

Issue No. : 3 Issue Date : February 2024

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ENVIRONMENTAL ASSESSMENT

FOR

PROPOSED REZONING FROM "GOVERNMENT, INSTITUTION COMMUNITY" OR TO "RESIDENTIAL (GROUP B)6" ZONE TO INCLUDE SOCIAL WELFARE FACILITIES (RCHE AND DE ONLY) AND PUBLIC VEHICLE PARK (EXCLUDING CONTAINER **VEHICLE) AT LOTS NOS. 148 S.A** RP (PART), 148 S.B RP (PART), 149 RP, 150 S.A., 150 S.B., AND 151 IN D.D. 206 AND ADJOINING **GOVERNMENT LAND, WEST OF** WU KAI SHA ROAD, MA ON **SHAN, NEW TERRITORIES**

Prepared by

Allied Environmental Consultants Limited

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Document Verification



Project Title Proposed Rezoning from "Government,

Institution or Community" to "Residential

(Group B)6" Zone to Include Social

Welfare Facilities (RCHE and DE only) and Public Vehicle Park (excluding container vehicle) at Lots Nos. 148 S.A RP (Part), 148 S.B RP (Part), 149 RP, 150 S.A., 150 S.B., and 151 in D.D. 206 and Adjoining Government Land, West of Wu Kai Sha Road, Ma On Shan, New Territories

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Project No. 2039

Environmental Assessment for Proposed Rezoning from "Government, Institution or Community" to "Residential (Group B)6" Zone to Include Social Welfare Facilities (RCHE and DE only) and Public Vehicle Park (excluding container vehicle) at Lots Nos. 148 S.A RP (Part), 148 S.B RP (Part), 149 RP, 150 S.A., 150 S.B., and 151 in D.D. 206 and Adjoining Government Land, West of Wu Kai Sha Road, Ma On Shan, New Territories

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1. Introduction

1.1.1. Allied Environmental Consultants Limited (AEC) has been appointed to conduct an Environmental Assessment (EA) for the proposed rezoning development at Wu Kai Sha under S.12A of the Town Planning Ordinance (hereinafter called "Proposed Development"). Indicative drawings and other technical information on the Proposed Development are provided by the Project Architect and the traffic forecast is provided by the Project Traffic Consultant (LLA Consultancy Ltd.).

2. Objectives

2.1.1. An Environmental Assessment for the Proposed Development is required to assess the potential air quality and noise impacts on its air/noise sensitive uses and recommend relevant mitigation measures where necessary.

3. The Proposed Development

- 3.1.1. The Project Site is currently used as a temporary convenient vehicles' holding area, the site area is about 4,255m² in land area. The proponent intends to develop the Project Site into a private residential development with residential care homes for the elderly ("RCHE") cum daycare centre for the elderly ("DE") and public vehicle park ("PVP") facilities. The Project Site is currently zoned "Government, Institution or Community" ("G/IC") under the Draft Ma On Shan Outline Zoning Plan No. S/MOS/27 ("Draft OZP"). The Project Site is located west of the junction of Yiu Sha Road and Wu Kai Sha Road. Various medium to high-rise residential developments including Double Cove, St. Barths, Altissimo, Lake Silver, Monte Vista, Lee On Estate, Kam Lung Court and Villa Athena are located within 500m radius from the site. Wu Kai Sha Village and Cheung Gan Village are also located to its farther south and southwest respectively. A strip of area zoned "Open Space" ("O") and area zoned "Conservation Area" ("CA") are respectively located to its northwest and the north of the Project Site. Location of the site and its surroundings are presented in *Figure 3.1*.
- 3.1.2. The Proposed Development comprises a total of 4 building blocks, i.e two 16-storey residential tower, one 2-storey clubhouse and one 7-storey RCHE cum DE on top 3 levels of basement carpark (with the lower 2 levels for PVP purpose). Upon completion by 2027, a total of 184 domestic units, 162 RCHE bed spaces, 40 DE places and 124 public carparks will be provided to meet the needs of the community. An indicative development layout of the Proposed Development is shown in *Appendix 3.1*.

4. Implication on Environmental Impact Assessment

4.1.1. This is not a designated project under the Environmental Impact Assessment (EIA) Ordinance (Cap. 499). This EA has been undertaken with reference to the guidance for environmental considerations provided in Chapter 9 "Environment" of the Hong Kong Planning Standards and Guidelines (HKPSG). This EA presents a study of the potential environmental impacts, with respect to both air quality and noise aspects. Drainage and sewerage impact assessments are presented separately.

5. Air Quality Impact Assessment

5.1. Introduction

- 5.1.1. This section assesses the potential air quality impacts in association with the proposed development by taking into account the following considerations:
 - Road traffic emissions from nearby roads in the proximity;
 - Industrial emissions; and
 - Potential cumulative air quality impacts, if any, from nearby major housing development.

5.2. Environmental Legislation, Standards and Criteria

Hong Kong Air Quality Objectives

5.2.1. Air quality in Hong Kong is governed under the Air Pollution Control Ordinance ("APCO") (Cap. 311). Under this legislation, the Government has designated various Air Control Zones for the whole territory, and the new Air Quality Objectives ("AQOs") was taken into effect in January 2022. The AQOs stipulate the statutory limits for seven pollutants and dictate the maximum number of allowable exceedances over specified periods as shown in *Table 5-1*.

Table 5-1 Hong Kong Air Quality Objectives

Pollutant	Averaging Time	Concentration Limit (ug/m³)[i]	Number of Exceedances to be allowed
Sulphur Dioxide	10-minute	500	3
(SO ₂)	24-hour	50	3
RSP or PM ₁₀ ^[ii]	24-hour	100	9
KSP Of PIVI ₁₀ th	Annual	50	N/A
ECD or DNA [iii]	24-hour	50	35
FSP or PM _{2.5} ^[iii]	Annual	25	N/A
Nitrogen Dioxide	1-hour	200	18
(NO ₂)	Annual	40	N/A
Ozone (O ₃)	8-hour	160	9
Carbon monoxide	1-hour	30,000	0
(CO)	8-hour	10,000	0
Lead (Pb)	Annual	0.5	N/A

Note:

Hong Kong Planning Standards and Guidelines

5.2.2. The Hong Kong Planning Standards and Guidelines (HKPSG) also provide guidance for all private and public development projects. A summary of relevant environmental design guidelines extracted from Table 3.1 of the HKPSG Chapter 9 is provided below.

Table 5-2 Recommended Buffer Distance for Land Uses (Table 3.1 of HKPSG Chapter 9)

Polluting Uses Sensitive Uses		Buffer Distance
Trunk roads and	(a) Active and passive recreational uses	>20m
Primary Distributor	(b) Passive recreational uses	3 – 20m
Primary Distributor	(c) Amenity areas	< 3m
Local Distributor	(a) Active and passive recreational uses	>5m
Local Distributor	(b) Passive recreational uses	<5m

5.3. Background Air Quality

5.3.1. Background air quality concentrations were extracted from PATH v2.1 (Pollutants in the Atmosphere and their Transport over Hong Kong), which is a regional air quality model has

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

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

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

been developed by the Environmental Protection Department (EPD) for simulating air quality over Hong Kong against Pearl River Delta region. Project Site falls within Grid (47, 45).

5.3.2. The PATH v2.1 data at (47, 45) in Year 2025 represents background air quality concentrations at the Project Site area. A summary of background air quality concentration in Year 2025 is shown in **Table 5-3**. These data have demonstrated that the concentrations of pollutants are below the AQO, except for ozone. Ozone is not directly emitted from an emission source. It is formed by the chemical reactions of NOx and VOCs under the presence of sunlight and a regional pollution problem. Ozone is therefore not considered as a key parameter in this assessment.

Table 5-3	Background	Air Quality	y Concentration o	of Pollutants
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Dell' te d		AQOs Concentration limit	Background	
Pollutant	Averaging time	(μg/m³) (exceedance)	(47,45)	
SO2	4th peak 10-min	500 (3)	60.25	
	4th peak 24-hr	50 (3)	10.33	
PM10	10th peak 24-hr	100 (9)	63.66	
	Annual Average	50	26.11	
PM2.5	36th peak 24-hr	50 (35)	22.25	
	Annual Average	25	14.30	
NO2	19th peak 1-hr	200 (18)	63.64	
	Annual Average	40	10.77	
03	10th peak 8-hr	160 (9)	218.26	
СО	1st peak 1-hr	30,000 (0)	874.65	
	1st peak 8-hr	10,000 (0)	805.40	

- 5.4. Assessment Area and Representative Air Quality Sensitive Receivers (ASRs)
- 5.4.1. In general, the assessment area for an air quality impact assessment (AQIA) is defined by a distance of 500m from the site boundary which is presented in *Figure 3.1*.
- 5.4.2. Representative air quality sensitive receivers (ASRs) were identified and the separation distance between ASRs and Project Site are shown in *Figure 5.1*.
- 5.5. Potential Air Quality Impact Construction Phase
- 5.5.1. Basement excavation, foundation and superstructure works during the construction period would be anticipated in construction phase, dust emission associated with these construction activities will be limited to localised at-grade construction works. With the implementation

of sufficient dust suppression measures as stipulated under the Air Pollution Control (Construction Dust) Regulation and good site practices, significant adverse dust generated from the construction of the planned residential developments is not anticipated. Mitigation measures to control construction dust/ gaseous emission listed below are recommended to be incorporated into the future contractor specifications for contractor's implementation:

- Wetting by water spraying or dust suppression chemical on dusty material before loading and unloading, stockpile of dusty materials, area where breaking, excavation or earth moving activities works is carried out, and unpaved main haul road.
- Providing hoarding of not less than 2.4m high from ground level along the site boundary which is next to a road or other public area.
- Providing effective dust screens, sheeting or netting to enclose any scaffolding built around the perimeter of a building.
- Covering or sheltering any stockpile of dusty materials.
- Disposing of any dusty materials collected by fabric filters or other pollution control system in totally enclosed containers.
- Properly treating any exposed earth, such as by compacting or hydroseeding, within 6 months after the last construction activity.
- Providing vehicle washing facilities at all site exits to wash away any dusty materials from vehicles body and wheels before they leave the site.
- Covering of dust load on vehicles before they leave the site.
- Use of ultra-low sulphur content for on-site generators to minimize black smoke emission.
- Providing water spraying system where available and applicable.
- Restricting heights from which materials are to be dropped, as far as practicable, to minimise the fugitive dust arising from unloading / loading.
- Where the public can be affected by exhaust fumes or smoke emission from any construction plants or activities, shielding the related activities by an incombustible screen such as corrugated sheet of at least 2m in width and 1.8m in height.
- Using enclosed chutes for dropping construction materials to ground level and the chutes are dampened regularly, if applicable.
- The foundation work can be carried out either by percussive piling method or non–percussive pilling method. For this project, adoption of non–percussive piling method is anticipated which helps generating lower dust emissions.
- The area where vehicle washing takes place and the section of the road between the
 washing facilities and the exit point should be paved with concrete, bituminous
 materials or hardcore.
- Vehicles within the site are restricted to a maximum speed of 10 kph.

- Vehicles are inspected regularly and well maintained to ensure that they are operating efficiently and that exhaust emissions are not causing nuisance.
- Vehicle engines are turned off when they are not in use.
- Haul road of the subject site is located as far as possible from nearby ASRs.
- 5.5.2. Due to small in development scale, the construction works to be involved the Project Site would be very limited. Also, requirements set out in the Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation to control potential emissions from non-road mobile machinery will need to be fully complied with. Therefore, gaseous emission from diesel-fueled construction equipment would be minor and would not cause any significant adverse air quality impact.
- 5.6. Potential Air Quality Impact Operation Phase
- 5.6.1. An environmental survey was conducted and records of specified licenses were reviewed in August and October 2022 respectively. In addition, a site inspection was conducted in January 2024. The results of that survey have confirmed that no chimney is being located within 200m radius. Therefore, no further assessment of the chimney is considered necessary.

Vehicular Emissions from Open Road Traffic

- 5.6.2. The major air pollution source in the vicinity of the Subject Site during operational phase would be tailpipe emission generated from road traffic along open road.
- 5.6.3. The Subject Site is bounded by two roads, namely Wu Kai Sha Road and Yiu Sha Road. As confirmed by TD, both mentioned road sections are classified as Local Distributor, the reply from TD was presented in *Appendix 5.1*. A local road is situated to the south of the Site. In accordance with to HKPSG, the buffer distance between the proposed residential blocks, clubhouse and the nearby roads should be adopted, which are summarised in *Table 5-4* and presented in *Figure 5.2*.
- 5.6.4. Centralised Air conditioning will be provided at the clubhouse, the location of fresh air intake will be carefully design and will not encroached on the buffer zone as recommended in the HKPSG.

 Table 5-4
 Buffer distance between the Proposed Development and Nearby Road

Road	Road Type[1]	HKPSG Guideline Buffer Distance Requirement	Distance between Proposed Residential Development and nearby road
Wu Kai Sha Road	Local Distributor	>5m	7m (to RCHE and DE)
Yiu Sha Road	Local Distributor	>5m	15m (to RCHE and DE)
Local Road	Local Distributor	>5m	8m (to Block A)

5.6.5. Buffer distances of more than 5m are being proposed as a setback distance between the nearest road kerb of Wu Kai Sha Road, Yiu Sha Road and Local Road as well as proposed development, including the residential towers, clubhouse, RCHE and DE.

Industrial Chimney Emissions

5.6.6. For chimney emission, an environmental survey was conducted and records of specified licences were reviewed in August and October 2022 respectively. In addition, site inspection was conducted on January 2024. The results of the survey have confirmed that no chimney is located within 200m radius of the Subject Site whilst slaughterhouses, sewage treatment works facilities, village incinerators, odour sources and duty uses are not found within 500m radius of the Subject Site. Thus, no significant adverse air quality impact on the Proposed Development is anticipated.

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5.7. Conclusions

- 5.7.1. With the implementation of dust suppression measures of the Proposed Development and provision of good site practice as stipulated under the Air Pollution Control (Construction Dust) Regulation and Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation, fugitive dust impacts and gaseous emission from diesel-fueled construction equipment to the nearby air sensitive receivers due to construction works are expected to be insignificant.
- 5.7.2. For the vehicular emission, a sufficient horizontal buffer distance between Wu Kai Sha Road, Yiu Sha Road and Local Road to the Subject Site is being proposed in accordance with the requirements set out in the HKPSG. No significant adverse air quality impact due to vehicular emission on the Proposed Development is anticipated.
- 5.7.3. In view of no chimney was identified within the assessment area, no air quality impact with respect to industrial chimney emission on the future domestic users in the Proposed Development is anticipated.

6. Noise Impact Assessment

6.1. Introduction

- 6.1.1. As observed, traffic noise and fixed noise impact are identified upon the Proposed Development.
- 6.1.2. The potential traffic noise impact is mainly dominated by Wu Kai Sha Road, Yiu Sha Road and Local Road within the assessment area, road traffic noise impact assessment was conducted to evaluate potential adverse noise impact arising from the carriageways in the vicinity of the Project Site (detailed in *Section 6.3*).
- 6.1.3. Since the Project Site is surrounded by numerous residential buildings in its vicinity, potential fixed noise impact on the Proposed Development is envisaged. Therefore, fixed noise impact assessment has been conducted (detailed in *Section 6.4*).

6.2. Design Strategy for Noise Consideration

6.2.1. General guidance is provided in the Hong Kong Planning Standard and Guidelines (HKPSG) and EPD's website on Innovative Noise Mitigation Designs and Measures to reduce noise exposure. These guidelines have been duly considered in the design layout of the Proposed Development. *Table 6-1* below summarizes the design strategies adopted in the Proposed Development.

Table 6-1 Summary of Noise Conscious Design Strategy

Item	Design Strategy/Mitigation Measure	Considerations in the Proposed Development
1	Building Setback	- The residential tower requires to maintain a setback from Wu Kai Sha Road and Yiu Sha Road to increase the horizontal separation distance from noise sources.
2	Building Disposition	 Most of the residential flats need to be arranged on the western facade facing towards Tolo Habour in order to limit the direct line of sight towards the Roads.
3	Noise Tolerant Building	- A stand-alone clubhouse which will be served by centralized air conditioning is being proposed to be placed between Wu Kai Sha Road/ Yiu Sha Road and the residential towers serving as a buffer to screen the traffic noise to the residential tower.

6.3. Traffic Noise Impact Assessment

Introduction

6.3.1. This road traffic NIA is prepared to assess the potential traffic noise impact on the noise sensitive uses of the Proposed Development and recommend mitigation measures where practicable to attenuate the noise impact, if any.

Assessment Criteria

- 6.3.2. Noise standards are recommended in Chapter 9, "Environmental" of the HKPSG for guiding new developments against potential noise impact from sources such as road traffic, railway and aircraft. The applicable road traffic standard on the residential blocks, habitable rooms of RCHE and activity room of DE (relies on openable windows for ventilation) are L_{10(1-hour)} 70dB(A); diagnostic rooms/wards/sickbay of RCHE and DE is L_{10(1-hour)} 55dB(A).
- 6.3.3. Stand-alone clubhouse will be served by a centralized air conditioning system and will not rely on openable windows for ventilation, therefore it is not regarded as a noise sensitive receiver.

Assessment Methodology

- 6.3.4. The potential noise impact arising from nearby existing and future road carriageways on the Noise Sensitive Receivers (NSRs) of Proposed Development was assessed.
- 6.3.5. This approach considers the worst-case scenario of 15 years from the tentative completion date (Year 2027) of the Proposed Development. For worst case scenario evaluation, the assessment year has been chosen to be Year 2042, which has the maximum forecasted traffic flow within the 15-year period.
- 6.3.6. **Appendix 6.1** presents the predicted peak hour traffic flows and percentage of heavy vehicle of road carriageways within 300m assessment area from the Project Site for Year 2042, with Transport Department's no objection on such traffic forecast data supplemented once available.
- 6.3.7. The procedure of "Calculation of Road Traffic Noise" adopted by U.K.'s Department of Transport was used to predict the hourly L_{10(1-hour)} noise levels generated from road traffic at selected representative NSRs. The predicted noise levels were compared to the noise standard set out in the HKPSG (i.e. L_{10(1-hour)} 70dB(A) for domestic and office uses, L_{10(1-hour)} 55dB(A) for Diagnostic Rooms). Practicable noise mitigation measures have been recommended where necessary.

- 6.3.8. All carriageways within the assessment area are assumed with a speed limit of 50 kph.
 - **Noise Sensitive Receivers**
- 6.3.9. Noise Sensitive Receivers (NSR) within the Proposed Development have been selected to assess the road traffic noise impact to the noise sensitive uses. Residential dwellings, as well as bedrooms and office, in the RCHE and DE with openable windows/doors for prescribed ventilation purposes are regarded as NSRs, which are likely to be affected by traffic noise impact. For other rooms in RCHE, centralized air-conditioning will be provided and will not rely on openable windows for ventilation. All noise assessment points (NAPs) were taken at 1.2m above the floor level and 1m away from the façade of openable windows in rooms of sensitive uses.
- 6.3.10. *Figure 6.1* shows the location of the selected NSRs for traffic noise impact assessment.

Assessment Result under Base Case Scenario

- 6.3.11. Road traffic noise assessment is being carried out for a "base case scenario", which is based on the building design strategy mentioned above while without any noise mitigation measures proposed. The results of the assessment have indicated that the highest predicted noise level is 67 dB(A) for residential towers and 68 dB(A) for bedroom and office in RCHE cum DE. No room will exceed with the traffic noise criteria of 70dB(A) and 55dB(A) as set out in the HKPSG. Noise exceedance is not found in the Proposed Development.
- 6.3.12. *Table* 6-2 summarizes the results of the of traffic noise assessment under base case scenario. Predicted noise levels at the representative NSRs are presented in *Appendix 6.2*.

Table 6-2 Traffic Noise Prediction Results, Base Case Scenario

	Residential Towers		RCHE <mark>cum DE</mark>			
	Block A	Block B	Total	Bedrooms /	<mark>Sickbays</mark>	Total
				Office		
Maximum Predicted	6 <mark>5</mark>	6 <mark>7</mark>	6 <mark>7</mark>	<mark>68</mark>	<mark>49</mark>	<mark>68</mark>
Traffic Noise Level,						
L _{10,peak hr} in dB(A)						
Noise Criteria L _{10,1 hr} in	70	70	NA	70	<mark>55</mark>	NA
dB(A)						
Total No. of Flats	92	92	184	<mark>49</mark>	<mark>14</mark>	<mark>63</mark>
				(Room: 6 nos x	<mark>(2 nos x 7</mark>	
				<mark>6 Floors + 5</mark>	<mark>Floors)</mark>	
				nos X 1 Floor)		
				(Office: 1 nos x		
				6 Floors + 2		
				nos x 1 floor)		

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Total No. of Flats	0	0	0	0	0	0
Exceed Traffic Noise					_	
Criteria						
Percentage of	100%	100%	100%	100%	<mark>100%</mark>	100%
Compliance						

Summary for Road Traffic Noise Impact Assessment

6.3.13. Potential road traffic noise impact on the Proposed Development has been assessed. According to the road traffic noise impact assessment result, the Proposed Development would not subject to significant adverse road traffic noise impact under base case scenario. Full compliance will be achieved with respect to the traffic noise criterion recommended in the HKPSG, no noise mitigation measure is required.

6.4. Fixed Plant Noise Impact Assessment

Industrial noise impacts on the NSRs in the vicinity

- 6.4.1. Potential industrial noise to be generated from the Proposed Development includes noise from the operation of air-conditioning units from the residential units and the clubhouse, mechanical ventilation installations of the plant rooms, as well as other fixed noise sources equipment.
- 6.4.2. Mechanical Equipment and Air conditioning (MVAC) and E&M plants, such as pump units, transformers, emergency generator and lift machines will be placed at enclosed plant rooms, which is at least 120m to the nearest noise sensitive receivers at Block 9 of Double Cove Summit. The ventilation louvres, mechanical ventilation intakes or exhausts of MVAC equipment and E&M plant rooms will be treated by silencers and enclosure, if necessary.
- 6.4.3. The choice of equipment and the requirement of noise control measures, such as acoustic treatments by silencers and enclosure, will be determined to ensure that noise level at potentially affected NSR will comply with the noise criteria. The cumulative noise impact on nearby NSRs shall comply with statutory requirement under Noise Control Ordinance (NCO) stipulated in IND-TM. For the design of plant noise control treatment, the plant noise shall be controlled and designed to meet the HKPSG requirement, i.e. 5 dB below ANL or the prevailing background noise level, whichever is the lower. The prevailing background noise levels shall be determined at detailed design stage, before construction commencement, for determining the planning criteria. The design requirement for the compliance to HKPSG criteria will be stated clearly in the tender specification. The Contractor shall be responsible for the design of the MVAC and E&M plants with proper mitigation measures, if necessary.
- 6.4.4. This assessment aims to assess the potential noise impact arising from the nearby fixed noise sources of the commercial or industrial buildings and activities within 300m assessment area of the Proposed Development. Practicable noise mitigation measures would be proposed to minimize the fixed noise impact on the Proposed Development, where necessary.
 - Industrial noise impacts on the proposed development
- 6.4.5. According to the Approved OZP, various "Residential (Group A)" ("R(A)") and "Village Type Development" ("V") zoned developments, including Double Cove, Wu Kai Sha Village and Cheung Gan Village are identified in the vicinity of the Proposed Development. A strip of area zoned "Open Space ("O") and area zoned "Conservation Area" ("CA") are respectively located to the northwest and the north of the Project Site.

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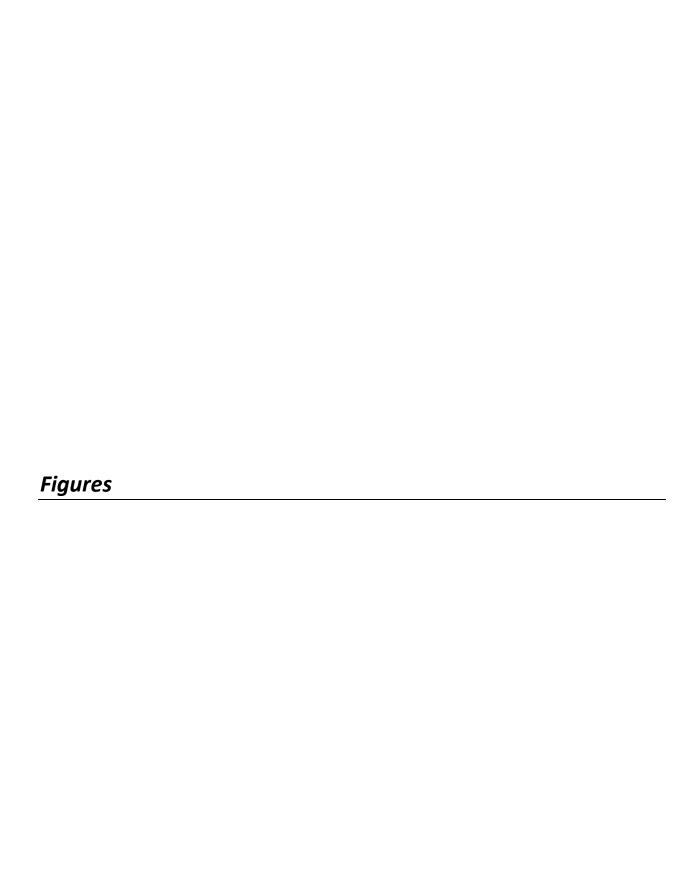
- 6.4.6. As the site is mainly surrounded residential/ village type development, and open space/ conservation area, which do not have any major noisy industrial noise source and activity. This has been verified by site inspections conducted in September 2022. It is considered that for the long-term planning intension for the area is non-industrial in nature and hence potential industrial/ residential interface problem would not exist. In this connection, industrial noise impact on the proposed development is not expected. No mitigation measure is required for the industrial noise aspect.
 - Summary of Fixed Noise Impact Assessment
- 6.4.7. The potential fixed noise impact has been assessed. According to the assessment result, the Proposed Development will not subject to any significant adverse noise impact from fixed noise sources.
- 6.4.8. To ensure that the noise level at potentially affected NSRs will comply with the statutory requirement under Noise Control Ordinance stipulated in IND-TM, all on-site planned fixed plant within the Proposed Development shall be controlled and designed to meet the HKPSG requirement, i.e. 5 dB below ANL or the prevailing background noise level, whichever is the lower.

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7. Conclusion

- 7.1.1. The potential environmental noise impacts from nearby road traffic and fixed noise sources on the Proposed Development have been evaluated.
- 7.1.2. For traffic noise impact assessment, all NSRs in the Proposed Development will comply with the relevant traffic noise standard stipulated in HKPSG. The Proposed Development would not subject to significant adverse traffic noise impact
- 7.1.3. Fixed noise impact assessment has been carried out for the Proposed Development. The results of the assessment have indicated that the predicted fixed noise levels of all NSRs would comply with the fixed noise standard under the Noise Control Ordinance.



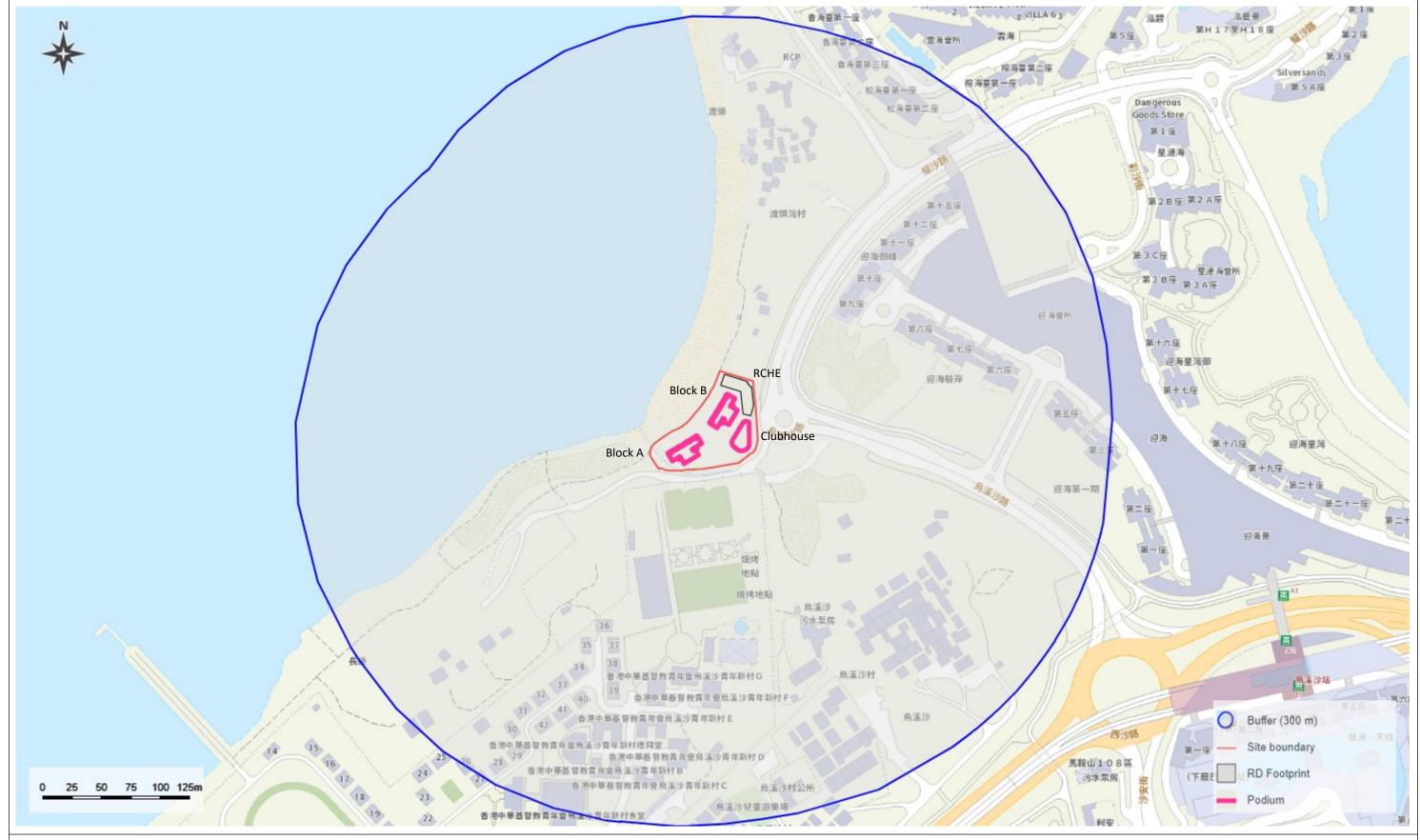


Fig3.1 - Location of Project Site and its Environ

Project Code: 2039 RCHE [vlss2]

Project Name: Wu Kai Sha RCHE

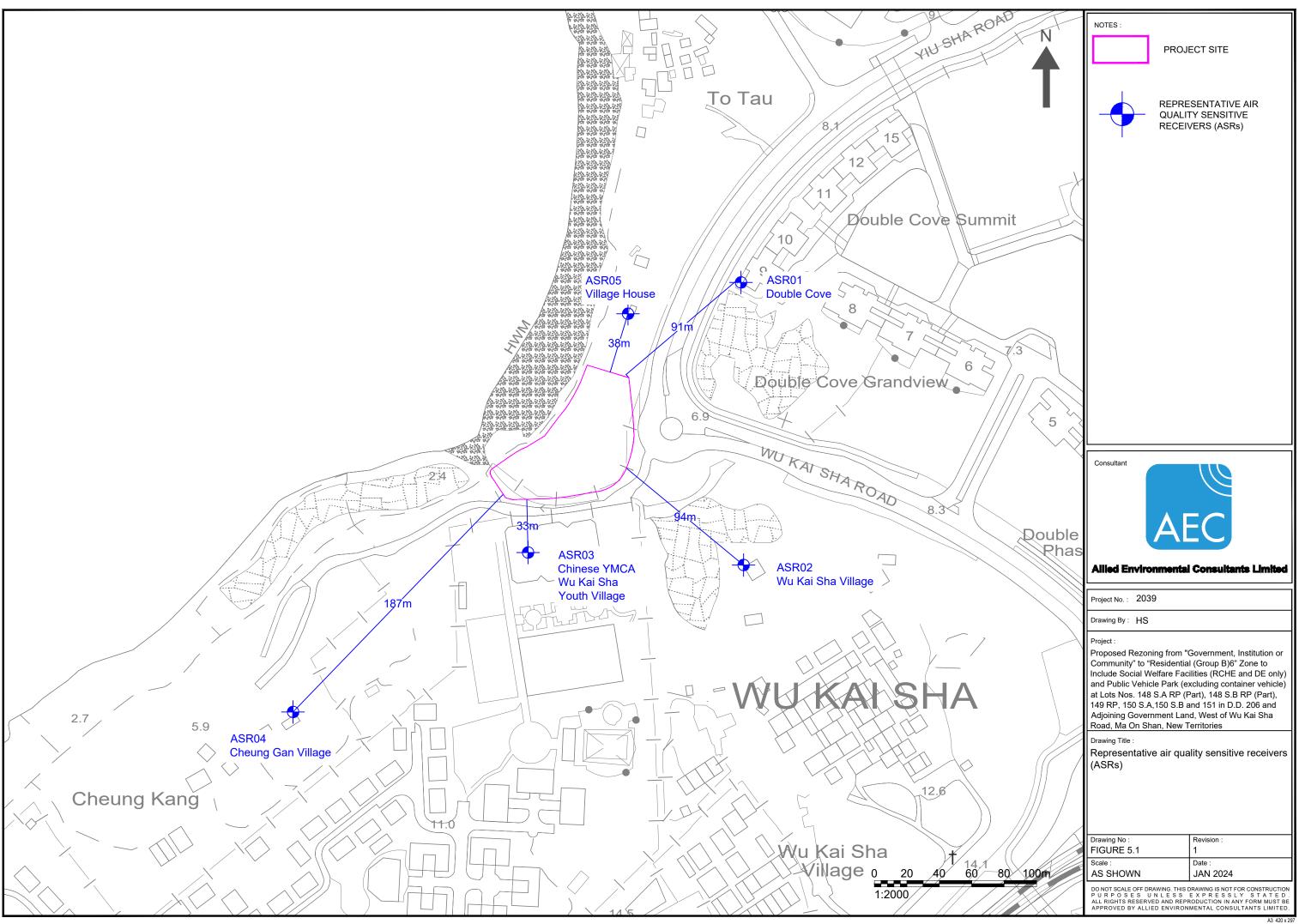
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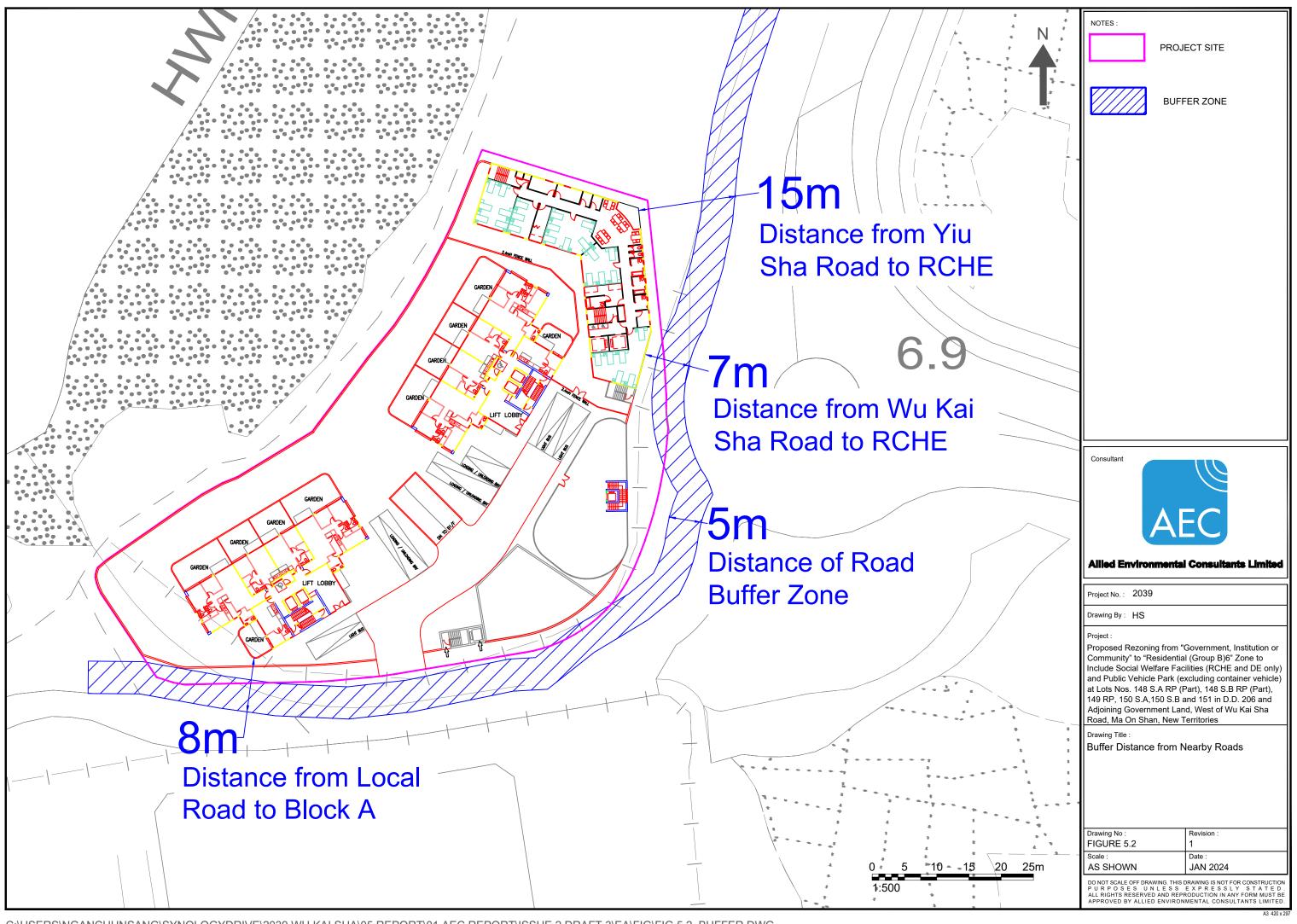
Web-NAT-Plan (A3)

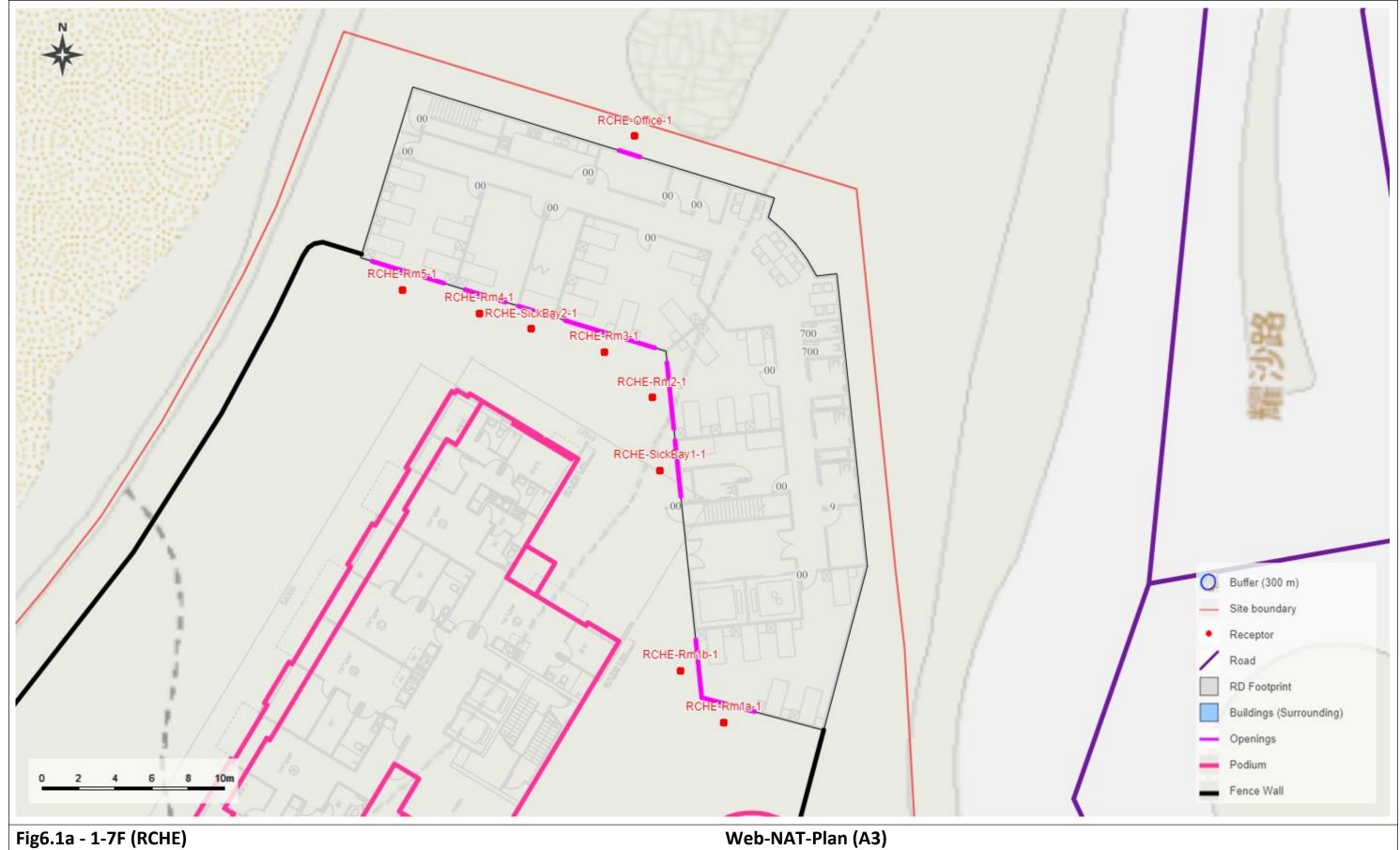
User: AEC

Date/Time: 2023-09-08 17:16

Remark:







Project Code: 2039 RCHE [vlss2] User:

Project Name: Wu Kai Sha RCHE Date/Time: 2023-09-08 17:58

AEC

AEC/2039 RCHE/RCHE of 1/2023-09-08 12:22 Watermark: Remark:



Project Code: 2039 Tower [vlss2]

User: AEC

Project Name: Wu Kai Sha Tower Date/Time: 2023-09-08 17:59

Watermark: AEC/2039 Tower/GF of 3/2023-09-08 12:26 Remark:

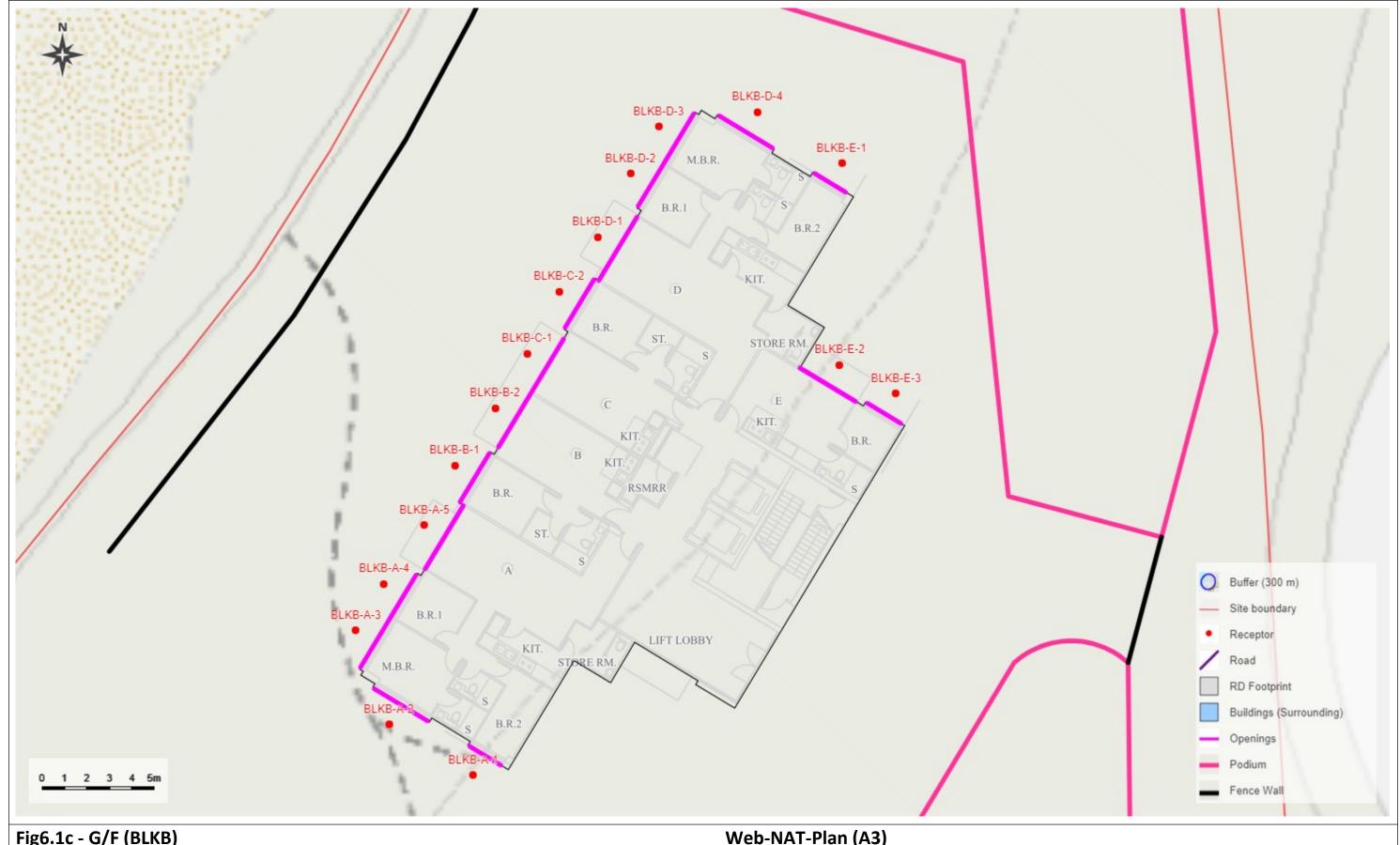


Fig6.1c - G/F (BLKB) Web-NAT-Plan (A3)

Project Code: 2039 Tower [vlss2] User:

Project Name: Wu Kai Sha Tower Date/Time: 2023-09-08 18:00

Remark:

AEC

Watermark:

AEC/2039 Tower/GF of 3/2023-09-08 12:26

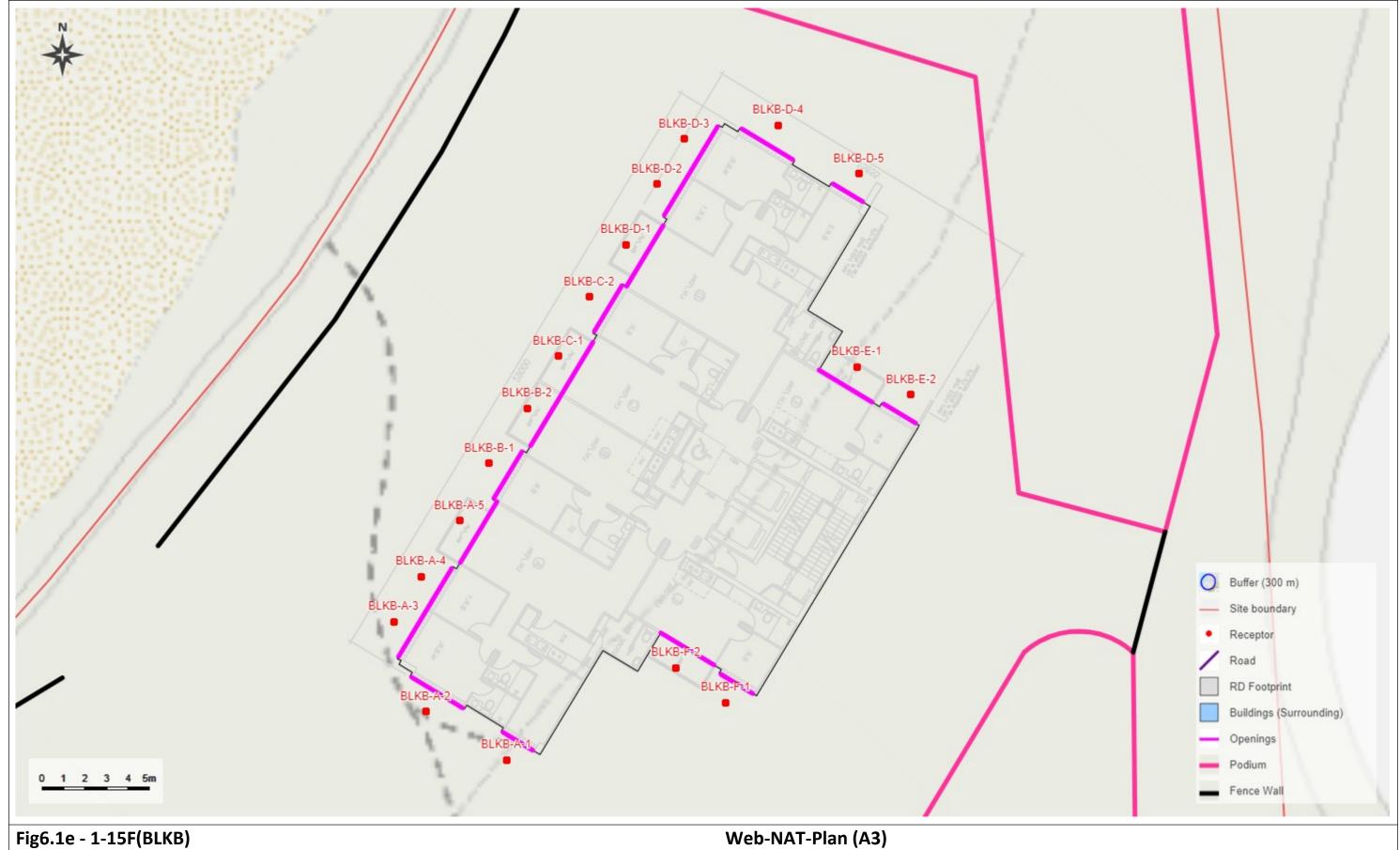


Web-NAT-Plan (A3) Fig6.1d - 1-15F(BLKA) Project Code: 2039 Tower [vlss2]

User: AEC Project Name: Wu Kai Sha Tower Date/Time:

Watermark: AEC/2039 Tower/1-15F of 3/2023-09-08 12:26 Remark:

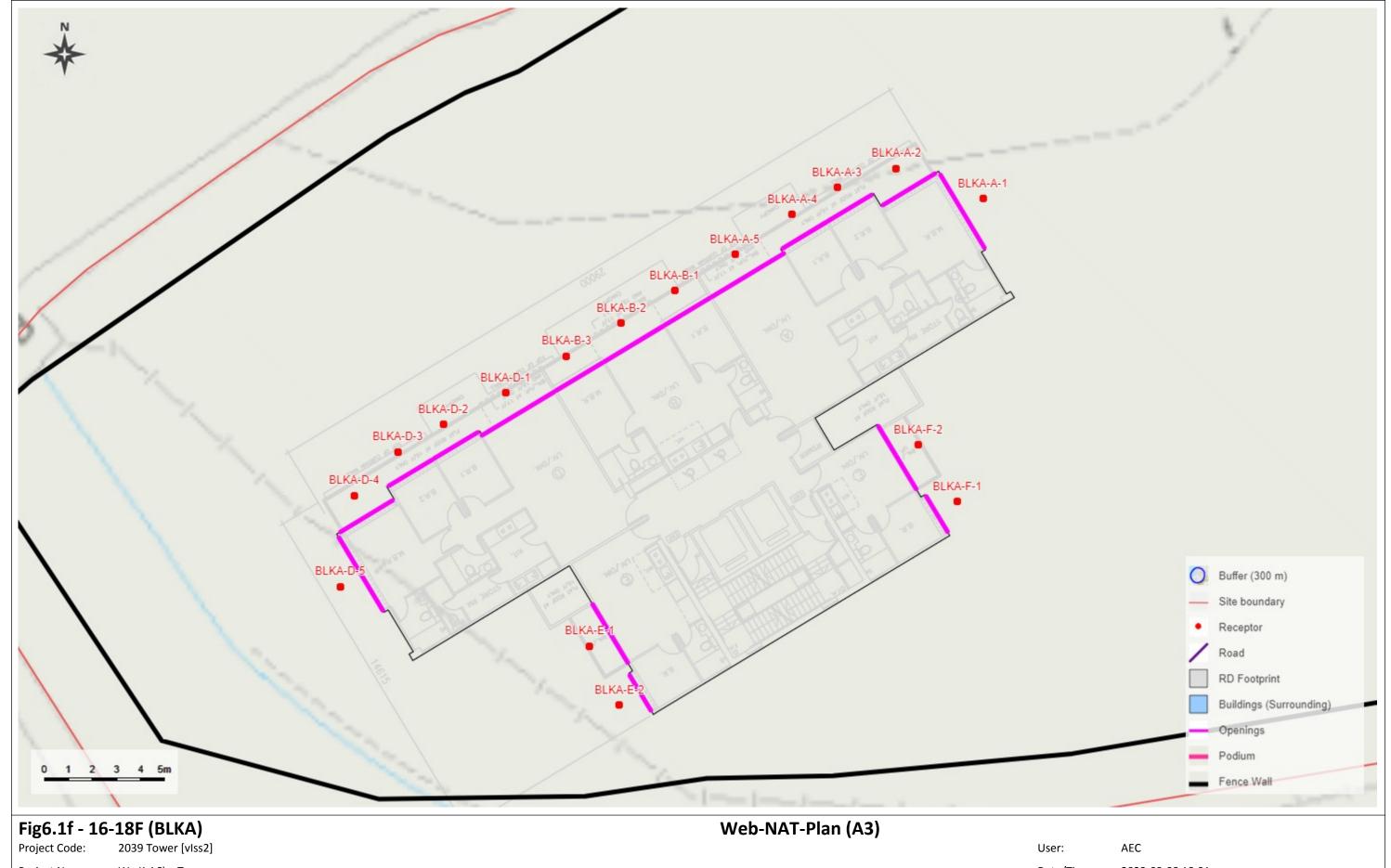
2023-09-08 18:00



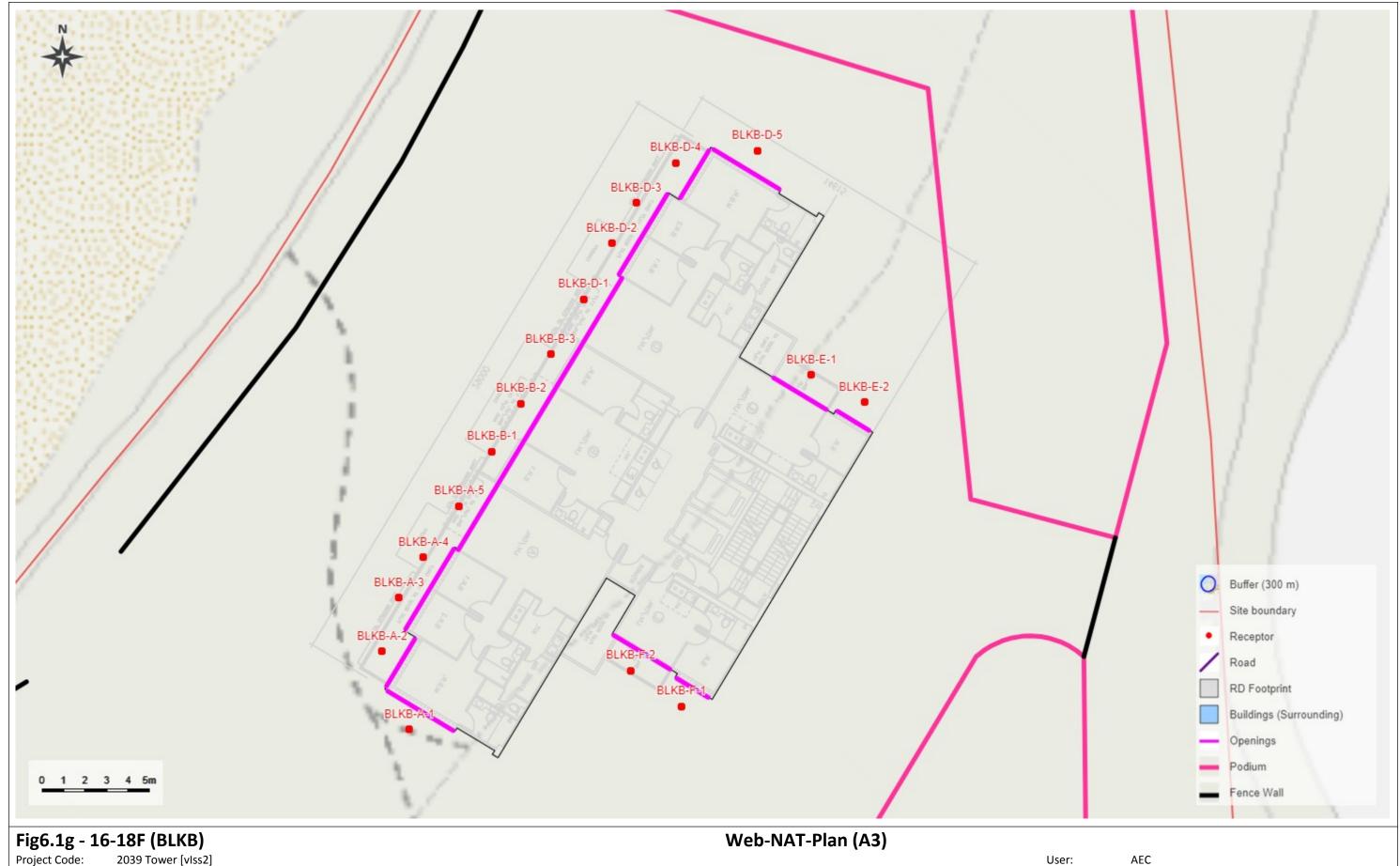
Project Code: 2039 Tower [vlss2] User: AEC

Project Name: Wu Kai Sha Tower Date/Time: 2023-09-08 18:01

Watermark: AEC/2039 Tower/1-15F of 3/2023-09-08 12:26 Remark:



Project Name: Wu Kai Sha Tower Date/Time: 2023-09-08 18:01 Watermark: AEC/2039 Tower/16-18F of 3/2023-09-08 12:26 Remark:



2039 Tower [vlss2] Project Code:

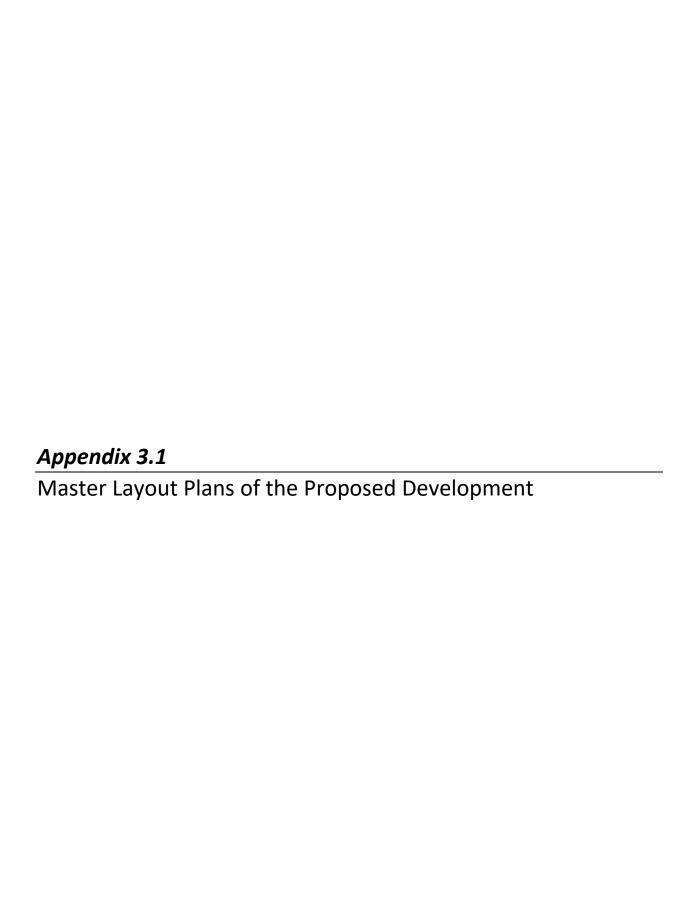
Project Name: Wu Kai Sha Tower

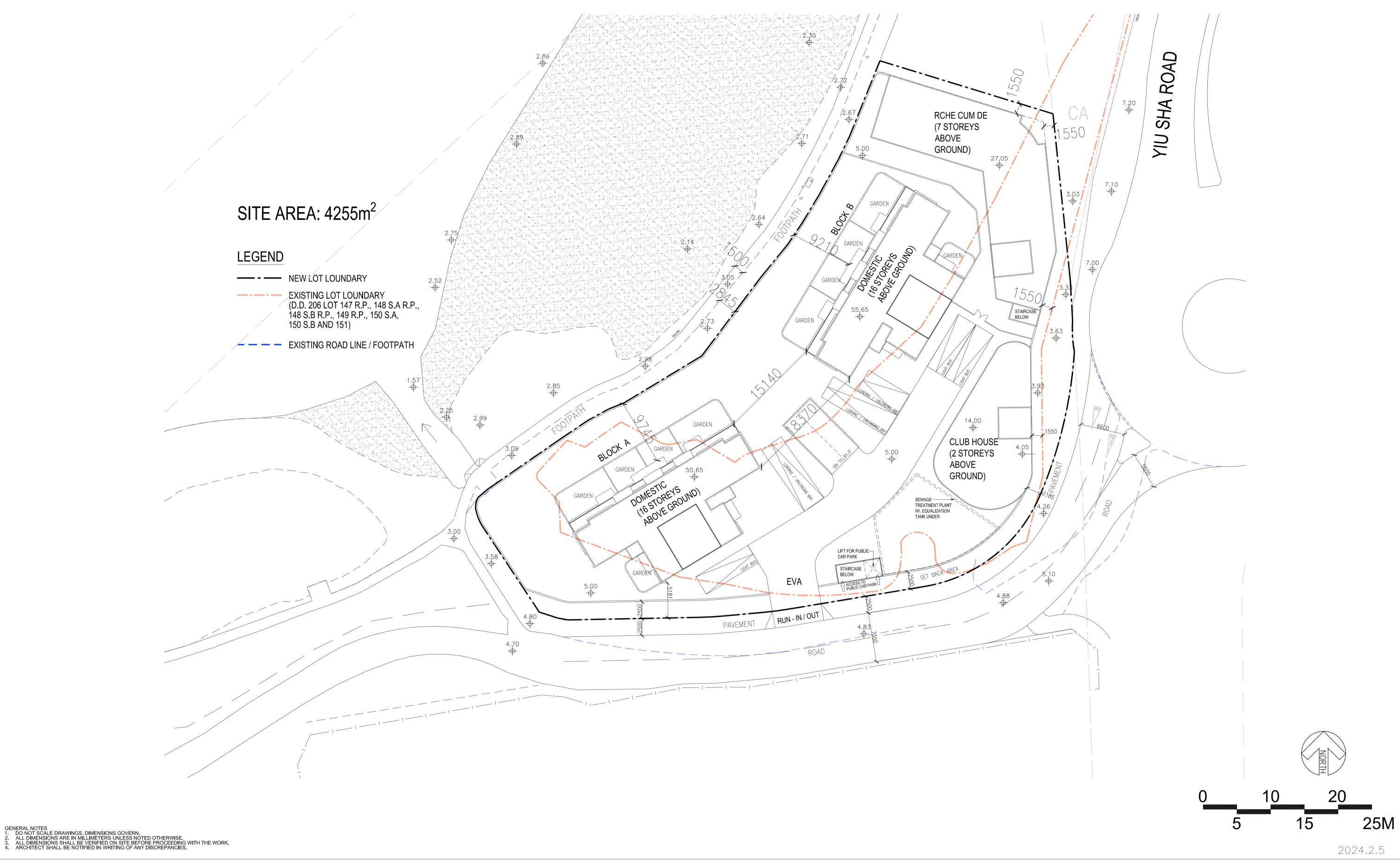
Date/Time:

2023-09-08 18:02

Remark:

Watermark: AEC/2039 Tower/16-18F of 3/2023-09-08 12:26





Project:

REZONING APPLICATION FROM "GOVERNMENT, INSTITUTION OR COMMUNITY" TO "RESIDENTIAL (GROUP B)6" ZONE TO INCLUDE SOCIAL WELFARE FACILITIES (RCHE AND DE ONLY) AND PUBLIC VEHICLE PARK (EXCLUDING CONTAINER VEHICLE) AT LOTS NOS. 148 S.A RP (PART), 148 S.B RP (PART), 149 RP, 150 S.A, 150 S.B AND 151 IN D.D. 206 AND ADJOINING GOVERNMENT LAND, WEST OF WU KAI SHA ROAD, MA ON SHAN, NEW TERRITORIES

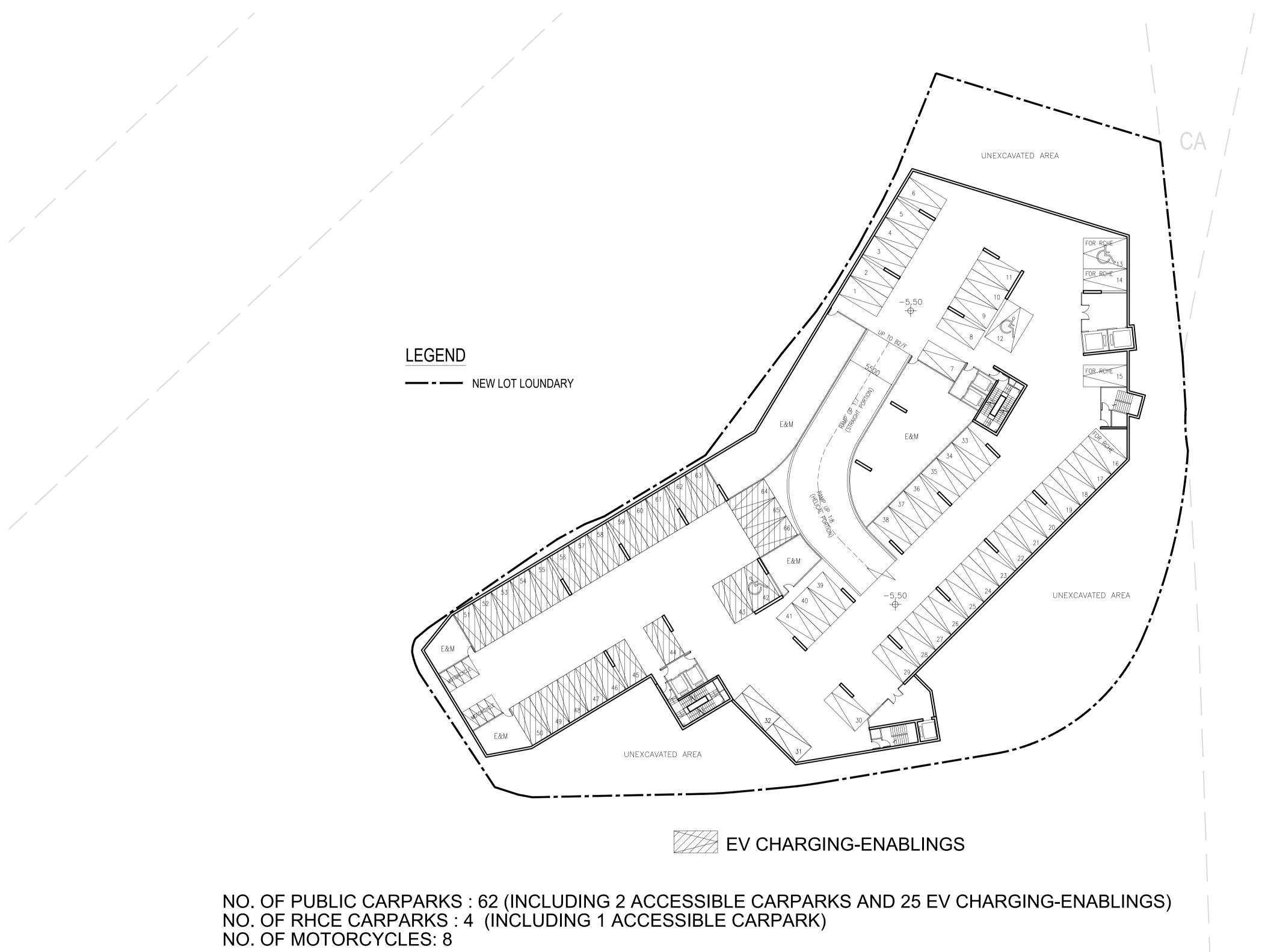
Drawing Title:
MASTER LAYOUT PLAN

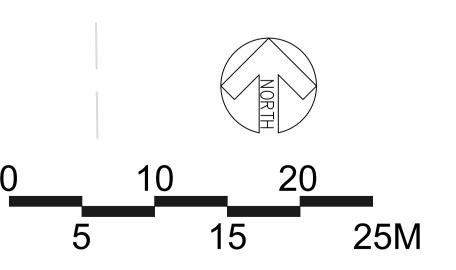
Drawing No.: MP-01

Architect:

樑安建築師有限公司 L&N Architects Ltd.

Rooms 1203-1204, 12/F Belgian Bank Building, 721-725 Nathan Road, Kowloon Tel: (852) 3422 3082, Fax: (852) 3428 2269





2024.1.12

Project:

GENERAL NOTES
1. DO NOT SCALE DRAWINGS. DIMENSIONS GOVERN.
2. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.
3. ALL DIMENSIONS SHALL BE VERIFIED ON SITE BEFORE PROCEEDING WITH THE WORK.
4. ARCHITECT SHALL BE NOTIFIED IN WRITING OF ANY DISCREPANCIES.

REZONING APPLICATION FROM "GOVERNMENT, INSTITUTION OR COMMUNITY" TO "RESIDENTIAL (GROUP B)6" ZONE TO INCLUDE SOCIAL WELFARE FACILITIES (RCHE AND DE ONLY) AND PUBLIC VEHICLE PARK (EXCLUDING CONTAINER VEHICLE) AT LOTS NOS. 148 S.A RP (PART), 148 S.B RP (PART), 149 RP, 150 S.A, 150 S.B AND 151 IN D.D. 206 AND ADJOINING GOVERNMENT LAND, WEST OF WU KAI SHA ROAD, MA ON SHAN, NEW TERRITORIES

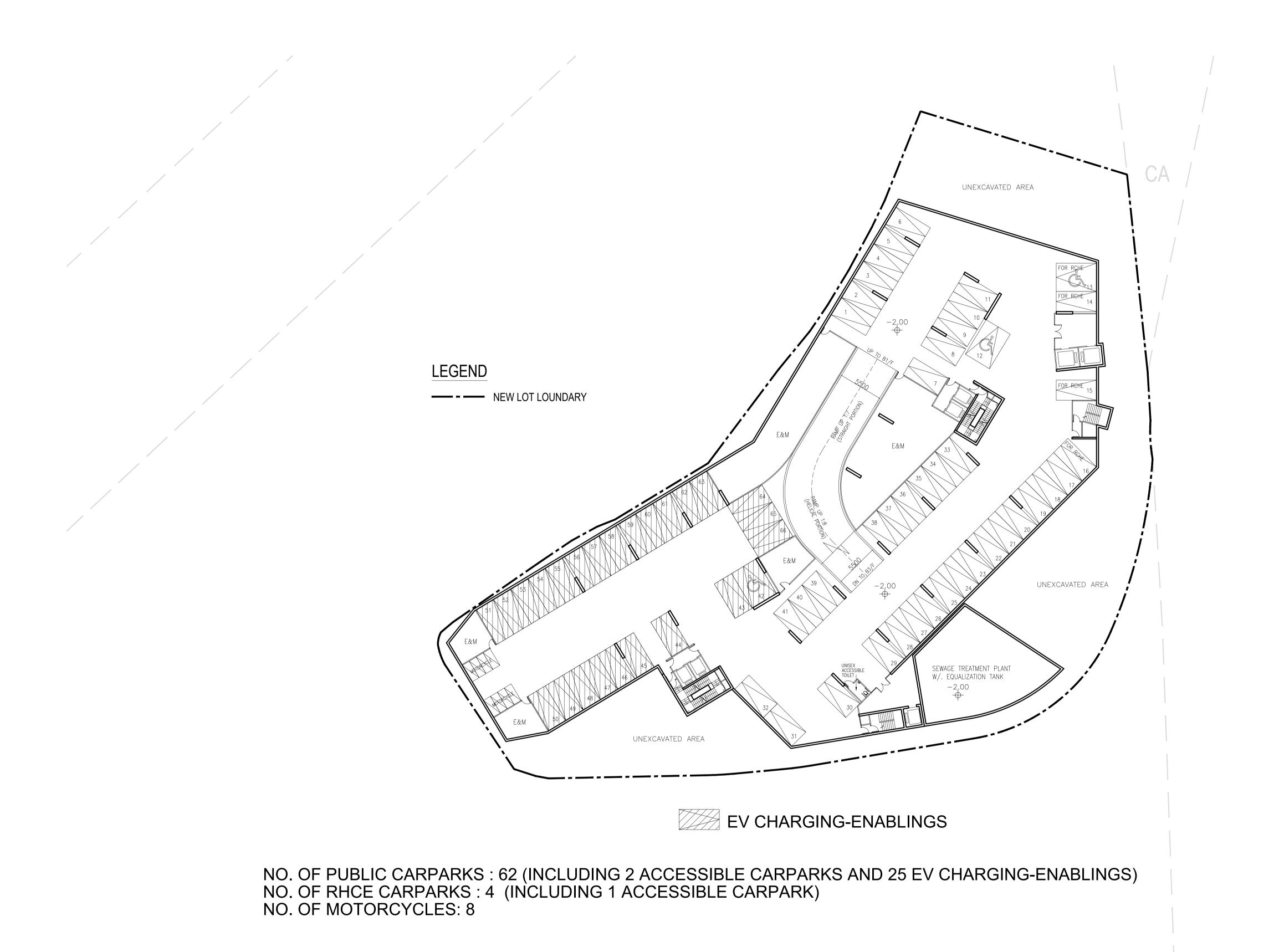
Drawing Title: B3/F PLAN

Drawing No.: GP-01

Architect:

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Project:

REZONING APPLICATION FROM "GOVERNMENT, INSTITUTION OR COMMUNITY" TO "RESIDENTIAL (GROUP B)6" ZONE TO INCLUDE SOCIAL WELFARE FACILITIES (RCHE AND DE ONLY) AND PUBLIC VEHICLE PARK (EXCLUDING CONTAINER VEHICLE) AT LOTS NOS. 148 S.A RP (PART), 148 S.B RP (PART), 149 RP, 150 S.A, 150 S.B AND 151 IN D.D. 206 AND ADJOINING GOVERNMENT LAND, WEST OF WU KAI SHA ROAD, MA ON SHAN, NEW TERRITORIES

Drawing Title: B2/F PLAN

Drawing No.: GP-02

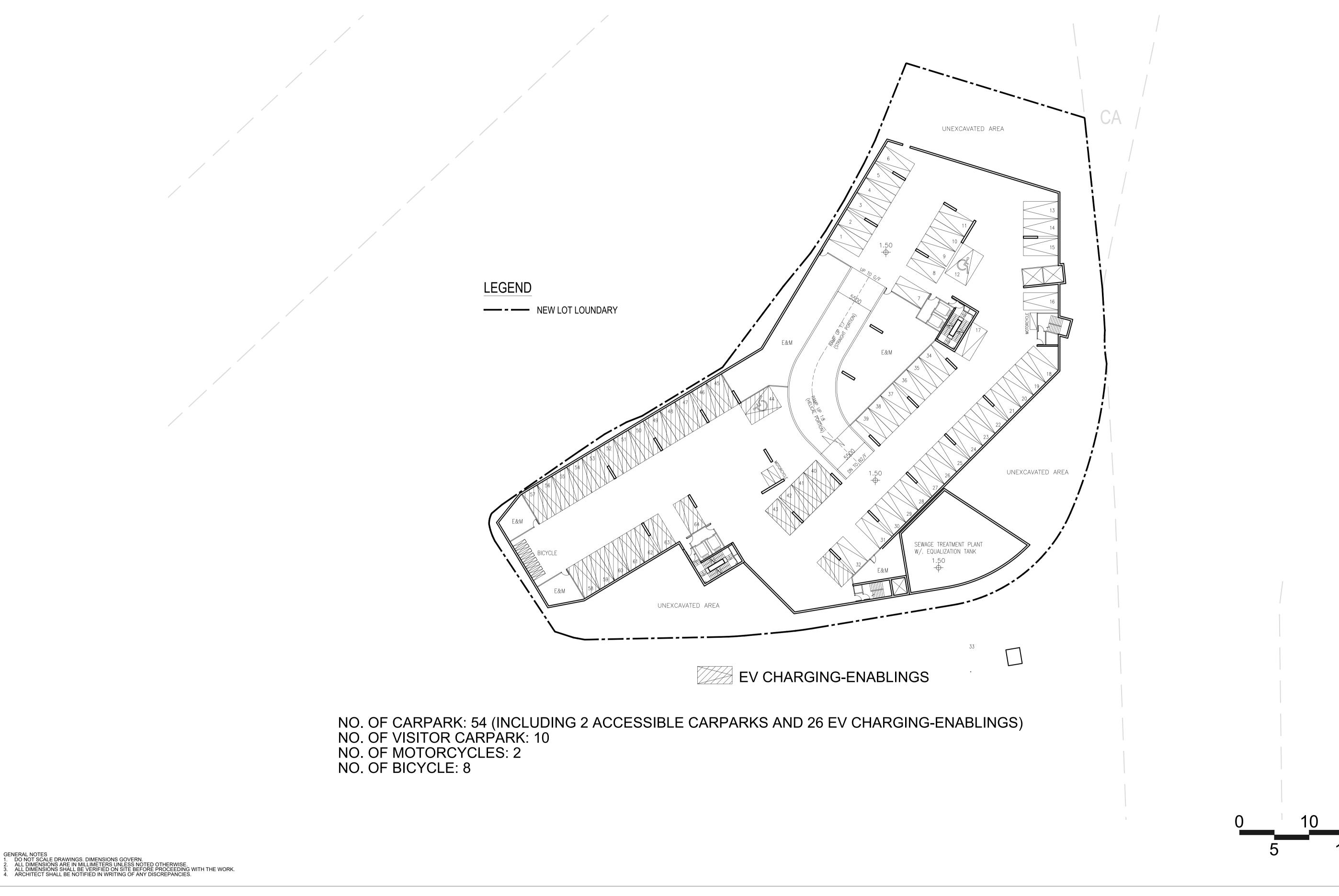
Architect:

PCT: 樑安建築師有限公司 L&N Architects Ltd.

25M

2024.1.12

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Project:

REZONING APPLICATION FROM "GOVERNMENT, INSTITUTION OR COMMUNITY" TO "RESIDENTIAL (GROUP B)6" ZONE TO INCLUDE SOCIAL WELFARE FACILITIES (RCHE AND DE ONLY) AND PUBLIC VEHICLE PARK (EXCLUDING CONTAINER VEHICLE) AT LOTS NOS. 148 S.A RP (PART), 148 S.B RP (PART), 149 RP, 150 S.A, 150 S.B AND 151 IN D.D. 206 AND ADJOINING GOVERNMENT LAND, WEST OF WU KAI SHA ROAD, MA ON SHAN, NEW TERRITORIES

Drawing Title: B1/F PLAN

Drawing No.: GP-03

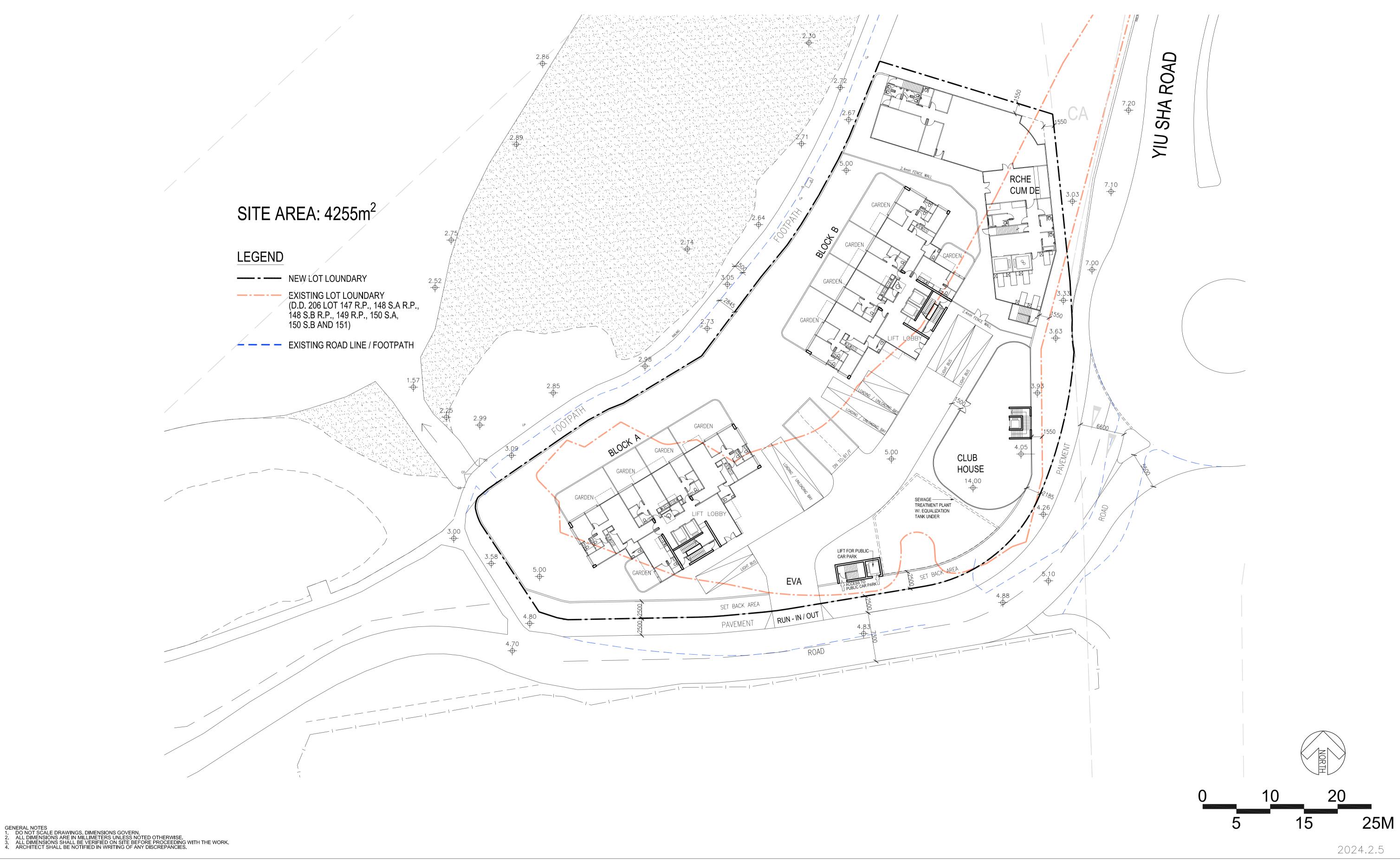
Architect:

Milect. 樑安建築師有限公司 L&N Architects Ltd.

25M

2024.1.12

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Project:

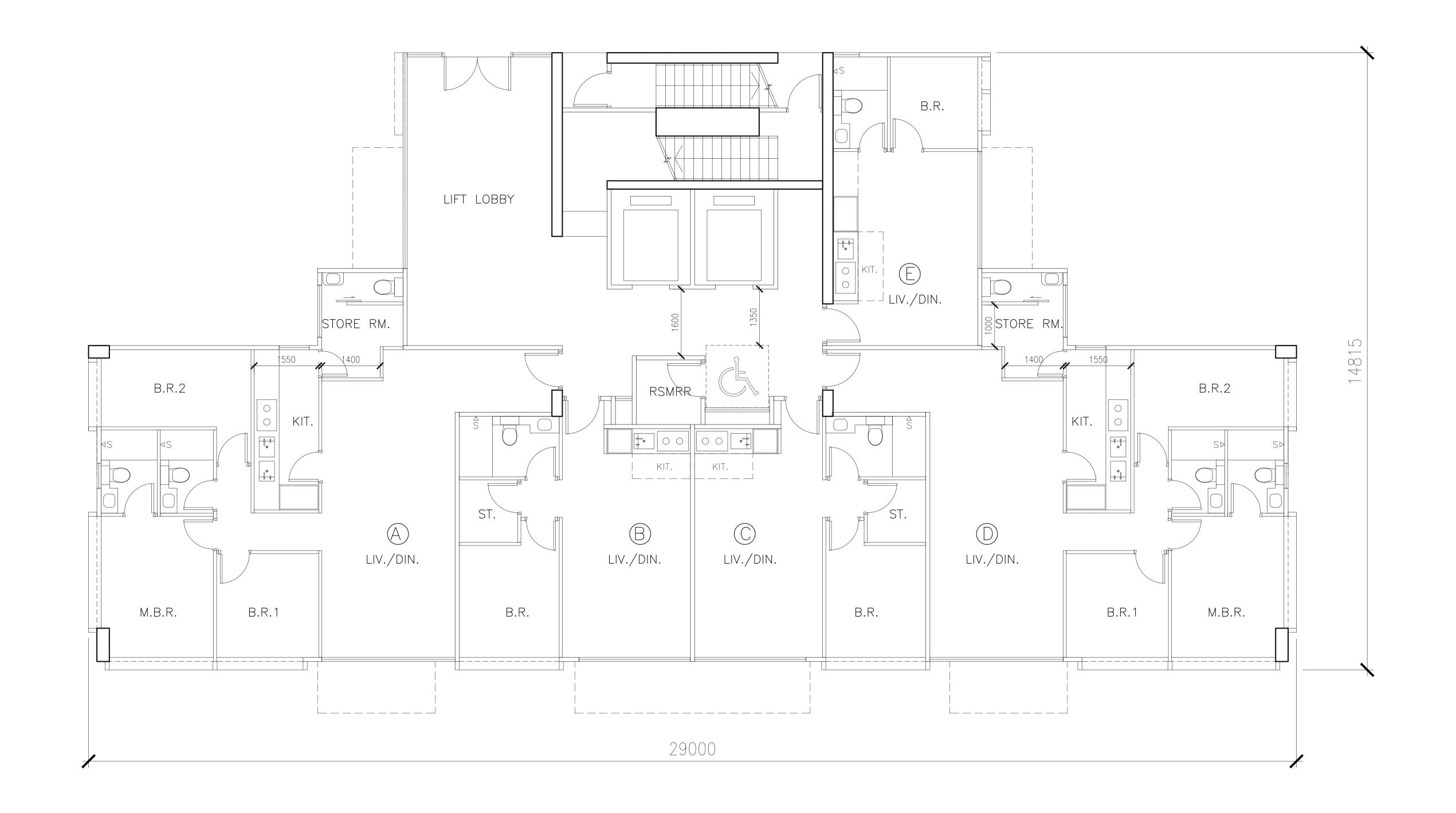
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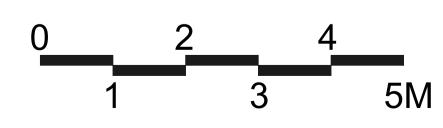
Drawing Title: G/F PLAN

Drawing No.: GP-04

Architect:

RECL. 樑安建築師有限公司 L&N Architects Ltd.





Project:

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Drawing Title:

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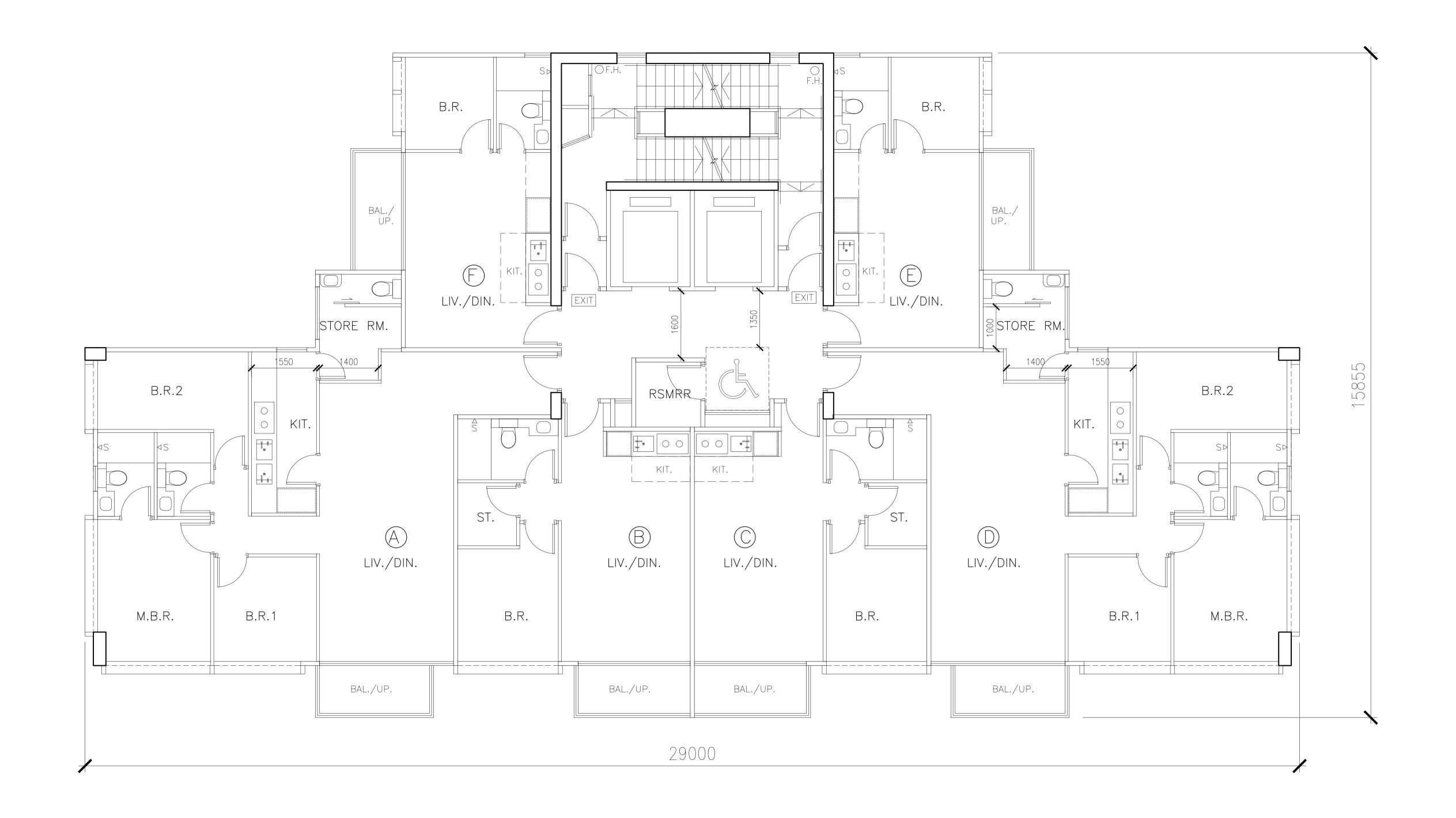
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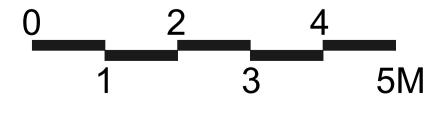
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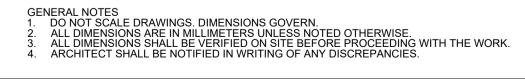
Drawing No.: GP-05

Architect:

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Project:

REZONING APPLICATION FROM "GOVERNMENT, INSTITUTION OR COMMUNITY" TO "RESIDENTIAL (GROUP B)6" ZONE TO INCLUDE SOCIAL WELFARE FACILITIES (RCHE AND DE ONLY) AND PUBLIC VEHICLE PARK (EXCLUDING CONTAINER VEHICLE) AT LOTS NOS. 148 S.A RP (PART), 148 S.B RP (PART), 149 RP, 150 S.A, 150 S.B AND 151 IN D.D. 206 AND ADJOINING GOVERNMENT LAND, WEST OF WU KAI SHA ROAD, MA ON SHAN, NEW TERRITORIES

Drawing Title:

1/F - 15/F PLAN

(FOR BLOCKS A & B)

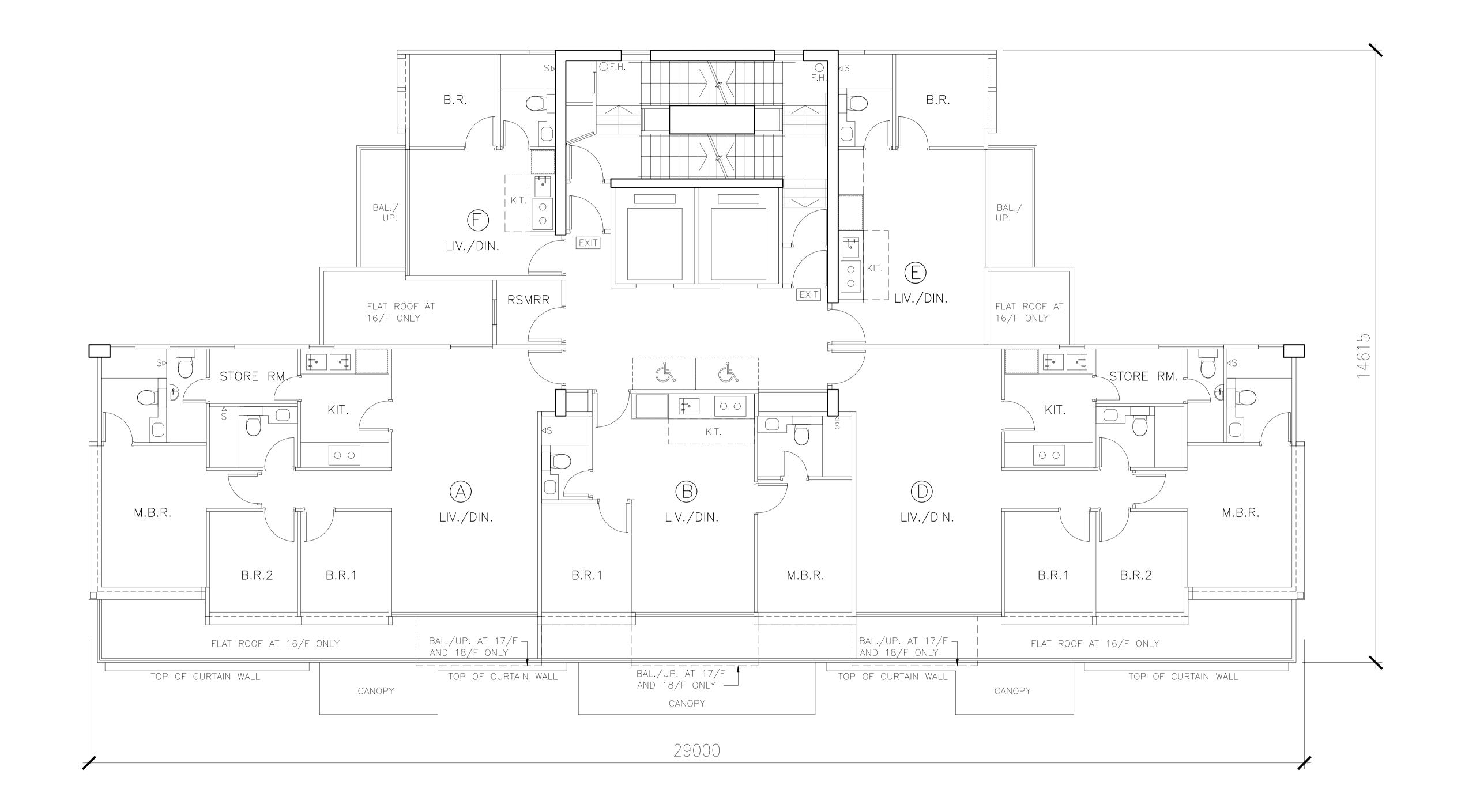
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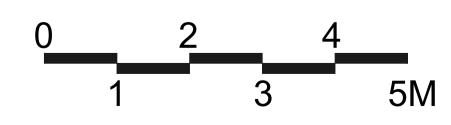
(4/F, 13/F AND 14/F OMITTED)

Drawing No.: GP-06

Architect:

₩ 安 建 築 師 有 限 公 司 L&N Architects Ltd.





GENERAL NOTES

1. DO NOT SCALE DRAWINGS. DIMENSIONS GOVERN.

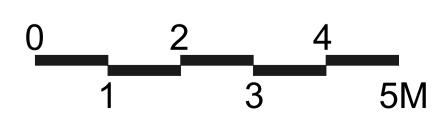
2. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.

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4. ARCHITECT SHALL BE NOTIFIED IN WRITING OF ANY DISCREPANCIES.

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Project:

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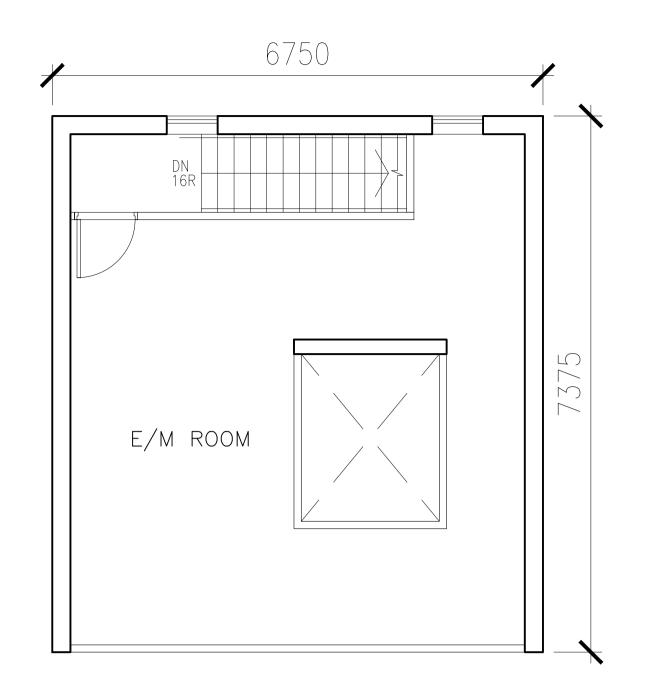
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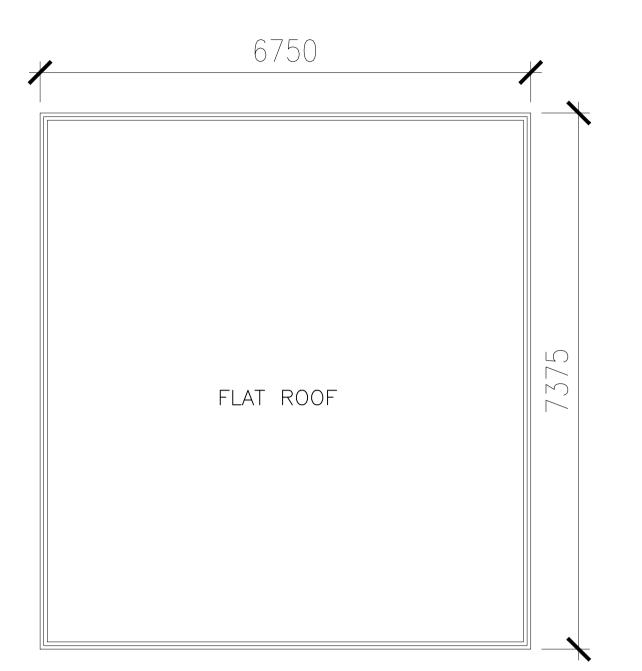
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MR/F PLAN
(FOR BLOCKS A & B)
(BLOCK B SAME AS BLOCK A BUT MIRRORED)

Drawing No.: GP-08

Architect:

樑安建築師有限公司 L&N Architects Ltd.





UR/F PLAN TR/F PLAN

0 2 4 1 3 5M

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Project:

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Drawing Title:
UR/F AND TR/F PLANS
(FOR BLOCK A & B)
(BLOCK B SAME AS BLOCK A BUT MIRROR)

Drawing No.: GP-9

Architect:

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Project:

GENERAL NOTES
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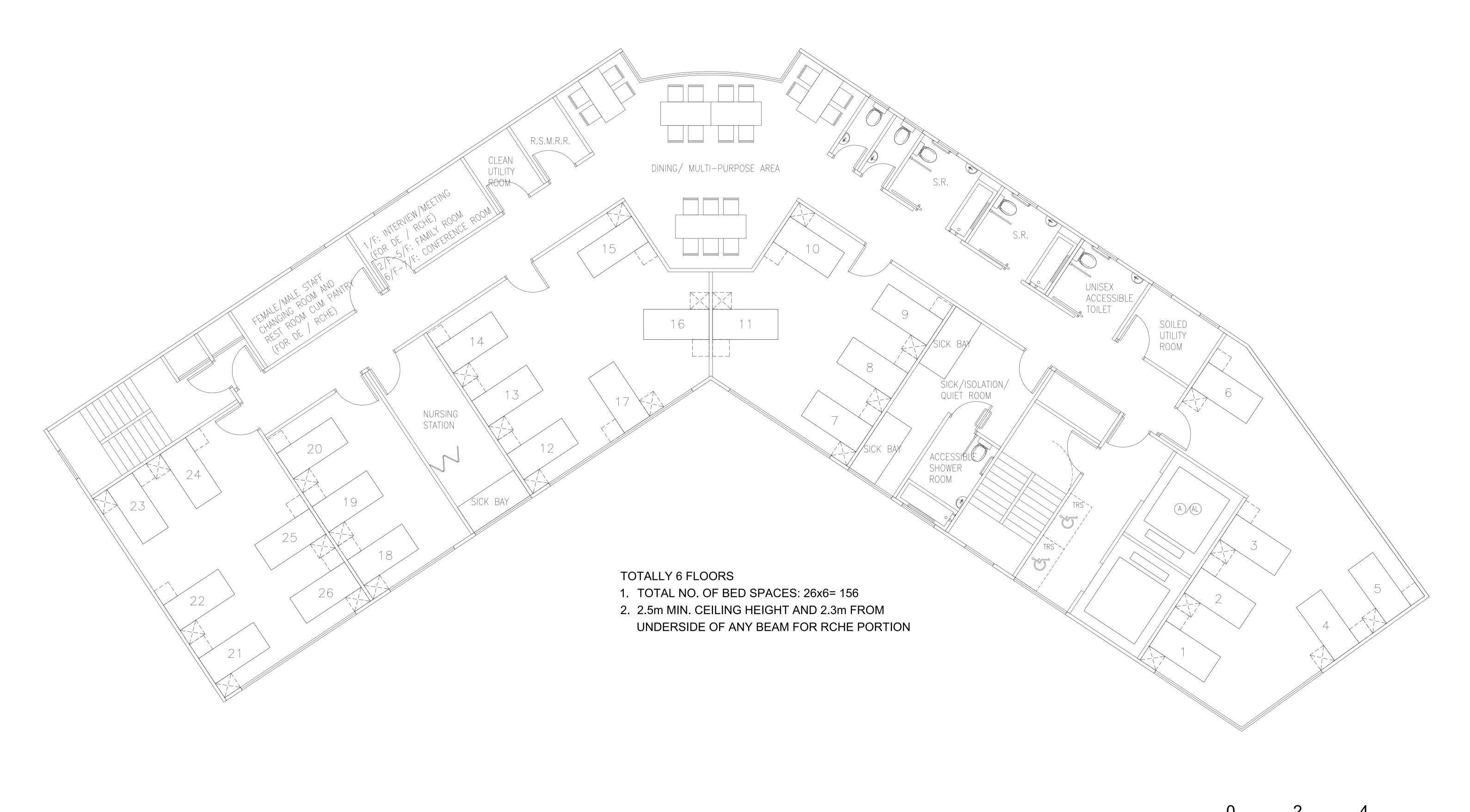
REZONING APPLICATION FROM "GOVERNMENT, INSTITUTION OR COMMUNITY" TO "RESIDENTIAL (GROUP B)6" ZONE TO INCLUDE SOCIAL WELFARE FACILITIES (RCHE AND DE ONLY) AND PUBLIC VEHICLE PARK (EXCLUDING CONTAINER VEHICLE) AT LOTS NOS. 148 S.A RP (PART), 148 S.B RP (PART), 149 RP, 150 S.A, 150 S.B AND 151 IN D.D. 206 AND ADJOINING GOVERNMENT LAND, WEST OF WU KAI SHA ROAD, MA ON SHAN, NEW TERRITORIES

Drawing Title: DE / RCHE - G/F Drawing No.: GP-10

Architect:

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2024.1.12





REZONING APPLICATION FROM "GOVERNMENT, INSTITUTION OR COMMUNITY" TO "RESIDENTIAL (GROUP B)6" ZONE TO INCLUDE SOCIAL WELFARE FACILITIES (RCHE AND DE ONLY) AND PUBLIC VEHICLE PARK (EXCLUDING CONTAINER VEHICLE) AT LOTS NOS. 148 S.A RP (PART), 148 S.B RP (PART), 149 RP, 150 S.A, 150 S.B AND 151 IN D.D. 206 AND ADJOINING GOVERNMENT LAND, WEST OF WU KAI SHA ROAD, MA ON SHAN, NEW TERRITORIES

Drawing Title:

Drawing No.: GP-11

Architect:

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Project:

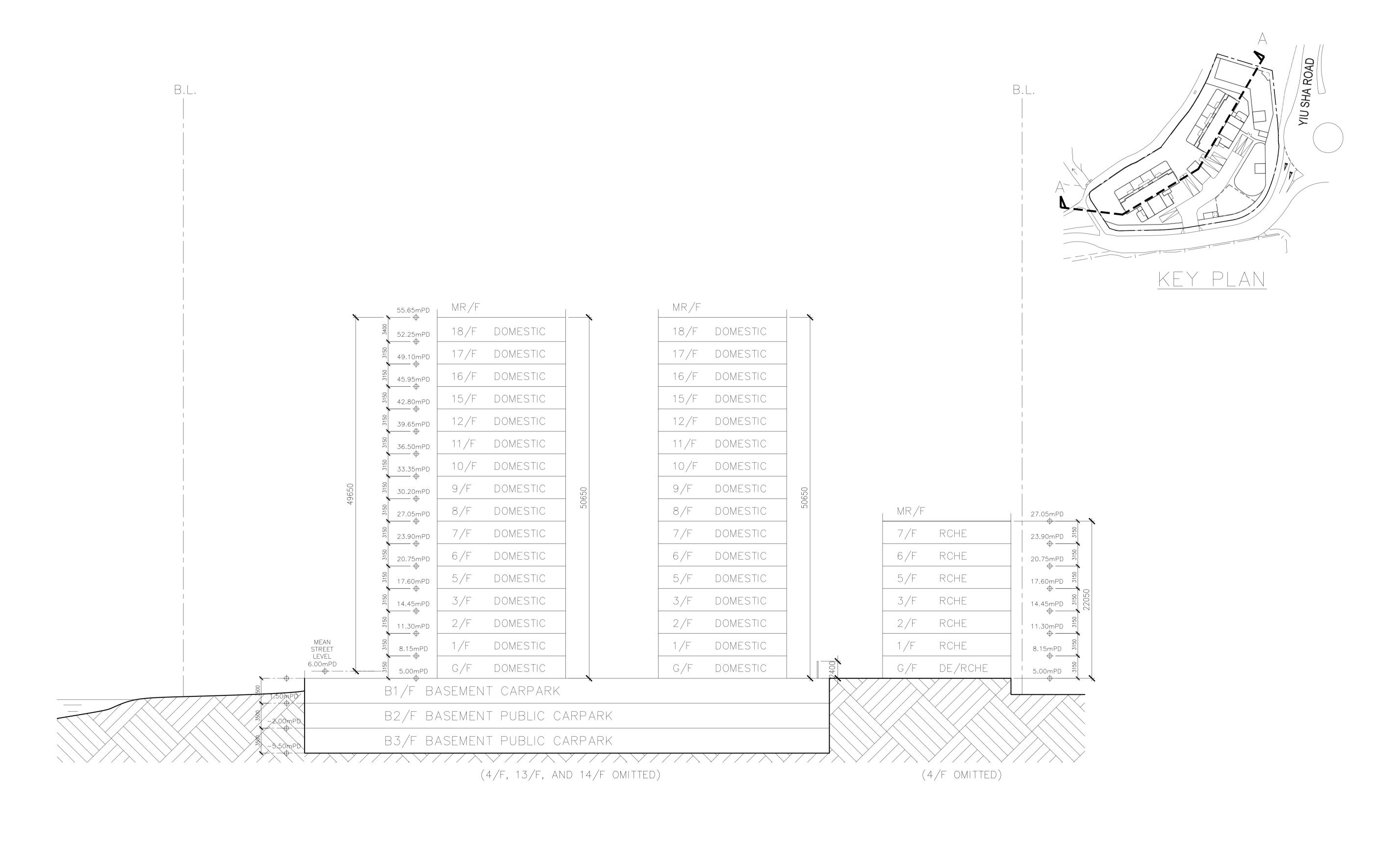
GENERAL NOTES

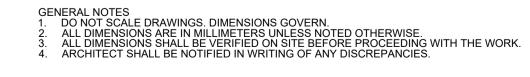
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2. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.

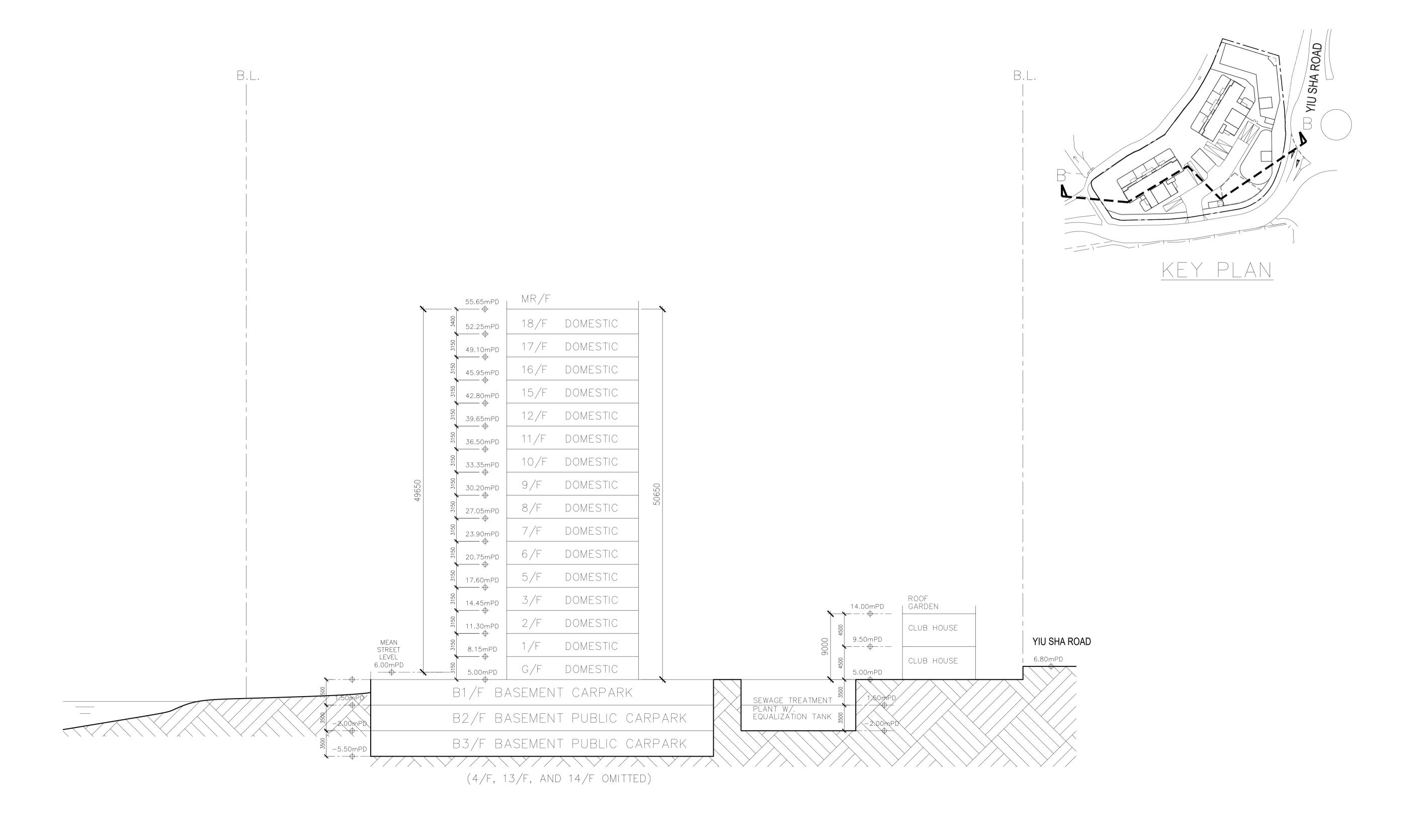
3. ALL DIMENSIONS SHALL BE VERIFIED ON SITE BEFORE PROCEEDING WITH THE WORK.

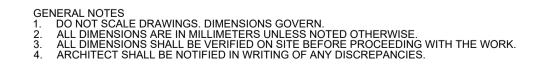
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Tel: (852) 3422 3082, Fax: (852) 3428 2269

Appendix 5.1

Information of Road Type from TD

NGAN Chun Sang

From: King Wui HO <kingwuiho@td.gov.hk>
Sent: Friday, 2 February, 2024 11:28 AM

To: Steven Lui Cc: S L Ng

Subject: Re: Proposed Rezoning at Various Lots in D.D. 206 and Adjoining Government Land, West of Wu Kai

Sha Road, Ma On Shan // Road Classification

Dear Steven,

I have no comment on the mentioned road sections (i.e. Wu Kai Sha Road and Yiu Sha Road) to be classified as Local Distributor.

Please be reminded that the information should be solely for environmental assessment use of the captioned rezoning application.

Regards, Steve K W HO E/MOS, TE/NTE, TD Tel: 2399 2408

From: Steven Lui <steven@lla.com.hk>
To: King Wui HO <Kingwuiho@td.gov.hk>

Cc: S L Ng <slng@lla.com.hk> Date: 02/02/2024 09:42

Subject: Proposed Rezoning at Various Lots in D.D. 206 and Adjoining Government Land, West of Wu Kai Sha Road, Ma On Shan

// Road Classification

Dear Mr. HO,

We are the traffic consultant for the captioned, we would like to seek your confirmation on the road type of the following road section in the vicinity of the Site, solely for environmental assessment use:

- 1. Wu Kai Sha Road (Local Distributor)
- 2. Yiu Sha Road (Local Distributor)

Justifications are provided as below:

Wu Kai Sha Road

According to TPDM, it states that local distributors are roads within districts linking developments to the district distributor roads.

Please note that Wu Kai Sha Road links local development, like Double Cove, to Yiu Sha Road and Sai Sha Road.

As a result, Wu Kai Sha Road can be considered to classify as a "local distributor" matching with the definition in the TPDM.

2. Yiu Sha Road

According to TPDM, it states that local distributors are roads within districts linking developments to the district distributor roads.

Please note that Yiu Sha Road links some local developments, like St Barths and Altissimo, to Wu Kai Sha Road and Lok Wo Sha Lane.

As a result, Yiu Sha Road can be considered to classify as a "local distributor" matching with the definition in the TPDM.

We would be pleased if you could consider and provide your comment on the above.

Should you have any query or require any additional information, please feel free to contact our Mr. S L Ng or the undersigned at 2831 9191.

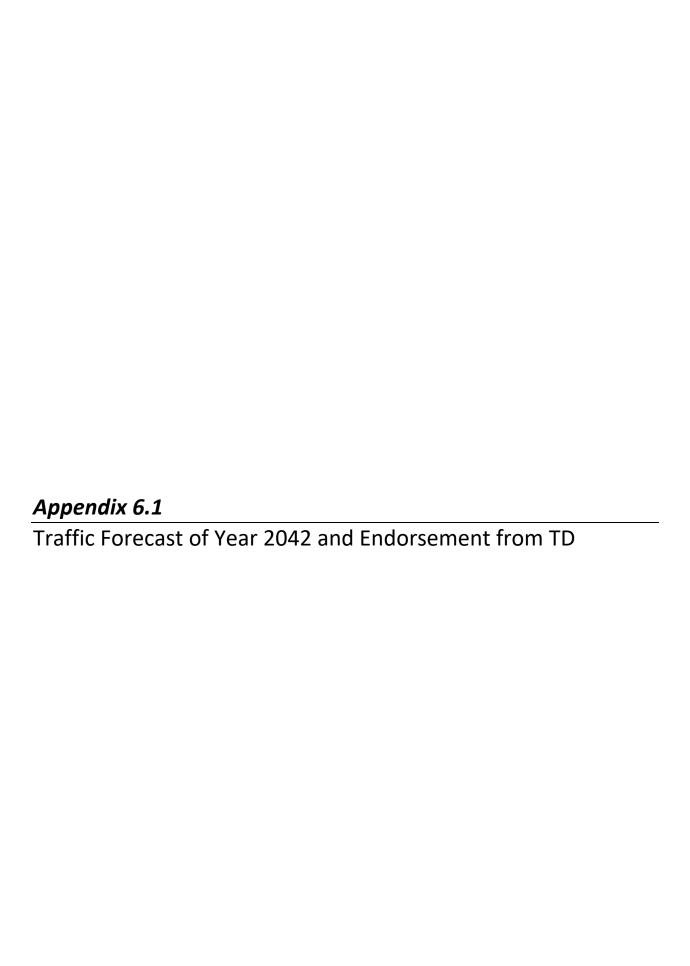
Thanks & Regards
Steven Lui

LLA Consultancy Ltd.
Unit 610, 6/F., Island Place Tower,
510 King's Road, North Point, Hong Kong
Tel: (852) 2831 9191 Fax: (852) 2831 0003

Web Site: http://www.lla.com.hk

Email: steven@lla.com.hk

Company Email: <u>lla@lla.com.hk</u>



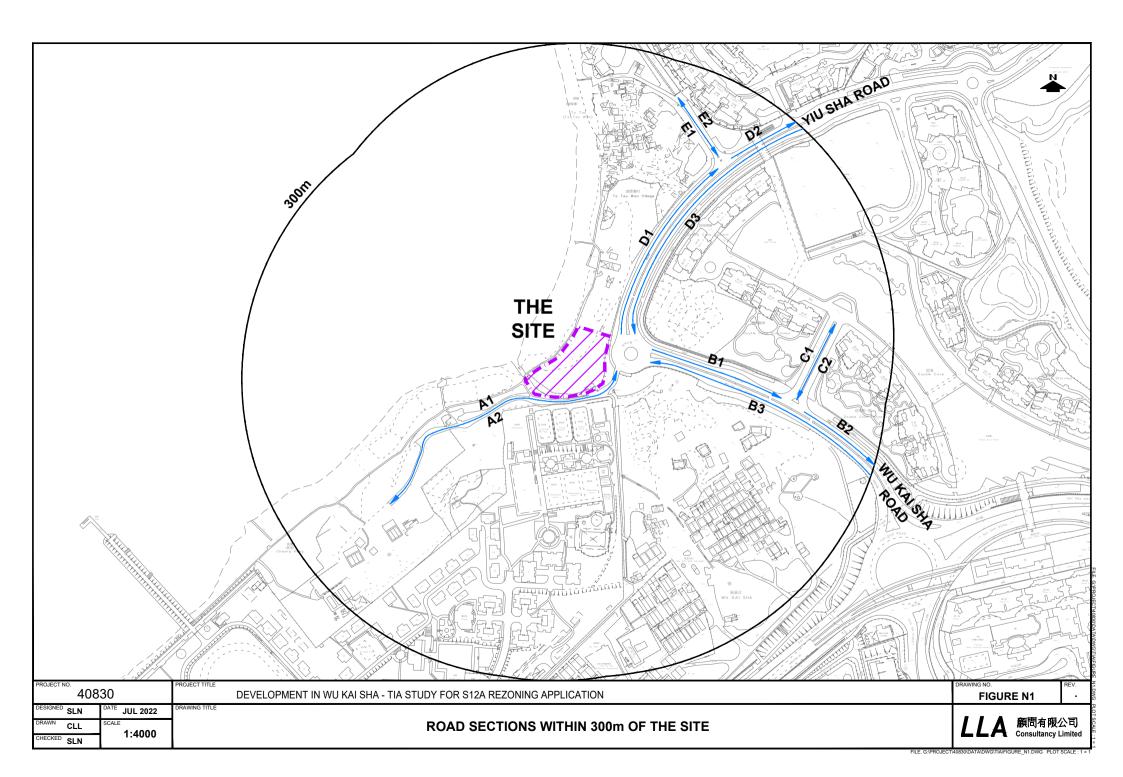


Table 6 2042 Traffic Forecast – AM Peak Hour

No. ⁽¹⁾	Road	2042 Project Traffic Flows	% of Heavies
		(veh/hr)	[1-P]
A1	Local Access Road	100	3%
A2	Local Access Road	50	13%
B1	Wu Kai Sha Road	750	17%
B2	Wu Kai Sha Road	850	14%
B3	Wu Kai Sha Road	550	18%
C1	Access Road to Double Cover	150	18%
C2	Access Road to Double Cover	200	10%
D1	Yiu Sha Road	400	17%
D2	Yiu Sha Road	400	19%
D3	Yiu Sha Road	600	18%
E1	Local Access Road	50	8%
E2	Local Access Road	50	24%

Appendix 6.2

Traffic Noise Impact Assessment Result (Base Case)

Web-NAT Result Summary

Creates Delatines: 2002-00-00 12-26
Project Cede: 2009 losses
Project Cede: 2009 losses
Report Version: 3
Report Version: 3
Report Version: 1
Report Version: 3
Report V

Floor/N	NP .	Height (mPD)	BUXA-A_A1-1	BLXA-A_A2-2	BIXA-V V3-3	BUXA-A_A4-4	BUXA-A, AS-S	BUXA-A_B1-1	BUKA-A_B2-2	BUKA-A_C1-1	BUXA-A_C2-2	BUXA-A_D1-1	BLKA-A_D2-2	BDXY-V 03-3	BLKA-A_D4-4	BUXA-A_DS-S	1-13_A-KXX3	BUXA-A_E2-2	BLKA-A_F1-1	BUXA-A_F2-2	BUXD-0_A1-1	BLX03-0_A2-2	ECKS-0_A3-3	BUXB-0_A4-4	BLXB-B_AS-S	BLXB-0_B1-1	BLX03-0_B2-2	BLXB-B_C1-1	BLXB-0_C2-2	BLX8-8_D1-1	BLXB-0_D2-2	BLXB-B_D2-3	ELX2-0_D4-4	BLX0-B_DS-S	BUXB-0_E1-1	BUXB-0_E2-2	BLXB-0_51-1	BLX0-0_F2-2
15		11.3	57	55	51	50	48	48	48	49	50	50	52	54	57	83	59	Ω.	60	59	53	51	47	46	46	46	46	46	47	47	46	46	41	41	46	47	53	49
25		14.5	59	57	53	52	49	50	50	51	52	52	54	56	60	62	61	a	62	61	55	23	50	49	49	49	49	49	49	41	48	46	41	41	47	48	56	51
35		17.6	61	60	55	52	49	50	50	51	52	52	54	57	61	62	61	a	63	62	60	54	51	50	50	50	49	49	49	49	49	49	42	42	47	49	62	53
55		20.8	64	63	59	52	49	50	50	51	51	52	54	57	60	62	61	Ω.	64	63	64	55	52	50	50	50	50	50	50	49	49	49	43	44	48	50	65	55
GS GS		23.9	65	64	61	52	49	50	50	50	51	52	54	36	60	E C	61	a	65	64	64	56	52	50	50	50	50	50	50	50	50	20	46	47	49	52	55	56
75		27.1	65	64	62	52	49	50	50	50	51	52	23	56	60	64	S	Q	65	65	65	56	52	50	50	50	50	50	50	50	50	50	49	50	51	54	66	56
25		20.2	65	65	62	52	49	50	50	50	51	52	53	36	60	61	S	61	65	65	65	56	52	50	50	50	50	50	50	50	53	54	54	57	57	59	67	57
36		22.4	65	65	62	53	49	50	50	51	51	52	53	56	59	64	S	61	66	65	65	56	52	50	50	50	50	50	51	51	58	59	62	62	62	Ω.	67	57
106		26.5	65	65	63	53	50	52	52	52	53	53	54	56	59	60	60	61	66	65	65	56	53	50	50	50	50	50	51	52	59	60	64	64	65	66	66	58
115		29.7	65	65	63	53	51	23	53	54	54	55	55	\$7	59	60	59	8	66	65	65	56	52	50	50	50	50	50	51	52	59	ω.	65	66	66	67	55	58
125		42.8	65	65	63	54	52	54	54	55	55	55	56	57	58	83	59	8	66	65	65	57	52	50	50	50	50	50	51	52	59	C2	66	67	67	GS	55	58
155		46.0	65	65	G3	54	53	54	55	55	36	56	56	\$7	58	59	59	8	66	65	65	57	53	51	51	51	51	51	52	53	59	a	67	67	67	68	55	58
	Max		65	65	63	54	53	54	55	55	56	56	56	57	61	62	61	G	66	65	65	57	53	51	51	51	51	51	52	53	59	G	67	67	67	GR	67	58
W	ndow with Exceeds	ance	0	0	۰	0	٥	0	0	٥		٥		0	۰	0	0	0	0	٥	۰	۰	0	0	0	0		٥	٥	0	0	0	0	0	٥	٥	٥	0

Web-NAT Result Summary

Creation Date/Time: 2023-09-08-12-26
Project Code: 2029 Flower
Project Name: Wu Kai Sha Tower
Report Version: 3
Rew Result: 1
Scenario: 16-18F
Traffic Data: 2042
Remarks:

	Tower		BLKA	BLKA	BLKA	BLKA	BLKA	BLKA	BLKA	BLKB																										
Floor/NAP		Height (mPD)	BLKA-A_A1-1	BLKA-A_A2-2	BLKA-A_A3-3	BLKA-A_A4-4	BLKA-A_AS-S	BLKA-A_B1-1	BLKA-A_B2-2	BLKA-A_B3-3	BLKA-A_D1-1	BLKA-A_D2-2	BLKA-A_D3-3	BLKA-A_D4-4	BLKA-A_D5-	5 BLKA-A_E1-1	BLKA-A_E2-2	BLKA-A_F1-1	BLKA-A_F2-2	BLKB-B_A1-1	BLKB-B_A2-2	BLKB-B_A3-3	BLKB-B_A4-4	BLKB-B_AS-S	BLKB-B_B1-1	BLKB-B_B2-2	BLKB-B_B3-3	BLKB-B_D1-1	BLKB-B_D2-2	BLKB-B_D3-3	BLKB-B_D4-4	BLKB-B_D5-9	BLKB-B_E1-1	BLKB-B_E2-2	BLKB-B_F1-1	BLKB-B_F2-2
16F		49.1	65	63	59	56	54	55	55	56	56	56	57	57	58	58	59	65	65	57	52	51	50	49	49	50	50	53	59	61	62	67	67	68	66	58
17F		52.3	65	63	59	56	55	55	56	56	56	57	57	57	58	58	59	65	65	57	52	51	50	50	50	50	50	53	59	61	62	67	67	68	66	58
18F		55.7	65	62	59	56	55	55	56	56	56	57	57	58	58	58	59	65	65	57	52	51	51	50	50	50	50	54	59	60	62	67	67	68	65	58
	Max		65	63	59	56	55	55	56	56	56	57	57	58	58	58	59	65	65	57	52	51	51	50	50	50	50	54	59	61	62	67	67	68	66	58
Window v	with Exceed:	ance	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Legend
71 Predicted Noise Level Exceed Noise Criteria recommended in HKP5G, 70 dB(A)
*The predicted noise level is
not the actual level at the
electrual faculad with the
application of accounts
windows, enhanced

Web-NAT Result Summary

Creation Dain*Time: 200 0-011236
Projet Code: 200 Town
Report Version: 3 to 10 0-011236
Rain Result: 1 to 50 town
Report Version: 200 Town
Report Version: 3 town
Report Version: 4 to

																																	DEXD	
Roor/NAS		Height (mPD)	BLKA-A_A1-1	BUXA-A_A2-2	BEKN-V VS-3	BLKA-A_A4-4	BLKA-A_AS-S	BLKA-A_B1-1	BLKA-A_B2-2	BLKA-A_C1-1	BUKA-A_C2-2	BUXA-A_D1-1	BLKA-A_D2-2	BEKN-V-D3-3	BLKA-A_D4-4	BDXA-A_E1-1	BUKA-A_E2-2	BUKA-A_E3-3	BLXB-B_A1-1	BLKID-B_A2-2	BLKS-0_A2-2	BLX0-0_A4-4	BLXB-B_AS-S	BLX0-0_B1-1	BCKB-0_82-2	BLXB-B_C1-1	BUXB-0_C2-2	BLXB-0_D1-1	BLKB-B_D2-2	BTXB-0_D3-3	BLXD-B_D4-4	BLX8-8_E1-1	DLKD-0_E2-2	BUXB-0_E3-3
CE CE		8.2	54	53	50	50	48	49	49	49	49	49	49	50	51	52	52	52	52	22	49	49	49	48	48	41	47	46	44	44	42	43	- 44	45
	Max		54	23	50	02	48	49	49	49	49	49	49	50	Si	52	22	52	52	2	49	49	49	48	48	48	47	46	44	44	42	2	- 44	45
Window with Exp	dance																		0															0
Legeno	- Annelson	d Marine Laurel Frances Mi	pise Criteria recommen	4-4 19707 70 4014																														
"		a moise sever sacees re	DOSE CITETO I RECUIRIES	nama an mar-aut, no tampe																														
"The predicted naise not the actual level a external farcade afte application of acoust windows, enhanced	evel is																																	
not the actual level a	the																																	
external farcade afte	the																																	
application of acoust																																		
windows, enhanced																																		

Web-NAT Result Summary

Tow	ver	RCHE	RCHE	RCHE	RCHE	RCHE	RCHE	RCHE	RCHE	RCHE
Floor/NAP	Height (mPD)	RCHE-Office-1	RCHE-Rm1a-1	RCHE-Rm1b-1	RCHE-Rm2-1	RCHE-Rm3-1	RCHE-Rm4-1	RCHE-Rm5-1	RCHE-SickBay1-1	RCHE-SickBay2-1
GF	8.2	69	59	45	42	41	42	42	42	42
1F	11.3	69	69	46	42	41	46	47	42	45
2F	14.5	69	69	47	42	41	48	48	42	47
3F	17.6	69	68	49	42	42	49	49	43	47
5F	20.8	69	68	52	43	43	50	50	44	48
6F	23.9	69	68	55	46	46	50	50	47	49
7F	27.0	68	68	56	50	50	52	52	51	51
Ma	ax	69	69	56	50	50	52	52	51	51
Windows with	1 Exceedance	0	0	0	0	0	0	0	0	0

Legend

Predicted Noise Level Exceed Noise Criteria recommended in HKPSG: 70 dB(A) in general, 55dB(A) for Sick Bay

PΝ

*The predicted noise level is not the actual level at the external farcade after the application of acoustic windows, enhanced