Appendix 9

Sewerage Impact Assessment

Prepared for

Free Ocean Investments Limited

Prepared by

Ramboll Hong Kong Limited

S16 PLANNING APPLICATION PROPOSED MINOR RELAXATION OF PLOT RATIO AND BUILDING HEIGHT RESTRICTIONS FOR THE PROPOSED RESIDENTIAL DEVELOPMENT (FLAT) WITH SHOP AND SERVICES USE AT LOTS 531 RP, 532 S.D. RP AND 532 RP IN DD 130 AND THE ADJOINING GOVERNMENT LAND, LAM TEI TUEN MUN

SEWERAGE IMPACT ASSESSMENT REPORT

Date	**November 2025**
Prepared by	**Miko Wan** **Environmental Consultant**
Signed	
Approved by	**Billy Fan** **Principal Environmental Consultant**
Signed	
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Ramboll Hong Kong Limited

21/F, BEA Harbour View Centre
56 Gloucester Road, Wan Chai, Hong Kong

Tel: (852) 3465 2888
Fax: (852) 3465 2899
Email: hkinfo@ramboll.com

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CHAPTERS

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1. INTRODUCTION

1.1 Background

1.1.1 This Planning Application is prepared and submitted on behalf of Free Ocean Investments Limited ("the Applicant") to seek approval from the Town Planning Board ("TPB") under Section 16 of the Town Planning Ordinance for the Proposed Minor Relaxation of Plot Ratio and Building Height Restriction for the Residential Development with Shop and Services at Lots 531 RP, 532 S.D. RP and 532 RP in DD 130 and adjoining Government Land in Lam Tei ("Application Site"/the "Site"). The Application Site falls within "Commercial" ("C") zone and area shown as Road on the Draft Lam Tei and Yick Yuen Outline Zoning Plan ("Draft OZP") No. S/TM-LTYY/13.

1.1.2 TPB approved a similar application for minor relaxation of Plot Ratio and Building Height Restrictions for a proposed residential development with shop and services at the Site (TPB Ref.: A/TM-LTYY/426) on 24 June 2022. In order to support the planning application, a Sewerage Impact Assessment Report (the Approved SIA Report) has been submitted and approved by Environmental Protection Department and Drainage Services Department. Subsequent to the approval of the aforementioned planning application, the Applicant has lodged the land exchange application to the Lands Department to kick-start the approved development. For better management of the residual unmanned land near the Site, and as negotiated with the Lands Department, the Application Site has been modified to include the unmanned land and road works in relation to the proposed run in/out for the Proposed Residential Development. Whilst the resultant development scheme involves material changes to the approved scheme, a fresh Section 16 Planning Application is therefore required.

1.1.3 Ramboll Hong Kong Limited is commissioned to conduct a Sewerage Impact Assessment (SIA) for the support of the planning application.

1.2 The Application Site and Its Environs

1.2.1 The Application Site is currently vacant and situated at San Hing Tsuen, Lam Tei bounded by Castle Peak Road – Lam Tei Section to the southeast, WRL viaduct and LRT tracks to the northwest. To the north is the existing residential development, Lingrade Garden separated by an open space. Some temporary carpark, open storage and the village houses are located to the west of the Site separated by a nullah. The Site area is about 2,200m^2.

1.2.2 **Figure 1.1** shows the location of the Application Site and its environment.

1.3 The Proposed Development

1.3.1 The Proposed Development will consist of one residential tower, ancillary residential facilities (e.g. clubhouse), shop and car parking facilities.

1.3.2 There will be altogether 336 flats, clubhouse of 540 m^2 and commercial area of 65 m^2. The tentative occupation year of the development is 2030.

1.3.3 The Master Layout Plan (MLP) of the Proposed Development is included in **Appendix 1.1**.

2. SEWERAGE IMPACT ASSESSMENT

2.1 Scope off Work

2.1.1 The aim of this SIA is to assess whether the capacity of the existing sewerage network serving the Application Site is sufficient to cope with sewage flow from the Proposed Development. Drainage Record Plans were referred to the Geoinfo Map for the purpose of this SIA.

2.2 Assessment Criteria and Methodology

2.2.1 Environmental Protection Department's (EPD's) Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning, Version 1 (GESF) has been referred to for the purposes of estimating the quantity of the sewage generated from the Proposed Development and the existing catchment area. Sewage flow parameters and global peaking factors in this document have been adopted for this SIA.

2.2.2 Based on the building types in the area, the following unit flow factors are used in the SIA calculation:

- Residents: 0.27 m^3/person/day (R2)
- Clubhouse Staff: 0.28 m^3/employee/day (J11 - Community, Social & Personal Services)
- Retail Staff: 0.28 m^3/employee/day (J4 – Wholesale & Retail)

2.2.3 Catchment Inflow Factor (P_{CIF}) of Tuen Mun (1.10) has been applied in the assessment.

2.3 Existing Sewerage System

2.3.1 According to Geoinfo Map, there is an existing 600mm diameter sewer which is located to west of the Subject Site separated by a nullah and Light Rail Transit (LRT). Therefore, there is no public sewer identified and connected to the Subject Site.

2.4 Wastewater Generated by the Proposed Development

2.4.1 Wastewater arising from the Proposed Development will be primarily contributed by the residents, clubhouse staff and retail staff.

2.4.2 Based on the constraints as mentioned in **Section 2.3.1**, on-site sewage treatment plant (STP) is proposed. The treated effluent will be discharge to the stormwater system.

2.4.3 The estimated peak flow is given in **Table 2.1** below while the detailed calculation for the Proposed Development is given in **Appendix 2.1**.

Table 2.1 Estimated Peak Flow for Application Site (On-site STP)

Development Parameters	Proposed Development		
	Residential	Clubhouse	Commercial
Number of flats	336	NA	NA
GFA (m^2)	NA	540	65
Assumed Population	874(1)	18(2)	2(3)
Design Flow (m^3/person/day)	0.27(4)	0.28(5)	0.28(6)
Flow Rate (m^3/day)	**235.9**	**5.0**	**0.6**
Total Flow Rate (m^3/day)	**265.6(7)**		
Peak Flow for STP (L/s)	**18.4**		

(1) 2021 Population Census: Average Household Size of 2.6 in Tuen Mun
(2) 30.3m^2/employee – based on Table 8 of CIFSUS – Community & Social Services
(3) 28.6m^2/employee – based on Table 8 of CIFSUS – Retail Trade
(4) Refer to Table T-1 of GESF – R2
(5) Refer to Table T-2 of GESF - J11
(6) Refer to Table T-2 of GESF – J4
(7) With Catchment Inflow Factor for Tuen Mun (1.1) in Table T-4 of GESF

2.5 Sewerage Impact

2.5.1 It is currently technically infeasible to discharge wastewater generated from the Proposed Development to public sewerage system. Therefore, on-site STP for Application Site is proposed to cater sewage discharge based on design capacity of 18.4 L/s. The treated effluent will be discharged to the stormwater system and discharged to public drainage system.

2.5.2 The exact treatment process would be subject to later detailed design and submissions. It will be necessary for the treatment facilities to achieve the necessary discharge standards, as set out in EPD's Technical Memorandum – Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters.

2.5.3 Membrane bioreactor with ultra-filtration (MBR) is generally recommended to achieve required effluent discharge standard and sludge dewatering system will be provided and designed in accordance with the requirement in the "Guidelines for the Design of Small Sewage Treatments Plants" issued by EPD. The location of the proposed on-site STP is shown in **Figure 2.1**.

2.5.4 Sludge storage tank with deodorisation facilities will be provided. Exhaust fan will be located and facing away from existing and planned air sensitive uses. The sludge after having been dewatered and thickened will be tanked away to the landfill for disposal subject to confirmation with future licensed collector/contractor. As good practice for sewage treatment facilities, measures will be incorporated into the design to minimize the risk of emergency overflow from the treatment plant. These measures will include standby pumps, secure power supplies and appropriate alarms, as well as comprehensive Operation and Maintenance procedures, to keep the facilities in good working order. Holding tank for emergency storage/retention will be included with adequate capacity (e.g. to store 6-hours of ADWF discharge) to minimise need of emergency discharge. In the event of any emergency overflow, on-call crews will follow the overflow emergency response plan and proceed with the best response to correct the problem immediately. For example, the alarm system will be activated once overflow occurs. The on-call crews will provide instant response by acknowledging the alarm, to investigate the cause of overflow and correct the problem. The alarm system will repeat until it is acknowledged. In addition, the on-call crews will ensure the standby pump is switched on and contain the overflowed sewage using temporary weirs or vacuum trucks, where applicable.

2.5.5 The Applicant will be responsible for the construction, operation and maintenance of the proposed on-site STP. When there is a public sewer available in close proximity to the Application Site in future, the Applicant will make connection to the public sewer and dismantle the proposed underground on-site STP subject to the agreement of DSD and EPD.

2.5.6 The Applicant will be responsible for the future sewer connection upon its availability in future and on-site STP decommissioning with connection details subject to agreement of DSD.

3. CONCLUSION

3.1.1 A Sewerage Impact Assessment (SIA) has been conducted to evaluate the potential impacts due to the sewage generation from the Proposed Development.

3.1.2 The estimated sewage generations from the Proposed Development will be approximately 18.4 L/s.

3.1.3 The proposed on-site STP will be designed, constructed, operated and maintained in accordance with the "Guidelines for the Design of Small Sewage Treatment Plants" published by the EPD to ensure the sewage generated from the Proposed Development will be treated to acceptable standards before discharge to the receiving water. Treated effluent from the proposed on-site STP will be discharged into the existing drainage system to the west of the Application Site in accordance to the Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters. The discharge from the proposed on-site STP is considered in the Drainage Impact Assessment (DIA) prepared for the Project. Based on the assessment and finding of the DIA, the drainage system has enough capacity to cater the surface runoff from the relevant catchment and the treated effluent from the proposed on-site STP. Hence, the effluent discharge would not cause adverse drainage impact.

3.1.4 Therefore, it is concluded that there is no sewerage impact arising from the Proposed Development.

Figures

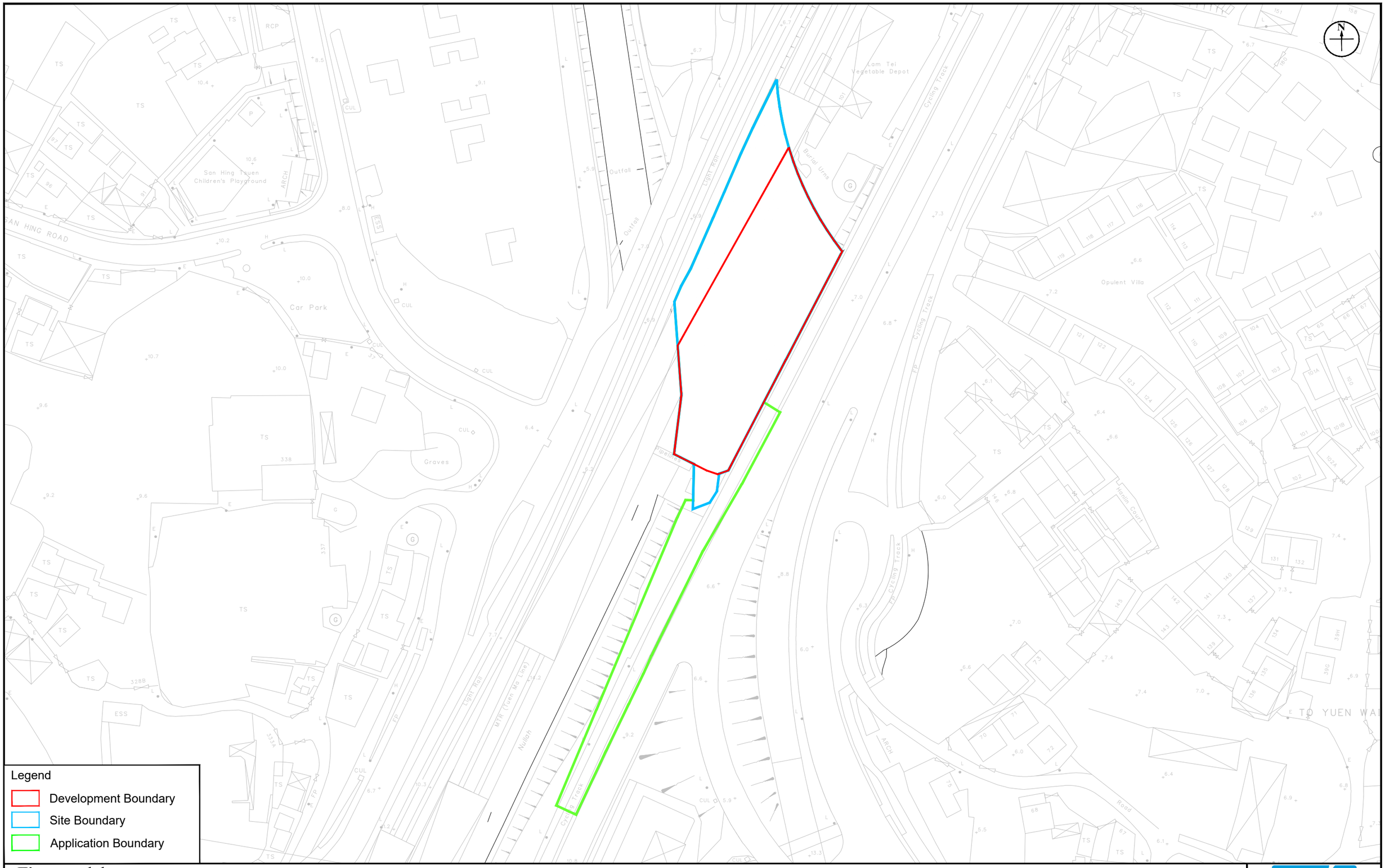

Figure: 1.1

Title: Location of the Application Site and Its Environs

Project: S16 Planning Application Proposed Minor Relaxation of Plot Ratio and Building Height Restrictions for the Proposed Residential Development (Flat) with Shop and Services Use at Lots 531 RP, 532 S.D. RP and 532 RP in DD 130 and the Adjoining Government Land, Lam Tei Tuen Mun

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Rev.:	1.0
Date:	Oct 2025

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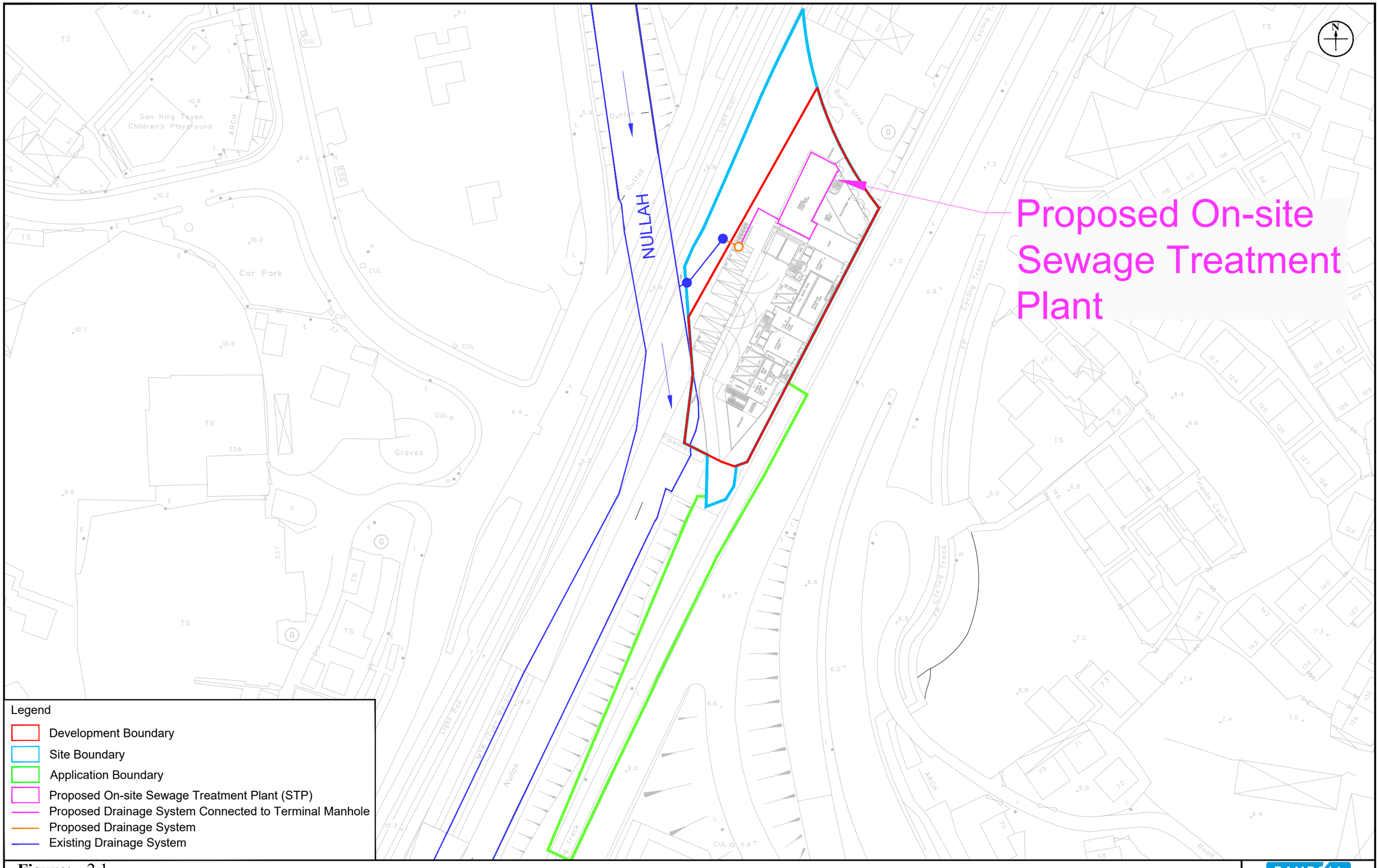

Figure: 2.1

Title: Proposed On-site Sewerage Treatment Plant and Effluent Discharge Locatioin

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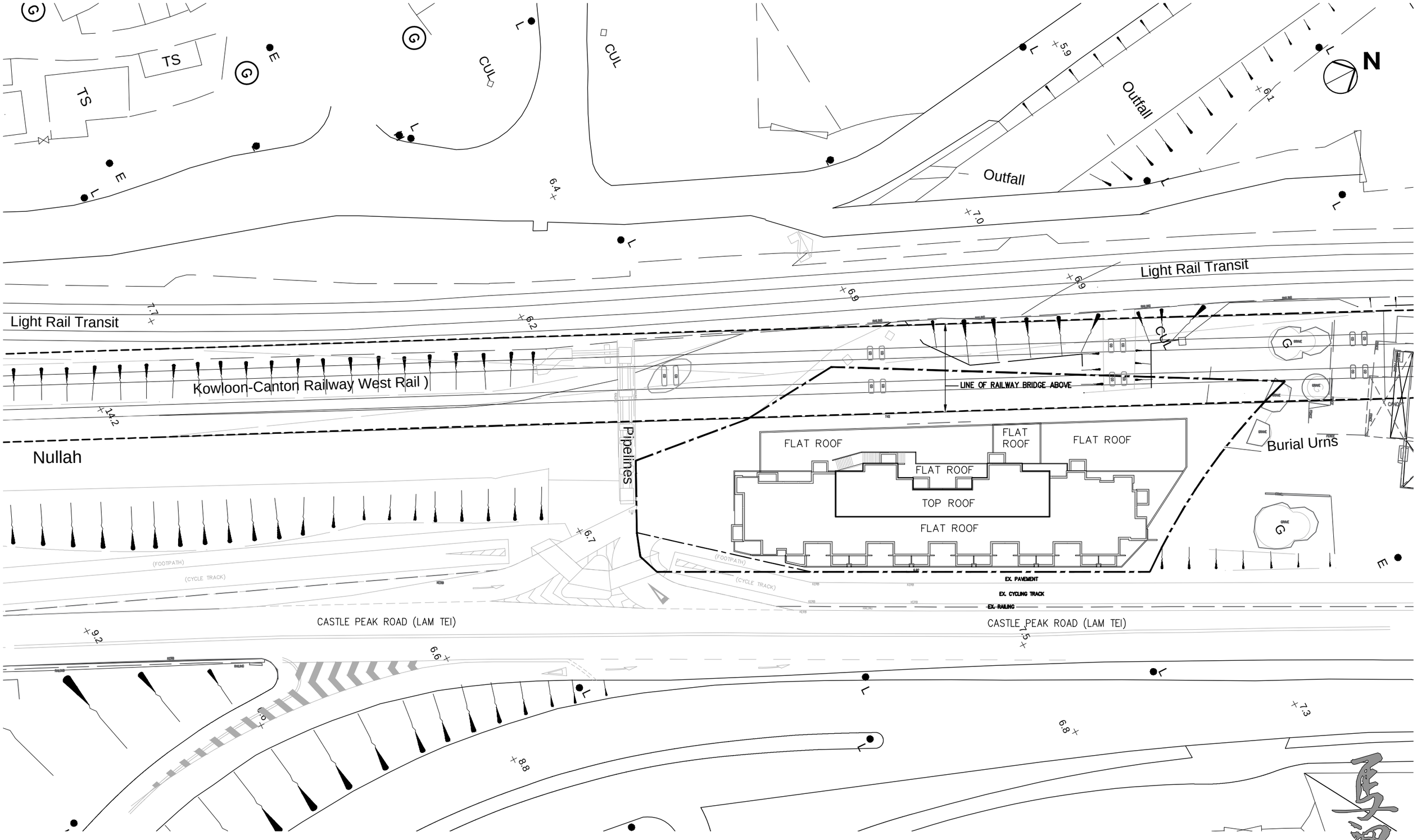
Appendix 1.1 Master Layout Plan (MLP)



BLOCK PLAN

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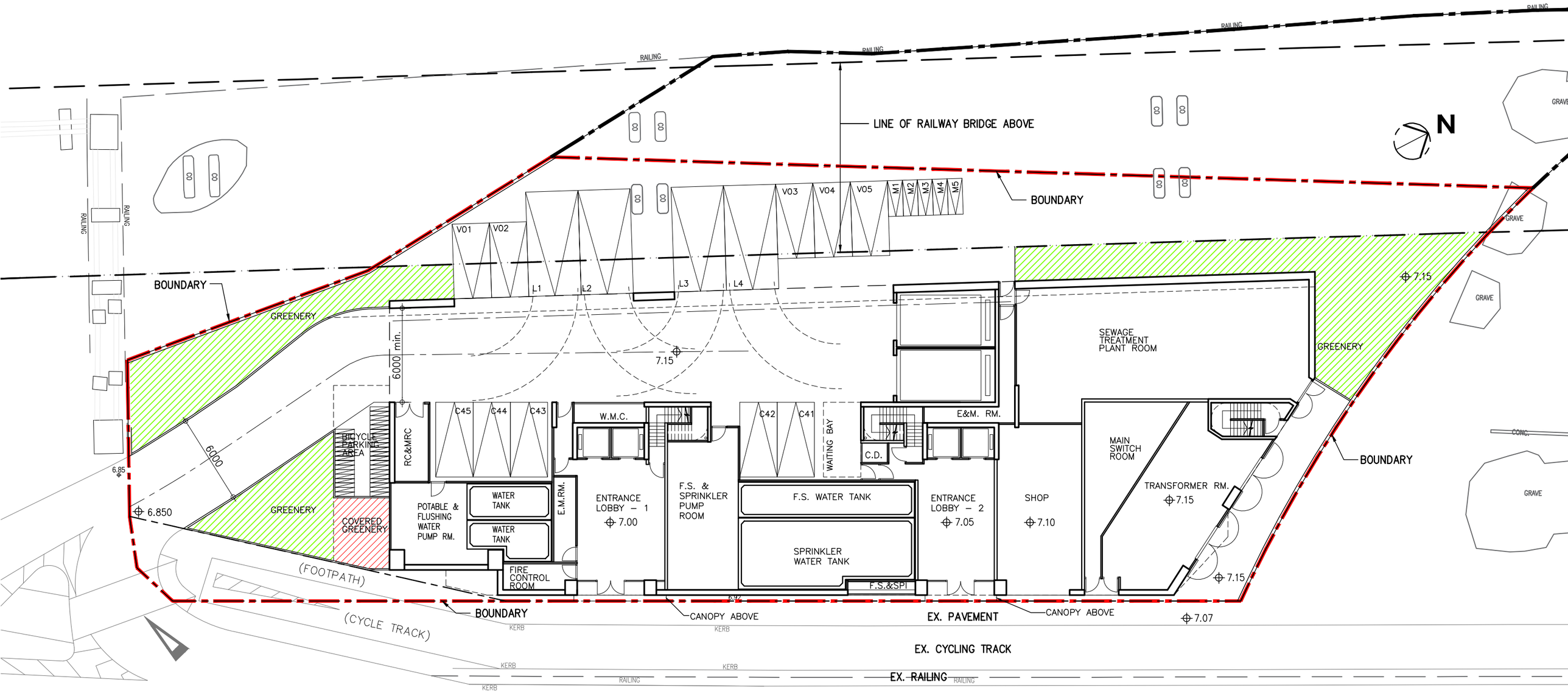
Proposed Minor Relaxation of Plot Ratio and Building Height Restriction for the Residential Development with Shop and Services at Lots 531 RP, 532 S.D. RP and 532 RP in DD 130 and adjoining Government Land in Lam Tei

SCALE 1 : 500 (A3)

SP–43–03
11–2025



GROUND FLOOR PLAN

NOS. OF LORRY PARKING = 4
NOS. OF PRIVATE CAR PARKING = 5 NOS.
NOS. OF MOTOR–CYCLE PARKING = 5 NOS.
NOS. OF VISITOR'S CARPARK = 5

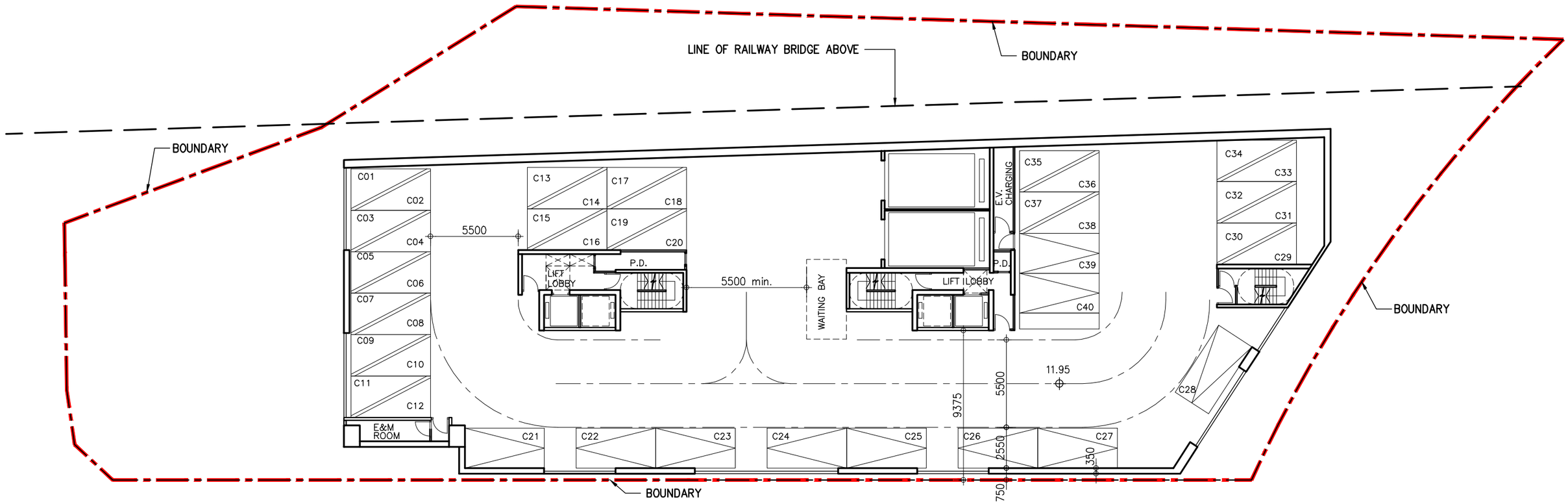
- GREENERY
- COVERED GREENERY
- DOUBLE DECK CAR PARKING
- BICYCLE PARKING SPACE

Proposed Minor Relaxation of Plot Ratio and Building Height Restriction for the Residential Development with Shop and Services at Lots 531 RP, 532 S.D. RP and 532 RP in DD 130 and adjoining Government Land in Lam Tei

SCALE 1 : 250 (A3)

SP–43–04
11–2025

MLA ARCHITECTS (HK) LTD 馬梁建築師事務所(香港)有限公司



1st FLOOR PLAN

NOS. OF PRIVATE CAR PARKING = 40 NOS.

PRIVATE CAR PARKING

DOUBLE DECK CAR PARKING

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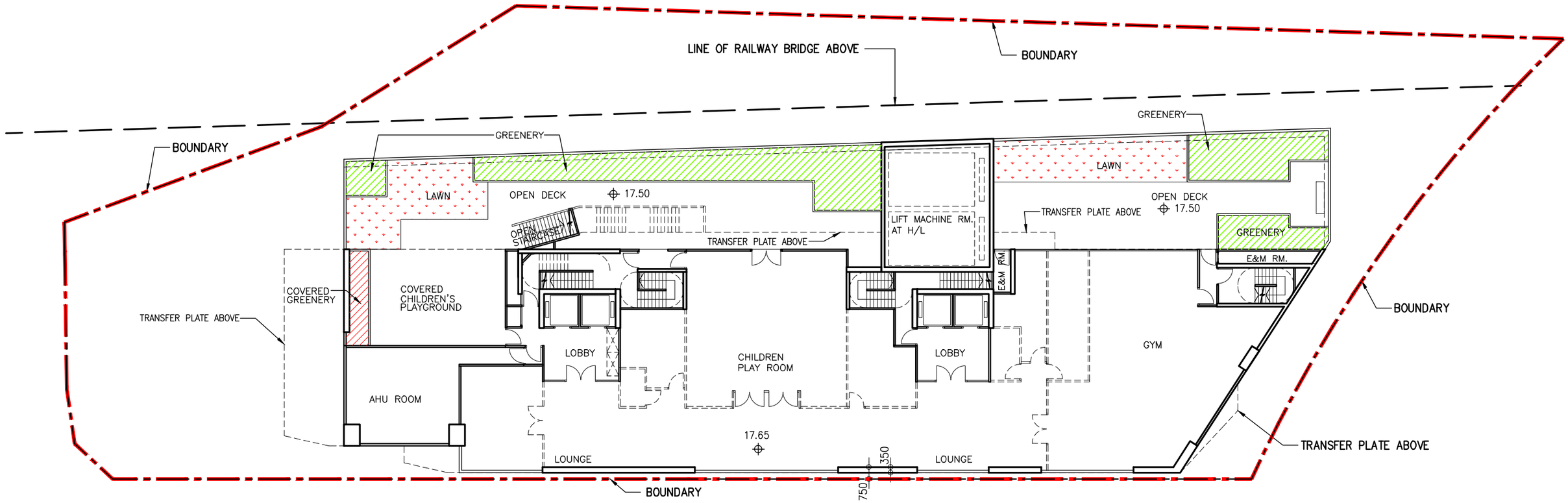
Proposed Minor Relaxation of Plot Ratio and Building Height Restriction for the Residential Development with Shop and Services at Lots 531 RP, 532 S.D. RP and 532 RP in DD 130 and adjoining Government Land in Lam Tei

SCALE 1 : 250 (A3)

SP–43–05

11–2025



2nd FLOOR PLAN (RESIDENTIAL RECREATIONAL FACILITIES)

RECREATIONAL FACILITIES AREA = 10800.00 x 5% = 540.00 s.m.

GREENERY / LAWN

COVERED GREENERY

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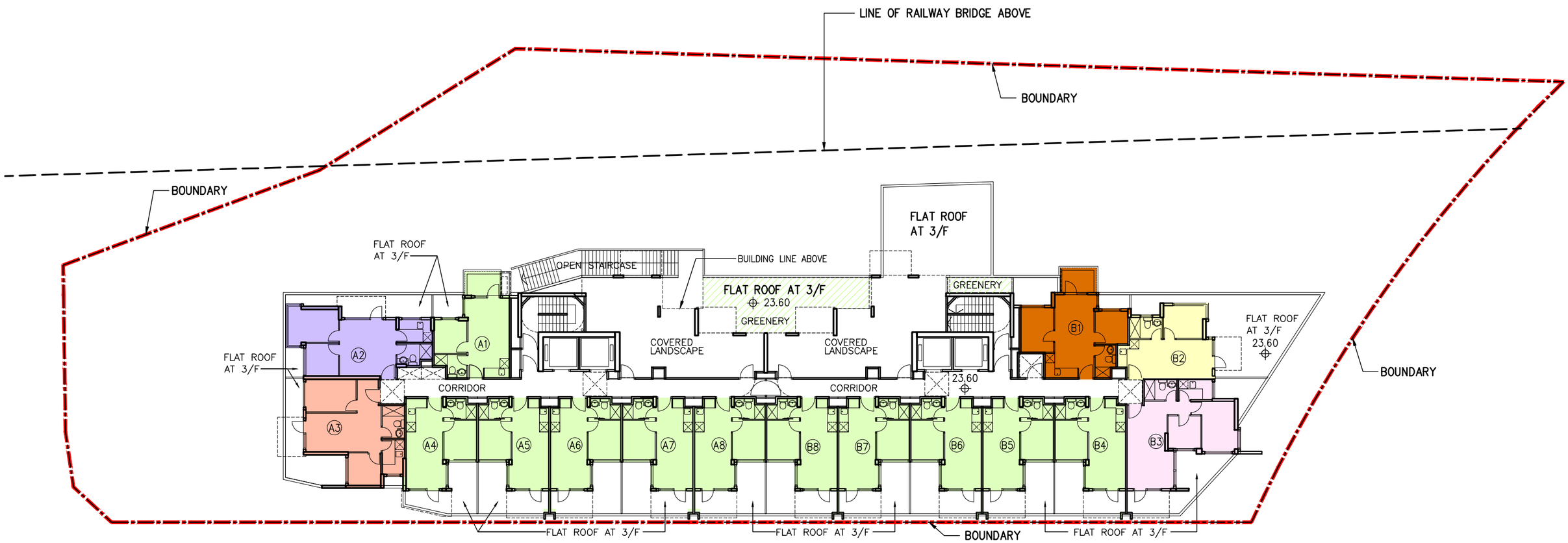
SCALE 1 : 250 (A3)

SP-43-06

11-2025



3rd FLOOR PLAN (1 STOREY)
(16 UNITS)

GREENERY

Proposed Minor Relaxation of Plot Ratio and Building Height Restriction for the Residential Development
with Shop and Services at Lots 531 RP, 532 S.D. RP and 532 RP in DD 130 and adjoining Government Land in Lam Tei

SCALE 1 : 250 (A3)

SP–43–07
11–2025

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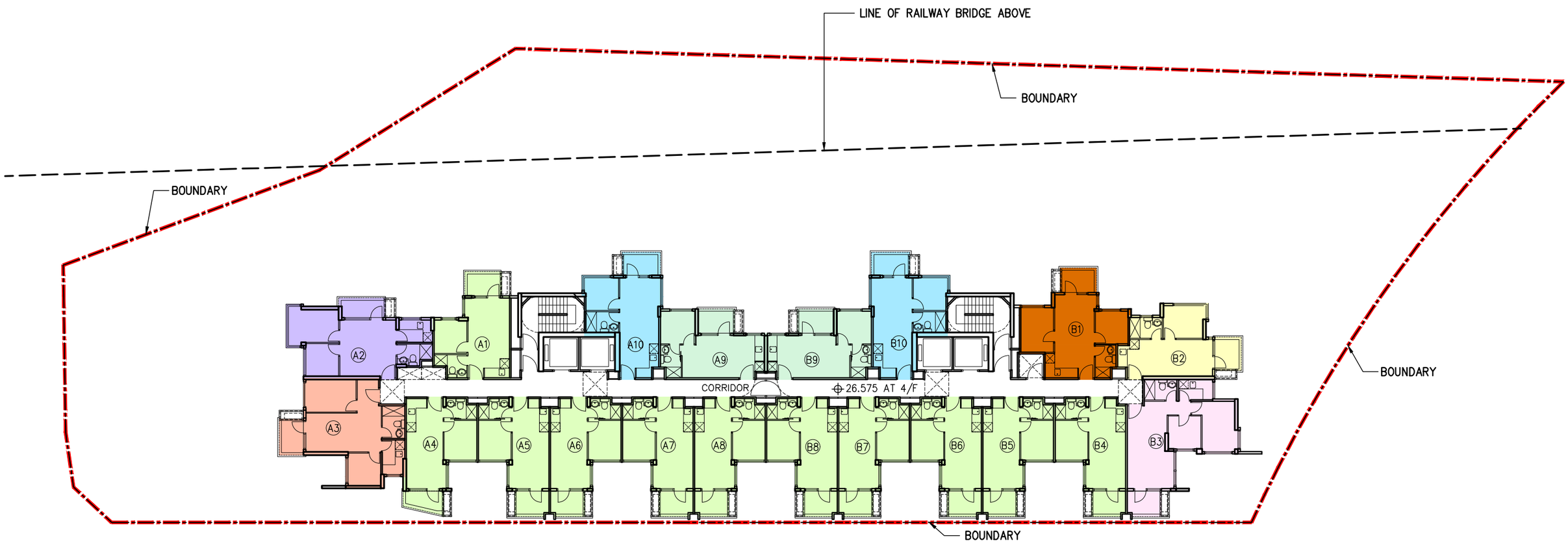

4th TO 19th FLOOR PLAN (16 STOREYS)
(20 UNITS)

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Proposed Minor Relaxation of Plot Ratio and Building Height Restriction for the Residential Development
with Shop and Services at Lots 531 RP, 532 S.D. RP and 532 RP in DD 130 and adjoining Government Land in Lam Tei

SCALE 1 : 250 (A3)

SP–43–08
11–2025

Appendix 2.1 Detailed Sewerage Impact Assessment Calculations

Table 1 Calculation for Sewage Generation Rate of the Proposed Development at the Application Site

Residential Tower			
Total number of residential units	=	336	units
Total number of residents	=	874	people -- (2021 Population Census: Average Household Size of 2.6 in Tuen Mun)
Design flow	=	0.27	m^3/person/day -- (Private R2 in Table T-1 of GESF)
Sewage Generation rate	=	**235.9**	m^3/day
Clubhouse			
Assumed Area	=	540	m^2
Assumed floor area per employee	=	30.3	m^2 per worker -- (refer to Table 8 of CIFSUS - Community, Social & Personal Services)
Total number of employees	=	18	employees
Design flow for commercial activities	=	0.28	m^3/employee/day -- (refer to Table T-2 of GESF - J11)
Sewage Generation rate	=	**5.0**	m^3/day
Commerial Area			
Assumed Area	=	65	m^2
Assumed floor area per employee	=	28.6	m^2 per worker -- (refer to Table 8 of CIFSUS - Retail Trade)
Total number of employees	=	2	employees
Design flow for commercial activities	=	0.28	m^3/employee/day -- (refer to Table T-2 of GESF - J4)
Sewage Generation rate	=	**0.6**	m^3/day
Total Flow from Proposed Development			
Flow Rate (without Catchmnet Inflow Factor)	=	241.5	m^3/day
Catchment Inflow Factor	=	1.10	Catchment Inflow Factor for Tuen Mun in Table T-4 of GEFS
Flow Rate (with Catchment Inflow Factor)	=	**265.6**	m^3/day
Contributing Population	=	984	people
Peaking factor for STP		6	Refer to Guideline for the Design of Small Sewage Treatment Plants for population equal or under 1000
Peak Flow for STP	=	**18.4**	litre/sec