia Nitrogen (mg/L)		0.066 (0.019 - 0.235)
Unionised Ammonia (mg/L)		0.003 (<0.001 - 0.019)
Nitrite Nitrogen (mg/L)		0.006 (<0.002 - 0.022)
Nitrate Nitrogen (mg/L)		0.069 (0.004 - 0.345)
Total Inorganic Nitrogen (mg/L)		0.14 (0.03 - 0.52)
Total Kjeldahl Nitrogen (mg/L)		0.33 (0.21 - 0.62)
Total Nitrogen (mg/L)		0.40 (0.23 - 0.65)

Parameters	Tolo Harbour & Channel WCZ
	TM2
Orthophosphate Phosphorus (mg/L)	0.011 (<0.002 - 0.053)
Total Phosphorus (mg/L)	0.08 (0.03 - 0.17)
Silica (as SiO ₂) (mg/L)	1.17 (<0.05 - 4.85)
Chlorophyll- <i>a</i> (µg/L)	8.1 (1.3 - 19.5)
<i>E. coli</i> (count/100mL)	31 (1 - 2500)
Faecal Coliforms (count/100mL)	150 (8 - 12000)

Note:

[1] The table above is extracted from the Annual Report of Marine Water Quality in Hong Kong in 2025.

[2] Unless otherwise specified, data presented are depth-averaged (A) values calculated by taking the means of three depths: Surface (S), Mid-depth (M), Bottom (B).

[3] Data presented are annual arithmetic means of the depth-averaged results except for *E. coli* and faecal coliforms, which are annual geometric means.

[4] Data in brackets indicate the ranges.

12.2.2 River Water

12.2.2.1 The baseline conditions of river water were referred to the river water quality monitoring data routinely collected by EPD. The closest representative river water quality monitoring station would be Shing Mun Main Channel (Station TR19I), which is located around 1.6km away from the Project Site.

12.2.2.2 The details of the recent water quality monitoring data from the closest representative monitoring station (Station TR19I) in Year 2025 are presented in **Table 12.4**.

Table 12.4: Summary of EPD's Routine River Water Quality Data for Shing Mun Main Channel in Year 2025

Parameters	Shing Mun Main Channel ^{[1][2][3][4][5]}
	TR19I
Dissolved oxygen (mg/L)	7.3 (5.0 - 8.0)
pH	7.8 (7.7 - 8.6)
Suspended solids (mg/L)	4.6 (1.9 - 8.5)
5-day Biochemical Oxygen Demand (mg/L)	2.4 (1.1 - 4.4)
Chemical Oxygen Demand (mg/L)	21 (8 - 53)
Oil & grease (mg/L)	<0.5 (<0.5 - <0.5)
<i>E. coli</i> (counts/100mL)	164 (10 - 2 200)
Faecal coliforms (counts/100mL)	1 093 (150 - 9 000)
Ammonia-nitrogen (mg/L)	0.094 (0.038 - 0.210)
Nitrate-nitrogen (mg/L)	0.160 (0.060 - 0.350)

Parameters	Shing Mun Main Channel ^{[1][2][3][4][5]}
	TR19I
Total Kjeldahl nitrogen (mg/L)	0.35 (0.19 - 0.57)
Orthophosphate Phosphorus (mg/L)	0.036 (0.009 - 0.074)
Total Phosphorus (mg/L)	0.09 (0.04 – 0.20)
Sulphide (mg/L)	<0.02 (<0.02 - <0.02)
Aluminium (µg/L)	<50 (<50 - <50)
Cadmium (µg/L)	<0.1 (<0.1 – 0.2)
Chromium (µg/L)	2 (<1 - 3)
Copper (µg/L)	5 (4 - 7)
Lead (µg/L)	<1 (<1 - <1)
Zinc (µg/L)	<10 (<10 - 20)
Flow (m³/s)	NM

Notes:

- [1] Data presented are in annual medians of monthly samples; except those for *E. coli* and faecal coliforms which are in annual geometric means.
- [2] Figures in brackets are annual ranges.
- [3] NM indicates no measurement taken.
- [4] cfu – colony forming unit.
- [5] Extracted from EPD River Water Quality in Hong Kong in 2025.

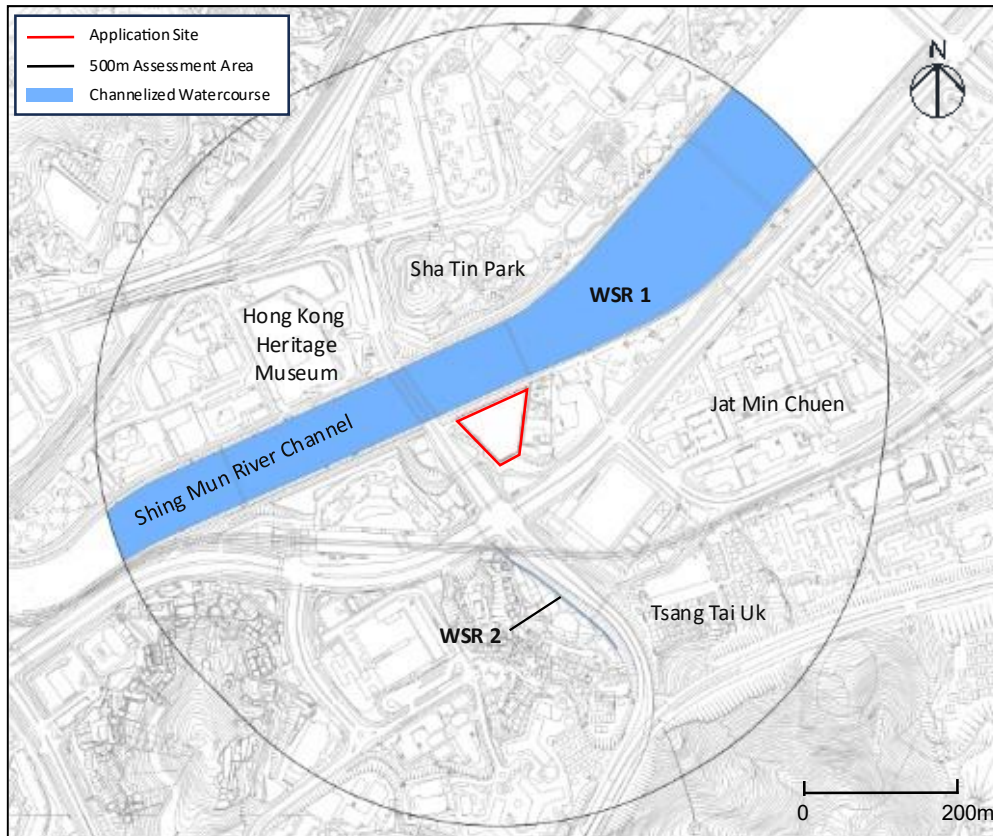
12.3 Water Sensitive Receivers

12.3.1.1 Water Sensitive Receivers (WSRs) within 500m from the Site are identified and presented in **Figure 12.1**. Major WSRs are listed in **Table 12.5**.

Table 12.5: Water sensitive receivers

ID	WSRs	Status	Distance from WSR
WSR 1	Shing Mun River	Channelized watercourse	13m
WSR 2	Channel near Sha Tin Tau Village	Channelized watercourse	115m

Figure 12.1: Locations of water sensitive receivers



12.4 Construction Phase Impact Evaluation

12.4.1 Construction Site Runoff

12.4.1.1 During rainstorm events, construction site runoff would come from all over the works site. The surface runoff might be polluted by:

- Runoff and erosion from site surfaces, earth working areas and stockpiles;
- Wash water from dust suppression sprays and wheel washing facilities; and
- Chemicals spillage such as fuel, oil, solvents and lubricants from maintenance of construction machinery and equipment.

12.4.1.2 Construction runoff may cause physical, biological and chemical effects. The physical effects include potential blockage of drainage channels and increase of suspended solid levels in the receiving water bodies. Runoff containing significant amounts of concrete and cement-derived material may cause primary chemical effects such as increasing turbidity and discoloration, elevation in pH, and accretion of solids. A number of secondary effects may also result in toxic effects to water biota due to elevated pH values, and reduced decay rates of faecal microorganisms and photosynthetic rate due to the decreased light penetration.

12.4.1.3 Construction site runoff could be carefully controlled and mitigated through the recommended mitigation measures outlined in **Section 12.5**. With proper implementation of recommended mitigation measure, construction site runoff would be properly controlled such that adverse water quality impact would not be anticipated.

12.4.2 Construction Works in Close Proximity of Inland Waters

- 12.4.2.1 Shing Mun River Channel is located near the Site. Construction works near this watercourse may pollute the storm water or inland waters due to potential release of construction wastes. Construction wastewater are generally characterised by high concentration of suspended solid (SS) and elevated pH. Adoption of good housekeeping and mitigation measures would reduce the generation of construction wastes and potential water pollution. The implementation of measures to control run-off and drainage water will be important for the construction works adjacent to the inland water in order to prevent run-off and drainage water with high levels of SS from entering the water environment. With the implementation of adequate construction site drainage and provision of mitigation measures as specified in ETWB TC (Works) No. 5/2005 “Protection of natural streams/rivers from adverse impacts arising from construction works”, it is anticipated that water quality impacts would be minimised.

12.4.3 Sewage from Workforce

- 12.4.3.1 Sludge and sewage effluents will arise from the sanitary facilities provided for the on-site construction workforce. The sewage is characterized by high levels of biochemical oxygen demand (BOD), ammonia, *E. coli* and oil / grease.
- 12.4.3.2 The sewage generated should be properly managed to minimize the adverse impact of odour and potential health risks to the workers by attracting pests and other disease vectors.
- 12.4.3.3 Adequate portable chemical toilets should be provided to ensure all sewage is properly collected. It is anticipated that no adverse environmental implications would arise if the chemical toilets are properly maintained and licensed collectors are employed for the collection and disposal of sewage on a regular basis.

12.4.4 Accidental Spillage of Chemical

- 12.4.4.1 Chemicals used during construction, such as fuel, oil, solvents, and lubricants from the maintenance of construction machinery and equipment, may cause pollution and trigger physicochemical effects in the nearby waterbodies if accidental spillage occurs. However, with the proper implementation of mitigation measures recommended in **Section 12.5** below, there would not be adverse water quality impacts.

12.4.5 Concurrent Project

- 12.4.5.1 As mentioned in **Section 2.4**, three concurrent projects have been identified within 500m from the boundary of the Project. For Improvement of Lion Rock Tunnel, no potential cumulative water quality impacts during construction phase are anticipated in view of the large separation distance, i.e. approximately 470m. For the Proposed Public Utility Installations, with reference to the RNTPC Paper No. A/ST/1025⁷, it is expected to commence in 2025 and complete in 2028. For Revised Trunk Road T4 in Sha Tin, with reference to CEDD's webpage⁸, it is expected to commence in 2024 and complete in 2030. As the Project will tentatively start construction works in 2027, overlapping of works are anticipated. However, with proper implementation of the recommended mitigation measures by the respective proponents, cumulative water quality impacts on the two identified representative WSRs are not anticipated.

12.5 Recommended Mitigation Measures for Construction Phase

12.5.1 Construction Site Runoff

- 12.5.1.1 In accordance with the Practice Note for Professional Persons on Construction Site Drainage, EPD, 2024 (ProPECC PN 2/24), the proposed construction phase mitigation measures include but not limited to the following.
- Surface run-off from construction sites should be discharged into storm water drains via adequately designed sand/silt removal facilities such as sand traps, silt traps, sedimentation tanks and sediment basins. Channels or earth bunds or sand bag barriers should be provided on site to properly direct surface run-off to such silt removal facilities. Perimeter channels at site boundaries should be provided where necessary to intercept surface run-off from outside the site so that it will not wash across the site. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks.
 - Silt removal facilities, channels and manholes should be maintained and the deposited silt and grit should be removed regularly, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times. Dikes or embankments for flood protection should be implemented around the boundaries of earthwork areas. Temporary ditches should be provided to facilitate the runoff discharge into storm drains, through a silt/sediment trap. The silt/ sediment traps should be incorporated in the permanent drainage channels to enhance deposition rates.
 - Construction works should be programmed to minimize soil excavation works in rainy seasons (generally from April to September). If soil excavation works could not be avoided in these months or at any time of year when rainstorms are likely, for the purpose of preventing soil erosion, temporarily exposed slope surfaces should be covered (e.g. by tarpaulin), and temporary access roads should be protected by crushed stone or gravel, as excavation proceeds. Intercepting channels should be provided (e.g. along the crest/edge of excavation) to prevent surface run-off from washing across exposed soil surfaces. Arrangements should always be in place to ensure that adequate surface protection measures can be safely carried out well before the arrival of a rainstorm.

⁷ https://www.tpb.gov.hk/uploads/page/meetings/RNTPC/A_ST_1025/A_ST_1025_MainPaper.pdf

⁸ <https://www.cedd.gov.hk/eng/our-projects/major-projects/index-id-143.html>

- Earthworks final surfaces should be well compacted and the subsequent permanent works or surface protection works should be carried out immediately after the final surfaces are formed to prevent erosion caused by rainstorms. Appropriate drainage like intercepting channels should be provided where necessary.
- Measures should be taken to minimize the ingress of rainwater into trenches. If excavation of trenches in the rainy season is necessary, they should be dug and backfilled in short sections of length. Rainwater pumped out from trenches or foundation excavations should be discharged into storm water drains via silt removal facilities.
- Open stockpiles of construction materials (e.g. aggregates, sand and fill material) on sites should be covered with tarpaulin or similar impermeable fabric during rainstorms. Measures should be taken to prevent washing away 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 surface run-off from getting into foul sewers. Discharge of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system.
- Precautions to be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecast and actions to be taken during or after rainstorms.
- Groundwater pumped out of wells, etc. for lowering ground water level in basement or foundation construction, and groundwater seepage pumped out of tunnels or caverns under construction should be diverted to silt removal facilities for treatment before discharging into storm water drains.
- Water used in ground boring and drilling for site investigation or rock/soil anchoring should as far as practicable be recirculated after sedimentation. When there is a need for final disposal, the wastewater should be discharged into storm water drains via silt removal facilities.
- Wastewater generated from the washing down of mixer trucks and drum mixers and similar equipment should wherever practicable be recycled. The discharge of wastewater should be kept to a minimum.
- To prevent pollution from wastewater overflow, the pump sump of any water recycling system should be provided with a standby pump of adequate capacity and with automatic alternating devices.
- Under normal circumstances, surplus wastewater arising from concrete batching and precast concrete casting may be discharged into foul sewers after proper treatment (e.g. silt removal, pH adjustment to within the pH range of 6 to 10, etc.). Disposal of wastewater into storm water drains will require more elaborate treatment. Surface run-off should be segregated from the concrete batching plant and casting yard area as much as possible, and diverted to the storm water drainage system. Surface run-off contaminated by materials in a concrete batching plant or casting yard should be adequately treated before disposal into storm water drains.
- All vehicles and plants should be cleaned before they leave a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. A wheel washing bay should be provided at every site exit if practicable and wash-water should have sand and silt settled out or removed before discharging into storm water drains. The section of construction road between the wheel washing bay and the

public road should be paved to reduce vehicle tracking of soil and to prevent site run-off from entering public road drains.

- Bentonite slurries used in diaphragm wall and bored-pile construction should be reconditioned and reused wherever practicable. If the disposal of a certain residual quantity cannot be avoided, used bentonite slurry (if mixed with only inert fill materials) should be dewatered, and disposed of at a (i) public fill reception facility / area; or (ii) marine dumping ground (as the last resort) subject to obtaining a marine dumping licence from the Environmental Protection Department (EPD) on a case-by-case basis.
- The water generated from the dewatering process should be treated to the respective effluent standards applicable to foul sewers, storm water drains or the receiving waters as set out in the “Technical Memorandum on Effluent Standards” (TM) issued under the Water Pollution Control Ordinance (WPCO) (Cap. 358) which is made available at the EPD’s website (<http://www.epd.gov.hk>).
- Water used in water testing to check leakage of structures and pipes should be reused for other purposes as far as practicable. Surplus unpolluted water could be discharged into storm water drains.
- Sterilization is commonly accomplished by chlorination. Specific advice from the EPD should be sought during the design stage of the works with regard to the disposal of the sterilizing water. The sterilizing water should be reused wherever practicable.
- Before commencing any demolition works, all sewer and drainage connections should be sealed to prevent building debris, soil, sand etc. from entering public sewers/drains.
- Wastewater generated from building construction activities including concreting, plastering, internal decoration, cleaning of works and similar activities should not be discharged into the storm water drainage system. If the wastewater is to be discharged into foul sewers, it should undergo the removal of settleable solids in a silt removal facility, and pH adjustment as necessary.
- Acidic wastewater generated from acid cleaning, etching, pickling and similar activities should be neutralized to within the pH range of 6 to 10 before discharging into foul sewers. If there is no public foul sewer in the vicinity, the neutralized wastewater should be tankered off site for disposal into foul sewers or treated to a standard acceptable for discharge into storm water drains and the receiving waters.
- Sewage from toilets, kitchens and similar facilities should be discharged into a foul sewer. If there is no foul sewer in the vicinity, chemical toilets, a septic tank and soakaway system (see Appendix B of ProPECC PN 2/24 for general reference) or for larger flows, a sewage treatment plant will have to be provided as appropriate.
- Wastewater collected from canteen kitchens, including that from basins, sinks and floor drains, should be discharged into foul sewers via grease traps capable of providing at least 20 minutes retention during peak flow. Details of a typical grease trap should be referred to Appendix C of ProPECC PN 2/24 for general reference. The EPD has also published “Grease Traps for Restaurants and Food Processors” which provides guidance on the design, operation and maintenance of grease traps and it is made available at the EPD’s website (<http://www.epd.gov.hk>).
- Drainage serving an open oil filling point should be connected to storm water drains via a petrol interceptor with peak storm bypass. Typical details of such a petrol interceptor prepared by the Highways Department, available at its website (<http://www.hyd.gov.hk>) for general reference.

- Vehicle and plant servicing areas, vehicle wash bays and lubrication bays should as far as possible be located within roofed areas. The drainage in these covered areas should be connected to the foul sewer via petrol interceptor(s). Oil leakage or spillage should be contained and cleaned up immediately. Waste oil should be collected and stored for recycling or disposal in accordance with the Waste Disposal Ordinance (Cap. 354).

12.5.1.2 By adopting the construction site mitigation measures with best management practices stated in ProPECC PN 2/24, construction site runoff and potential water quality impact would be properly controlled and mitigated such that adverse water quality impact would not be anticipated. The Contractor shall apply for a discharge license under WPCO and meet the licence requirements for any effluent discharge.

12.5.2 Construction Works in Close Proximity of Inland Waters

12.5.2.1 Apart from the general site best management practices, extra care shall be paid for works near watercourses to minimise the potential water quality impacts. The measures described in ETWB TC (Works) No. 5/2005 “Protection of natural streams / rivers from adverse impacts arising from construction works” should be adopted where applicable. The major measures are list below:

- Stockpiling of construction materials and dusty materials should be located away from any watercourses, contained in bunded areas and covered with tarpaulin.
- Construction debris and spoil should be covered with tarpaulin during storage. Timely removal of materials away from the site for disposal should be arranged to avoid being washed into the nearby watercourses.
- Water pumps should be used to collect any wastewater and construction site surface runoff. The collected wastewater shall be properly treated before discharge.
- Any wastewater treatment facility and discharge point during construction stage, with effluent pre-treatment to WPCO requirement as necessary, should be sited away from natural section of watercourse.
- Toe-board and bunds shall be provided along the edge of the works area to prevent wastewater/ debris from falling into the watercourses.
- Proper shoring may need to be erected in order to prevent soil / mud from slipping into the inland water bodies.
- Construction effluent, site run-off and sewage should be properly collected and/or treated.
- Construction works close to the inland waters should be carried out in dry season as far as practicable where the flow in the surface channel or stream is low.
- The use of less or smaller construction plants may be specified in areas close to the watercourses to reduce the disturbance to the surface water.

12.5.3 Sewage from Workforce

12.5.3.1 Portable chemical toilets and sewage holding tanks should be provided for handling the sewage generated by the construction workforce. A licensed contractor should be employed to provide appropriate and adequate portable toilets to cater employed populations and be responsible for appropriate disposal and maintenance.

- 12.5.3.2 Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the nearby environment during the construction phase. Regular environmental audit on the construction site should be conducted in order to provide an effective control of any malpractices and achieve continual improvement of environmental performance on site.
- 12.5.3.3 With the implementation of mitigation measures and good site practices as mentioned above, adverse water quality impacts due to the sewage from workforce are not anticipated.

12.6 Operational Phase Impact Evaluation

- 12.6.1.1 The Professional Persons Environmental Consultative Committee Practice Note 1/23 Drainage Plans subject to Comment by the Environmental Protection Department (ProPECC PN 1/23), also 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 site effluents generated within the proposed development area should follow the relevant guidelines and practices as given in the ProPECC PN 1/23.

12.6.2 Runoff from the Development

- 12.6.2.1 According to desktop review and site survey results, the existing Application Site is mostly paved. Hence, it is expected that the proposed development would only marginally increase the area of impermeable surfaces and hence the peak surface runoff rates. Besides, vehicle dust, tyre scraps and oils might be washed away from the road surface to the nearby water courses by surface runoff or road surface cleaning. Subject to detailed design and requirement of relevant government departments, the capacities of road drainage system shall cater the runoff from 50 year-return-period rainstorm. Proper drainage systems with silt traps and oil interceptors should be installed and connected to the existing drainage system. The design of road gullies with silt traps should be incorporated in the detailed design stage.
- 12.6.2.2 Runoff will be controlled by best management practice. Runoff will be intercepted by properly designed and managed silt traps at appropriate spacings so that common roadside debris, refuse and fallen leaves etc. can be captured before allowing the runoff to drain into the drainage system. At the outlets to the drainage system, the Project Proponent or the delegated operation parties should manage the road/open area cleaning prior to the occurrence of a storm. Moreover, it is recommended each of the cleaning events should be carried out during low traffic flow period, preferably using either manual methods or mechanical means such as vacuum sweeper/truck equipped with side broom to sweep road sludge and debris into the suction nozzle to increase the removal efficiency of pollutants. The collected pollutants would be tankered away for off-site disposal at landfill sites. After the removal of the pollutants, the pollution levels from stormwater would be much reduced.

12.6.3 Sewage from the Development

- 12.6.3.1 Sewage will be generated from the future population who use the facilities of the Development. According to the current design, the estimated Average Dry Weather Flow from the development is about 584 m³/day. All sewage will be conveyed to the public sewerage system, which will be connected to the Sha Tin Sewage Treatment Works. The Development will be properly sewered and adverse water quality impact is not anticipated. A separate Sewerage Impact Assessment Report has been conducted to assess the impact of sewage generation as a result of the proposed development. Details of mitigation measures, if necessary, shall be referred to the Sewerage Impact Assessment Report.

12.6.4 Recommended Mitigation Measures

- 12.6.4.1 The site is located at a highly urbanised, well-planned area. As evaluated in above **Section 12.6.2**, adverse water quality impact during operational phase is not anticipated. However, any potential impact can be further minimized with the implementation of mitigation measures recommended below.

12.6.5 Runoff from the Development

- 12.6.5.1 The Development will lead to an increase in area of impermeable surfaces and hence the peak surface runoff rates. Besides, vehicle dust, tyre scraps and oils might be washed away from the road surface to the nearby water environment by surface runoff or road surface cleaning. Proper drainage systems with silt traps and oil interceptors should be installed.
- 12.6.5.2 Runoff will be controlled by best management practice. Runoff will be intercepted by properly designed and managed silt traps at appropriate spacing so that common debris, refuse and fallen leaves etc. can be captured before allowing the runoff to drain into nearby water environment. The collected pollutants would be tankered away for off-site disposal at landfill sites. After the removal of the pollutants, the pollution levels from stormwater would be much reduced. Furthermore, the design of drainage plans would follow the recommendations in ProPECC PN 1/23 which provides useful non-statutory guidelines for pollution control on different types of discharge from the Development to minimize water quality impact.

12.6.6 Sewage from the Development

- 12.6.6.1 As mentioned in **Section 12.6.3** above, the Development will be properly sewered and adverse water quality impact is not anticipated.

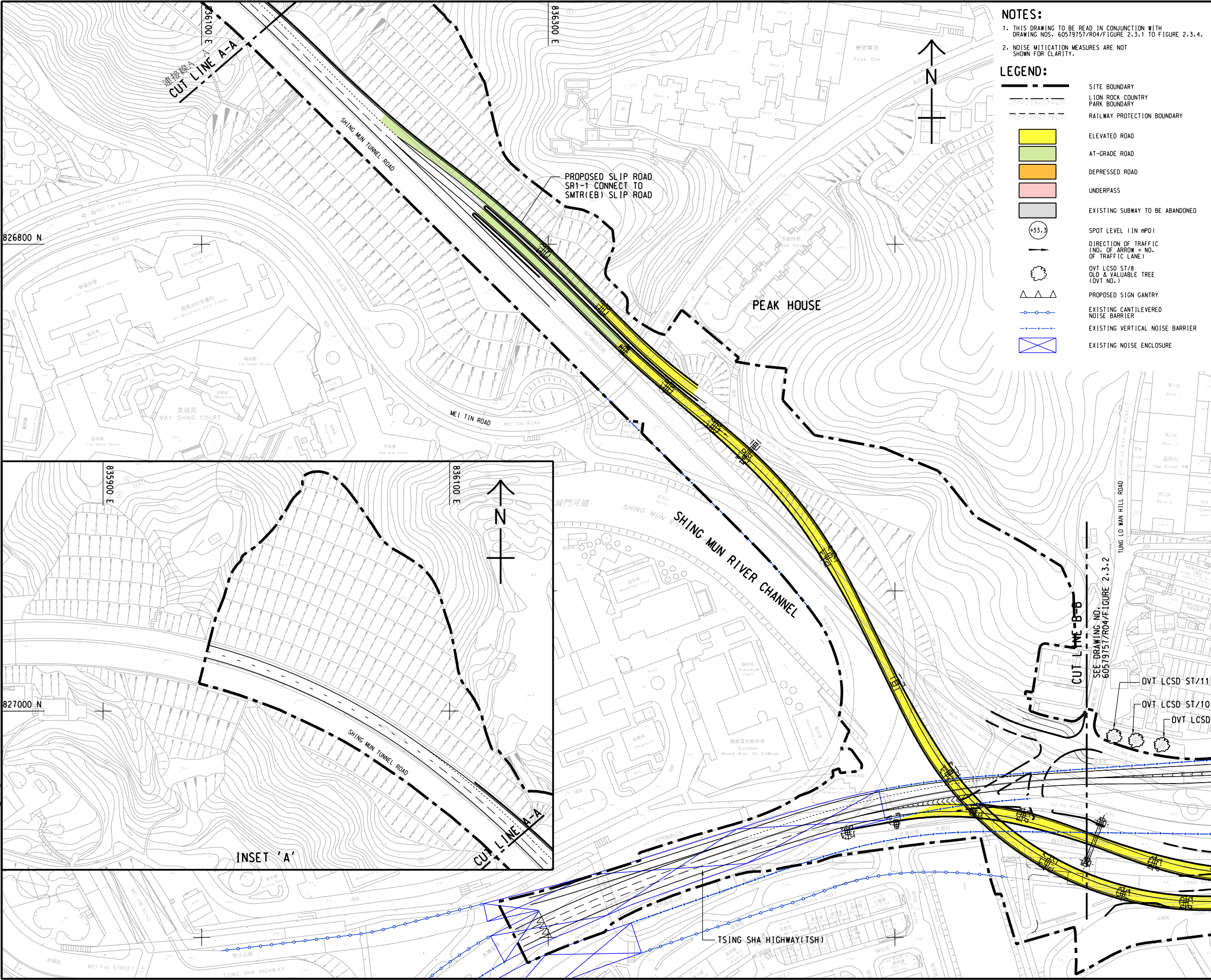
13. Conclusion

- 13.1.1.1 An Environmental Assessment has been conducted to support the Application for Amendment of Plan Under Section 12A of the Town Planning Ordinance (Cap. 131) for Proposed Residential cum Social Welfare Facilities Development at STTL 310, Sha Tin.
- 13.1.1.2 With the implementation of the recommended acoustic window (baffle type) and conventional acoustic balcony, all residential units will not be exposed to road traffic noise levels in excess of 70dB(A), as stipulated in the HKPSG. Adverse road traffic noise impact on the proposed development is not anticipated.
- 13.1.1.3 A number of existing and planned fixed plants are identified within 300m of the subject site. In consideration of the large separation distances and substantial influence of road traffic noise, noise impact from these identified fixed noise sources is not anticipated. With appropriate noise mitigation measures, adverse noise impact from the planned fixed plant noise sources due to the operation of the proposed development is not anticipated.
- 13.1.1.4 The Tuen Ma Line (TML) is located at about 110m to the south of the Application Site. In consideration of the large separation distance and substantial influence of road traffic noise from the heavily trafficked Lion Rock Tunnel Road and Tai Chung Kiu Road, adverse rail noise impact on the proposed development is not anticipated.
- 13.1.1.5 The current design scheme has allowed sufficient setback from the surrounding roads to meet the minimum requirement as stipulated in the HKPSG. Hence potential vehicular emission impact is not anticipated. Based on the chimney survey, no existing chimneys were found within 500m of the subject site.
- 13.1.1.6 A preliminary land contamination site appraisal through desktop review and site survey has been conducted to review any past and existing land uses within and adjoining the Application Site. It is found that there is no potential of land contamination within and adjoining the Application Site.
- 13.1.1.7 For waste management, adverse implications during construction and operational phases are not anticipated provided good practices and other appropriate mitigation measures are in place.
- 13.1.1.8 Potential water pollution sources have been identified and mitigation measures have been recommended to mitigate any potential water quality impacts during the construction phase. With the implementation of good site practices and mitigation measures, adverse water quality impacts are not anticipated. Operational impacts associated with runoff and sewage from the development would be insignificant with proper management practices in place. The proposed development will be properly sewered and adverse water quality impact is not anticipated.
- 13.1.1.9 It is concluded that there are no insurmountable environmental impacts on the proposed private residential cum social welfare facilities development at the existing “Open Space” Zone at STTL 310, Sha Tin.

Appendix 4.1

**Road Alignment and Proposed Noise Mitigation Measures on Trunk Road T4
extracted from Approved EIA Report (AEIAR-231/2022)**

ISO A1 594mm x 841mm
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Project Management Initials:
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NOTES:
1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60579757/R04/FIGURE 2.3.1 TO FIGURE 2.3.4.
2. NOISE MITIGATION MEASURES ARE NOT SHOWN FOR CLARITY.

LEGEND:

	SITE BOUNDARY
	LION ROCK COUNTRY PARK BOUNDARY
	RAILWAY PROTECTION BOUNDARY
	ELEVATED ROAD
	AT-GRADE ROAD
	DEPRESSED ROAD
	UNDERPASS
	EXISTING SUBWAY TO BE ABANDONED
	SPOT LEVEL (IN mPD)
	DIRECTION OF TRAFFIC (NO. OF ARROW = NO. OF TRAFFIC LANE)
	OVT LCSD ST/8 OLD & VALUABLE TREE (OVT NO.)
	PROPOSED SIGN GANTRY
	EXISTING CANTILEVERED NOISE BARRIER
	EXISTING VERTICAL NOISE BARRIER
	EXISTING NOISE ENCLOSURE



PROJECT
項目
REVISED TRUNK ROAD T4 IN SHA TIN

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

CONSULTANT
工程顧問公司
AECOM Asia Company Ltd.

SUB-CONSULTANTS
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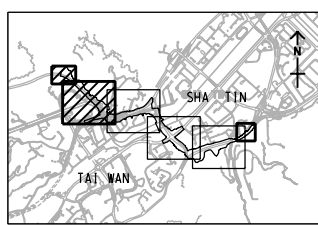
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SCALE
比例
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DIMENSION UNIT
尺寸單位
METRES

KEY PLAN
索引圖
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PROJECT NO.
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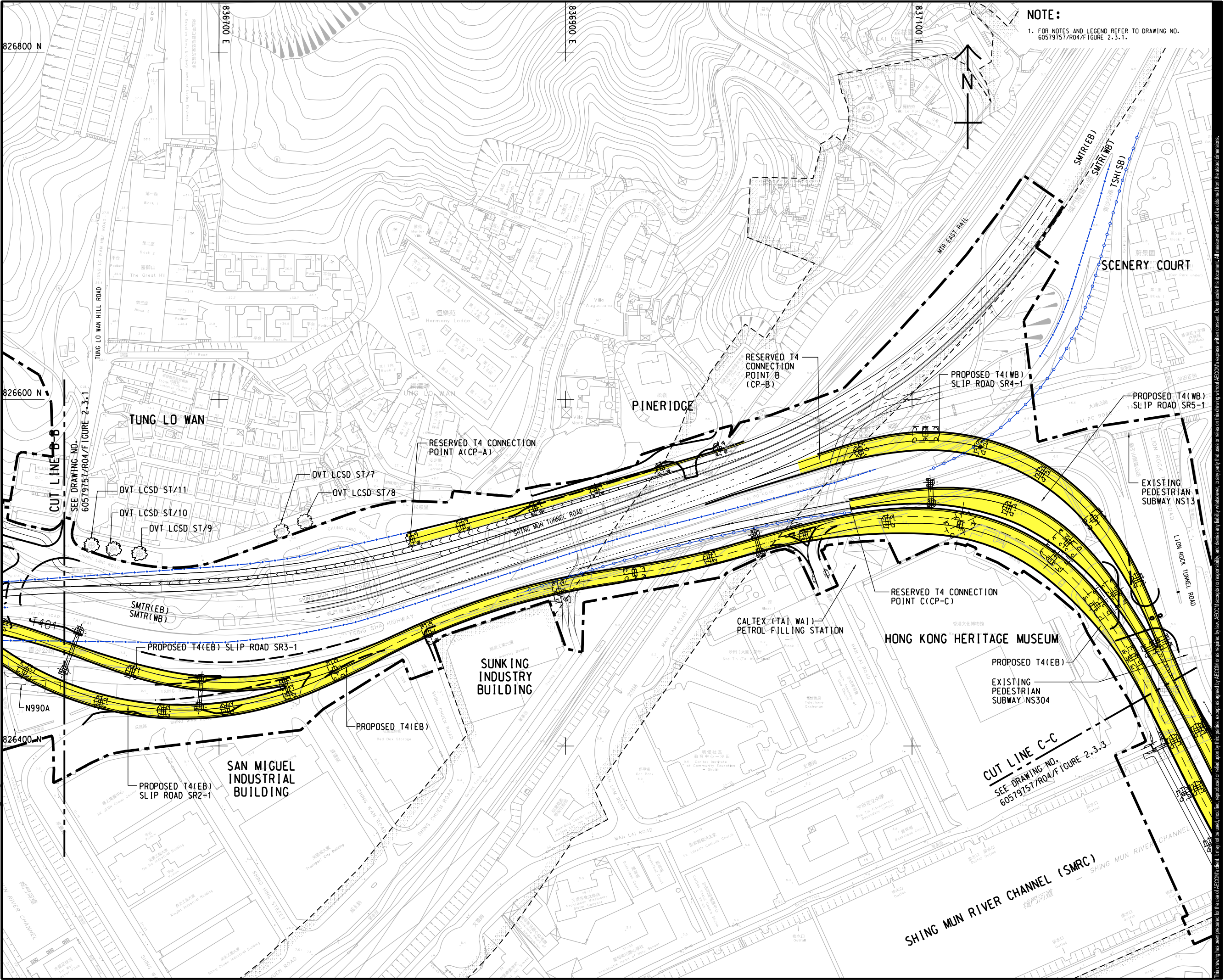
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圖紙名稱
REVISED TRUNK ROAD T4
GENERAL LAYOUT PLAN

SHEET NUMBER
圖紙編號
60579757/R04/FIGURE 2.3.1

SHEET 1 OF 4

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NOTE:
1. FOR NOTES AND LEGEND REFER TO DRAWING NO.
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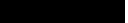
PROJECT
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REVISED TRUNK ROAD
T4 IN SHA TIN

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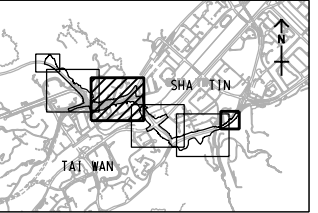
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DIMENSION UNIT
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REVISED TRUNK ROAD T4
GENERAL LAYOUT PLAN

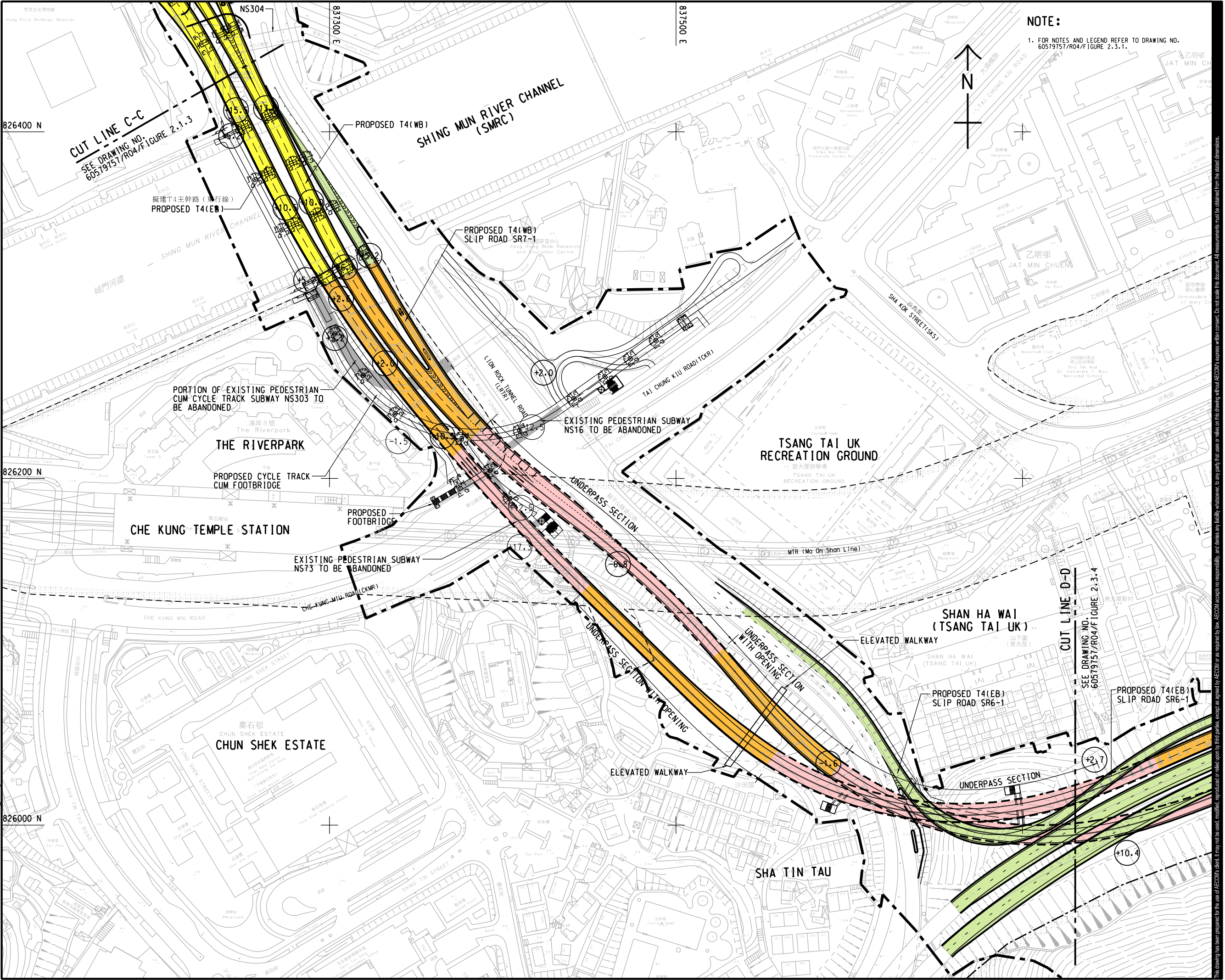
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60579757/R04/FIGURE 2.3.2

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REVISED TRUNK ROAD
T4 IN SHA TIN

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SUB-CONSULTANTS
分利工程有限公司

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SCALE
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PROJECT NO.
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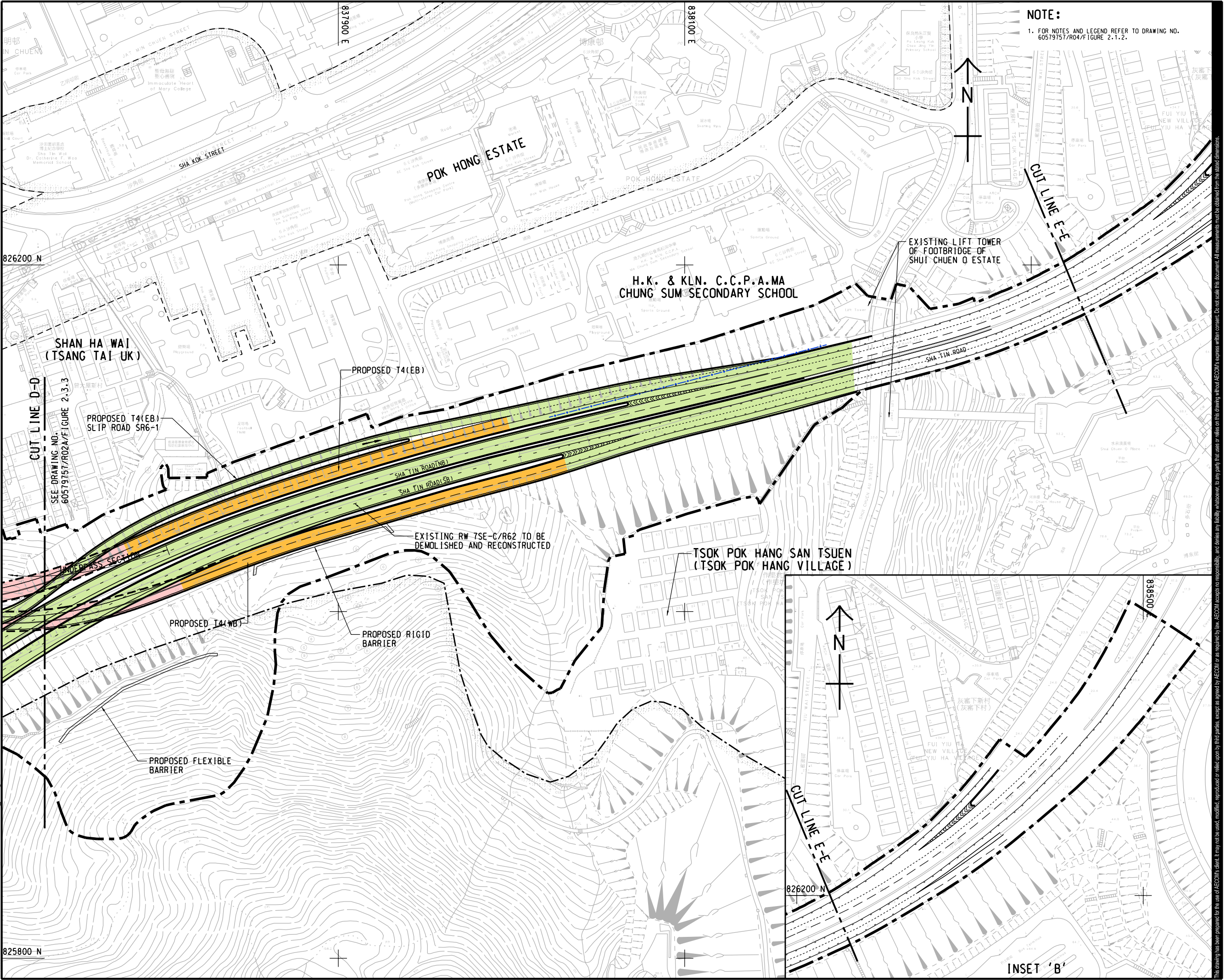
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SHEET TITLE
圖紙名稱
REVISED TRUNK ROAD T4
GENERAL LAYOUT PLAN

SHEET NUMBER
圖紙編號
60579757/R04/FIGURE 2.3.3

SHEET 3 OF 4

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NOTE:
1. FOR NOTES AND LEGEND REFER TO DRAWING NO. 60579757/R04/F/FIGURE 2.1-2.

AECOM

PROJECT
項目

**REVISED TRUNK ROAD
T4 IN SHA TIN**

CLIENT
業主

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Civil Engineering and
Development Department

CONSULTANT
工程顧問公司

AECOM Asia Company Ltd.
[Redacted]

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NO.	DATE	DESCRIPTION	CHK.

STATUS
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SCALE
比例

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DIMENSION UNIT
尺寸單位

METRES

KEY PLAN
索引圖

A3 1 : 100000

PROJECT NO.
項目編號

60579757

AGREEMENT NO.
協議編號

CE8/2018 (HY)

SHEET TITLE
圖紙名稱

**REVISED TRUNK ROAD T4
GENERAL LAYOUT PLAN**

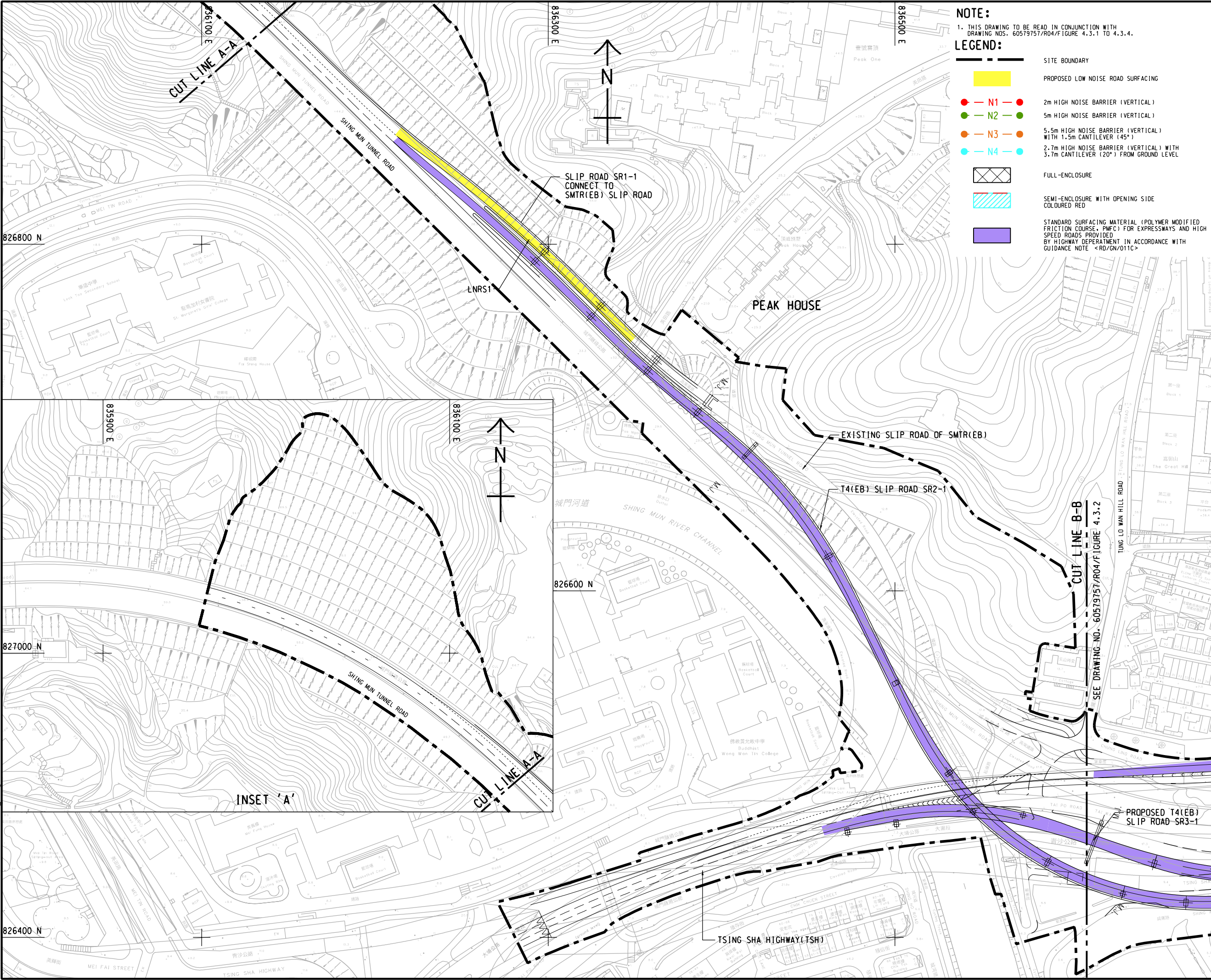
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60579757/R04/FIGURE 2.3.4

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NOTE:
1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60579757/R04/FIGURE 4.3.1 TO 4.3.4.

LEGEND:

	SITE BOUNDARY
	PROPOSED LOW NOISE ROAD SURFACING
	2m HIGH NOISE BARRIER (VERTICAL)
	5m HIGH NOISE BARRIER (VERTICAL)
	5.5m HIGH NOISE BARRIER (VERTICAL) WITH 1.5m CANTILEVER (45°)
	2.7m HIGH NOISE BARRIER (VERTICAL) WITH 3.7m CANTILEVER (20°) FROM GROUND LEVEL
	FULL-ENCLOSURE
	SEMI-ENCLOSURE WITH OPENING SIDE COLOURED RED
	STANDARD SURFACING MATERIAL (POLYMER MODIFIED FRICTION COURSE, PMFC) FOR EXPRESSWAYS AND HIGH SPEED ROADS PROVIDED BY HIGHWAY DEPARTMENT IN ACCORDANCE WITH GUIDANCE NOTE <RD/GN/D11C>

AECOM

PROJECT
項目

**REVISED TRUNK ROAD
T4 IN SHA TIN**

CLIENT
業主

土木工程拓展署
Civil Engineering and Development Department

CONSULTANT
顧問公司

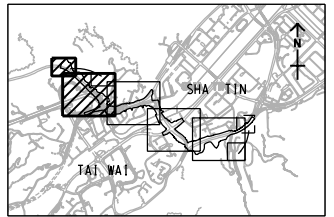
AECOM Asia Company Ltd.

SUB-CONSULTANTS
分判工程顧問公司

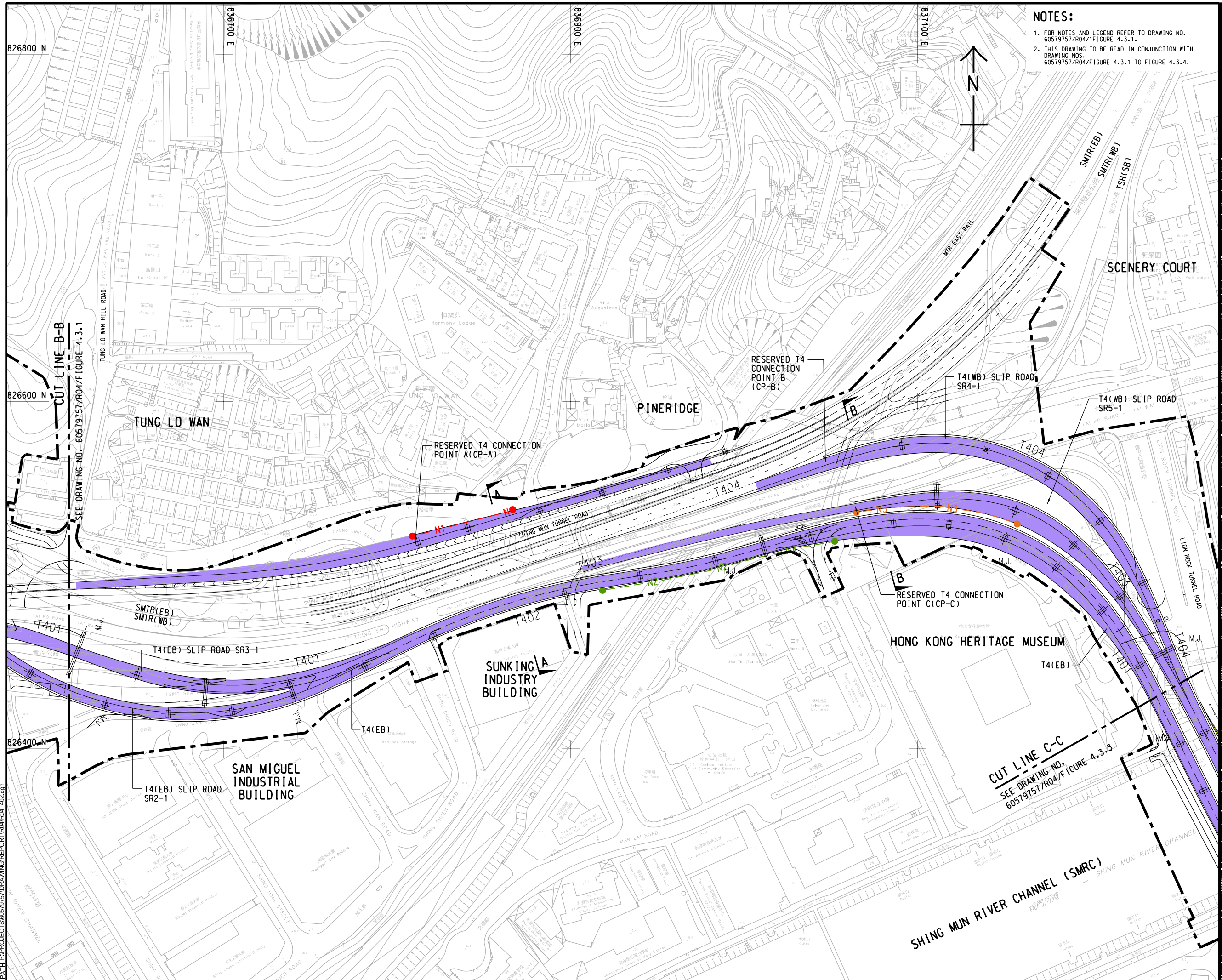
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修訂				
I/R	DATE	DESCRIPTION	CHK.	
修訂	日期	內容摘要	校核	

STATUS
階段

SCALE 比例	DIMENSION UNIT 尺寸單位
A3 1: 2000	METRES
KEY PLAN 索引圖	A3 1: 100000



PROJECT NO. 項目編號	AGREEMENT NO. 協議編號
60579757	CE8/2018 (HY)
SHEET TITLE 圖紙名稱	
LOCATIONS OF PROPOSED TRAFFIC NOISE MITIGATION MEASURES	
SHEET NUMBER 圖紙編號	
60579757/R04/FIGURE 4.3.1	



1. FOR NOTES AND LEGEND REFER TO DRAWING NO.
60579757/R04/FIGURE 4.3.1.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH
DRAWING NOS.
60579757/R04/FIGURE 4.3.1 TO FIGURE 4.3.4.

PROJECT 項目

REVISED TRUNK ROAD T4 IN SHA TIN



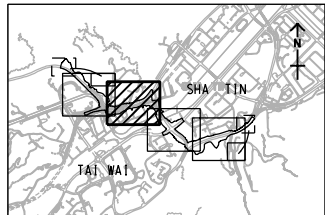
土木工程拓展署
 Civil Engineering and
 Development Department

AECOM Asia Company Ltd.

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

METRES

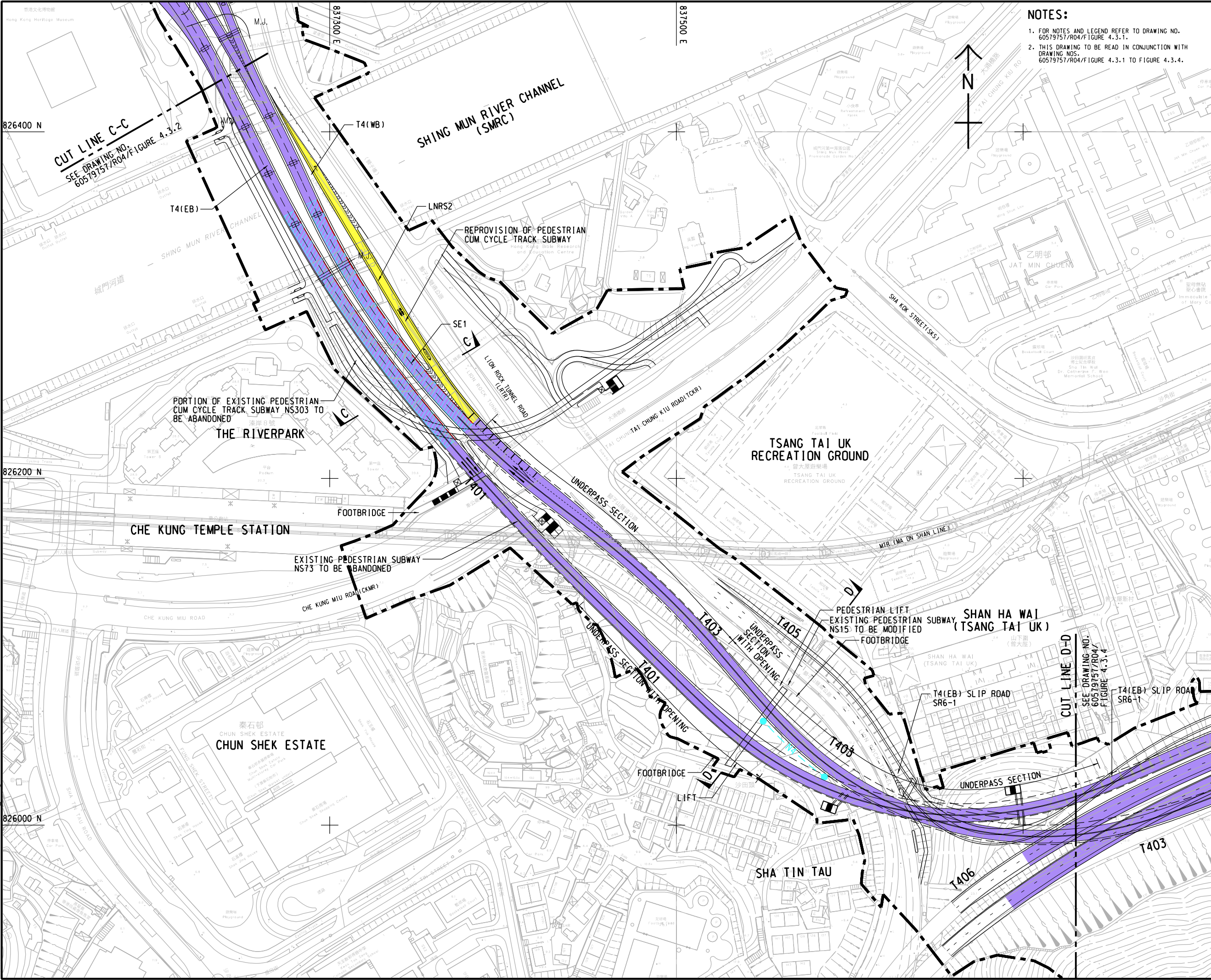
A3 1 : 100000



CE8/2018 (HY)

60579757/R04/FIGURE 4.3.2

ISO A1 594mm x 841mm
Approved:
Checked:
Designer:
Project Management Initials:
Plot File by: cara.xu
2021/7/23
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- NOTES:
1. FOR NOTES AND LEGEND REFER TO DRAWING NO. 60579757/R04/Figure 4.3.1.
 2. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60579757/R04/Figure 4.3.1 TO Figure 4.3.4.

AECOM

PROJECT
項目
REVISED TRUNK ROAD
T4 IN SHA TIN

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

CONSULTANT
工程顧問公司
AECOM Asia Company Ltd.
[Redacted]

SUB-CONSULTANTS
分判工程顧問公司

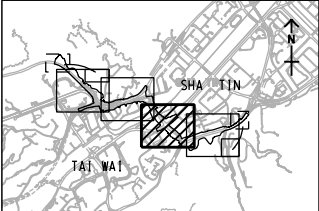
ISSUE/REVISION				
修訂				
I/R	DATE	DESCRIPTION	CHK.	
修訂	日期	內容簡述	校核	

STATUS
階段

SCALE
比例
A3 1:2000

DIMENSION UNIT
尺寸單位
METRES

KEY PLAN
索引圖
A3 1:100000



PROJECT NO.
項目編號
60579757

AGREEMENT NO.
協議編號
CE8/2018 (HY)

SHEET TITLE
圖紙名稱

LOCATIONS OF PROPOSED
TRAFFIC NOISE MITIGATION
MEASURES

SHEET NUMBER
圖紙編號
60579757/R04/FIGURE 4.3.3

ISO A1 594mm x 841mm

Approved:

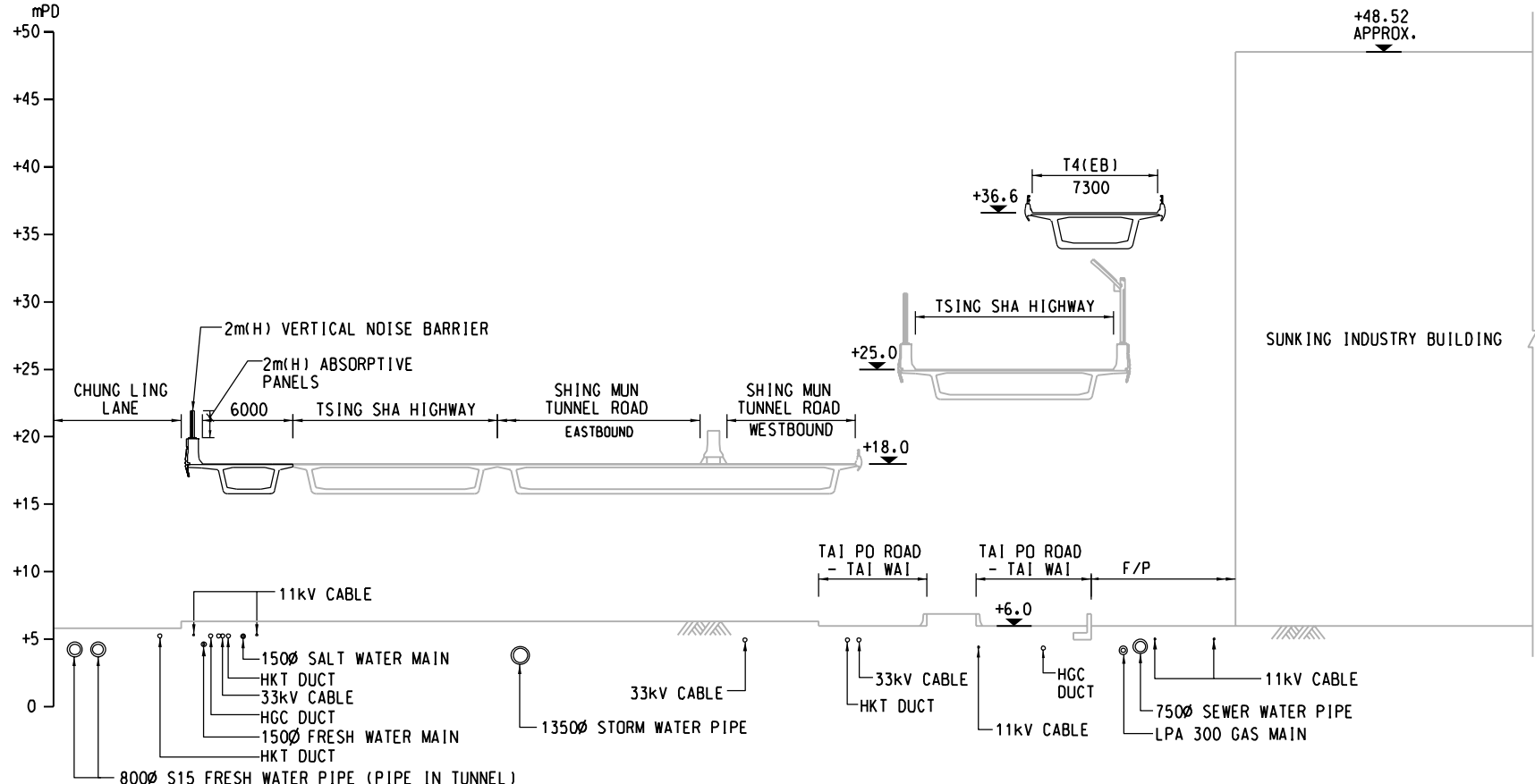
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Designer:

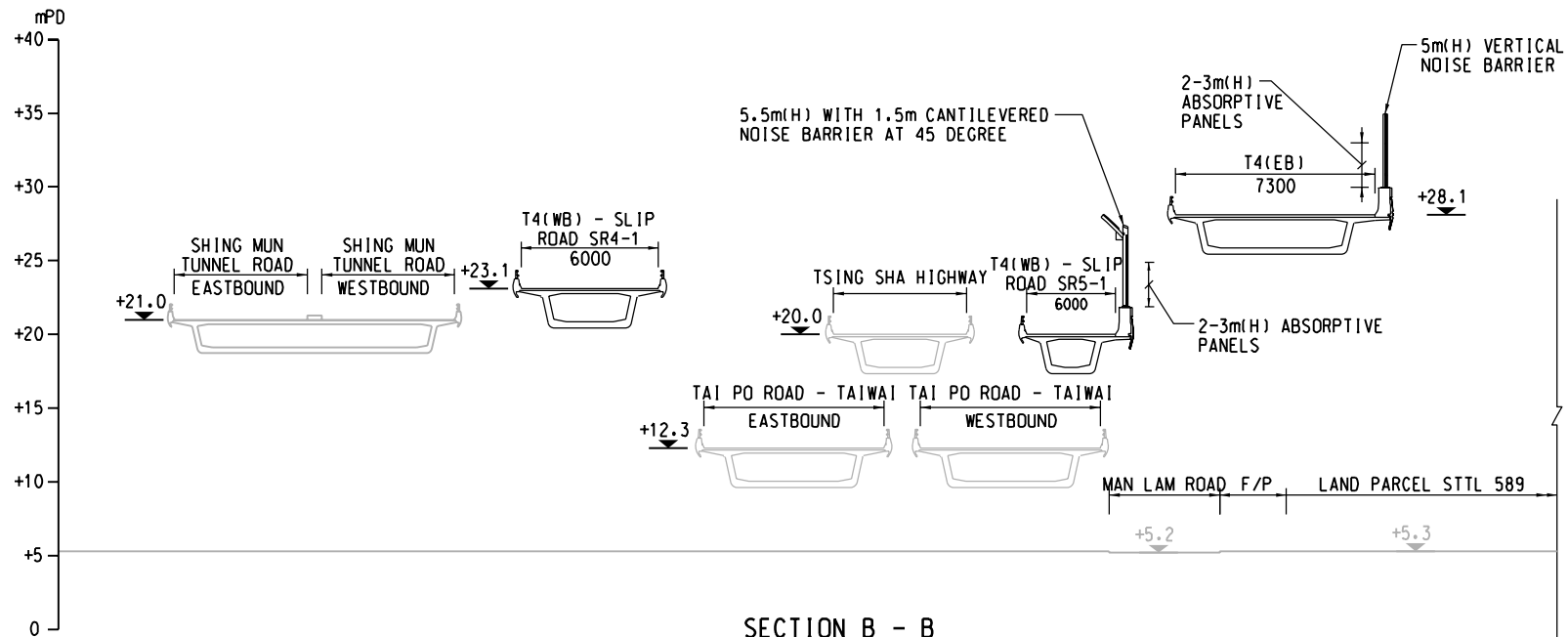
Project Management Initials:

Plot File by: Yiling.Q1 2021/7/15

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SECTION A - A



SECTION B - B



PROJECT
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REVISED TRUNK ROAD
T4 IN SHA TIN

CLIENT
業主



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

STATUS
階段

SCALE
比例

A3 1 : 500

DIMENSION UNIT
尺寸單位

MILLIMETRES

KEY PLAN
索引圖

PROJECT NO.
項目編號

60579757

AGREEMENT NO.
協議編號

CE8/2018 (HY)

SHEET TITLE
圖紙名稱

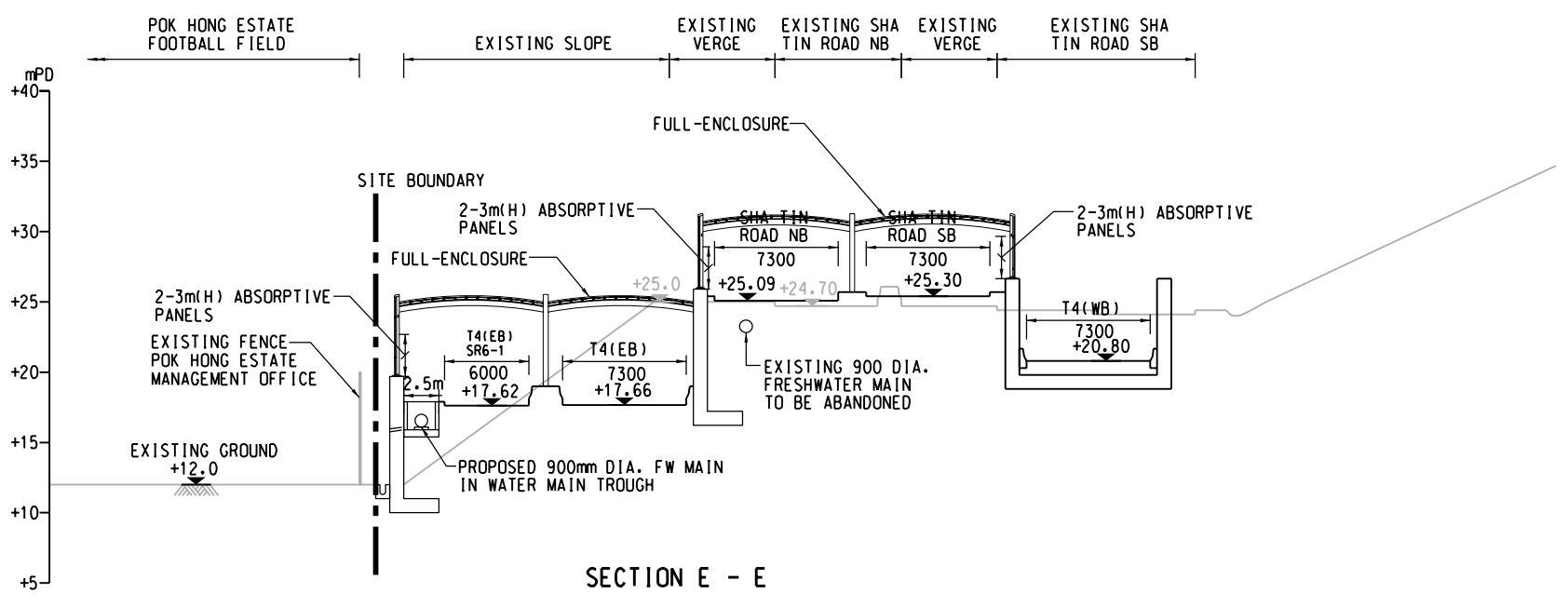
CROSS SECTIONS OF
PROPOSED MITIGATION MEASURES

SHEET NUMBER
圖紙編號

60579757/R04/FIGURE 4.4.1

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PROJECT
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REVISED TRUNK ROAD
T4 IN SHA TIN

CLIENT
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CONSULTANT
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[Redacted]

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修訂

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

STATUS
階段

SCALE
比例

A3 1 : 500

DIMENSION UNIT
尺寸單位

MILLIMETRES

KEY PLAN
索引圖

PROJECT NO.
項目編號

60579757

AGREEMENT NO.
協議編號

CE8/2018 (HY)

SHEET TITLE
圖紙名稱

CROSS SECTIONS OF
PROPOSED MITIGATION
MEASURES

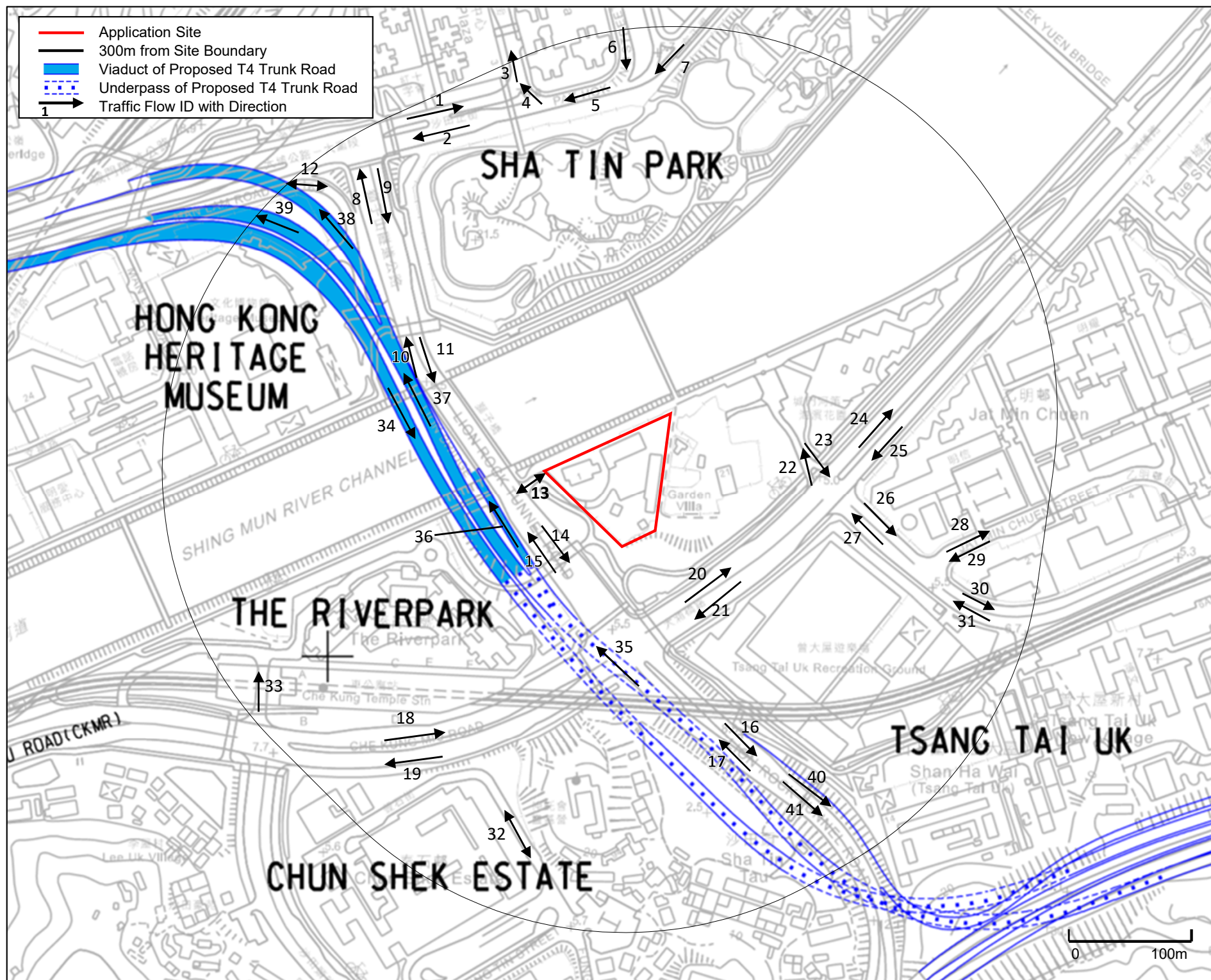
SHEET NUMBER
圖紙編號

60579757/R04/FIGURE 4.4.3

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Appendix 4.2

Traffic Forecast (Year 2047)



ID	Road Links	Design Speed (km/hr)	Year 2047 (PM)	
			Flow (veh/hr)	HV (%)
1	Sha Tin Centre Street	50	700	21.0%
2	Sha Tin Centre Street	50	850	21.0%
3	Sha Tin Centre Street	50	1,150	19.0%
4	Pak Hok Ting Street	50	450	15.0%
5	Pak Hok Ting Street	50	1,150	19.0%
6	Pak Hok Ting Street	50	1,000	20.0%
7	Yi Ching Lane	50	500	9.0%
8	Lion Rock Tunnel Road	50	700	16.0%
9	Lion Rock Tunnel Road	50	850	20.0%
10	Lion Rock Tunnel Road	50	1,000	16.0%
11	Lion Rock Tunnel Road	50	1,200	20.0%
12	Man Lam Road	50	900	18.2%
13	Local Access Road	50	200	20.0%
14	Lion Rock Tunnel Road	50	1,250	18.0%
15	Lion Rock Tunnel Road	50	650	16.0%
16	Lion Rock Tunnel Road	50	1,050	17.0%
17	Lion Rock Tunnel Road	50	300	19.0%
18	Che Kung Miu Road	50	650	27.0%
19	Che Kung Miu Road	50	500	28.0%
20	Tai Chung Kiu Road	50	900	23.0%
21	Tai Chung Kiu Road	50	850	21.0%
22	Local Access Road	50	50	0.0%
23	Local Access Road	50	100	0.0%
24	Tai Chung Kiu Road	70	700	18.0%
25	Tai Chung Kiu Road	70	750	16.0%
26	Sha Kok Street	50	550	31.0%
27	Sha Kok Street	50	400	23.0%
28	Jat Min Chuen Street	50	350	41.0%
29	Jat Min Chuen Street	50	100	27.0%
30	Sha Kok Street	50	250	22.0%
31	Sha Kok Street	50	300	23.0%
32	Fung Shek Street	50	250	26.8%
33	Local Access Road	50	50	16.0%
34	Trunk Road T4	70	2,250	14.0%
35	Trunk Road T4	70	1,450	14.0%
36	Slip Road from Trunk Road T4	50	300	17.0%
37	Trunk Road T4	70	1,150	13.0%
38	Trunk Road T4	70	650	12.0%
39	Trunk Road T4	70	600	14.0%
40	Lion Rock Tunnel Road new slip road	50	800	7.0%
41	Lion Rock Tunnel Road	50	300	17.0%

Appendix 4.3

Predicted Traffic Noise Levels for Residential Block (Basecase Scenario)

Floor	R101a	R101b	R102a	R102b	R102c	R103a	R103b	R103c	R104a	R104b	R105a	R105b	R105c	R106a	R106b	R107a	R107b	R107c	R108a	R108b	R108c
30	70.3	69.1	70.3	69.4	62.2	66.0	58.4	64.9	64.8	64.9	67.5	70.0	69.9	69.6	68.7	70.0	71.9	71.8	71.9	71.2	66.4
29	70.4	69.2	70.4	69.5	62.2	66.1	58.4	65.0	64.8	64.9	67.6	70.1	69.9	69.6	68.7	70.0	72.0	71.9	72.0	71.2	66.5
28	70.4	69.3	70.4	69.6	62.2	66.1	58.3	65.0	64.8	64.9	67.7	70.1	70.0	69.7	68.8	70.1	72.1	72.0	72.1	71.3	66.6
27	70.5	69.3	70.5	69.6	62.2	66.2	58.3	65.1	64.9	65.0	67.7	70.2	70.0	69.7	68.9	70.2	72.2	72.1	72.1	71.4	66.6
26	70.6	69.4	70.6	69.7	62.3	66.2	58.3	65.1	64.9	65.0	67.8	70.2	70.1	69.8	68.9	70.2	72.2	72.1	72.2	71.5	66.7
25	70.6	69.5	70.6	69.7	62.3	66.3	58.2	65.2	64.9	65.1	67.9	70.3	70.2	69.9	69.0	70.3	72.3	72.2	72.3	71.5	66.8
24	70.7	69.6	70.7	69.8	62.3	66.3	58.2	65.2	65.0	65.1	67.9	70.3	70.2	69.9	69.1	70.4	72.4	72.3	72.4	71.6	66.9
23	70.7	69.6	70.7	69.9	62.3	66.4	58.2	65.2	65.0	65.1	68.0	70.4	70.3	70.0	69.1	70.4	72.5	72.4	72.4	71.7	66.9
22	70.8	69.7	70.8	69.9	62.4	66.4	58.2	65.3	65.0	65.2	68.0	70.5	70.4	70.1	69.2	70.5	72.5	72.5	72.5	71.8	67.0
21	70.9	69.8	70.8	70.0	62.4	66.5	58.2	65.3	65.1	65.2	68.1	70.5	70.4	70.1	69.3	70.6	72.6	72.5	72.6	71.8	67.0
20	70.9	69.8	70.9	70.0	62.4	66.5	58.1	65.4	65.1	65.3	68.2	70.6	70.5	70.2	69.4	70.6	72.7	72.6	72.7	71.9	67.1
19	71.0	69.9	70.9	70.1	62.4	66.6	58.1	65.4	65.2	65.3	68.2	70.7	70.5	70.3	69.5	70.7	72.8	72.7	72.7	72.0	67.1
18	71.0	70.0	71.0	70.1	62.5	66.6	58.1	65.4	65.2	65.4	68.3	70.7	70.6	70.3	69.5	70.8	72.9	72.8	72.8	72.1	67.2
17	71.1	70.0	71.0	70.2	62.5	66.7	58.1	65.5	65.2	65.4	68.4	70.8	70.7	70.4	69.6	70.8	72.9	72.8	72.9	72.2	67.2
16	71.2	70.1	71.1	70.2	62.5	66.7	58.1	65.5	65.3	65.5	68.4	70.9	70.8	70.5	69.7	70.9	73.0	72.9	73.0	72.2	67.2
15	71.2	70.2	71.1	70.3	62.5	66.8	58.1	65.6	65.3	65.5	68.5	70.9	70.8	70.5	69.8	71.0	73.1	73.0	73.1	72.3	67.2
14	71.3	70.2	71.2	70.3	62.6	66.8	58.0	65.6	65.4	65.6	68.5	71.0	70.9	70.6	69.8	71.1	73.1	73.1	73.1	72.4	67.3
13	71.3	70.3	71.2	70.4	62.6	66.9	58.0	65.6	65.4	65.6	68.6	71.0	70.9	70.7	69.9	71.1	73.2	73.1	73.2	72.5	67.3
12	71.4	70.4	71.3	70.4	62.6	66.9	58.0	65.6	65.4	65.6	68.7	71.1	71.0	70.8	70.0	71.2	73.3	73.2	73.3	72.6	67.3
11	71.5	70.4	71.3	70.5	62.6	66.9	58.0	65.7	65.4	65.7	68.7	71.2	71.1	70.8	70.1	71.3	73.4	73.3	73.4	72.6	67.4
10	71.5	70.4	71.4	70.5	62.6	67.0	57.9	65.7	65.5	65.7	68.8	71.2	71.1	70.9	70.1	71.4	73.5	73.4	73.5	72.7	67.4
9	71.5	70.5	71.4	70.5	62.6	66.9	57.9	65.7	65.5	65.7	68.8	71.3	71.2	71.0	70.2	71.4	73.5	73.5	73.6	72.8	67.4
8	71.6	70.5	71.4	70.5	62.6	66.9	57.8	65.6	65.5	65.8	68.9	71.3	71.2	71.0	70.3	71.5	73.6	73.5	73.6	72.9	67.5
7	71.6	70.5	71.4	70.5	62.5	66.9	57.7	65.6	65.5	65.8	68.9	71.3	71.3	71.0	70.3	71.6	73.7	73.6	73.7	72.9	67.5
6	71.6	70.5	71.4	70.5	62.5	66.9	57.5	65.5	65.0	65.5	68.9	71.3	71.3	71.1	70.4	71.6	73.8	73.7	73.8	73.0	67.5
5																					
4																					
3																					
2																					
1																					
Max	71.6	70.5	71.4	70.5	62.6	67.0	58.4	65.7	65.5	65.8	68.9	71.3	71.3	71.1	70.4	71.6	73.8	73.7	73.8	73.0	67.5
Min	70.3	69.1	70.3	69.4	62.2	66.0	57.5	64.9	64.8	64.9	67.5	70.0	69.9	69.6	68.7	70.0	71.9	71.8	71.9	71.2	66.4

Total Flats 450

Exceedances 170

Compliance Rate 62.2%

 Noise sensitive receivers with exceedance (≥ 70.5 dB(A))

Floor	R109a	R109b	R109c	R109d	R201a	R201b	R201c	R202a	R202b	R202c	R203a	R203b	R204a	R204b	R204c	R204d	R205a	R205b	R205c	R206a	R206b
30	71.7	71.8	69.9	69.4	66.7	66.6	67.2	67.0	67.7	68.4	60.1	65.3	60.0	63.1	67.1	66.8	60.6	65.7	68.0	68.3	69.0
29	71.8	71.9	70.0	69.5	66.8	66.6	67.2	67.1	67.8	68.5	60.1	65.4	60.0	63.1	67.2	66.8	60.7	65.8	68.1	68.4	69.1
28	71.9	72.0	70.1	69.6	66.8	66.7	67.2	67.1	67.8	68.5	60.2	65.4	60.1	63.1	67.2	66.9	60.8	65.8	68.1	68.5	69.2
27	71.9	72.0	70.2	69.6	66.9	66.7	67.3	67.1	67.9	68.6	60.2	65.4	60.1	63.2	67.2	67.0	60.8	65.9	68.2	68.5	69.2
26	72.0	72.1	70.2	69.7	66.9	66.8	67.3	67.2	67.9	68.6	60.3	65.5	60.2	63.2	67.3	67.0	60.9	66.0	68.2	68.6	69.3
25	72.1	72.2	70.3	69.8	66.9	66.8	67.4	67.2	67.9	68.6	60.3	65.5	60.2	63.2	67.3	67.1	60.9	66.0	68.3	68.6	69.4
24	72.2	72.3	70.4	69.9	67.0	66.8	67.4	67.2	67.9	68.7	60.3	65.5	60.2	63.2	67.4	67.1	61.0	66.1	68.4	68.7	69.4
23	72.3	72.3	70.4	69.9	67.0	66.9	67.4	67.3	68.0	68.7	60.4	65.5	60.3	63.2	67.4	67.2	61.0	66.1	68.4	68.8	69.5
22	72.3	72.4	70.5	70.0	67.1	66.9	67.4	67.3	68.0	68.7	60.4	65.6	60.3	63.2	67.5	67.3	61.1	66.2	68.5	68.8	69.6
21	72.4	72.5	70.6	70.1	67.1	66.9	67.5	67.3	68.0	68.8	60.4	65.6	60.4	63.2	67.5	67.3	61.1	66.2	68.5	68.9	69.6
20	72.5	72.6	70.7	70.2	67.1	67.0	67.5	67.4	68.1	68.8	60.4	65.6	60.4	63.2	67.6	67.4	61.2	66.3	68.6	69.0	69.7
19	72.6	72.7	70.7	70.2	67.1	67.0	67.5	67.4	68.1	68.8	60.5	65.6	60.5	63.2	67.6	67.4	61.3	66.4	68.7	69.0	69.8
18	72.7	72.7	70.8	70.3	67.2	67.0	67.6	67.4	68.1	68.8	60.5	65.7	60.5	63.3	67.6	67.5	61.3	66.4	68.7	69.1	69.8
17	72.7	72.8	70.9	70.4	67.2	67.0	67.6	67.4	68.1	68.8	60.5	65.7	60.6	63.2	67.7	67.5	61.4	66.5	68.8	69.2	69.9
16	72.8	72.9	70.9	70.4	67.2	67.1	67.6	67.4	68.1	68.8	60.6	65.7	60.6	63.2	67.7	67.6	61.4	66.5	68.8	69.2	69.9
15	72.9	73.0	71.0	70.5	67.2	67.1	67.6	67.4	68.1	68.9	60.6	65.7	60.6	63.2	67.8	67.6	61.5	66.6	68.9	69.3	70.0
14	73.0	73.1	71.0	70.5	67.3	67.1	67.6	67.4	68.1	68.8	60.6	65.7	60.7	63.2	67.8	67.7	61.5	66.6	69.0	69.3	70.0
13	73.0	73.1	71.1	70.6	67.3	67.1	67.6	67.4	68.1	68.9	60.6	65.7	60.7	63.2	67.8	67.7	61.6	66.7	69.0	69.4	70.1
12	73.1	73.2	71.2	70.7	67.3	67.1	67.6	67.4	68.1	68.8	60.6	65.7	60.7	63.2	67.9	67.8	61.6	66.8	69.1	69.4	70.2
11	73.2	73.3	71.2	70.7	67.3	67.1	67.6	67.4	68.0	68.8	60.6	65.7	60.8	63.2	67.9	67.8	61.7	66.8	69.1	69.5	70.2
10	73.3	73.4	71.3	70.8	67.2	67.0	67.5	67.3	68.0	68.8	60.6	65.7	60.8	63.1	68.0	67.9	61.7	66.9	69.2	69.5	70.3
9	73.4	73.5	71.3	70.8	67.2	67.0	67.5	67.3	68.0	68.8	60.7	65.6	60.8	63.1	68.0	67.9	61.7	66.9	69.2	69.6	70.3
8	73.5	73.5	71.4	70.9	67.2	66.9	67.4	67.2	67.9	68.7	60.7	65.6	60.9	63.0	68.0	67.9	61.8	66.9	69.2	69.6	70.3
7	73.5	73.6	71.4	70.9	67.1	66.9	67.4	67.1	67.8	68.7	60.7	65.6	60.9	63.0	68.0	68.0	61.8	67.0	69.3	69.7	70.4
6	73.6	73.7	71.5	71.0	67.0	66.8	67.3	67.1	67.7	68.6	60.7	65.5	60.9	63.0	68.1	68.0	61.8	67.0	69.3	69.7	70.4
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Max	73.6	73.7	71.5	71.0	67.3	67.1	67.6	67.4	68.1	68.9	60.7	65.7	60.9	63.3	68.1	68.0	61.8	67.0	69.3	69.7	70.4
Min	71.7	71.8	69.9	69.4	66.7	66.6	67.2	67.0	67.7	68.4	60.1	65.3	60.0	63.0	67.1	66.8	60.6	65.7	68.0	68.3	69.0

Floor	R206c	R207a	R207b	R208a	R208b	R208c	R209a	R209b	R101 Max	R102 Max	R103 Max	R104 Max	R105 Max	R106 Max	R107 Max	R108 Max	R109 Max	R201 Max	R202 Max	R203 Max	R204 Max
30	69.7	68.7	69.3	69.7	69.8	69.1	68.6	68.6	70.3	70.3	66.0	64.9	70.0	69.6	71.9	71.9	71.8	67.2	68.4	65.3	67.1
29	69.7	68.7	69.4	69.7	69.8	69.2	68.6	68.6	70.4	70.4	66.1	64.9	70.1	69.6	72.0	72.0	71.9	67.2	68.5	65.4	67.2
28	69.8	68.8	69.4	69.8	69.9	69.3	68.7	68.7	70.4	70.4	66.1	64.9	70.1	69.7	72.1	72.1	72.0	67.2	68.5	65.4	67.2
27	69.8	68.9	69.5	69.8	70.0	69.3	68.7	68.7	70.5	70.5	66.2	65.0	70.2	69.7	72.2	72.1	72.0	67.3	68.6	65.4	67.2
26	69.9	68.9	69.6	69.9	70.0	69.4	68.8	68.8	70.6	70.6	66.2	65.0	70.2	69.8	72.2	72.2	72.1	67.3	68.6	65.5	67.3
25	69.9	69.0	69.6	69.9	70.1	69.4	68.8	68.8	70.6	70.6	66.3	65.1	70.3	69.9	72.3	72.3	72.2	67.4	68.6	65.5	67.3
24	70.0	69.0	69.7	70.0	70.1	69.5	68.9	68.9	70.7	70.7	66.3	65.1	70.3	69.9	72.4	72.4	72.3	67.4	68.7	65.5	67.4
23	70.1	69.1	69.7	70.0	70.2	69.5	69.0	68.9	70.7	70.7	66.4	65.1	70.4	70.0	72.5	72.4	72.3	67.4	68.7	65.5	67.4
22	70.1	69.1	69.8	70.1	70.2	69.6	69.0	69.0	70.8	70.8	66.4	65.2	70.5	70.1	72.5	72.5	72.4	67.4	68.7	65.6	67.5
21	70.2	69.2	69.9	70.2	70.3	69.7	69.1	69.0	70.9	70.8	66.5	65.2	70.5	70.1	72.6	72.6	72.5	67.5	68.8	65.6	67.5
20	70.2	69.3	69.9	70.2	70.4	69.7	69.1	69.1	70.9	70.9	66.5	65.3	70.6	70.2	72.7	72.7	72.6	67.5	68.8	65.6	67.6
19	70.3	69.3	70.0	70.3	70.4	69.8	69.2	69.2	71.0	70.9	66.6	65.3	70.7	70.3	72.8	72.7	72.7	67.5	68.8	65.6	67.6
18	70.3	69.4	70.0	70.3	70.5	69.8	69.2	69.2	71.0	71.0	66.6	65.4	70.7	70.3	72.9	72.8	72.7	67.6	68.8	65.7	67.6
17	70.4	69.4	70.1	70.4	70.5	69.9	69.3	69.2	71.1	71.0	66.7	65.4	70.8	70.4	72.9	72.9	72.8	67.6	68.8	65.7	67.7
16	70.4	69.5	70.1	70.4	70.6	69.9	69.3	69.3	71.2	71.1	66.7	65.5	70.9	70.5	73.0	73.0	72.9	67.6	68.8	65.7	67.7
15	70.5	69.5	70.2	70.5	70.6	70.0	69.4	69.3	71.2	71.1	66.8	65.5	70.9	70.5	73.1	73.1	73.0	67.6	68.9	65.7	67.8
14	70.5	69.6	70.2	70.5	70.7	70.0	69.4	69.4	71.3	71.2	66.8	65.6	71.0	70.6	73.1	73.1	73.1	67.6	68.8	65.7	67.8
13	70.6	69.6	70.3	70.6	70.7	70.0	69.4	69.4	71.3	71.2	66.9	65.6	71.0	70.7	73.2	73.2	73.1	67.6	68.9	65.7	67.8
12	70.6	69.6	70.3	70.6	70.8	70.1	69.5	69.4	71.4	71.3	66.9	65.6	71.1	70.8	73.3	73.3	73.2	67.6	68.8	65.7	67.9
11	70.6	69.7	70.4	70.6	70.8	70.1	69.5	69.5	71.5	71.3	66.9	65.7	71.2	70.8	73.4	73.4	73.3	67.6	68.8	65.7	67.9
10	70.7	69.7	70.4	70.7	70.8	70.1	69.5	69.5	71.5	71.4	67.0	65.7	71.2	70.9	73.5	73.5	73.4	67.5	68.8	65.7	68.0
9	70.7	69.7	70.4	70.7	70.8	70.1	69.5	69.5	71.5	71.4	66.9	65.7	71.3	71.0	73.5	73.6	73.5	67.5	68.8	65.6	68.0
8	70.7	69.7	70.4	70.7	70.9	70.1	69.4	69.4	71.6	71.4	66.9	65.8	71.3	71.0	73.6	73.6	73.5	67.4	68.7	65.6	68.0
7	70.7	69.7	70.4	70.7	70.8	70.0	69.3	69.3	71.6	71.4	66.9	65.8	71.3	71.0	73.7	73.7	73.6	67.4	68.7	65.6	68.0
6	70.7	69.6	70.3	70.6	70.8	69.8	68.9	68.9	71.6	71.4	66.9	65.5	71.3	71.1	73.8	73.8	73.7	67.3	68.6	65.5	68.1
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1																					
Max	70.7	69.7	70.4	70.7	70.9	70.1	69.5	69.5	71.6	71.4	67.0	65.8	71.3	71.1	73.8	73.8	73.7	67.6	68.9	65.7	68.1
Min	69.7	68.7	69.3	69.7	69.8	69.1	68.6	68.6	70.3	70.3	66.0	64.9	70.0	69.6	71.9	71.9	71.8	67.2	68.4	65.3	67.1

Floor	R205 Max	R206 Max	R207 Max	R208 Max	R209 Max
30	68.0	69.7	69.3	69.8	68.6
29	68.1	69.7	69.4	69.8	68.6
28	68.1	69.8	69.4	69.9	68.7
27	68.2	69.8	69.5	70.0	68.7
26	68.2	69.9	69.6	70.0	68.8
25	68.3	69.9	69.6	70.1	68.8
24	68.4	70.0	69.7	70.1	68.9
23	68.4	70.1	69.7	70.2	69.0
22	68.5	70.1	69.8	70.2	69.0
21	68.5	70.2	69.9	70.3	69.1
20	68.6	70.2	69.9	70.4	69.1
19	68.7	70.3	70.0	70.4	69.2
18	68.7	70.3	70.0	70.5	69.2
17	68.8	70.4	70.1	70.5	69.3
16	68.8	70.4	70.1	70.6	69.3
15	68.9	70.5	70.2	70.6	69.4
14	69.0	70.5	70.2	70.7	69.4
13	69.0	70.6	70.3	70.7	69.4
12	69.1	70.6	70.3	70.8	69.5
11	69.1	70.6	70.4	70.8	69.5
10	69.2	70.7	70.4	70.8	69.5
9	69.2	70.7	70.4	70.8	69.5
8	69.2	70.7	70.4	70.9	69.4
7	69.3	70.7	70.4	70.8	69.3
6	69.3	70.7	70.3	70.8	68.9
5					
4					
3					
2					
1					
Max	69.3	70.7	70.4	70.9	69.5
Min	68.0	69.7	69.3	69.8	68.6

Appendix 4.4

Predicted Traffic Noise Levels for Residential Block (Mitigated Scenario)

Floor	R101a	R101b	R102a	R102b	R102c	R103a	R103b	R103c	R104a	R104b	R105a	R105b	R105c	R106a	R106b	R107a	R107b	R107c	R108a	R108b	R108c
30	70.3	69.1	70.3	69.4	62.2	66.0	58.4	64.9	64.8	64.9	67.5	70.0	69.9	69.6	68.7	70.0	67.9	67.8	67.9	67.2	66.4
29	70.4	69.2	70.4	69.5	62.2	66.1	58.4	65.0	64.8	64.9	67.6	70.1	69.9	69.6	68.7	70.0	68.0	67.9	68.0	67.2	66.5
28	70.4	69.3	70.4	69.6	62.2	66.1	58.3	65.0	64.8	64.9	67.7	70.1	70.0	69.7	68.8	70.1	68.1	68.0	68.1	67.3	66.6
27	66.5	69.3	66.5	69.6	62.2	66.2	58.3	65.1	64.9	65.0	67.7	70.2	70.0	69.7	68.9	70.2	68.2	68.1	68.1	67.4	66.6
26	66.6	69.4	66.6	69.7	62.3	66.2	58.3	65.1	64.9	65.0	67.8	70.2	70.1	69.8	68.9	70.2	68.2	68.1	68.2	67.5	66.7
25	66.6	69.5	66.6	69.7	62.3	66.3	58.2	65.2	64.9	65.1	67.9	70.3	70.2	69.9	69.0	70.3	68.3	68.2	68.3	67.5	66.8
24	66.7	69.6	66.7	69.8	62.3	66.3	58.2	65.2	65.0	65.1	67.9	70.3	70.2	69.9	69.1	70.4	68.4	68.3	68.4	67.6	66.9
23	66.7	69.6	66.7	69.9	62.3	66.4	58.2	65.2	65.0	65.1	68.0	70.4	70.3	70.0	69.1	70.4	68.5	68.4	68.4	67.7	66.9
22	66.8	69.7	66.8	69.9	62.4	66.4	58.2	65.3	65.0	65.2	68.0	66.5	70.4	70.1	69.2	68.0	68.5	68.5	68.5	67.8	67.0
21	66.9	69.8	66.8	70.0	62.4	66.5	58.2	65.3	65.1	65.2	68.1	66.5	70.4	70.1	69.3	68.1	68.6	68.5	68.6	67.8	67.0
20	66.9	69.8	66.9	70.0	62.4	66.5	58.1	65.4	65.1	65.3	68.2	66.6	68.0	70.2	69.4	68.1	68.7	68.6	68.7	67.9	67.1
19	67.0	69.9	66.9	70.1	62.4	66.6	58.1	65.4	65.2	65.3	68.2	66.7	68.0	70.3	69.5	68.2	68.8	68.7	68.7	68.0	67.1
18	67.0	70.0	67.0	70.1	62.5	66.6	58.1	65.4	65.2	65.4	68.3	66.7	68.1	70.3	69.5	68.3	68.9	68.8	68.8	68.1	67.2
17	67.1	70.0	67.0	70.2	62.5	66.7	58.1	65.5	65.2	65.4	68.4	66.8	68.2	70.4	69.6	68.3	68.9	68.8	68.9	68.2	67.2
16	67.2	70.1	67.1	70.2	62.5	66.7	58.1	65.5	65.3	65.5	68.4	66.9	68.3	66.5	69.7	68.4	69.0	68.9	69.0	68.2	67.2
15	67.2	70.2	67.1	70.3	62.5	66.8	58.1	65.6	65.3	65.5	68.5	66.9	68.3	66.5	69.8	68.5	69.1	69.0	69.1	68.3	67.2
14	67.3	70.2	67.2	70.3	62.6	66.8	58.0	65.6	65.4	65.6	68.5	67.0	68.4	66.6	69.8	68.6	69.1	69.1	69.1	68.4	67.3
13	67.3	70.3	67.2	70.4	62.6	66.9	58.0	65.6	65.4	65.6	68.6	67.0	68.4	66.7	69.9	68.6	69.2	69.1	69.2	68.5	67.3
12	67.4	70.4	67.3	70.4	62.6	66.9	58.0	65.6	65.4	65.6	68.7	67.1	68.5	66.8	70.0	68.7	69.3	69.2	69.3	68.6	67.3
11	67.5	70.4	67.3	66.5	62.6	66.9	58.0	65.7	65.4	65.7	68.7	67.2	68.6	66.8	70.1	68.8	69.4	69.3	69.4	68.6	67.4
10	67.5	70.4	67.4	66.5	62.6	67.0	57.9	65.7	65.5	65.7	68.8	67.2	68.6	66.9	70.1	68.9	69.5	69.4	69.5	68.7	67.4
9	67.5	68.0	67.4	66.5	62.6	66.9	57.9	65.7	65.5	65.7	68.8	67.3	68.7	67.0	70.2	68.9	69.5	69.5	69.6	68.8	67.4
8	67.6	68.0	67.4	66.5	62.6	66.9	57.8	65.6	65.5	65.8	68.9	67.3	68.7	67.0	70.3	69.0	69.6	69.5	69.6	68.9	67.5
7	67.6	68.0	67.4	66.5	62.5	66.9	57.7	65.6	65.5	65.8	68.9	67.3	68.8	67.0	70.3	69.1	69.7	69.6	69.7	68.9	67.5
6	67.6	68.0	67.4	66.5	62.5	66.9	57.5	65.5	65.0	65.5	68.9	67.3	68.8	67.1	70.4	69.1	69.8	69.7	69.8	69.0	67.5
5																					
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3																					
2																					
1																					
Max	70.4	70.4	70.4	70.4	62.6	67.0	58.4	65.7	65.5	65.8	68.9	70.4	70.4	70.4	70.4	70.4	69.8	69.7	69.8	69.0	67.5
Min	66.5	68.0	66.5	66.5	62.2	66.0	57.5	64.9	64.8	64.9	67.5	66.5	68.0	66.5	68.7	68.0	67.9	67.8	67.9	67.2	66.4

Total Flats 450

Exceedances 0

Compliance Rate 100%

 Noise sensitive receivers applied with acoustic window (baffle type)
  Noise sensitive receivers applied with acoustic balcony

Floor	R109a	R109b	R109c	R109d	R201a	R201b	R201c	R202a	R202b	R202c	R203a	R203b	R204a	R204b	R204c	R204d	R205a	R205b	R205c	R206a	R206b
30	67.7	67.8	69.9	69.4	66.7	66.6	67.2	67.0	67.7	68.4	60.1	65.3	60.0	63.1	67.1	66.8	60.6	65.7	68.0	68.3	69.0
29	67.8	67.9	70.0	69.5	66.8	66.6	67.2	67.1	67.8	68.5	60.1	65.4	60.0	63.1	67.2	66.8	60.7	65.8	68.1	68.4	69.1
28	67.9	68.0	70.1	69.6	66.8	66.7	67.2	67.1	67.8	68.5	60.2	65.4	60.1	63.1	67.2	66.9	60.8	65.8	68.1	68.5	69.2
27	67.9	68.0	70.2	69.6	66.9	66.7	67.3	67.1	67.9	68.6	60.2	65.4	60.1	63.2	67.2	67.0	60.8	65.9	68.2	68.5	69.2
26	68.0	68.1	70.2	69.7	66.9	66.8	67.3	67.2	67.9	68.6	60.3	65.5	60.2	63.2	67.3	67.0	60.9	66.0	68.2	68.6	69.3
25	68.1	68.2	70.3	69.8	66.9	66.8	67.4	67.2	67.9	68.6	60.3	65.5	60.2	63.2	67.3	67.1	60.9	66.0	68.3	68.6	69.4
24	68.2	68.3	70.4	69.9	67.0	66.8	67.4	67.2	67.9	68.7	60.3	65.5	60.2	63.2	67.4	67.1	61.0	66.1	68.4	68.7	69.4
23	68.3	68.3	70.4	69.9	67.0	66.9	67.4	67.3	68.0	68.7	60.4	65.5	60.3	63.2	67.4	67.2	61.0	66.1	68.4	68.8	69.5
22	68.3	68.4	68.0	70.0	67.1	66.9	67.4	67.3	68.0	68.7	60.4	65.6	60.3	63.2	67.5	67.3	61.1	66.2	68.5	68.8	69.6
21	68.4	68.5	68.1	70.1	67.1	66.9	67.5	67.3	68.0	68.8	60.4	65.6	60.4	63.2	67.5	67.3	61.1	66.2	68.5	68.9	69.6
20	68.5	68.6	68.2	70.2	67.1	67.0	67.5	67.4	68.1	68.8	60.4	65.6	60.4	63.2	67.6	67.4	61.2	66.3	68.6	69.0	69.7
19	68.6	68.7	68.2	70.2	67.1	67.0	67.5	67.4	68.1	68.8	60.5	65.6	60.5	63.2	67.6	67.4	61.3	66.4	68.7	69.0	69.8
18	68.7	68.7	68.3	70.3	67.2	67.0	67.6	67.4	68.1	68.8	60.5	65.7	60.5	63.3	67.6	67.5	61.3	66.4	68.7	69.1	69.8
17	68.7	68.8	68.4	70.4	67.2	67.0	67.6	67.4	68.1	68.8	60.5	65.7	60.6	63.2	67.7	67.5	61.4	66.5	68.8	69.2	69.9
16	68.8	68.9	68.4	70.4	67.2	67.1	67.6	67.4	68.1	68.8	60.6	65.7	60.6	63.2	67.7	67.6	61.4	66.5	68.8	69.2	69.9
15	68.9	69.0	68.5	66.5	67.2	67.1	67.6	67.4	68.1	68.9	60.6	65.7	60.6	63.2	67.8	67.6	61.5	66.6	68.9	69.3	70.0
14	69.0	69.1	68.5	66.5	67.3	67.1	67.6	67.4	68.1	68.8	60.6	65.7	60.7	63.2	67.8	67.7	61.5	66.6	69.0	69.3	70.0
13	69.0	69.1	68.6	66.6	67.3	67.1	67.6	67.4	68.1	68.9	60.6	65.7	60.7	63.2	67.8	67.7	61.6	66.7	69.0	69.4	70.1
12	69.1	69.2	68.7	66.7	67.3	67.1	67.6	67.4	68.1	68.8	60.6	65.7	60.7	63.2	67.9	67.8	61.6	66.8	69.1	69.4	70.2
11	69.2	69.3	68.7	66.7	67.3	67.1	67.6	67.4	68.0	68.8	60.6	65.7	60.8	63.2	67.9	67.8	61.7	66.8	69.1	69.5	70.2
10	69.3	69.4	68.8	66.8	67.2	67.0	67.5	67.3	68.0	68.8	60.6	65.7	60.8	63.1	68.0	67.9	61.7	66.9	69.2	69.5	70.3
9	69.4	69.5	68.8	66.8	67.2	67.0	67.5	67.3	68.0	68.8	60.7	65.6	60.8	63.1	68.0	67.9	61.7	66.9	69.2	69.6	70.3
8	69.5	69.5	68.9	66.9	67.2	66.9	67.4	67.2	67.9	68.7	60.7	65.6	60.9	63.0	68.0	67.9	61.8	66.9	69.2	69.6	70.3
7	69.5	69.6	68.9	66.9	67.1	66.9	67.4	67.1	67.8	68.7	60.7	65.6	60.9	63.0	68.0	68.0	61.8	67.0	69.3	69.7	70.4
6	69.6	69.7	69.0	67.0	67.0	66.8	67.3	67.1	67.7	68.6	60.7	65.5	60.9	63.0	68.1	68.0	61.8	67.0	69.3	69.7	70.4
5																					
4																					
3																					
2																					
1																					
Max	69.6	69.7	70.4	70.4	67.3	67.1	67.6	67.4	68.1	68.9	60.7	65.7	60.9	63.3	68.1	68.0	61.8	67.0	69.3	69.7	70.4
Min	67.7	67.8	68.0	66.5	66.7	66.6	67.2	67.0	67.7	68.4	60.1	65.3	60.0	63.0	67.1	66.8	60.6	65.7	68.0	68.3	69.0

Floor	R206c	R207a	R207b	R208a	R208b	R208c	R209a	R209b	R101 Max	R102 Max	R103 Max	R104 Max	R105 Max	R106 Max	R107 Max	R108 Max	R109 Max	R201 Max	R202 Max	R203 Max	R204 Max
30	69.7	68.7	69.3	69.7	69.8	69.1	68.6	68.6	70.3	70.3	66.0	64.9	70.0	69.6	70.0	67.9	69.9	67.2	68.4	65.3	67.1
29	69.7	68.7	69.4	69.7	69.8	69.2	68.6	68.6	70.4	70.4	66.1	64.9	70.1	69.6	70.0	68.0	70.0	67.2	68.5	65.4	67.2
28	69.8	68.8	69.4	69.8	69.9	69.3	68.7	68.7	70.4	70.4	66.1	64.9	70.1	69.7	70.1	68.1	70.1	67.2	68.5	65.4	67.2
27	69.8	68.9	69.5	69.8	70.0	69.3	68.7	68.7	69.3	69.6	66.2	65.0	70.2	69.7	70.2	68.1	70.2	67.3	68.6	65.4	67.2
26	69.9	68.9	69.6	69.9	70.0	69.4	68.8	68.8	69.4	69.7	66.2	65.0	70.2	69.8	70.2	68.2	70.2	67.3	68.6	65.5	67.3
25	69.9	69.0	69.6	69.9	70.1	69.4	68.8	68.8	69.5	69.7	66.3	65.1	70.3	69.9	70.3	68.3	70.3	67.4	68.6	65.5	67.3
24	70.0	69.0	69.7	70.0	70.1	69.5	68.9	68.9	69.6	69.8	66.3	65.1	70.3	69.9	70.4	68.4	70.4	67.4	68.7	65.5	67.4
23	70.1	69.1	69.7	70.0	70.2	69.5	69.0	68.9	69.6	69.9	66.4	65.1	70.4	70.0	70.4	68.4	70.4	67.4	68.7	65.5	67.4
22	70.1	69.1	69.8	70.1	70.2	69.6	69.0	69.0	69.7	69.9	66.4	65.2	70.4	70.1	68.5	68.5	70.0	67.4	68.7	65.6	67.5
21	70.2	69.2	69.9	70.2	70.3	69.7	69.1	69.0	69.8	70.0	66.5	65.2	70.4	70.1	68.6	68.6	70.1	67.5	68.8	65.6	67.5
20	70.2	69.3	69.9	70.2	70.4	69.7	69.1	69.1	69.8	70.0	66.5	65.3	68.2	70.2	68.7	68.7	70.2	67.5	68.8	65.6	67.6
19	70.3	69.3	70.0	70.3	70.4	69.8	69.2	69.2	69.9	70.1	66.6	65.3	68.2	70.3	68.8	68.7	70.2	67.5	68.8	65.6	67.6
18	70.3	69.4	70.0	70.3	66.5	69.8	69.2	69.2	70.0	70.1	66.6	65.4	68.3	70.3	68.9	68.8	70.3	67.6	68.8	65.7	67.6
17	70.4	69.4	70.1	70.4	66.5	69.9	69.3	69.2	70.0	70.2	66.7	65.4	68.4	70.4	68.9	68.9	70.4	67.6	68.8	65.7	67.7
16	70.4	69.5	70.1	70.4	66.6	69.9	69.3	69.3	70.1	70.2	66.7	65.5	68.4	69.7	69.0	69.0	70.4	67.6	68.8	65.7	67.7
15	68.0	69.5	70.2	68.0	66.6	70.0	69.4	69.3	70.2	70.3	66.8	65.5	68.5	69.8	69.1	69.1	69.0	67.6	68.9	65.7	67.8
14	68.0	69.6	70.2	68.0	66.7	70.0	69.4	69.4	70.2	70.3	66.8	65.6	68.5	69.8	69.1	69.1	69.1	67.6	68.8	65.7	67.8
13	68.1	69.6	70.3	68.1	66.7	70.0	69.4	69.4	70.3	70.4	66.9	65.6	68.6	69.9	69.2	69.2	69.1	67.6	68.9	65.7	67.8
12	68.1	69.6	70.3	68.1	66.8	70.1	69.5	69.4	70.4	70.4	66.9	65.6	68.7	70.0	69.3	69.3	69.2	67.6	68.8	65.7	67.9
11	68.1	69.7	70.4	68.1	66.8	70.1	69.5	69.5	70.4	67.3	66.9	65.7	68.7	70.1	69.4	69.4	69.3	67.6	68.8	65.7	67.9
10	68.2	69.7	70.4	68.2	66.8	70.1	69.5	69.5	70.4	67.4	67.0	65.7	68.8	70.1	69.5	69.5	69.4	67.5	68.8	65.7	68.0
9	68.2	69.7	70.4	68.2	66.8	70.1	69.5	69.5	68.0	67.4	66.9	65.7	68.8	70.2	69.5	69.6	69.5	67.5	68.8	65.6	68.0
8	68.2	69.7	70.4	68.2	66.9	70.1	69.4	69.4	68.0	67.4	66.9	65.8	68.9	70.3	69.6	69.6	69.5	67.4	68.7	65.6	68.0
7	68.2	69.7	70.4	68.2	66.8	70.0	69.3	69.3	68.0	67.4	66.9	65.8	68.9	70.3	69.7	69.7	69.6	67.4	68.7	65.6	68.0
6	68.2	69.6	70.3	68.1	66.8	69.8	68.9	68.9	68.0	67.4	66.9	65.5	68.9	70.4	69.8	69.8	69.7	67.3	68.6	65.5	68.1
5																					
4																					
3																					
2																					
1																					
Max	70.4	69.7	70.4	70.4	70.4	70.1	69.5	69.5	70.4	70.4	67.0	65.8	70.4	70.4	70.4	69.8	70.4	67.6	68.9	65.7	68.1
Min	68.0	68.7	69.3	68.0	66.5	69.1	68.6	68.6	68.0	67.3	66.0	64.9	68.2	69.6	68.5	67.9	69.0	67.2	68.4	65.3	67.1

Floor	R205 Max	R206 Max	R207 Max	R208 Max	R209 Max
30	68.0	69.7	69.3	69.8	68.6
29	68.1	69.7	69.4	69.8	68.6
28	68.1	69.8	69.4	69.9	68.7
27	68.2	69.8	69.5	70.0	68.7
26	68.2	69.9	69.6	70.0	68.8
25	68.3	69.9	69.6	70.1	68.8
24	68.4	70.0	69.7	70.1	68.9
23	68.4	70.1	69.7	70.2	69.0
22	68.5	70.1	69.8	70.2	69.0
21	68.5	70.2	69.9	70.3	69.1
20	68.6	70.2	69.9	70.4	69.1
19	68.7	70.3	70.0	70.4	69.2
18	68.7	70.3	70.0	70.3	69.2
17	68.8	70.4	70.1	70.4	69.3
16	68.8	70.4	70.1	70.4	69.3
15	68.9	70.0	70.2	70.0	69.4
14	69.0	70.0	70.2	70.0	69.4
13	69.0	70.1	70.3	70.0	69.4
12	69.1	70.2	70.3	70.1	69.5
11	69.1	70.2	70.4	70.1	69.5
10	69.2	70.3	70.4	70.1	69.5
9	69.2	70.3	70.4	70.1	69.5
8	69.2	70.3	70.4	70.1	69.4
7	69.3	70.4	70.4	70.0	69.3
6	69.3	70.4	70.3	69.8	68.9
5					
4					
3					
2					
1					
Max	69.3	70.4	70.4	70.4	69.5
Min	68.0	69.7	69.3	69.8	68.6

Appendix 10.1

Historical Aerial Photos

YEAR 1963



OPEN AREA

LOW-RISE STRUCTURES



LEGEND
SITE BOUNDARY

YEAR 1973



OPEN AREA

LOW-RISE STRUCTURES

YEAR 1983



OPEN AREA

LOW-RISE STRUCTURES

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LEGEND

 SITE BOUNDARY

YEAR 1993



NEW LOW-RISE
STRUCTURE

OPEN AREA

LOW-RISE
STRUCTURE

LOW-RISE STRUCTURE

LAND WITH
VEGETATION



LEGEND

 SITE BOUNDARY

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Filename : \\global\\EastAsia\\HKG\\Group\\C\\ENV\\env\\project\\299123\\13 Drawing Deliverables\\EAS\\Historical Aerial Photos\\Historical Aerial Photos.dgn

YEAR 2003



LOW-RISE
STRUCTURE

OPEN AREA

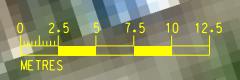
LOW-RISE
STRUCTURE

LOW-RISE STRUCTURE

LAND WITH
VEGETATION



Printed by : 18/2/2025
Filename : \\global\\EastAsia\\HKG\\Group\\C\\EN\\env\\project\\299123\\13 Drawing Deliverables\\EAS\\Historical Aerial Photos\\Historical Aerial Photos.dgn



LEGEND

 SITE BOUNDARY

YEAR 2014



LOW-RISE
STRUCTURE

OPEN AREA

LOW-RISE STRUCTURE

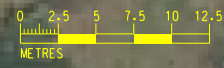
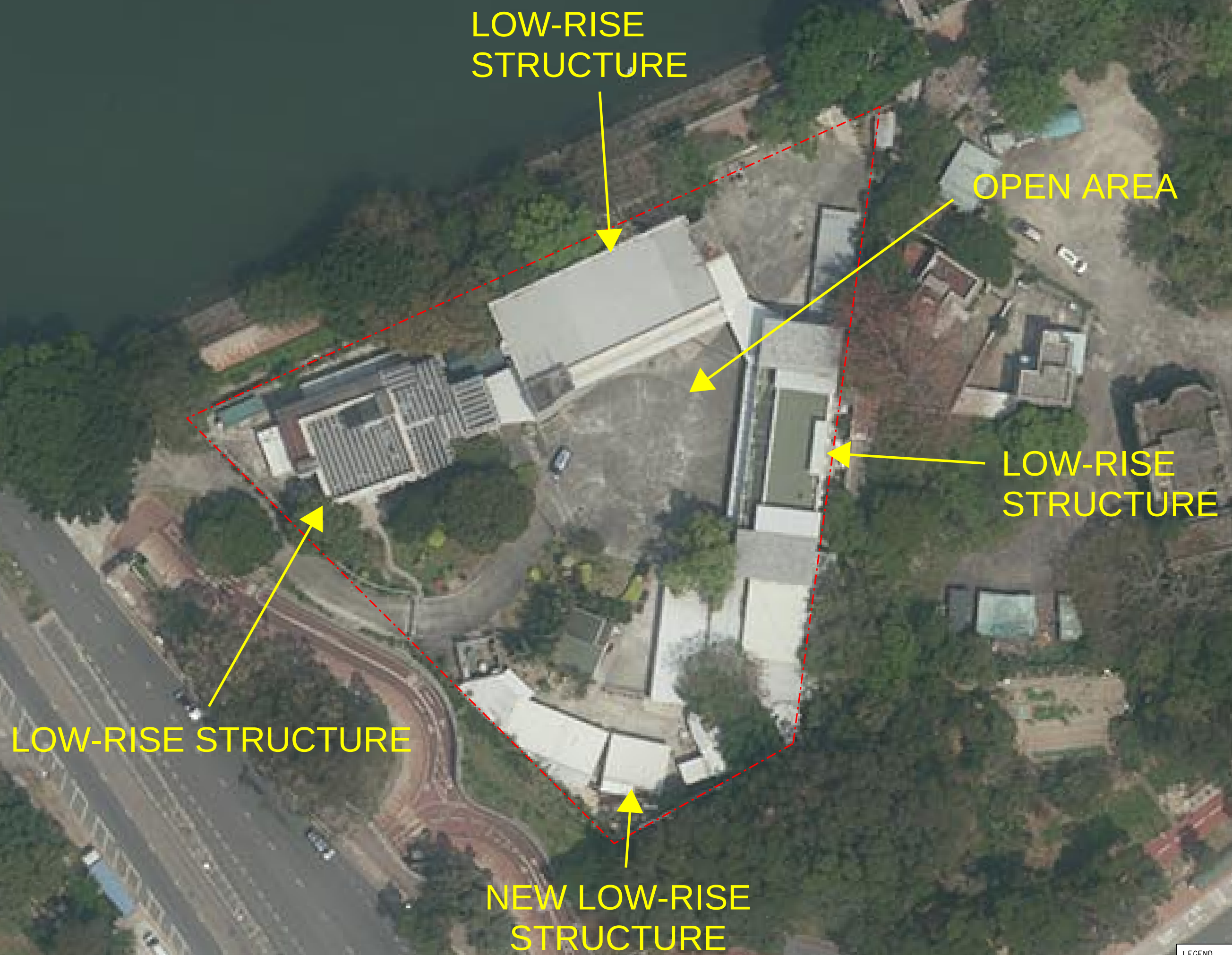
LOW-RISE
STRUCTURE

NEW ACCESS ROAD

NEW LOW-RISE
STRUCTURES



LEGEND
 SITE BOUNDARY





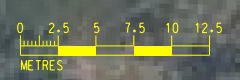
LOW-RISE
STRUCTURE

OPEN AREA

LOW-RISE
STRUCTURE

LOW-RISE STRUCTURE

NEW LOW-RISE
STRUCTURE



Appendix 10.2

Photo Record of Site Survey



Appendix 10.2 – Photo Record of Site Survey

Photo No.	Description	Contamination Potential
1	Waste Collection Point near the entrance of the Site	Unlikely
2	Gated entrance of the Site	Unlikely
3	Walled boundary at the southern side of the Site	Unlikely
4	Open area of the site, with minor works and storage of LPG canisters observed	Unlikely
5	Low-rise structures within the Site	Unlikely

Appendix 10.3

Site Walkover Checklist

Site Walkover Checklist

1) GENERAL SITE DETAILS	
Site Owner/ Client	Success Cosmos Development Limited
Property Address	Sha Tin Town Lot 310, 1-9 Tai Chung Kiu Road, Sha Tin, New Territories
Person Conducting the Questionnaire (name & position)	Name: Mr. Jonathan Cheng; Position: Environmental Consultant
Authorised Owner/ Client Representative (if applicable) (name, position & telephone)	N/A

2) ACTIVITIES	
Briefly describe activities carried out on site, including types of products/chemicals/materials handled. Obtain a flow schematic if possible.	
Number of employees:	N/A
- Full-time:	N/A
- Part-time:	N/A
- Temporary/Seasonal:	N/A
Maximum no. of people on site at any time:	N/A
Typical hours of operation:	N/A
Number of shifts:	N/A
Days per week:	N/A
Weeks per year:	N/A
Scheduled plant shut-down:	N/A
Detail the main sources of energy at the site:	
Gas (Yes/No)	No
Electricity (Yes/No)	Yes
Coal (Yes/No)	No
Oil (Yes/No)	No
Other (Yes/No)	No

Site Walkover Checklist

3) SITE DESCRIPTION	
This section is intended to gather information on site setting and environmental receptors on, adjacent or close to the site.	
What is the total site area:	Approximately 5,225m ²
What area of the site is covered by buildings (%):	Approximately 60%
Please list all current and previous owners/occupiers if possible.	Hong Kong Bible Research and Education Center
Is a site plan available? (Yes/No) If yes, please attach.	No
Are there any other parties on site as tenants or sub-tenants? (Yes/No) If yes, identify those parties.	No
Describe surrounding land use (residential, industrial, rural, etc.) and identify neighbouring facilities and types of industry. North: South: East: West:	Shing Mun River Promenade and Shing Mun River Tsang Tai Uk Playground Village houses, Shing Mun River Promenade Garden No. 1 High-rise residential blocks (The Riverpark) and Che Kung Temple Station
Describe the topography of the area (flat terrain, rolling hills, mountains, by a large body of water, vegetation, etc.).	Flat terrain
State the size and location of the nearest residential communities.	Village houses located to the east, which are adjacent to the site
Are there any sensitive habitats nearby, such as nature reserves, parks, wetlands, or sites of special scientific interest?	No

Site Walkover Checklist

4) QUESTIONNAIRE WITH EXISTING/ PREVIOUS SITE OWNER OR OCCUPIER		
	Yes/No	Notes
1. What are the main activities/operations at the above address?	-	Religious institution
2. How long have you been occupying the site?	-	N/A
3. Were you the first occupant on site? (If yes, what was the usage of the site prior to occupancy.)	No	N/A
4. Prior to your occupancy, who occupied the site?	-	N/A
5. What were the main activities/operations during their occupancy?	-	N/A
6. Have there been any major changes in operations carried out at the site in the last 10 years?	No	N/A
7. Have any polluting activities been carried out in the vicinity of the site in the past?	No	N/A
8. To the best of your knowledge, has the site ever been used as a petrol filling station/car service garage?	No	N/A
9. Are there any boreholes/wells or natural springs either on the site or in the surrounding area?	No	N/A
10. Do you have any registered hazardous installations as defined under relevant ordinances? (If yes, please provide details.)	No	N/A
11. Are any chemicals used in your daily operations? (If yes, please provide details.)	No	N/A
- Where do you store these chemicals?	-	N/A
12. Material inventory lists, including quantities and locations available? (If yes, how often are these inventories updated?)	No	N/A
13. Has the facility produced a separate hazardous substance inventory?	No	N/A
14. Have there ever been any incidents or accidents (e.g. spills, fires, injuries, etc.) involving any of these materials? (If yes, please provide details.)	No	N/A
15. How are materials received (e.g. rail, truck, etc.) and stored on site (e.g. drums, tanks, carboys, bays, silos, cisterns, vaults and cylinders)?	No	N/A

4) QUESTIONNAIRE WITH EXISTING/ PREVIOUS SITE OWNER OR OCCUPIER (CONTINUED)		
	Yes/No	Notes
16. Do you have any underground storage tanks? (If yes, please provide details.)	No	N/A
- How many underground storage tanks do you have on site?	-	N/A
- What are the tanks constructed of?	-	N/A
- What are the contents of these tanks?	-	N/A
- Are the pipelines above or below ground?	-	N/A
- If the pipelines are below ground, has any leak and integrity testing been performed?	-	N/A
- Have there been any spills associated with these tanks?	-	N/A
17. Are there any disused underground storage tanks?	No	N/A
18. Do you have regular check for any spillage and monitoring of chemicals handled? (If yes, please provide details.)	No	No chemicals are stored on site.
19. How are the wastes disposed of?	-	Waste collection points are available at the entrance of the site.
20. Have you ever received any notices of violation of environmental regulations or received public complains? (If yes, please provide details.)	No	N/A
21. Have any spills occurred on site? (If yes, please provide details)	No	N/A
- When did the spill occur?	-	N/A
- What were the substances spilled?	-	N/A
- What was the quantity of material spilled?	-	N/A
- Did you notify the relevant departments of the spill?	-	N/A
- What were the actions taken to clean up the spill?	-	N/A
- What were the areas affected?	-	N/A
22. Do you have any records of major renovation of your site or re-arrangement of underground utilities, pipe work/underground tanks? (If yes, please provide details.)	No	N/A
23. Have disused underground tanks been removed or otherwise secured (e.g. concrete, sand, etc.)?	No	N/A
24. Are there any known contaminations on site? (If yes, please provide details.)	No	N/A
25. Has the site ever been remediated? (If yes, please provide details.)	No	N/A

Site Walkover Checklist

5) OBSERVATIONS		
	Yes/No	Notes
1. Are chemical storage areas provided with secondary containment (i.e. bund walls and floors)?	No	N/A
2. What are the conditions of the bund walls and floors?	-	N/A
3. Are any surface water drains located near to drum storage and unloading areas?	No	N/A
4. Are any solid or liquid waste (other than wastewater) generated at the site? (If yes, please provide details.)	No	N/A
5. Is there a storage site for the wastes?	-	Waste collection points are available at the entrance of the site.
6. Is there an on-site landfill?	No	N/A
7. Were any stressed vegetation noted on site during the site reconnaissance? (If yes, please indicate location and approximate size.)	No	N/A
8. Were any stained surfaces noted on-site during the site reconnaissance? (If yes, please provide details.)	No	N/A
9. Are there any potential off-site sources of contamination?	No	N/A
10. Does the site have any equipment which might contain polychlorinated biphenyls (PCBs)?	No	N/A
11. Are there any sumps, effluent pits, interceptors or lagoons on site?	No	N/A
12. Any noticeable odours during site walkover?	No	N/A
13. Are any of the following chemicals used on site: fuels, lubricating oils, hydraulic fluids, cleaning solvents, used chemical solutions, acids, anti-corrosive paints, thinners, coal, ash, oily tanks and bilge sludge, metal wastes, wood preservatives, and polyurethane foam?	No	N/A

Appendix 10.4

Relevant Correspondence with FSD

BY EMAIL AND POST

Fire Services Department,
Fire Services Headquarters Building,
No.1 Hong Chong Road,
Tsim Sha Tsui East,
Kowloon

05 March 2025

Dear Sir/Madam,

Application for Amendment of Plan Under Section 12A of the Town Planning Ordinance (Cap. 131) of the “Open Space” Zone in Sha Tin Town Lot 310, Sha Tin
Request for Information of Dangerous Goods and Incident Records

We, Arup Hong Kong Limited, are appointed by Success Cosmos Development Limited for the captioned assignment. The appointment letter is attached for your kind reference (see **Attachment 1**).

One of the objectives of the assignment is to undertake an Environmental Assessment Study (EAS). As part of the EAS, we are required to conduct a land contamination assessment within the project boundary shown in the enclosed figure (see **Attachment 2**).

We would therefore like to request the following information for our assessment:

- Records of Dangerous Goods License issued within the project boundary;
- Any other information related to the use and/or storage of dangerous goods within the project boundary; and
- Past and present incident records within the project boundary.

It would be highly appreciated if you could provide the mentioned information at your earliest convenience or before **19 March 2025**. If you require any further information, please do not hesitate to contact the undersigned or our Mr. Jonathan Cheng at [REDACTED]

Yours faithfully,



Johnny So
Senior Consultant

Encl.

Attachment 1 – Appointment Letter
Attachment 2 – Location of the Project



3 March 2025

Dear Sir/Madam,

Authorization Letter for
Application for Amendment of Plan
Under Section 12A of the Town Planning Ordinance (Cap. 131) of
the “Open Space” Zone in Sha Tin Town Lot 310, Sha Tin

We hereby authorize Arup Hong Kong Limited to act as our authorized agent on the submission of the application for amendment of plan under Section 12A of the Town Planning Ordinance in relation to Sha Tin Town Lot 310, Sha Tin, and dealing with the related matters.

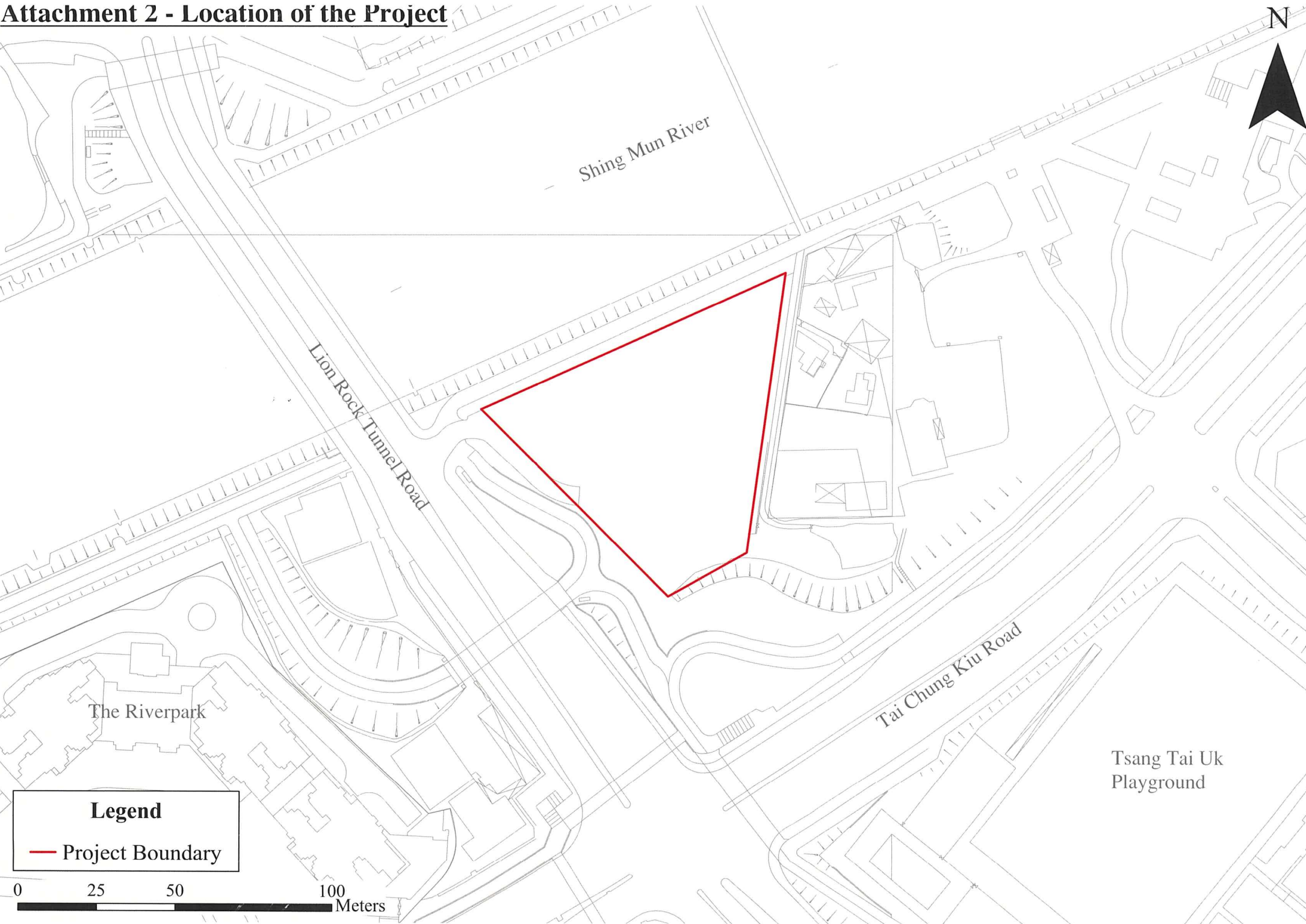
Yours faithfully,

For and on behalf of
Success Cosmos Development Limited

For and on behalf of
SUCCESS COSMOS DEVELOPMENT LIMITED
恒豪發展有限公司

.....
Authorized Signature(s)

Attachment 2 - Location of the Project



From: vin_hei_chow@hkfsd.gov.hk on behalf of ado_lea_cs@hkfsd.gov.hk
To: [Jonathan Cheng CH](#)
Cc: [OE8 CS/FSD](#); [SSO LEA CS/FSD](#)
Subject: Re: Fw: Application for Amendment of Plan Under Section 12A of the Town Planning Ordinance (Cap. 131) of the "Open Space" Zone in Sha Tin Town Lot 310, Sha Tin - Request for Information of Dangerous Goods and Incident Records
Date: 27 March 2025 09:44:53

You don't often get email from ado_lea_cs@hkfsd.gov.hk. [Learn why this is important](#)

Our reference: (122) in FSD GR 6-5/4 R Pt. 57

Your reference: -

Dear Mr. CHENG,

**Application for Amendment of Plan Under Section 12A of the Town Planning Ordinance
(Cap. 131) of the "Open Space" Zone in Sha Tin Town Lot 310, Sha Tin
Request for Information of Dangerous Goods & Incident Records**

I refer to your email of 7.3.2025 regarding the captioned request and reply below in response to your questions:-

Please be advised that neither records of dangerous goods license, fire incidents nor incidents of spillage / leakage of dangerous goods were found in connection with the given conditions of your request at the subject location.

If you have further questions, please feel free to contact the undersigned.

Best regards,

CHOW Yin-hei
Assistant Divisional Officer (Legal Affairs)
Corporate Services Division
Fire Services Department

Tel.: 2733 7896

Disclaimer:

*Fire Services Department uses its best endeavor to ensure the accuracy and reliability of the information provided, but cannot guarantee its accuracy and reliability and accepts no liability of any nature for any loss or damage arising from any inaccuracies or omissions that may from the information provided.

Appendix 10.5

Relevant Correspondence with EPD

BY EMAIL AND POST

Environmental Protection Department,
Environmental Compliance Division,
Regional Office (North), Shatin,
10/F., Sha Tin Government offices,
No.1 Sheung Wo Che Road, Sha Tin,
New Territories

Attn: Mr. LEUNG Man Lung

05 March 2025

Dear Sir,

Application for Amendment of Plan Under Section 12A of the Town Planning Ordinance (Cap. 131) of the “Open Space” Zone in Sha Tin Town Lot 310, Sha Tin
Request for Information on Chemical Waste Producer and Chemical Spillage Accident Records

We, Arup Hong Kong Limited, are appointed by Success Cosmos Development Limited for the captioned assignment. The appointment letter is attached for your kind reference (see **Attachment 1**).

One of the objectives of the assignment is to undertake an Environmental Assessment Study (EAS). As part of the EAS, we are required to conduct a land contamination assessment within the project boundary shown in the enclosed figure (see **Attachment 2**).

We would therefore like to request the following information for our assessment:

- Records of Chemical Waste Producers Registration within the project boundary; and
- Past and present chemical spillage / leakage records within the project boundary.

It would be highly appreciated if you could provide the mentioned information at your earliest convenience or before **19 March 2025**. If you require any further information, please do not hesitate to contact the undersigned or our Mr. Jonathan Cheng at [REDACTED]

Yours faithfully



Johnny So
Senior Consultant

Encl.

Attachment 1 – Appointment Letter
Attachment 2 – Location of the Project



3 March 2025

Dear Sir/Madam,

Authorization Letter for

Application for Amendment of Plan

**Under Section 12A of the Town Planning Ordinance (Cap. 131) of
the "Open Space" Zone in Sha Tin Town Lot 310, Sha Tin**

We hereby authorize Arup Hong Kong Limited to act as our authorized agent on the submission of the application for amendment of plan under Section 12A of the Town Planning Ordinance in relation to Sha Tin Town Lot 310, Sha Tin, and dealing with the related matters.

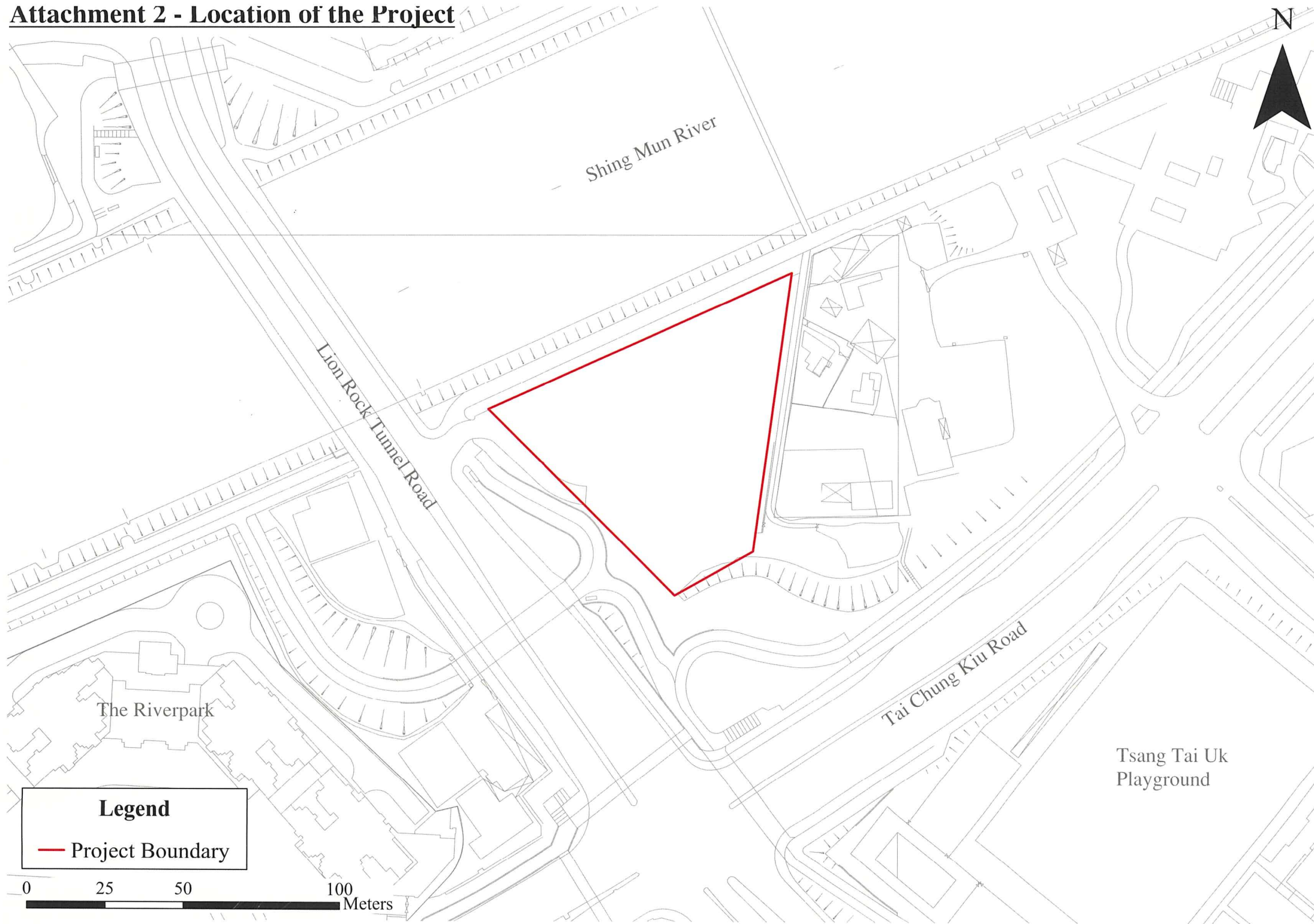
Yours faithfully,

For and on behalf of
Success Cosmos Development Limited

For and on behalf of
SUCCESS COSMOS DEVELOPMENT LIMITED
恒豪發展有限公司

.....
Authorized Signature(s)

Attachment 2 - Location of the Project



本署檔案
OUR REF : () in EP549/E2/1
來函檔案
YOUR REF : 299123/L002/JS/jc
電話
TEL NO : 2158 5744
圖文傳真
FAX NO : 2650 6033
網址
HOMEPAGE : <http://www.epd.gov.hk/>

Environmental Protection Department
Environmental Compliance Division
Regional Office (North)

10/F., Sha Tin Government Offices,
No. 1, Sheung Wo Che Road,
Sha Tin, N.T. Hong Kong.



環境保護署
環保法規管理科
區域辦事處(北)
香港新界沙田
上禾輦路1號
沙田政府合署10樓

17 March 2025

Ove Arup & Partners Hong Kong Ltd.

(Attn: Mr. Johnny SO, Senior Consultant)

Dear Mr. SO,

**Application for Amendment of Plan Under Section 12A of the Town Planning Ordinance
(Cap. 131) of the "Open Space" Zone in Sha Tin Town Lot 310, Sha Tin
Request for Information of Chemical Waste Producer and Chemical Spillage Accident**

I refer to your letter dated 5 March 2025 on the subject matter.

Please be informed that we have nil record of chemical spillage/leakage complaint within the Concerned Area as shown in the enclosed location plan of your letter. You may wish to check with other relevant parties or departments for the record as appropriate.

As registered chemical waste producers at the location are concerned, a register of chemical waste producers is available for inspection in the Territorial Control Office of this department. If you would like to inspect, please contact Mr. MAN at 2835 1017 for making appointment to view the records.

While we have made a reasonable effort to ensure the completeness and accuracy of the information provided, you should comprehend that the information is provided as is and the EPD is not responsible or liable for any claim, loss or damage resulting from the use of this information.

Should you have any queries, please feel free to contact the undersigned or our Senior Environmental Protection Inspector, Ms. CHAN at 2158 5741.

Yours sincerely,

(Antony C.H. FAN)
for Director of Environmental Protection