Appendix B

Sewerage Impact Assessment

Prepared by

Ramboll Hong Kong Limited

PROPOSED HOTEL WITH MINOR RELAXATION OF PLOT RATIO AT 201 AND 203 WAI YIP STREET, KWUN TONG

SEWERAGE IMPACT ASSESSMENT

Date	**August 2024**
Prepared by	**Tony Ling** **Assistant Environmental Consultant**
Signed	
Approved by	**Wendy Tin** **Environmental Consultant**
Signed	
Project Reference	**HHPWYSDCSI00**
Document No.	**R9543_v1.0_240826.docx**

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

Q:\Projects\HHPWYSDCSI00\04 Deliverables\03 SIA Report - Hotel\R9543_v1.0_240826.docx

CHAPTERS

TABLES

FIGURES

APPENDIX

1. INTRODUCTION

1.1 Background and Objectives

1.1.1 The Application Site is located at 201 and 203 Wai Yip Street, Kwun Tong, which falls within an area zoned "Other Specified Uses (Business)" under the Approved Kwun Tong (South) Outline Zoning Plan No. S/K14S/26.

1.1.2 Ramboll Hong Kong Limited is commissioned to conduct the sewerage impact assessment based on the information regarding the proposed scheme.

1.2 Application Site and its Environs

1.2.1 The Application Site is bounded by Hung To Road to the north-east, Hoi Yuen Road to the south-east, Wai Yip Street to the south-west and Tsun Yip Street to the north-west.

1.2.2 **Figure 1** shows the location and the environs of the Proposed Development.

1.3 Proposed Development

1.3.1 Under the current application, the Application Site is proposed for a hotel development. Details of the proposed development schedule are summarised in **Table 1.1** below and the layout plan is shown in **Appendix 1.1**.

Table 1.1 Development Schedule of the Proposed Development

Total Site Area	About 1872 m^2
Plot Ratio	14.4
Total GFA	About 26,957 m^2 [1]
No. of Blocks	1
Building Height	120mPD
No. of Storeys	33 [2]

Remarks:

[1] Excluding an approvable bonus GFA of about 793m^2 (i.e. equivalent to a PR of about 0.424) in accordance with the Building (Planning) Regulations to be claimed from the Building Department during GBP stage that comprises of:

- 2.5m SBL from the lot boundary abutting Wai Yip Street
- 1.5m SBL along the back alley

[2] Including one level of refuge floor on 17/F but excluding one level of basement car park floor.

2. SEWERAGE IMPACT ASSESSMENT

2.1 Scope of Work

2.1.1 The aim of this study is to compare the sewage flow generated from the proposed development with the sewage flow generated from the existing usage, and to determine whether adverse sewage impact is anticipated.

2.2 Assessment Criteria and Methodology

2.2.1 The Commercial and Industrial Floor Space Utilization Survey (CIFSUS) conducted by the Planning Department has been used to determine the worker density for various economic activities and planned usage types.

2.2.2 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.

2.2.3 According to the GESF, the overall unit flow is composed of flows due to employees and the associated activities. The following unit flow factors have been adopted in the SIA calculation in accordance with Tables T-1, T-2 and T-3 of the GESF:

- J10 Restaurants & Hotels: 1.58 m^3/day

2.3 Existing and Future Sewerage System

2.3.1 With reference to the sewerage system shown in Geoinfo Map, the sewage generated from the proposed development will be discharged to the existing manhole FMH4043092 from the proposed terminal manhole.

2.3.2 The existing and proposed sewerage system are shown in **Figure 2.1**

2.4 Wastewater Generated by the Proposed Development

2.4.1 The sewage generated by the proposed development is given in **Table 2.1** shown below.

Table 2.1 Estimated Peak Flow

Calculation for Sewage Generation Rate of the Proposed Development at the Application Site			
1. Hotel			
Assumer Area	=	25378	m^2 [1]
Assumed floor area per employee	=	31.3	m^2 per employee – (refer to Table 8 of CIFSUS – Hotels and Boarding Houses)
Total number of employees	=	813	employees
Design flow for commercial employees	=	1.58	m^3/employee/day -- (refer to Table T-2 of GESF - J10 Restaurant & Hotels)
Sewage generation rate	=	**1284.7**	m^3/day
2. Restaurant & Café			
Assumer Area	=	861	m^2 [1]
Assumed floor area per employee	=	19.6	m^2 per employee – (refer to Table 8 of CIFSUS – Restaurants)
Total number of employees	=	71	employees
Design flow for commercial employees	=	1.58	Litre/employee/day – (refer to Table T-2 of GESF – Job T10 Restaurants & Hotels)
Sewage generation rate	=	**111.5**	m^3/day
3. Shop			
Assumer Area	=	107	m^2 [1]
Assumed floor area per employee	=	28.6	m^2 per employee – (refer to Table 8 of CIFSUS – Retail Trade)
Total number of employees	=	4	employees
Design flow for commercial employees	=	0.28	Litre/employee/day – (refer to Table T-2 of GESF – Job T10 Wholesale & Retail)
Sewage generation rate	=	**1.0**	m^3/day
3. Swimming Pool			
Assumed area	=	120	m^2
Assumed depth of water	=	1.5	m
Volume of water	=	225.0	m^3
Turnover Rate	=	4.0	hr CAP132, Section 42 Swimming Pools Regulation (covered))
Surface loading rate of filter	=	50.0	$m^3/m^2/hr$
Filter areas required	=	0.9	m^2
Backwashing flow rate	=	30.0	$m^3/m^2/hr$
Design flow for backwashing	=	27.0	m^3/hr
Backwash duration	=	3.0	min/day
Backwash generation rate	=	1.35	m^3/day
Backwash generation rate	=	**7.5**	litre/sec
Total Flow from the Proposed Development			
Flow rate	=	1353.6	m^3/day
Flow rate with P_{CIF}	=	1488.9	m^3/day (refer to Table T-4 of GESF – East Kowloon - 1.1)
Contributing population	=	5515	people
Peaking factor	=	5	(refer to Table T-5 of GESF for a population between 5,000 – 10,000 incl. stormwater allowance)

Peak Flow (without swimming pool)	=	7444.6	m^3/day
	=	86.2	litre/sec
Peak flow (with swimming pool)	=	**93.7**	litre/sec

Remark:
[1] Excluding GFA of about 1403m^2 from landscape garden, lounge, hotel lobby, back of house, plantroom, TX. room and filtration plant room.

2.5 Assessment of Sewerage Impact

2.5.1 As shown in **Figure 2.1**, sewerage generated from the proposed development will be discharged from the terminal manhole located within the Application Site to Manhole S1 FMH4043092 which is located at the back alley of the proposed development.

2.5.2 Catchments in the vicinity of the Application Site are shown in **Figure 2.2**.

2.5.3 Detailed calculation of sewage generation, peak flow estimation and the capacity of the public sewer can be referred to **Appendix 2.1**. Based on the assessment results, the capacity of sewers FWD4048770, FWD4048771, FWD4048772, FWD4048554, FWD4048555, FWD4048556, FWD4048557 and FWD4049140 are not sufficient for the sewerage generated from the proposed development and the surrounding catchment. Therefore, sewers FWD4048770, FWD4048771 and FWD4048772 are proposed to upgrade to 375mm with total length of 21.4m while FWD4048554 and FWD4048555 are to be upgraded to 1250mm with the total length of 124.9m. FWD4048556, FWD4048557 and FWD4049140 are proposed to upgrade to 1500mm with the total length of 63.5m.

2.5.4 Hence, upgrading works on the public sewers FWD4048770, FWD4048771, FWD4048772, FWD4048554, FWD4048555, FWD4048556, FWD4048557 and FWD4049140 by the project proponent are required.

2.5.5 Beside upgrading works on the above-mentioned pipes, a new 375mm sewer is proposed to connect manhole FMH4043095 and FMH4042874.

2.5.6 The proposed development is expected to be completed by the year of 2028/2029 and hence the proposed upgrading works and new pipe will be completed before 2028/2029 or prior to the commissioning of the proposed development.

3. OVERALL CONCLUSION

3.1.1 The Application Site is located at 201 and 203 Wai Yip Street, which falls within an area zoned "Other Specified Uses (Business)" under the Approved Kwun Tong (South) Outline Zoning Plan No. S/K14S/26.

3.1.2 The Proposed development is to develop a hotel building. The development consists of a 27-storey hotel guest rooms with a swimming pool , 3-storey restaurant and café and 1-storey shop.

3.1.3 The estimated sewage generation rate of the Proposed Development has been quantitatively addressed. The estimated peak sewage generation from the Proposed Development is about 93.7 litre/sec.

3.1.4 Based on the calculations, as shown in **Appendix 2.1**, the capacity of existing sewers are not sufficient to cater for the sewage generated from the Proposed Development. Upgrading works on the public sewers FWD4048770, FWD4048771, FWD4048772, FWD4048554, FWD4048555, FWD4048556, FWD4048557 and FWD4049140 are required. Beside upgrading works on the above-mentioned pipes, a new 375mm sewer is proposed to connect manhole FMH4043095 and FMH4042874. After the proposed upgrading and new pipe wors, there would not have any adverse impact on the public sewerage system.

Figures

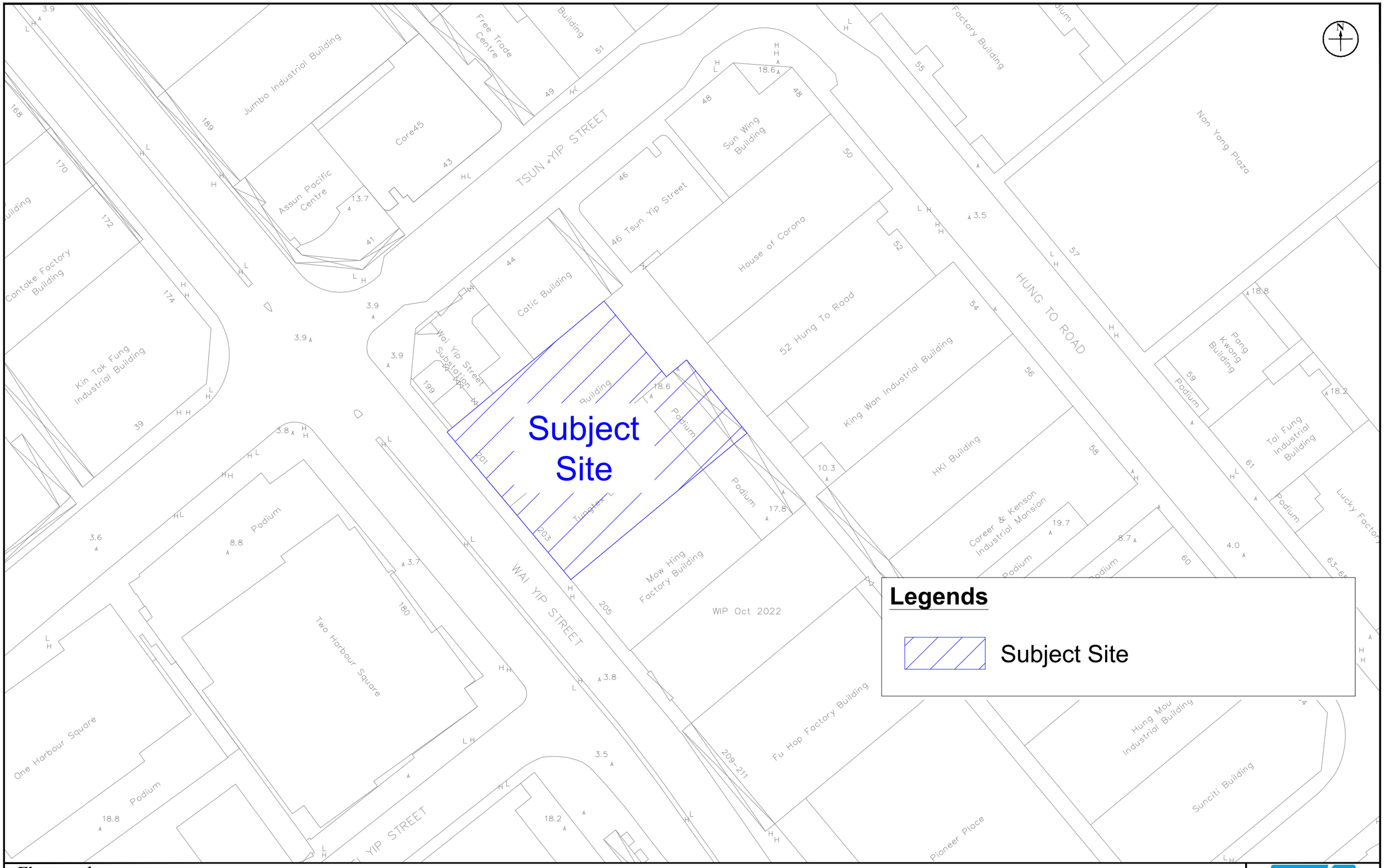


Figure: 1	RAMBOLL
Title: Location of the Application Site	Drawn by: SC
	Checked by: TC
Project: Proposed Re-development at 201 and 203 Wai Yip Street	Rev.: 1.0
	Date: Oct 2023

Q:\Projects\HHPWYSDCSI00\05 Assessments\04 SIA\Site Location.dwg

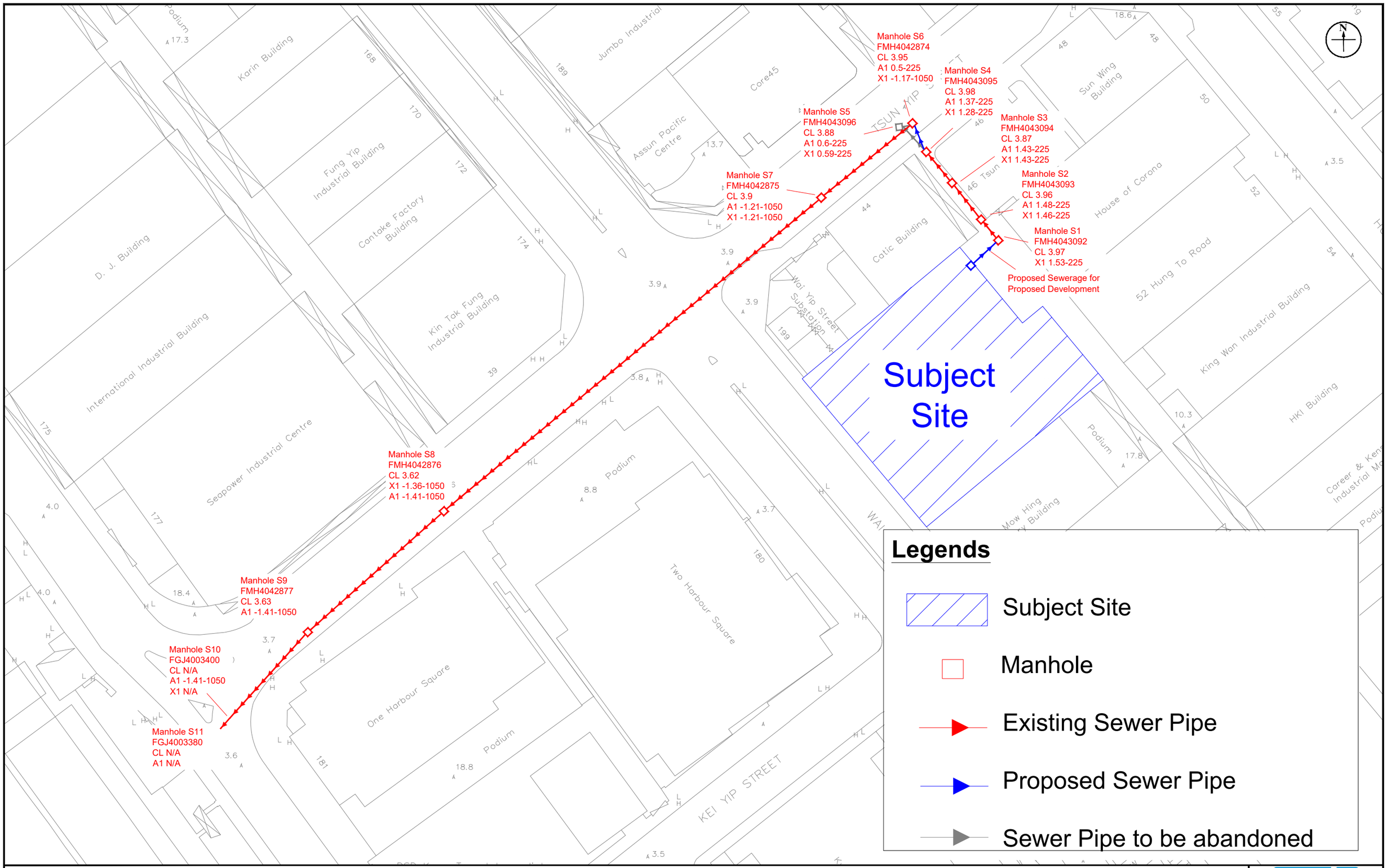


Figure: 2.1

Title: Existing and Proposed Sewerage System

Project: Proposed Re-development at 201 and 203 Wai Yip Street

RAMBOLL

Drawn by:	SC
Checked by:	TC
Rev.:	1.0
Date:	Oct 2023

Q:\Projects\HHPWYSDCSI00\05 Assessments\04 SIA\Hotel Scheme\Fig 2.1_Existing Sewerage System.dwg

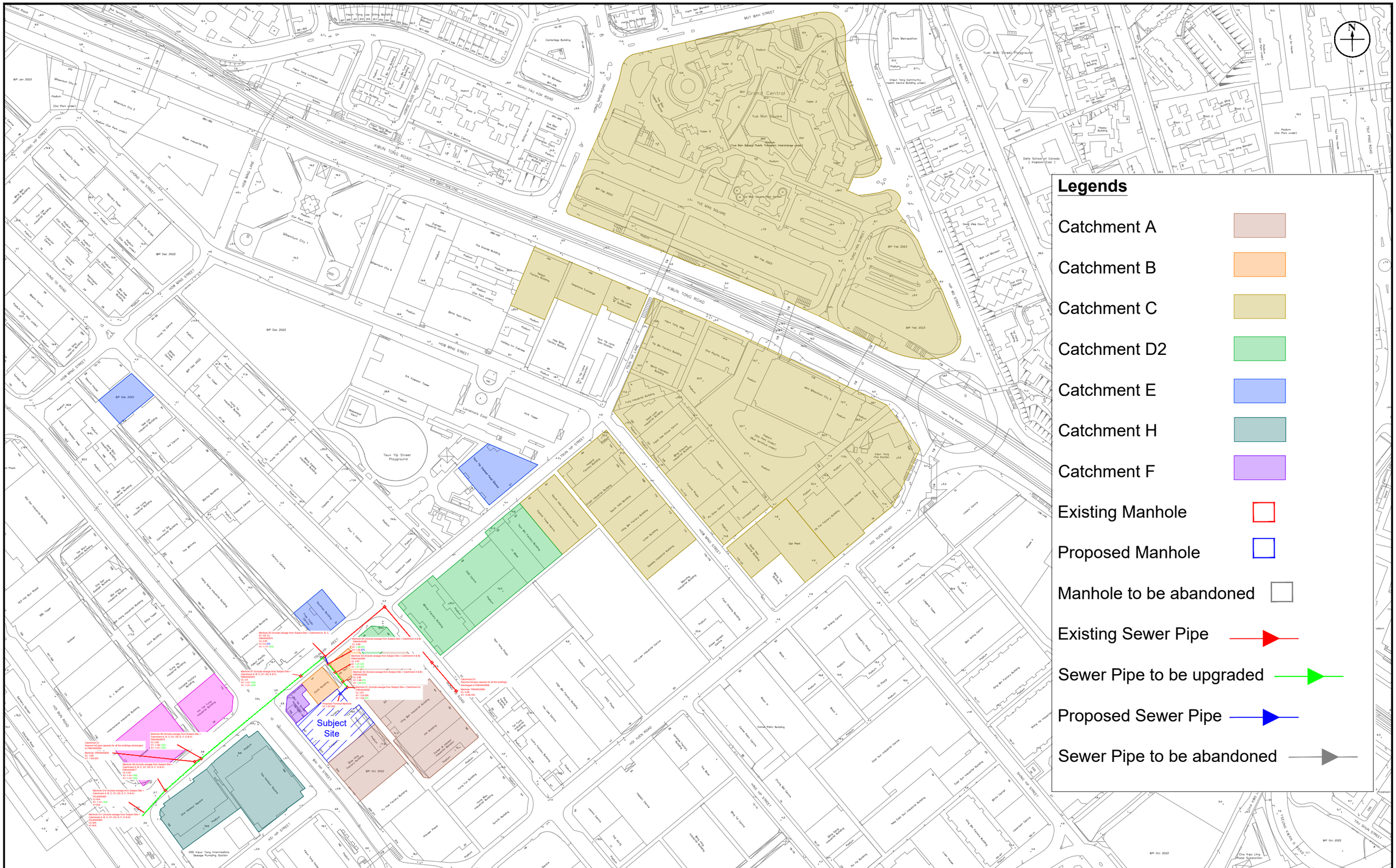


Figure: 2.2a	RAMBOLL
Title: Existing/Proposed/ Upgrading Sewerage System and Catchments Area	Drawn by: SC Checked by: TC
Project: Proposed Re-development at 201 and 203 Wai Yip Street	Rev.: 1.0 Date: Oct 2023

Q:\Projects\HHPWYSDCSI00\05 Assessments\04 SIA\Fig 2.2_Catchment.dwg

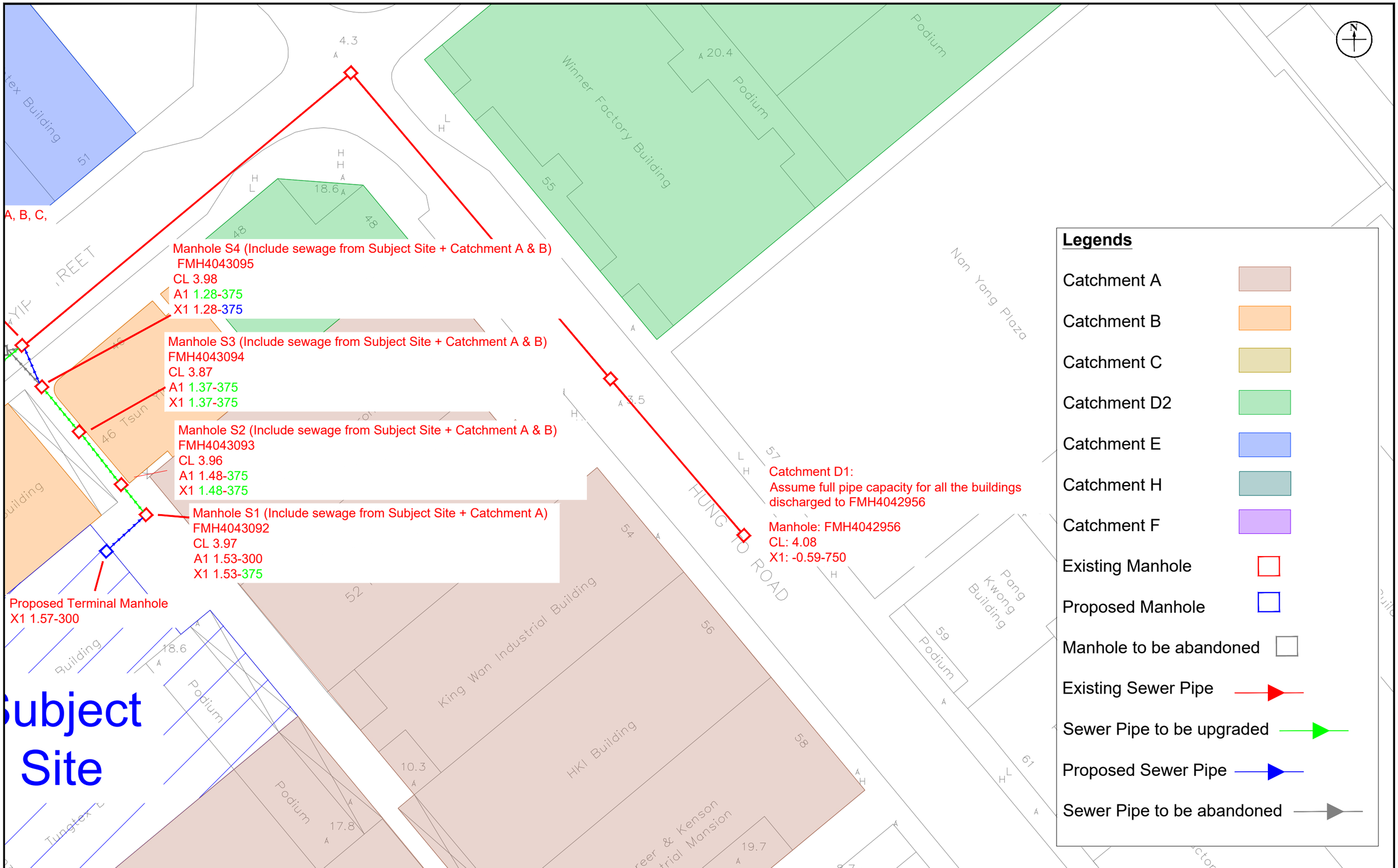


Figure: 2.2b	RAMBOLL
Title: Existing/Proposed/ Upgrading Sewerage System and Catchments Area (Zoom-in from Mamhole S1 to S4)	Drawn by: SC Checked by: TC
Project: Proposed Re-development at 201 and 203 Wai Yip Street	Rev.: 1.0 Date: Oct 2023

Q:\Projects\HHPWYSDCSI00\05 Assessments\04 SIA\Fig 2.2_Catchment.dwg

Manhole S5 (Include sewage from Subject Site + Catchment A, B, C, D1, D2, E)
FMH4042874
CL 3.95
A1 0.5-375
X1 -1.17-1250

Manhole S4 (Include sewage from Subject Site + Catchment A & B)
FMH4043095
CL 3.98
A1 1.28-375
X1 1.28-375

Manhole S3 (Include sewage from Subject Site + Catchment A & B)
FMH4043094
CL 3.87
A1 1.37-375
X1 1.37-375

Manhole S2 (Include sewage from Subject Site + Catchment A & B)
FMH4043093
CL 3.96
A1 1.48-375
X1 1.48-375

Manhole S1 (Include sewage from Subject Site + Catchment A)
FMH4043092
CL 3.97
A1 1.53-300
X1 1.53-375

Manhole S7 (Include sewage from Subject Site + Catchment A, B, C, D1, D2, E & F)
FMH4042875
CL 3.9
A1 -1.21-1250
X1 -1.21-1250

Proposed Terminal Manhole
X1 1.57-300

Subject Site

Jumbo Industrial Building
Free Trade Centre
Southtex Building
Winner Factory Building
Podium
Assun Pacific Centre
TSUN YIP STREET
Catic Building
Wai Yip Street Substation
Building
Tungtex
King Wan Industrial Building

Legends

- Catchment A
- Catchment B
- Catchment C
- Catchment D2
- Catchment E
- Catchment H
- Catchment F
- Existing Manhole
- Proposed Manhole
- Manhole to be abandoned
- Existing Sewer Pipe
- Sewer Pipe to be upgraded
- Proposed Sewer Pipe
- Sewer Pipe to be abandoned

Figure: 2.2c	RAMBOLL
Title: Existing/Proposed/ Upgrading Sewerage System and Catchments Area (Zoom-in from Manhole S1 to S7)	Drawn by: SC Checked by: TC
Project: Proposed Re-development at 201 and 203 Wai Yip Street	Rev.: 1.0 Date: Oct 2023

Q:\Projects\HHPWYSDCSI00\05 Assessments\04 SIA\Fig 2.2_Catchment.dwg

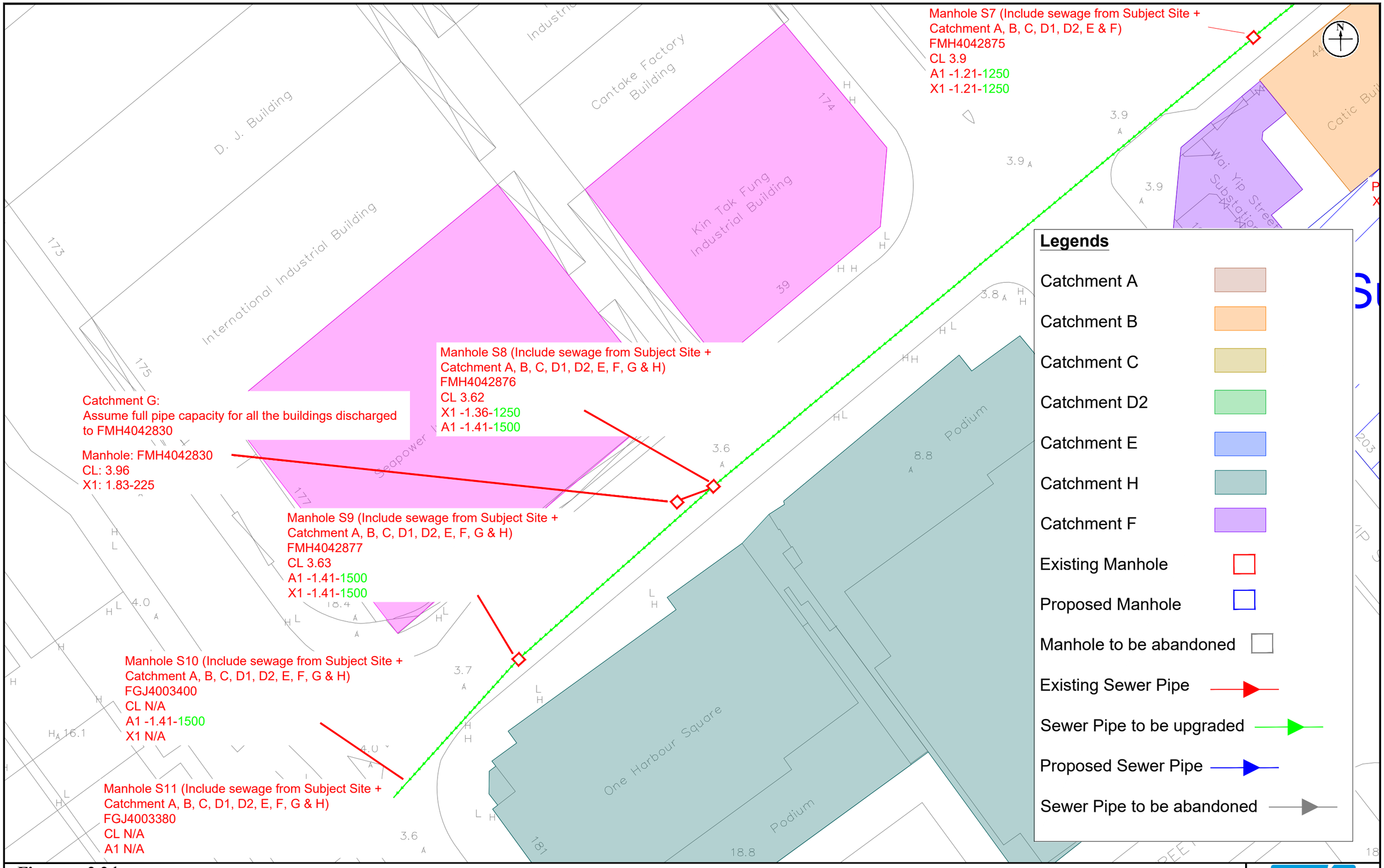


Figure: 2.2d	RAMBOLL
Title: Existing/Proposed/ Upgrading Sewerage System and Catchments Area (Zoom-in from Manhole S7 to S11)	Drawn by: SC Checked by: TC
Project: Proposed Re-development at 201 and 203 Wai Yip Street	Rev.: 1.0 Date: Oct 2023

Q:\Projects\HHPWYSDCSI00\05 Assessments\04 SIA\Fig 2.2_Catchment.dwg

Appendix 1.1 Master Layout Plan of the Application Site

PLOT RATIO & SITE COVERAGE CALCULATION

(UNDER O.Z.P.)

SITE AREA	=	1871.980 S.M. (20150.000 S.F.)	
CLASS OF SITE	=	`A'	
HEIGHT RESTRICTION	=	120.000 mPD	
MEAN LEVEL	=	4.000 M.	
HEIGHT OF NEW BUILDING			
120.000 mPD - 4.000 mPD(MEAN LEVEL)	=	116.000 M	
PERMITTED NON-DOMESTIC SITE COVERAGE (BELOW 15M)	=	100.000%	
ACTUAL NON-DOMESTIC SITE COVERAGE (BELOW 15M)	=	1639.440 S.M. (87.577%)	
PERMITTED NON-DOMESTIC SITE COVERAGE (OVER 61M)	=	60.000%	
PERMITTED NON-DOMESTIC PLOT RATIO = 12 x (1 + 20%)	=	14.4	
ROAD WIDENING AREA (SURRENDERED):	=	99.067 S.M.	
SET BACK AREA (SURENDERED):	=	59.444 S.M.	
TOTAL	=	158.511 S.M.	

BONUS: ROAD WIDENING x 1500 / SITE AREA x HEIGHT OF BUILDING

$\frac{158.511 \text{ S.M.} \times 1500}{1871.980 \text{ S.M.} \times 116.000 \text{ M}}$ % = 1.095 %

TOTAL PERMITTED NON-DOMESTIC SITE COVERAGE = 61.095%

TOTAL PERMITTED NON-DOMESTIC SITE COVERAGE AREA

1871.980 S.M. x 61.095 % = 1143.686 S.M.

ACTUAL NON-DOMESTIC SITE COVERAGE AREA (OVER 61M) = 1142.646 S.M. < 1143.686 S.M.
(61.039 %) (61.095 %)

PERMITTED NON-DOMESTIC G.F.A.

1871.980 S.M. x 14.4 = 26956.512 S.M.

BONUS :

99.067 S.M. x 5 WAI YIP STREET - ROAD WIDENING (SURRENDERED)	=	495.335 S.M.
59.444 S.M. x 5 BACK ALLEY - SET BACK AREA (SURRENDERED)	=	297.220 S.M.
TOTAL	=	27749.067 S.M.

ACTUAL GROSS FLOOR AREA FOR NON-DOMESTIC (AFTER BONUS):

GROUND FLOOR			=	495.427 S.M.
1ST FLOOR			=	589.722 S.M.
2ND FLOOR			=	642.515 S.M.
3/F - 4/F	948.885	X 2	=	1897.770 S.M.
5/F - 6/F	950.924	X 2	=	1901.848 S.M.
7/F - 11/F	943.348	X 5	=	4716.740 S.M.
12/F - 16/F, 18/F - 28/F	935.772	X 16	=	14972.352 S.M.
29/F - 30/F	944.479	X 2	=	1888.958 S.M.
31/F			=	461.692 S.M.
32/F			=	661.618 S.M.
			=	28228.642 S.M.
DEDUCT				
EXEMPTED G.F.A. OF LIFT SHAFT			=	479.605 S.M.
TOTAL			=	27749.037 S.M. < 27749.067S.M.

NO. OF CARPARK CALCULATION

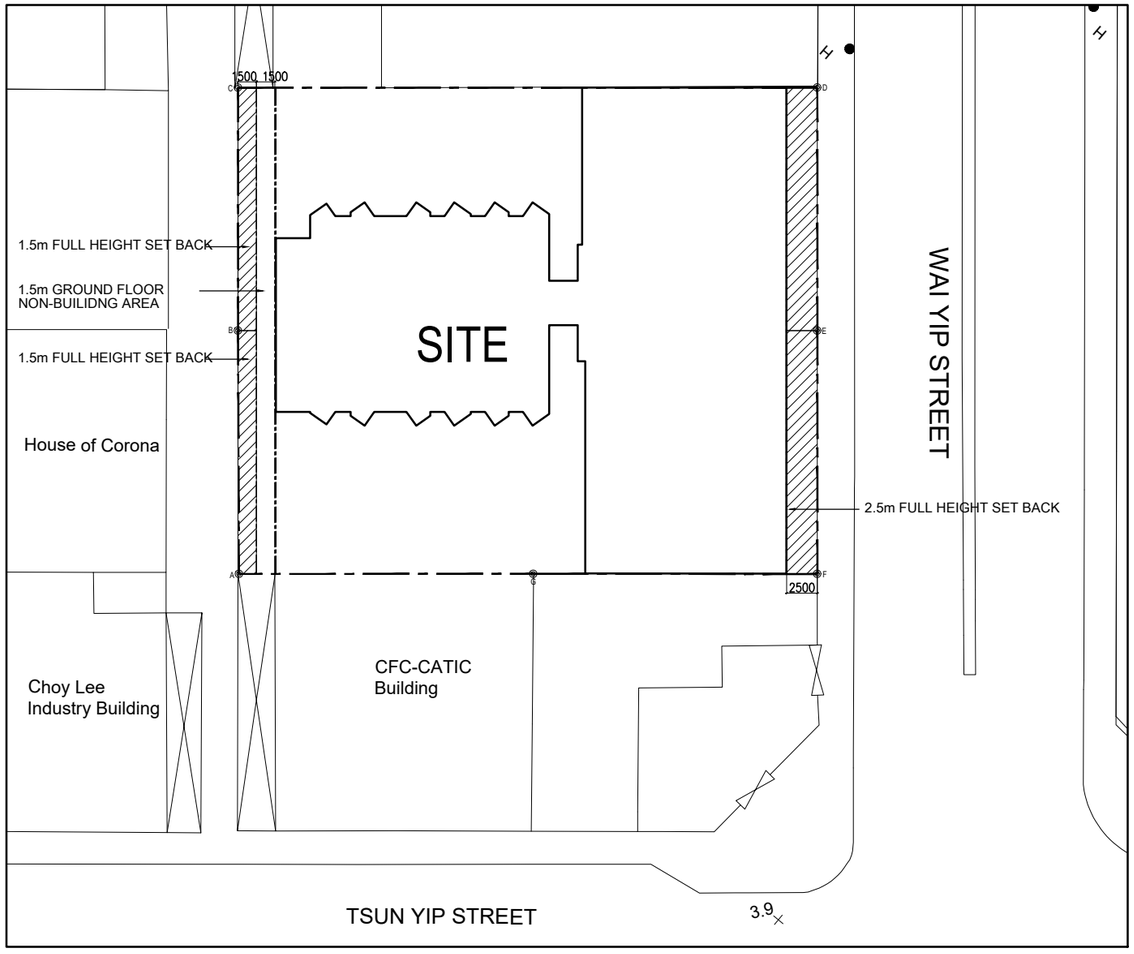
(ACCORDING TO H.K.P.S.G.)

NO. OF GUEST ROOM

3/F - 4/F		
31 x 2 STOREYS	=	62 NOS.
5/F - 16/F, 18/F - 28/F		
16 x 23 STOREYS	=	368 NOS.
29/F - 30/F		
9 x 2 STOREYS	=	18 NOS.
TOTAL	=	448 NOS.

CAR PARK NOS REQUIRED

MOTOR VEHICLES (2.5 x 5.0 x 2.4H)			
HOTEL ROOMS :	448 / 100	=	5 NOS.
ANCILLARY FACILITIES :	589.722 (1/F) +642.515 (3/F) / 400	=	4 NOS.
TOTAL		=	9 NOS.
GOODS VEHICLES (LOADING & UNLOADING BAY)			
448 HOTEL ROOMS	(3.5 x 11.0 x 4.7H)	=	1 NOS.
	(3.5 x 7.0 x 3.6H)	=	2 NOS.
LAY-BYS FOR TAXI			
300 - 599 HOTEL ROOMS		=	3 NOS.
LAY-BYS FOR COACH / TOUR BUS			
300 - 899 HOTEL ROOMS	(3.5 x 12.0 x 3.8H)	=	3 NOS.



BLOCK PLAN

LIFT SHAFT AREA EXEMPTED IN G.F.A. CALCULATION :

G.F.A. OF NON-DOMESTIC	=	28228.642 S.M.
TOTAL G.F.A. OF LIFT SHAFT		
39.618 x 32 STOREYS	=	1467.744 S.M.
EXEMPTED G.F.A. OF LIFT SHAFT		
(1467.744 / 28228.642) x 100% - 3.5%	=	1.699 %
28228.642 x 1.699%	=	479.605 S.M.

TOTAL AREA OF BACK OF HOUSE

TOTAL NON-DOMESTIC G.F.A.		=	27749.037 S.M.
27749.067 x 5%		=	1387.452 S.M.
BACK OF HOUSE PROVIDED			
GROUND FLOOR		=	125.809 S.M.
1ST FLOOR		=	955.222 S.M.
3/F - 30/F	11.340 x 27	=	306.180 S.M.
TOTAL		=	1387.211 S.M. < 1387.452 S.M.

GREENERY AREA REQ. (PLANTER AREA)

SITE AREA = 1871.980 S.M. (1000 S.M. - 20000 S.M.)

SITE COVERAGE OF GREENERY REQ. :
PRIMARY ZONE 10% & OVERALL 20%

GREENERY AREA REQ. (PLANTER AREA) PRO. (OVERALL)

p1	PLANTER AREA (2/F)	=	274.305 S.M.
p2	VERTICAL GREEN (1/F - 2/F)	=	94.163 S.M.
p3	PLANTER AREA (R/F)	=	175.705 S.M.
	TOTAL	=	544.173 S.M.

TOTAL SITE COVERAGE OF GREENERY

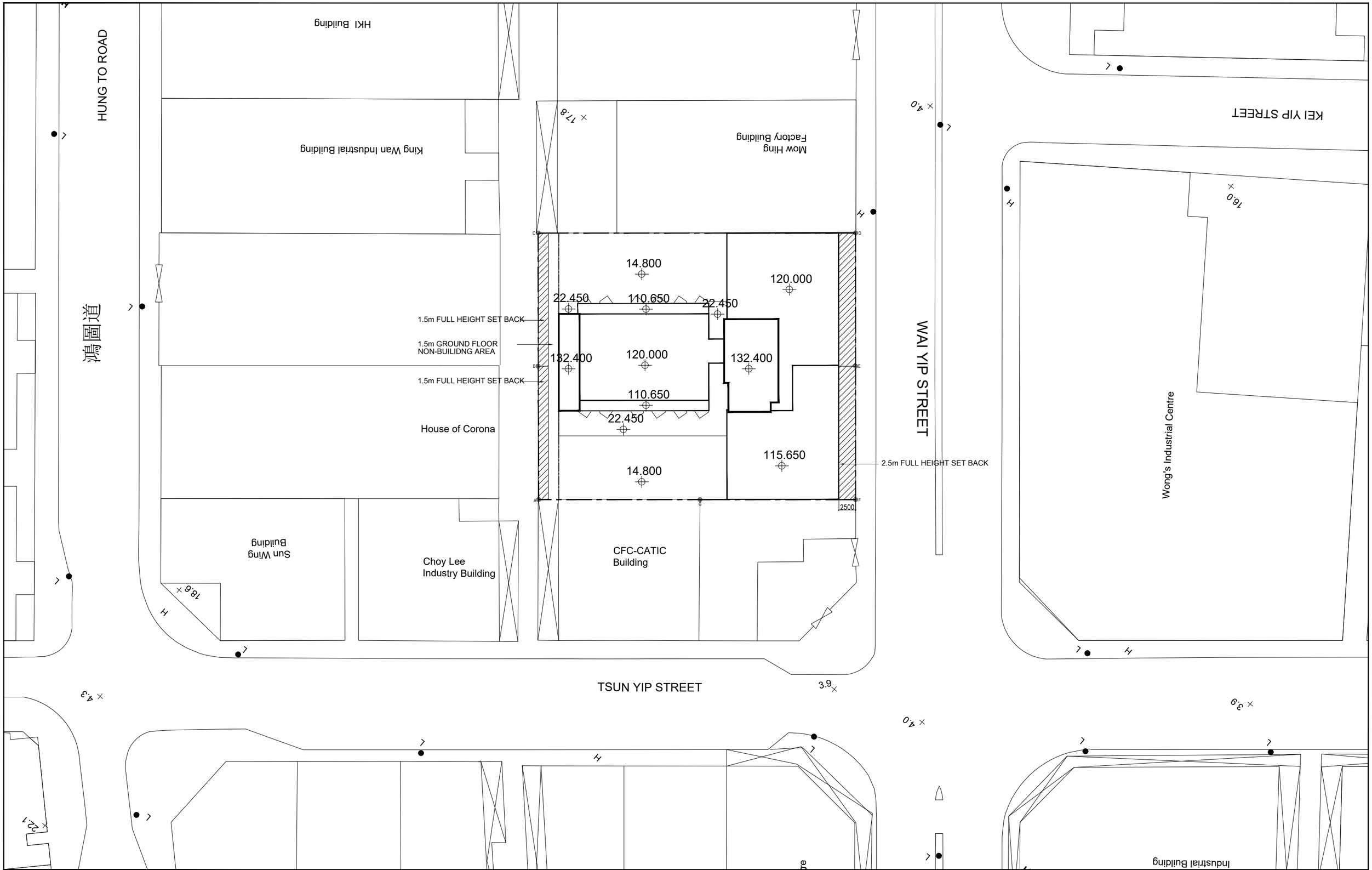
SITE COVERAGE OF GREENERY

$= \frac{\text{TOTAL GREENERY AREA}}{\text{SITE AREA}} \times 100\%$

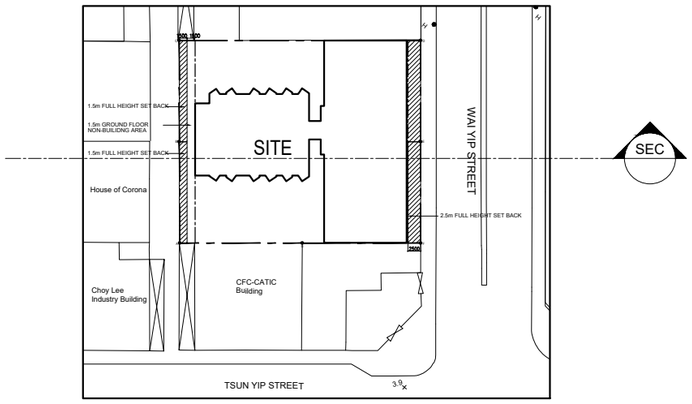
$= \frac{544.173}{1871.980} \times 100\% = 29.033\% > 20\%$ (REQUIRED) i.e. OK

Drawing Title: CALCULATION	Scale: 1:500 Date: 19/08/2024	Project: SECTION 16 PLANNING APPLICATION FOR PROPOSED HOTEL WITH MINOR RELAXATION OF PLOT RATIO AND BUILDING HEIGHT RESTRICTIONS AT 201 AND 203 WAI YIP STREET, KWUN TONG, KOWLOON	Job No.: A-2302

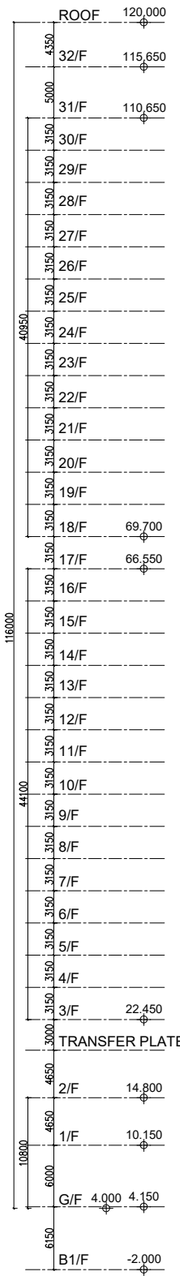
ALKF+ ANDREW LEE KING FUN & ASSOCIATES ARCHITECTS LTD

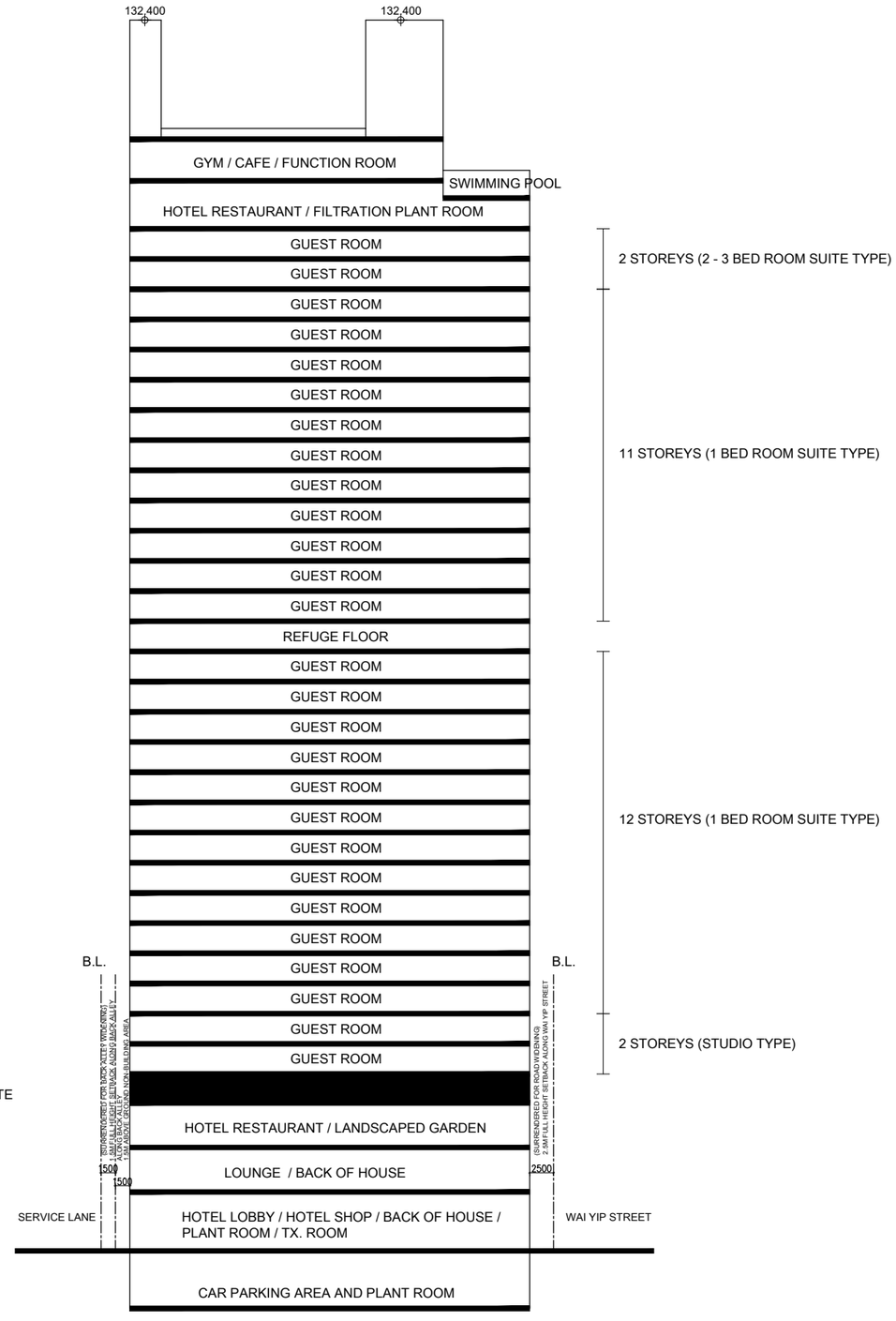


Drawing Title	Scale	Project	Job No.	
BLOCK PLAN	1:500	SECTION 16 PLANNING APPLICATION FOR PROPOSED HOTEL WITH MINOR RELAXATION OF PLOT RATIO AND BUILDING HEIGHT RESTRICTIONS AT 201 AND 203 WAI YIP STREET, KWUN TONG, KOWLOON	A-2302	ALKF+ ANDREW LEE KING FUN & ASSOCIATES ARCHITECTS LTD
	Date 19/08/2024			

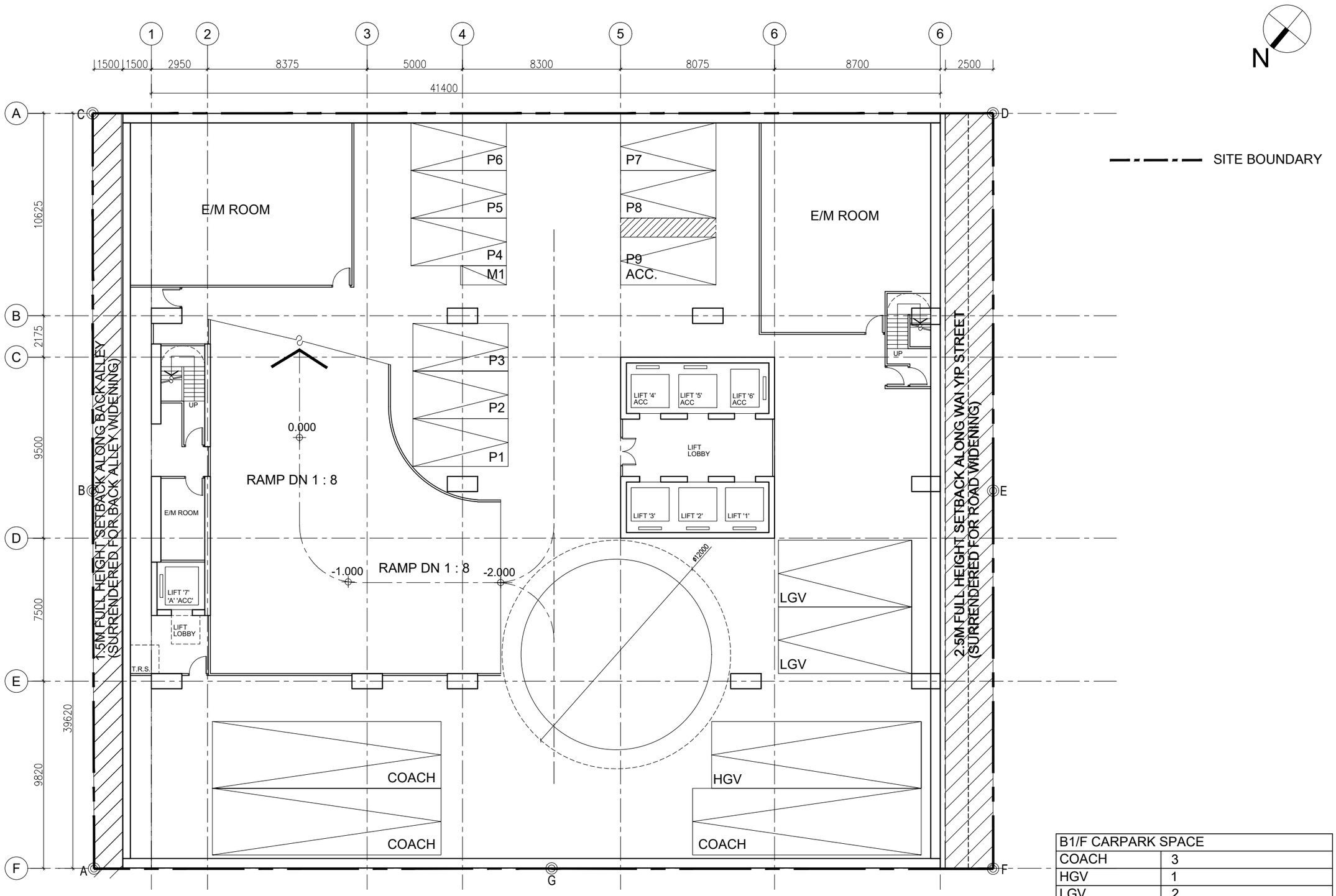


KEY PLAN





Drawing Title SECTION	Scale 1:600 Date 19/08/2024	Project SECTION 16 PLANNING APPLICATION FOR PROPOSED HOTEL WITH MINOR RELAXATION OF PLOT RATIO AND BUILDING HEIGHT RESTRICTIONS AT 201 AND 203 WAI YIP STREET, KWUN TONG, KOWLOON	Job No. A-2302	ALKF+ ANDREW LEE KING FUN & ASSOCIATES ARCHITECTS LTD



SCALE BAR

0m 2m 4m 6m 8m 10m

B1/F CARPARK SPACE	
COACH	3
HGV	1
LGV	2
PRIVATE CAR	9
MOTOR CYCLE	1

Drawing Title

BASEMENT FLOOR PLAN

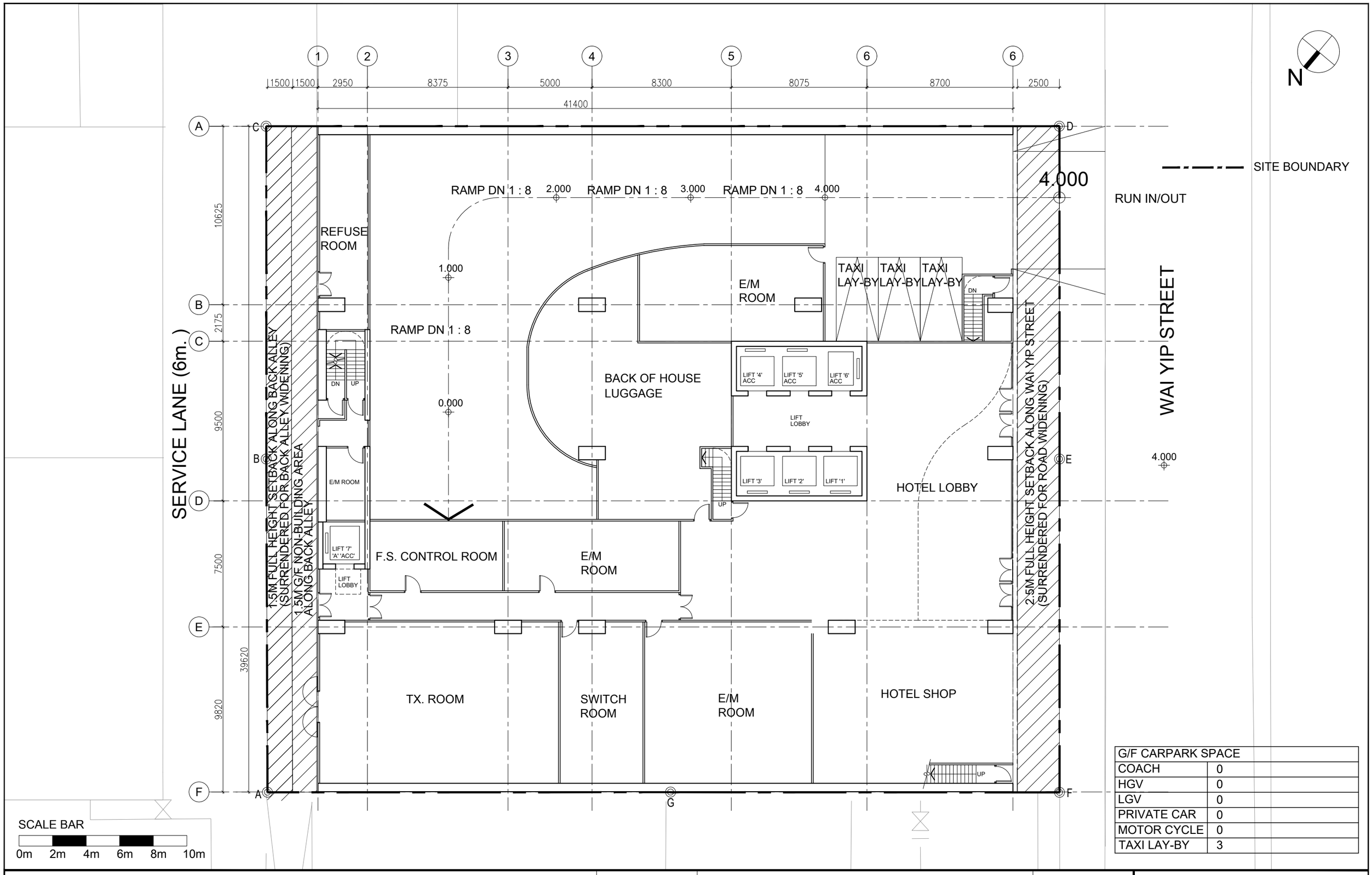
Scale
1:200

Date
19/08/2024

Project
SECTION 16 PLANNING APPLICATION FOR PROPOSED HOTEL WITH MINOR RELAXATION OF PLOT RATIO AND BUILDING HEIGHT RESTRICTIONS AT 201 AND 203 WAI YIP STREET, KWUN TONG, KOWLOON

Job No.
A-2302

ALKF+
ANDREW LEE KING FUN & ASSOCIATES ARCHITECTS LTD



G/F CARPARK SPACE	
COACH	0
HGV	0
LGV	0
PRIVATE CAR	0
MOTOR CYCLE	0
TAXI LAY-BY	3

Drawing Title

GROUND FLOOR PLAN

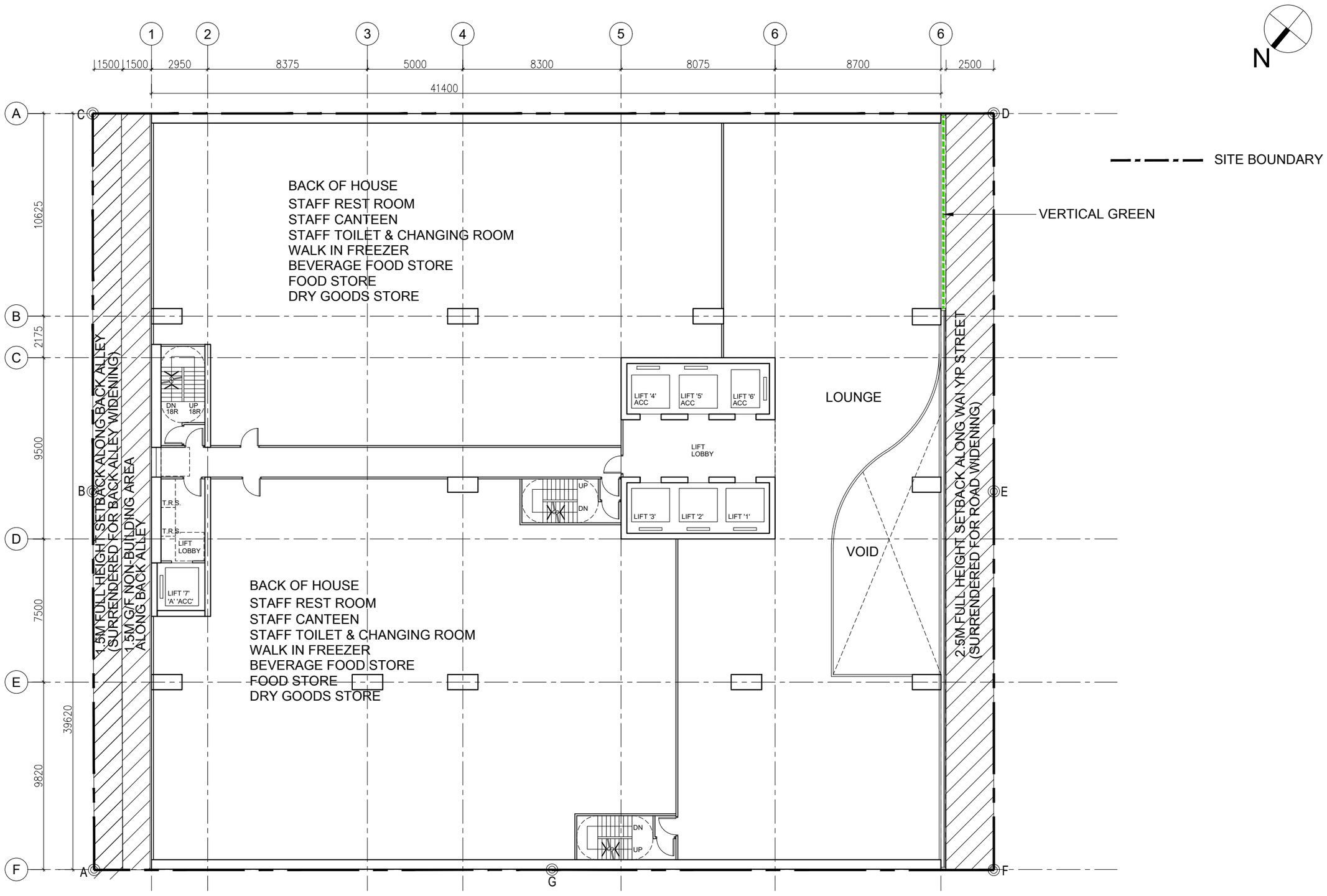
Scale
1:200

Date
19/08/2024

Project
SECTION 16 PLANNING APPLICATION FOR PROPOSED HOTEL WITH MINOR RELAXATION OF PLOT RATIO AND BUILDING HEIGHT RESTRICTIONS AT 201 AND 203 WAI YIP STREET, KWUN TONG, KOWLOON

Job No.
A-2302

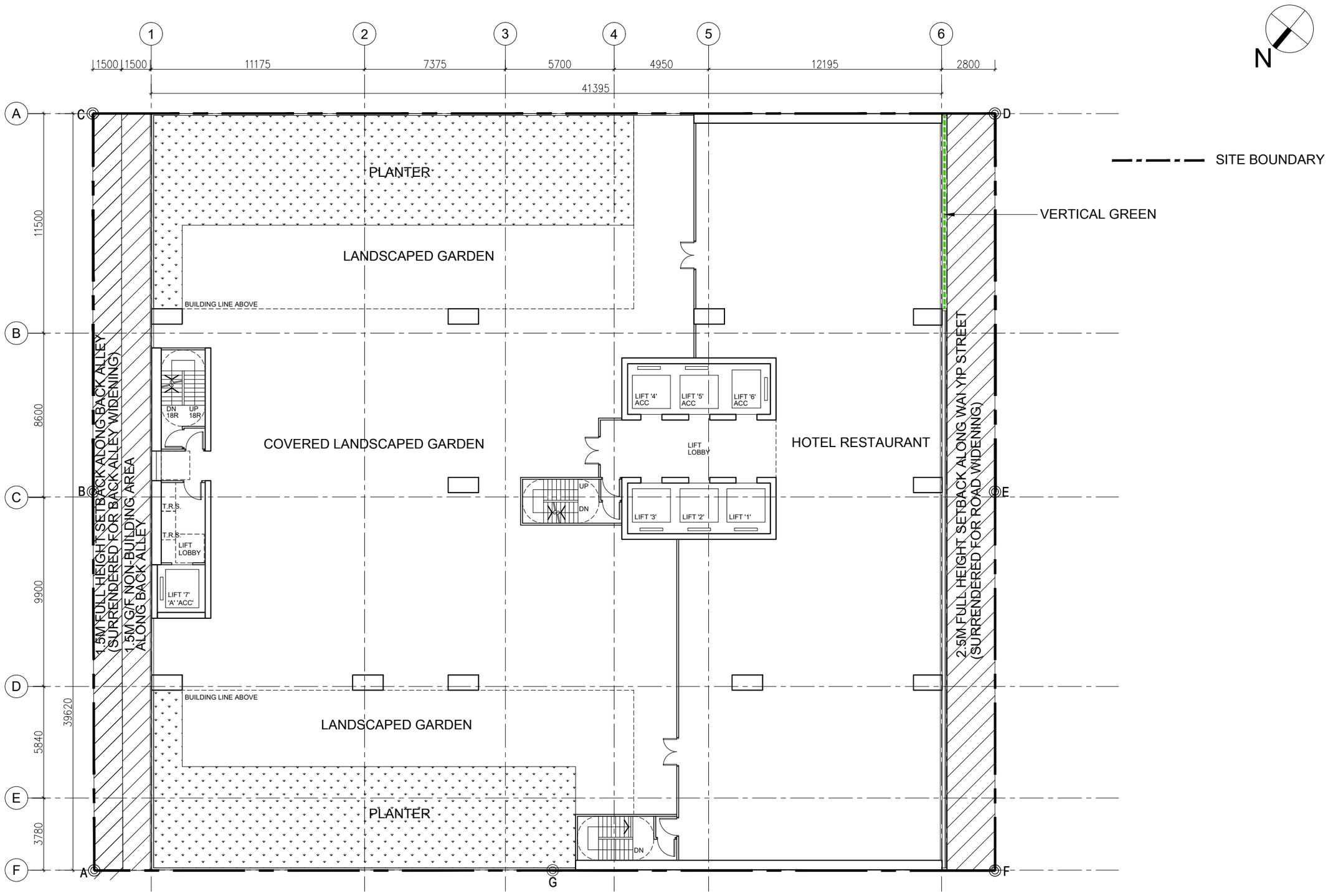
ALKF+
ANDREW LEE KING FUN & ASSOCIATES ARCHITECTS LTD



SCALE BAR

0m 2m 4m 6m 8m 10m

Drawing Title	Scale	Project	Job No.	
1/F PLAN	1:200 Date 19/08/2024	SECTION 16 PLANNING APPLICATION FOR PROPOSED HOTEL WITH MINOR RELAXATION OF PLOT RATIO AND BUILDING HEIGHT RESTRICTIONS AT 201 AND 203 WAI YIP STREET, KWUN TONG, KOWLOON	A-2302	ALKF+ ANDREW LEE KING FUN & ASSOCIATES ARCHITECTS LTD

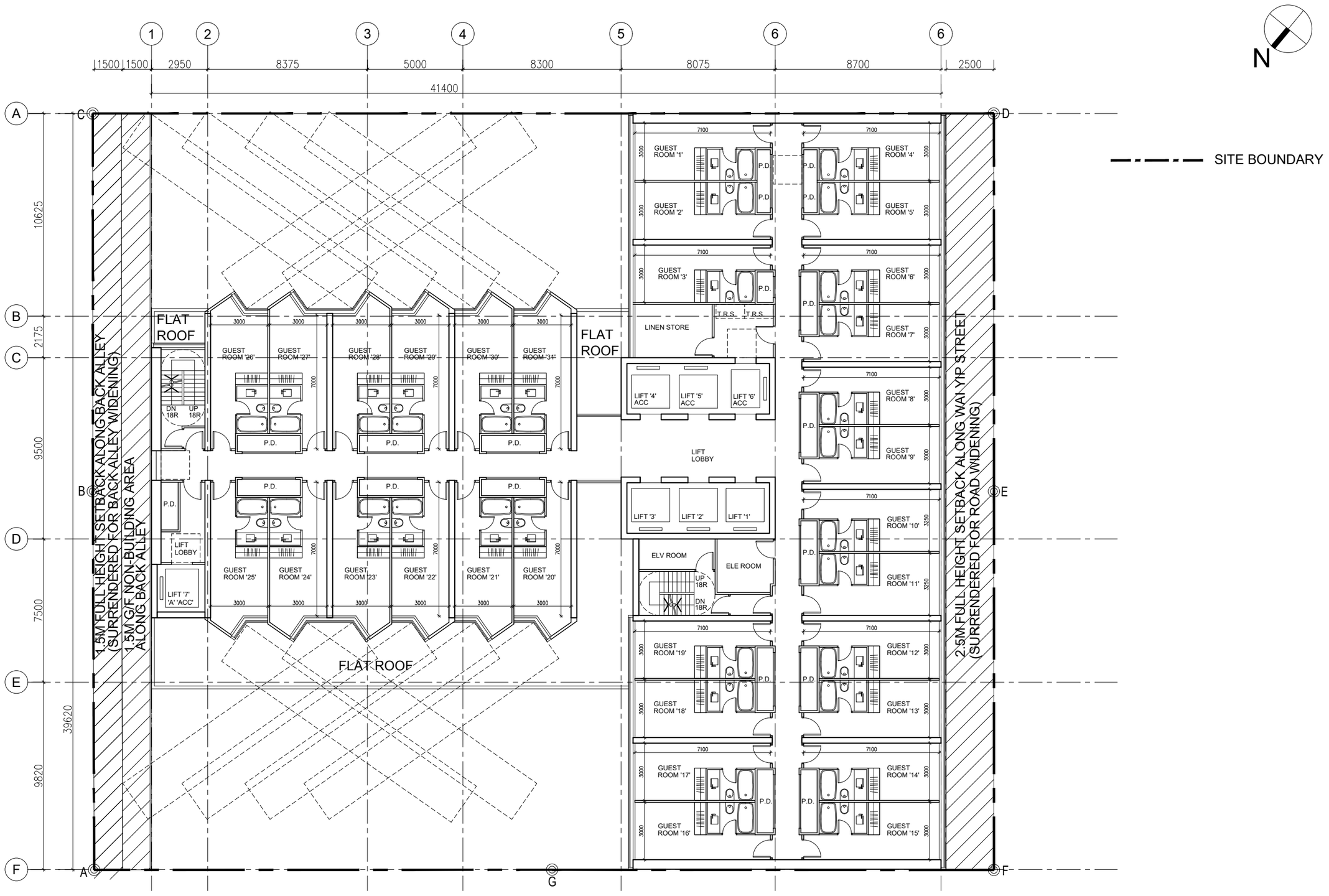


SCALE BAR

0m 2m 4m 6m 8m 10m

Drawing Title	Scale	Project	Job No.
2/F PLAN	1:200	SECTION 16 PLANNING APPLICATION FOR PROPOSED HOTEL WITH MINOR RELAXATION OF PLOT RATIO AND BUILDING HEIGHT RESTRICTIONS AT 201 AND 203 WAI YIP STREET, KWUN TONG, KOWLOON	A-2302
	Date 19/08/2024		

ALKF+
ANDREW LEE KING FUN & ASSOCIATES ARCHITECTS LTD

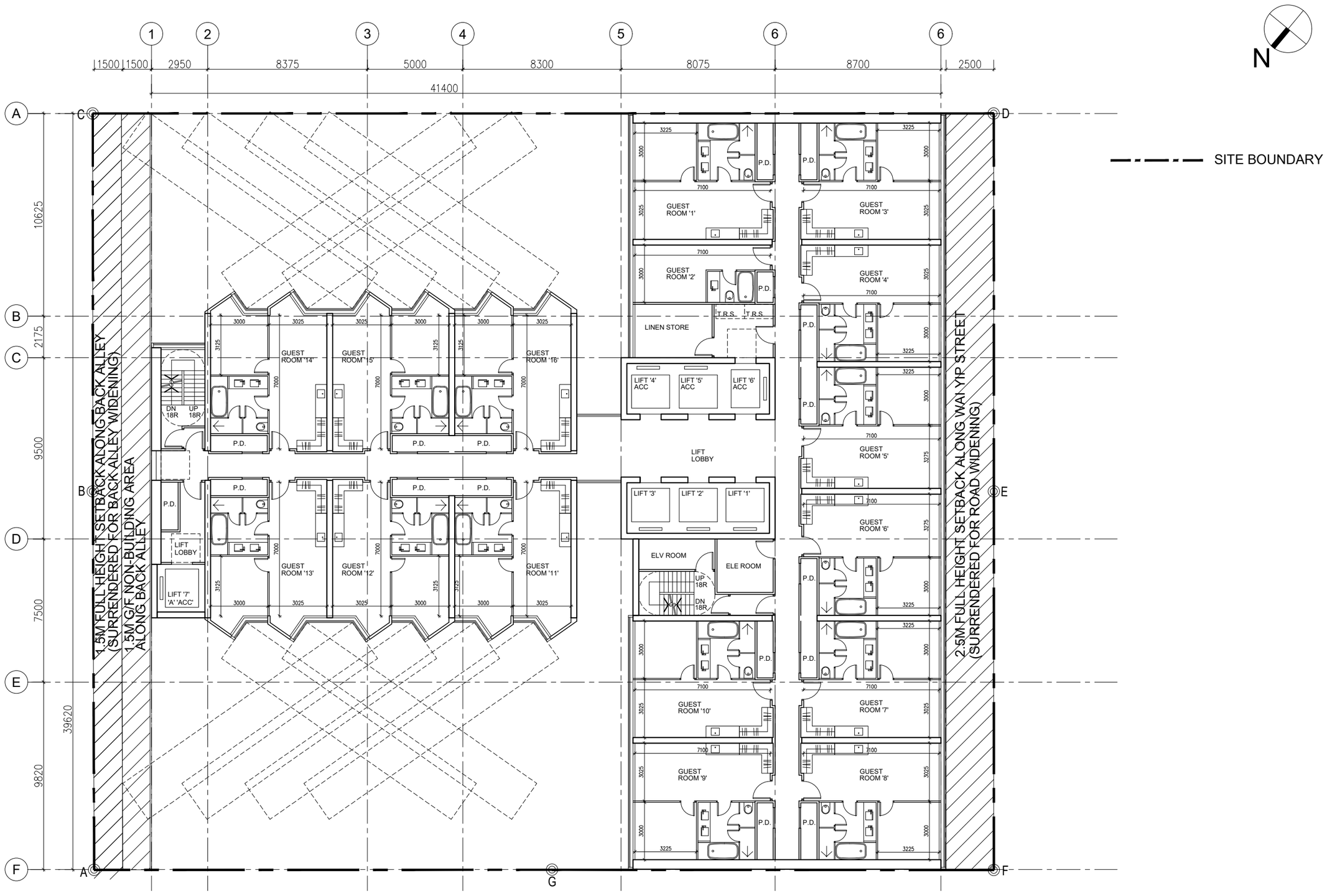


SCALE BAR

0m 2m 4m 6m 8m 10m

Drawing Title	Scale	Project	Job No.
3/F - 4/F PLAN	1:200 Date 19/08/2024	SECTION 16 PLANNING APPLICATION FOR PROPOSED HOTEL WITH MINOR RELAXATION OF PLOT RATIO AND BUILDING HEIGHT RESTRICTIONS AT 201 AND 203 WAI YIP STREET, KWUN TONG, KOWLOON	A-2302

ALKF+
ANDREW LEE KING FUN & ASSOCIATES ARCHITECTS LTD

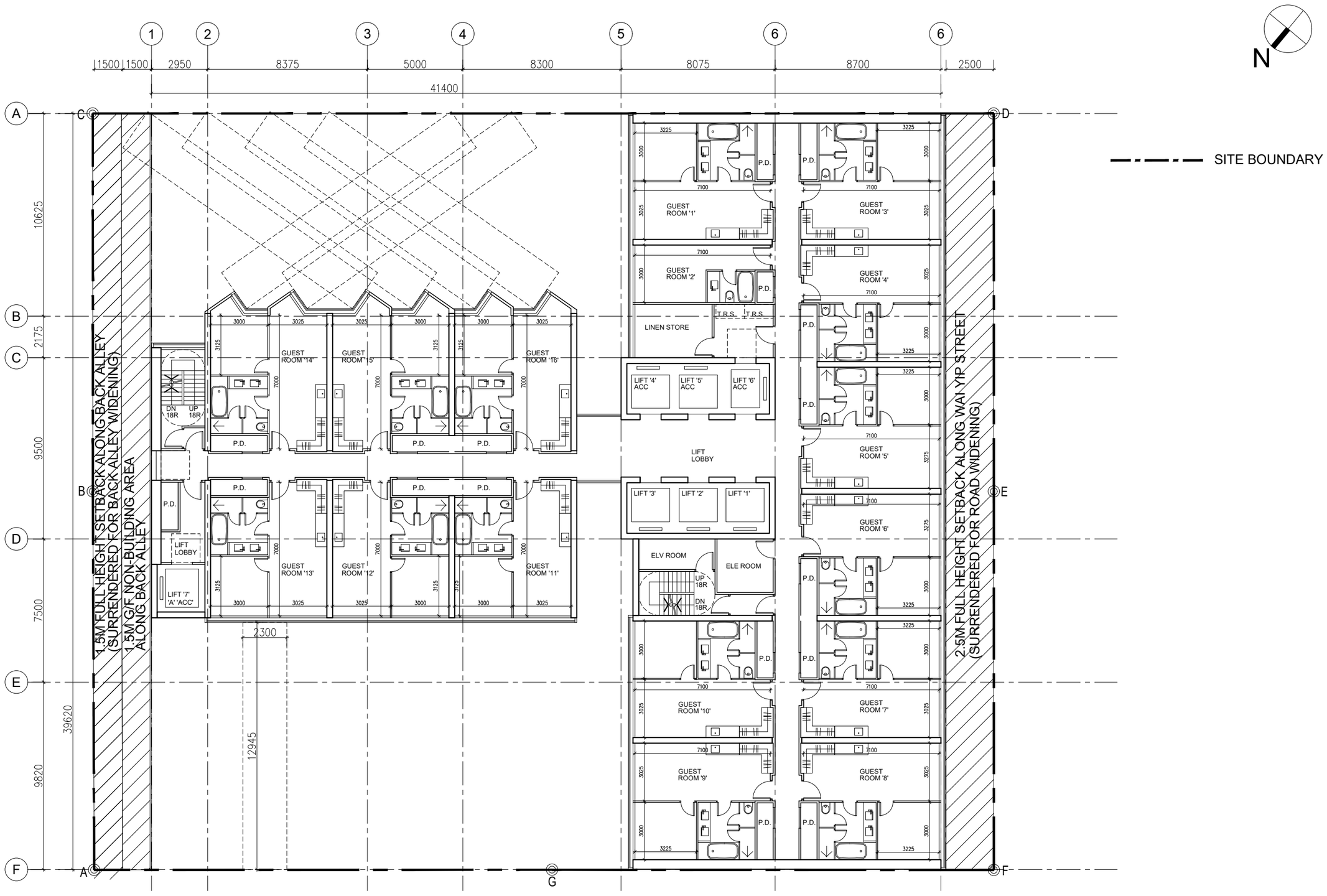


SCALE BAR

0m 2m 4m 6m 8m 10m

Drawing Title	Scale	Project	Job No.
5/F - 6/F PLAN	1:200 Date 19/08/2024	SECTION 16 PLANNING APPLICATION FOR PROPOSED HOTEL WITH MINOR RELAXATION OF PLOT RATIO AND BUILDING HEIGHT RESTRICTIONS AT 201 AND 203 WAI YIP STREET, KWUN TONG, KOWLOON	A-2302

ANDREW LEE KING FUN & ASSOCIATES ARCHITECTS LTD

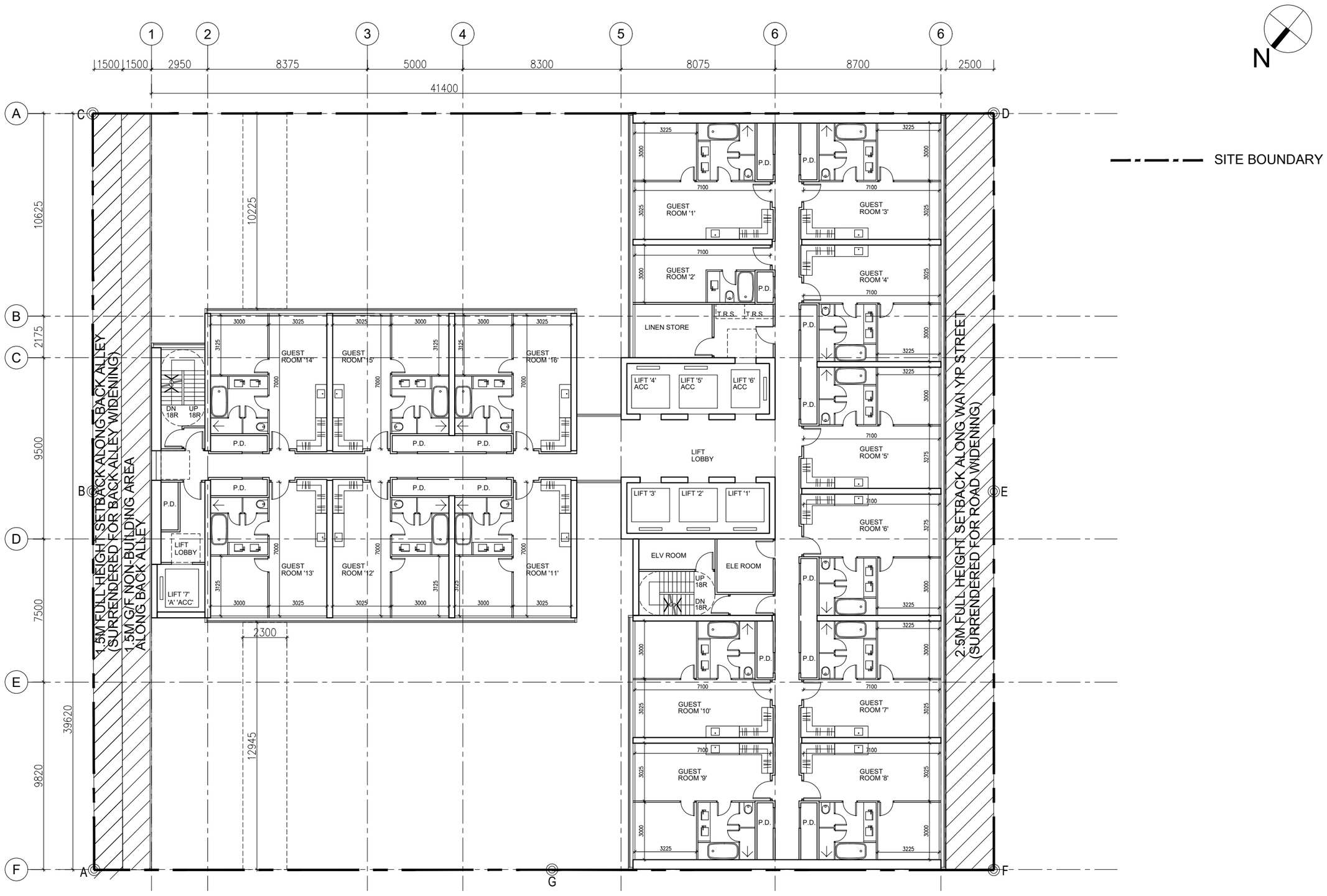


SCALE BAR

0m 2m 4m 6m 8m 10m

Drawing Title	Scale	Project	Job No.
7/F - 11/F PLAN	1:200 Date 19/08/2024	SECTION 16 PLANNING APPLICATION FOR PROPOSED HOTEL WITH MINOR RELAXATION OF PLOT RATIO AND BUILDING HEIGHT RESTRICTIONS AT 201 AND 203 WAI YIP STREET, KWUN TONG, KOWLOON	A-2302

ALKF+
ANDREW LEE KING FUN & ASSOCIATES ARCHITECTS LTD

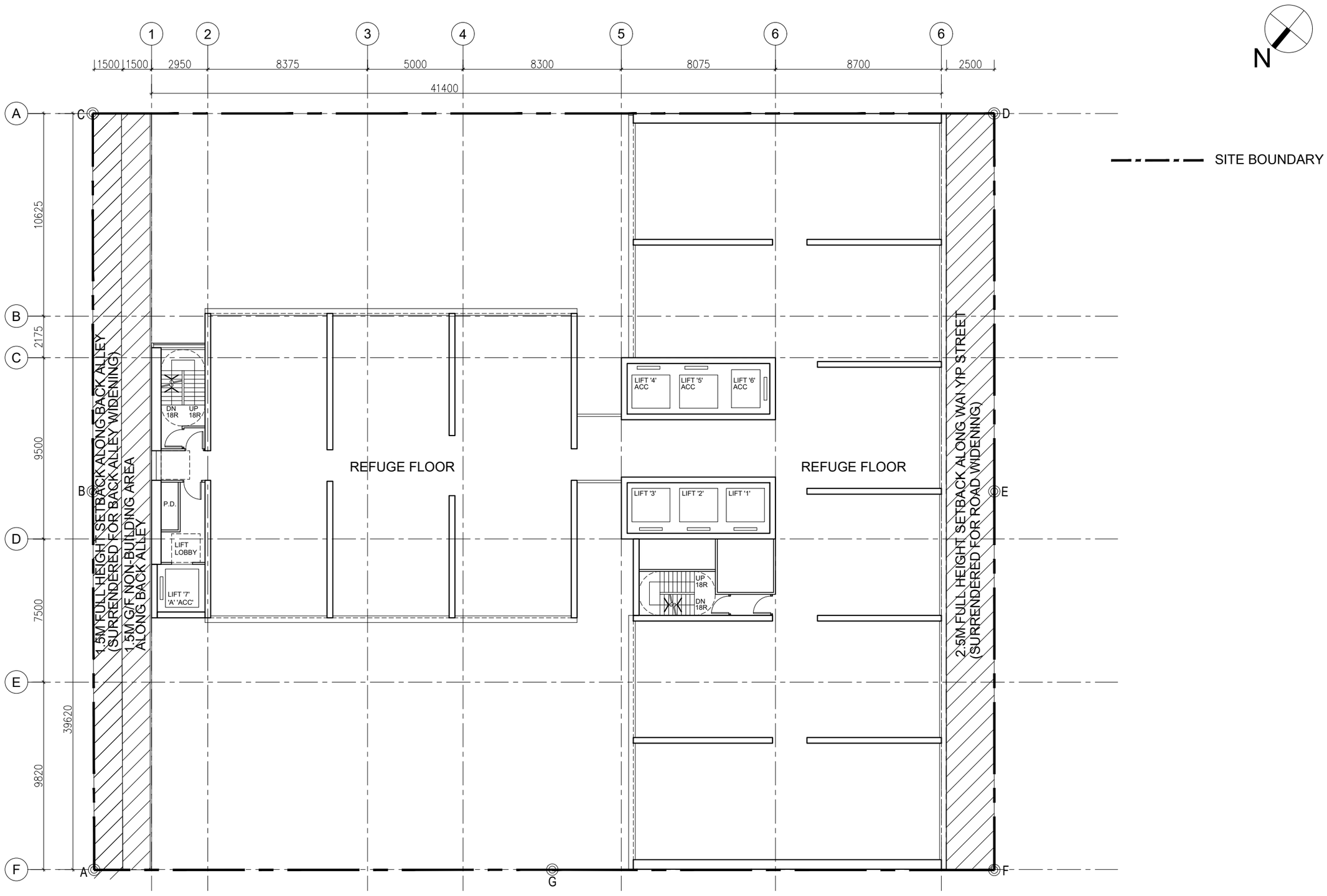


SCALE BAR

0m 2m 4m 6m 8m 10m

Drawing Title	Scale	Project	Job No.
12/F - 16/F, 18/F - 28/F PLAN	1:200 Date 19/08/2024	SECTION 16 PLANNING APPLICATION FOR PROPOSED HOTEL WITH MINOR RELAXATION OF PLOT RATIO AND BUILDING HEIGHT RESTRICTIONS AT 201 AND 203 WAI YIP STREET, KWUN TONG, KOWLOON	A-2302

ALKF+
ANDREW LEE KING FUN & ASSOCIATES ARCHITECTS LTD

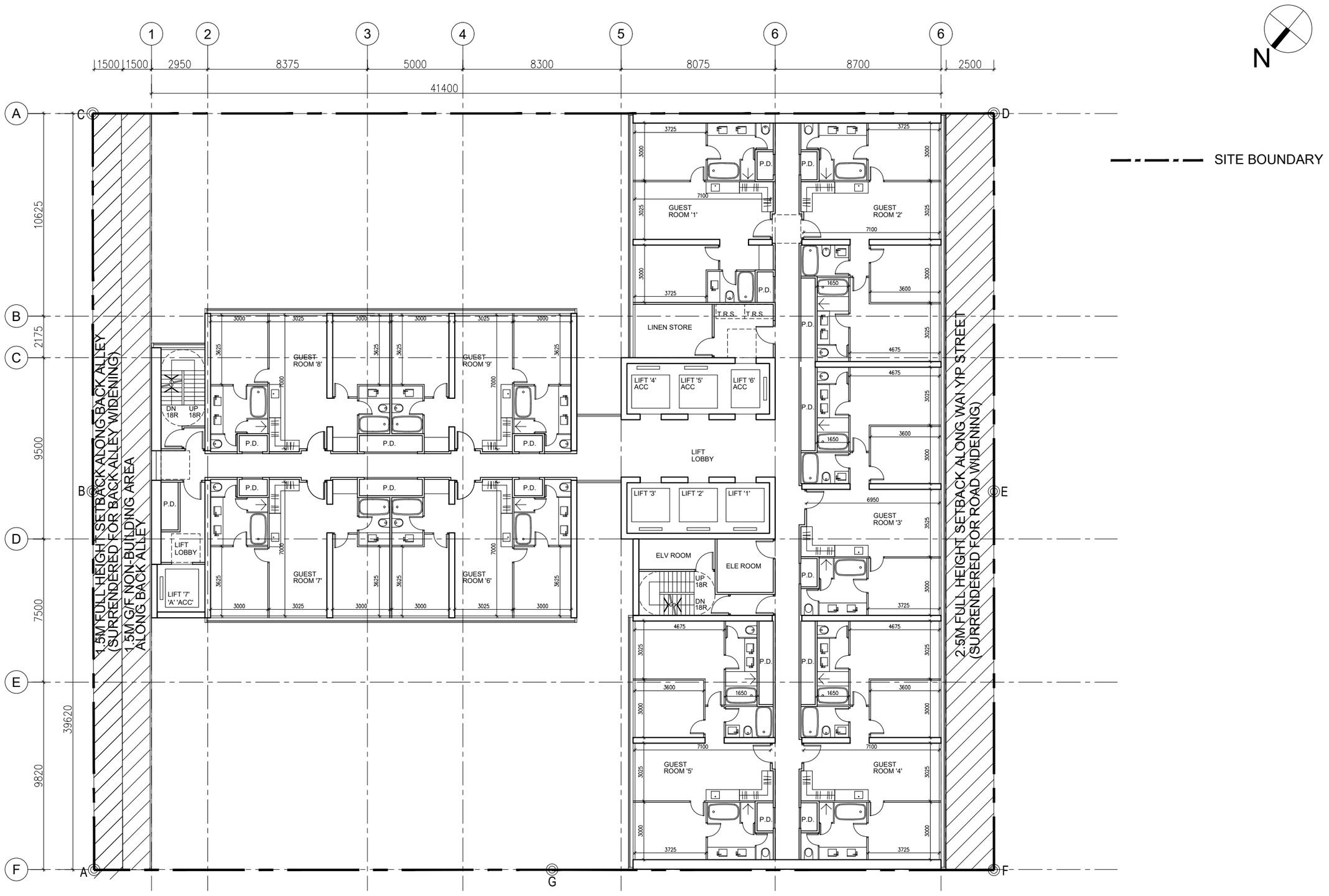


SCALE BAR

0m 2m 4m 6m 8m 10m

Drawing Title 17/F PLAN	Scale 1:200 Date 19/08/2024	Project SECTION 16 PLANNING APPLICATION FOR PROPOSED HOTEL WITH MINOR RELAXATION OF PLOT RATIO AND BUILDING HEIGHT RESTRICTIONS AT 201 AND 203 WAI YIP STREET, KWUN TONG, KOWLOON	Job No. A-2302

ALKF+
ANDREW LEE KING FUN & ASSOCIATES ARCHITECTS LTD

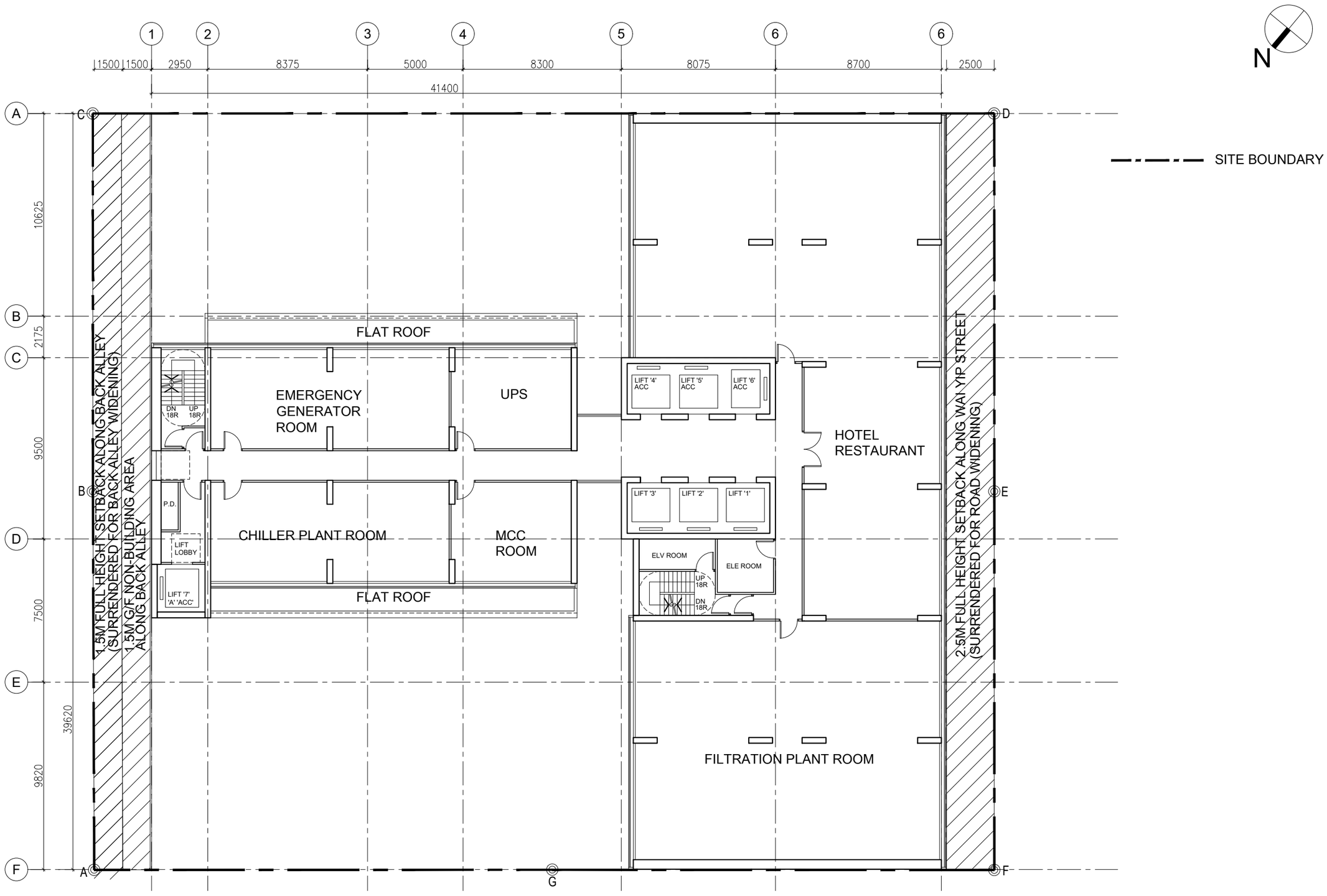


SCALE BAR

0m 2m 4m 6m 8m 10m

Drawing Title	Scale	Project	Job No.
29/F - 30/F PLAN	1:200 Date 19/08/2024	SECTION 16 PLANNING APPLICATION FOR PROPOSED HOTEL WITH MINOR RELAXATION OF PLOT RATIO AND BUILDING HEIGHT RESTRICTIONS AT 201 AND 203 WAI YIP STREET, KWUN TONG, KOWLOON	A-2302

ALKF+ ANDREW LEE KING FUN & ASSOCIATES ARCHITECTS LTD

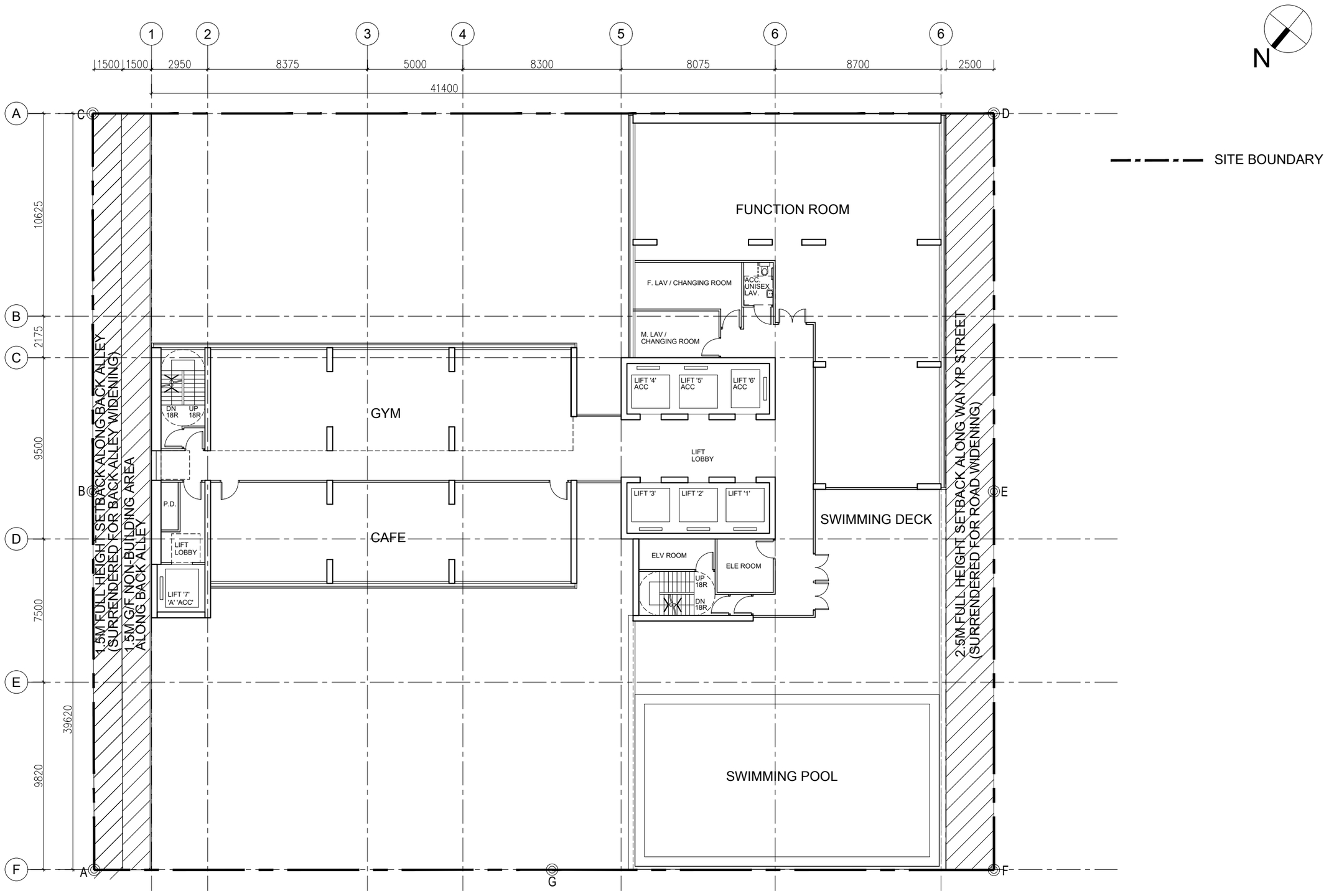


SCALE BAR

0m 2m 4m 6m 8m 10m

Drawing Title	Scale	Project	Job No.
31/F PLAN	1:200	SECTION 16 PLANNING APPLICATION FOR PROPOSED HOTEL WITH MINOR RELAXATION OF PLOT RATIO AND BUILDING HEIGHT RESTRICTIONS AT 201 AND 203 WAI YIP STREET, KWUN TONG, KOWLOON	A-2302
	Date 19/08/2024		

ALKF+ ANDREW LEE KING FUN & ASSOCIATES ARCHITECTS LTD

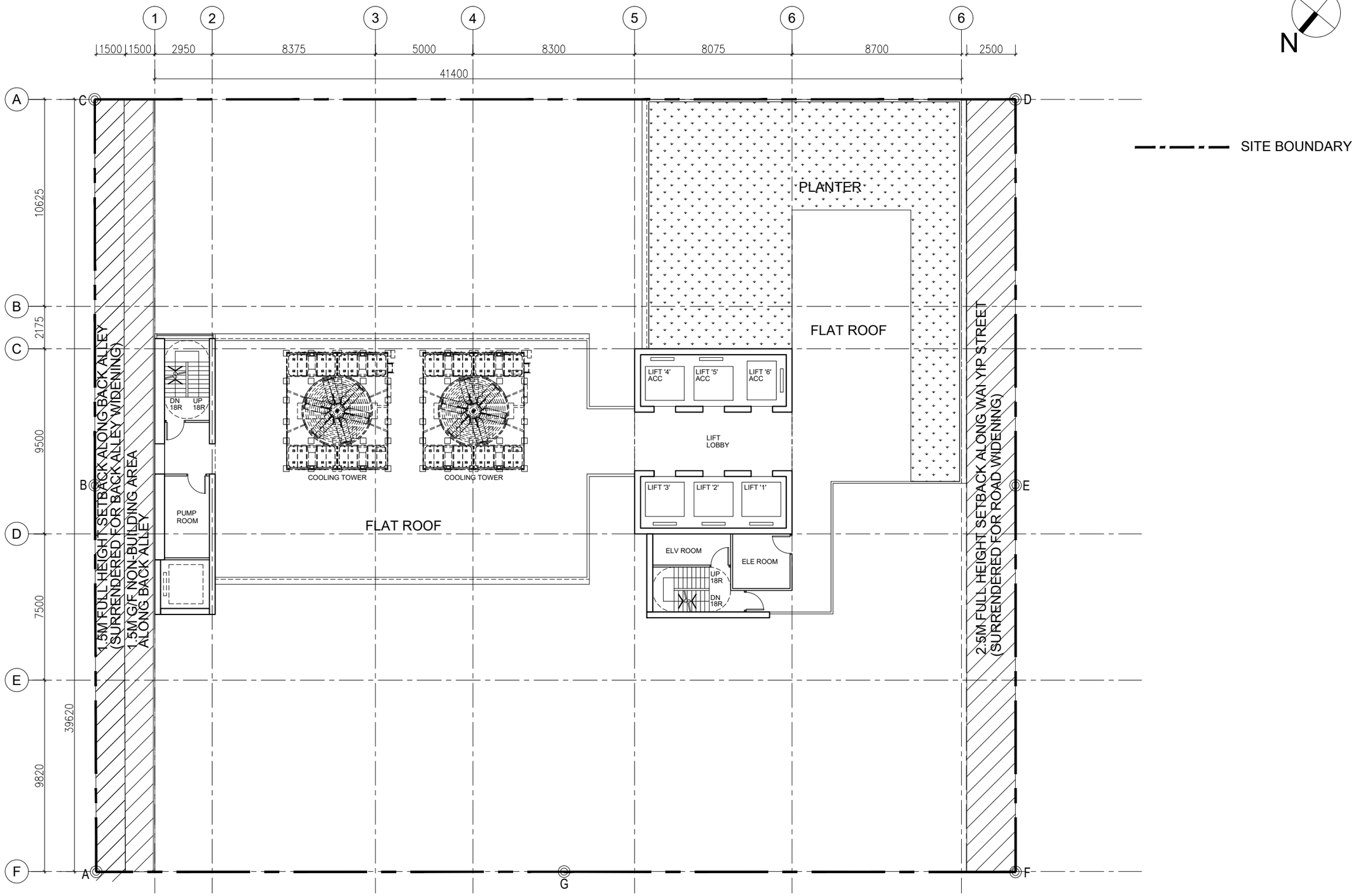


SCALE BAR

0m 2m 4m 6m 8m 10m

Drawing Title 32/F PLAN	Scale 1:200 Date 19/08/2024	Project SECTION 16 PLANNING APPLICATION FOR PROPOSED HOTEL WITH MINOR RELAXATION OF PLOT RATIO AND BUILDING HEIGHT RESTRICTIONS AT 201 AND 203 WAI YIP STREET, KWUN TONG, KOWLOON	Job No. A-2302

ALKF+
ANDREW LEE KING FUN & ASSOCIATES ARCHITECTS LTD



SCALE BAR

0m 2m 4m 6m 8m 10m

Drawing Title	Scale	Project	Job No.
ROOF FLOOR PLAN	1:200 Date 19/08/2024	SECTION 16 PLANNING APPLICATION FOR PROPOSED HOTEL WITH MINOR RELAXATION OF PLOT RATIO AND BUILDING HEIGHT RESTRICTIONS AT 201 AND 203 WAI YIP STREET, KWUN TONG, KOWLOON	A-2302

ANDREW LEE KING FUN & ASSOCIATES ARCHITECTS LTD

Appendix 2.1 Detailed Sewerage Impact Assessment Calculations

Table 1. Calculation of Sewage Generation Rate of the Proposed Development (201 & 203 Wai Yip Street, Kwun Tong, Kowloon)

1. Hotel (3/F to 30/F)

Assumed area	=	25378	m^2
Assumed floor area per employee	=	31.3	m^2 per employee -- (refer to Table 8 of CIFSUS - Hotels and Boarding Houses)
Total number of employees	=	812	employees
Design flow for commercial employees	=	1.58	m^3/employee/day -- (refer to Table T-2 of GESF - J10 Restaurant & Hotels)
Sewage generation rate	=	**1283.1**	m^3/day

2. Restaurant & Café (2/F, 31/F & 32/F)

Assumed Floor Area	=	861	m^2
Assumed floor area per employee	=	19.6	m^2 per employee -- (refer to Table 8 of CIFSUS - Restaurant)
Total number of employees	=	44	employees
Design flow for commercial employees	=	1.58	m^3/employee/day -- (refer to Table T-2 of GESF - J10 Restaurant & Hotels)
Sewage generation rate	=	**69.4**	m^3/day

3. Shop (G/F)

Assumed Floor Area	=	107	m^2
Assumed floor area per employee	=	28.6	m^2 per employee -- (refer to Table 8 of CIFSUS - Retail Trade)
Total number of employees	=	4	employees
Design flow for commercial employees	=	0.28	m^3/employee/day -- (refer to Table T-2 of GESF - J4 Wholesale & Retail)
Sewage generation rate	=	**1.0**	m^3/day

3. Indoor Swimming Pool

Assumed area	=	120	m^2
Assumed depth of water	=	1.5	m
Volume of water	=	180.0	m^3
Turnover Rate	=	4.0	hr (CAP132, Section 42 Swimming Pools Regulation (covered))
Surface loading rate of filter	=	50.0	m^3/m^2/hr
Filter areas required	=	0.9	m^2
Backwashing flow rate	=	30.0	m^3/m^2/hr
Design flow for backwashing	=	27.0	m^3/hr
Backwash duration	=	3.0	min/day
Backwash generation rate	=	1.35	m^3/day
Backwash generation rate	=	**7.5**	litre/sec

Total Flow from Proposed Development

Flow Rate	=	1353.6	m^3/day
Catchment Inflow Factor	=	1.1	Refer to Table T-4, Catchment Infow Factor: East Kowloon
Flow Rate with catchment inflow factor	=	1488.9	m^3/day
Contributing Population	=	5515	people
Peaking factor	=	5	Refer to Table T-5 of GESF for population 5,000-10,000 incl. stormwater allowance
Peak Flow (without swimming pool)	=	7444.6	m^3/day
	=	86.2	litre/sec
Peak Flow (without swimming pool)	=	**93.7**	litre/sec

Table 2. Calculation for Sewage Generation Rate of the Existing Surrounding Building (Catchment A)

Catchment A

1. Career and Kenson Industrial Mansion 金凱工業大廈 (58 Hung To Road, Kwun Tong)

Sewage generation rate	=	**73.3**	m^3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

2. HKI Building 香江國際大廈 (56 Hung To Road, Kwun Tong)

Sewage generation rate	=	**37.4**	m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

3. King Wan Industrial Building 景雲工廠大廈 (54 Hung To Road, Kwun Tong)

Sewage generation rate	=	**41.8**	m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

4. Bamboos Centre 百本中心 (52 Hung To Road, Kwun Tong)

Sewage generation rate	=	**53.2**	m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

5. House of Corona 寶冠大廈 (50 Hung To Road, Kwun Tong)

Sewage generation rate	=	**32.1**	m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

6. Mow Hing Factory Building 茂興工業大廈 (205 Wai Yip Street, Kwun Tong)

Sewage generation rate	=	**52.4**	m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

7. The MOD (207 Wai Yip Street, Kwun Tong)

Sewage generation rate	=	**74.6**	m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

Sub-total Catchment A

Flow Rate	=	364.7	m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)
Flow Rate with Catchment Inflow Factor	=	401.1	m^3/day (refer to Table T-4 of GESF - East Kowloon)
Contributing Population	=	1486	people
Peaking factor	=	6	Refer to Table T-5 of GESF for population 1,000 - 5,000 incl. stormwater allowance
Peak Flow	=	**2406.9**	m^3/day

Total Flow including Proposed Development and Catchment A

Flow Rate	=	1718.2	m^3/day
Flow Rate with Catchment Inflow Factor	=	1890.1	m^3/day (refer to Table T-4 of GESF - East Kowloon)
Contributing Population	=	7000	people
Peaking factor	=	5	Refer to Table T-5 of GESF for population 5,000 - 10,000 incl. stormwater allowance
Peak Flow	=	9450.3	m^3/day
		109.4	litre/sec

Table 3. Calculation for Sewage Generation Rate of the Existing Surrounding Building (Catchment B)

Catchment B

1. GR8 Inno Tech Centre 廣域創科中心 (46 Tsun Yip Street, Kwun Tong)

1f. Sewage generation rate	=	**33.9**	m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

2. CFC - CATIC Building 航空科技大廈 (44 Tsun Yip Street, Kwun Tong)

2f. Sewage generation rate	=	**23.0**	m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

Sub-total Catchment B

Flow Rate	=	56.9	m^3/day
Flow Rate with Catchment Inflow Factor	=	62.6	m^3/day (refer to Table T-4 of GESF - East Kowloon)
Contributing Population	=	232	people
Peaking factor	=	8	Refer to Table T-5 of GESF for population <1,000 incl. stormwater allowance
Peak Flow	=	**500.5**	m^3/day

Total Flow including Proposed Development and Catchment A+B

Flow Rate	=	1775.1	m^3/day
Flow Rate with Catchment Inflow Factor	=	1952.6	m^3/day (refer to Table T-4 of GESF - East Kowloon)
Contributing Population	=	7232	people
Peaking factor	=	5	Refer to Table T-5 of GESF for population 5,000 - 10,000 incl. stormwater allowance
Peak Flow	=	9763.2	m^3/day
		113.0	litre/sec

Table 4. Calculation for Sewage Generation Rate of the Existing Surrounding Building (Catchment C)

Catchment C

1. Capital Trade Centre 京貿中心 (62 Tsun Yip Street, Kwun Tong)
Sewage generation rate = **48.2** m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

2. South Asia Commercial Centre 南益商業中心 (64 Tsun Yip Street, Kwun Tong)
Sewage generation rate = **41.4** m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

3. Howard Factory Building 巧運工業大廈 (66 Tsun Yip Street, Kwun Tong)
Sewage generation rate = **69.8** m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

4. Crown Industrial Building 冠力工業大廈 (106 How Ming Street)
Sewage generation rate = **75.6** m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

5. South Asia Building 南益集團大廈 (108 How Ming Street, Kwun Tong)
Sewage generation rate = **46.5** m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

6. Hing Win Factory Building 興運工業大廈 (110 How Ming Street, Kwun Tong)
Sewage generation rate = **69.5** m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

7. Union Building 友聯大廈 (112 How Ming Street, Kwun Tong)
Sewage generation rate = **15.9** m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

8. Speedy Industrial Building 迅達工業大廈 (114 How Ming Street, Kwun Tong)
Sewage generation rate = **71.1** m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

9. Fully Industrial Building 富利工業大廈 (6 Tsun Yip Lane, Kwun Tong)
Sewage generation rate = **48.2** m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

10. Good Luck Industrial Building 好運工業大廈 (105 How Ming Street, Kwun Tong)
Sewage generation rate = **66.4** m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

11. Kwok Kee Group Centre 國基集團中心 (107 How Ming Street, Kwun Tong)
Sewage generation rate = **28.3** m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

12. Wing Cheung Industrial Building 榮昌工業大廈 (109 How Ming Street, Kwun Tong)
Sewage generation rate = **69.3** m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

13. Futura Plaza 富利廣場 (111 - 113 How Ming Street, Kwun Tong)
Sewage generation rate = **96.6** m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

14. Po Shau Centre 柏秀中心 (115 How Ming Street, Kwun Tong)
Sewage generation rate = **45.8** m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

15. Entrepot Centre 港貿中心 (117 How Ming Street, Kwun Tong)
Sewage generation rate = **45.8** m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

16. Kwun Tong Inland Lots 1 S.A , 1 RP, 3 and 15 (A/K14/807)
Sewage generation rate = **1215.0** m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

Table 4. Calculation for Sewage Generation Rate of the Existing Surrounding Building (Catchment C)

17. Crocodile Centre 鱷魚恤中心 (79 Hoi Yuen Road, Kwun Tong)
Sewage generation rate = **68.7** m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

18. Kwun Tong Fire Station 觀塘消防局 (426 Kwun Tong Road, Kwun Tong)
Sewage generation rate = **5.6** m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

19. APM Millennium City 5 創紀之城五期 (418 Kwun Tong Road, Kwun Tong)
Sewage generation rate = **548.3** m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

20. One Pacific Centre 1亞太中心(414 Kwun Tong Road, Kwun Tong)
Sewage generation rate = **56.4** m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

21. Kwun Tong View 觀點中心 (410 Kwun Tong Road, Kwun Tong)
Sewage generation rate = **59.0** m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

22. Yip Win Factory Building 業運工業大廈 (10 Tsun Yip Lane, Kwun Tong)
Sewage generation rate = **56.2** m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

23. World Interests Building 世貿大樓 (8 Tsun Yip Lane, Kwun Tong)
Sewage generation rate = **35.7** m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

24. Tsun Yip Lane "B" Substation 駿業里"B"變電站 (408 Kwun Tong Road, Kwun Tong)
Sewage generation rate = **1.0** m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

25. Selwyn Factory Building 時運工業大廈 (404 Kwun Tong Road, Kwun Tong)
Sewage generation rate = **79.2** m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

26. Kwun Tong Town Centre (DA1-GIC+DA2+DA3+DA4+DA5)
Sewage generation rate = **8381.1** m^3/day (With reference to the Approved SIA in the Planning Application A/K14/819)

Sub-total Catchment C
Flow Rate = 11344.8 m3/day
Flow Rate with Catchment Inflow Factor = 12479.2 m^3/day (refer to Table T-4 of GESF - East Kowloon)
Contributing Population = 46219 people
Peaking factor = 4 Refer to Table T-5 of GESF for population 10,000 - 50,000 incl. stormwater allowance
Peak Flow = **49916.9** m^3/day

Total Flow including Proposed Development and Catchment A+B+C
Flow Rate = 13119.9 m^3/day
Flow Rate with Catchment Inflow Factor = 14431.9 m^3/day (refer to Table T-4 of GESF - East Kowloon)
Contributing Population = 53451 people
Peaking factor = 4 Refer to Table T-5 of GESF for population >50,000 incl. stormwater allowance
Peak Flow = 58003.1 m^3/day
671.3 litre/sec

Table 5. Calculation for Sewage Generation Rate of the Existing Surrounding Building (Catchment D1)

Catchment D1

1. Full Pipe Capacity for all the buildings discharged to FMH4042956

Sewage generation rate	=	561.4	L/s
	=	48500.8	m3/day

Total Flow including Proposed Development and Catchment A+B+C+D1

Flow Rate [1]	=	13119.9	m^3/day
Flow Rate with Catchment Inflow Factor	=	14431.9	m^3/day (refer to Table T-4 of GESF - East Kowloon)
Contributing Population	=	53451	people
Peaking factor	=	4	Refer to Table T-5 of GESF for population >50,000 incl. stormwater allowance
Peak Flow [1]	=	106503.9	m^3/day
		1232.7	litre/sec

[1] As full pipe capacity is assumed for Catchment D1, peaking factor shall not be considered in the calculation. Instead, it shall be added in the Peak Flow directly.

Table 6. Calculation for Sewage Generation Rate of the Existing Surrounding Building (Catchment D2)

Catchment D2

1. Winner Factory Building 幸運工業大廈 (55 Hung To Road, Kwun Tong)

Sewage generation rate	=	**143.5**	m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

2. COS centre 中海日升中心 (56 Tsun Yip Street, Kwun Tong)

Sewage generation rate	=	**1534.5**	m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

3. TY Wider 電訊數碼大樓 (58 Tsun Yip Street, Kwun Tong)

Sewage generation rate	=	**86.8**	m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

4. Tsun Win Factory Building 駿運工業大廈 (60 Tsun Yip Street, Kwun Tong)

Sewage generation rate	=	**70.7**	m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

3. Sun Wing Building 新榮大廈 (48 Tsun Yip, Kwun Tong)

Sewage generation rate	=	**16.8**	m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

Sub-total Catchment D2

Flow Rate	=	1852.3	m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)
Flow Rate with Catchment Inflow Factor	=	2037.5	m^3/day (refer to Table T-4 of GESF - East Kowloon)
Contributing Population	=	7546	people
Peaking factor	=	5	Refer to Table T-5 of GESF for population 5,000 - 10,000 incl. stormwater allowance
Peak Flow	=	**10187.5**	m^3/day

Total Flow including Proposed Development and Catchment A+B+C+D1+D2

Flow Rate	=	14972.2	m^3/day
Flow Rate with Catchment Inflow Factor	=	16469.4	m^3/day (refer to Table T-4 of GESF - East Kowloon)
Contributing Population	=	60998	people
Peaking factor	=	4	Refer to Table T-5 of GESF for population >50,000 incl. stormwater allowance
Peak Flow [1]	=	113394.6	m^3/day
		1312.4	litre/sec

[1] Sewage from D1 is added in the Peak Flow directly.

Table 7. Calculation for Sewage Generation Rate of the Existing Surrounding Building (Catchment E)

Catchment E

1. Tsun Yip Cooked Food Market 駿業熟食市場 (67 Tsun Yip Street, Kwun Tong)

Sewage generation rate	=	**289.1**	m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

2. Free Trade Centre 佳貿中心 (49 Tsun Yip Street, Kwun Tong)

Sewage generation rate	=	**15.4**	m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

3. Southtex Building 南達大廈 (51 Tsun Yip Street, Kwun Tong)

Sewage generation rate	=	**25.8**	m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

4. Horizon Sea 海傲 (32 Hung To Road, Kwun Tong)

Sewage generation rate	=	**57.8**	m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

Sub-total Catchment E

Flow Rate	=	388.2	m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)
Flow Rate with Catchment Inflow Factor	=	427.0	m^3/day (refer to Table T-4 of GESF - East Kowloon)
Contributing Population	=	1581	people
Peaking factor	=	6	Refer to Table T-5 of GESF for population 1,000-5,000 incl. stormwater allowance
Peak Flow	=	**2562.0**	m^3/day

Total Flow including Proposed Development and Catchment A+B+C+D1+D2+E

Flow Rate	=	15360.3	m^3/day
Flow Rate with Catchment Inflow Factor	=	16896.4	m^3/day (refer to Table T-4 of GESF - East Kowloon)
Contributing Population	=	62579	people
Peaking factor	=	4	Refer to Table T-5 of GESF for population >50,000 incl. stormwater allowance
Peak Flow [1]	=	#######	m^3/day
		1329.0	litre/sec

[1] Sewage from D1 is added in the Peak Flow directly.

Table 8. Calculation for Sewage Generation Rate of the Existing Surrounding Building (Catchment H)

Catchment F

1. Wai Yip Street Substation 偉業街變電站 (199 Wai Yip Street, Kwun Tong)

1f. Sewage generation rate	=	**0.99**	m^3/day

Sub-total Catchment F

Flow Rate	=	1.0	m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)
Flow Rate with Catchment Inflow Factor	=	1.1	m^3/day (refer to Table T-4 of GESF - East Kowloon)
Contributing Population	=	4	people
Peaking factor	=	8	Refer to Table T-5 of GESF for population <1,000 incl. stormwater allowance
Peak Flow	=	**8.7**	m^3/day

Total Flow including Proposed Development and Catchment A+B+C+D1+D2+E+F

Flow Rate	=	15361.3	m^3/day
Flow Rate with Catchment Inflow Factor	=	16897.5	m^3/day (refer to Table T-4 of GESF - East Kowloon)
Contributing Population	=	62583	people
Peaking factor	=	4	Refer to Table T-5 of GESF for population >50,000 incl. stormwater allowance
Peak Flow [1]	=	66324.7	m^3/day
		767.6	litre/sec

[1] Sewage from D1 is added in the Peak Flow directly.

Table 9. Calculation for Sewage Generation Rate of the Existing Surrounding Building (Catchment F)

Catchment G

1. Full Pipe Capacity for all the buildings discharged to FMH4042830

Sewage generation rate	=	128.5	L/s
	=	11100.9	m3/day

Total Flow including Proposed Development and Catchment A+B+C+D1+D2+E+F+G

Flow Rate	=	15361.3	m^3/day
Flow Rate with Catchment Inflow Factor	=	16897.5	m^3/day (refer to Table T-4 of GESF - East Kowloon)
Contributing Population	=	62583	people
Peaking factor	=	4	Refer to Table T-5 of GESF for population >50,000 incl. stormwater allowance
Peak Flow [1]	=	125926.4	m^3/day
		1457.5	litre/sec

[1] As full pipe capacity is assumed for Catchment G, peaking factor shall not be considered in the calculation. Instead, it shall be added in the Peak Flow directly.

Table 10. Calculation for Sewage Generation Rate of the Existing Surrounding Building (Catchment G)

Catchment H

1. Two Harbour Square (180 Wai Yip Street, Kwun Tong)

Sewage generation rate	=	**233.3**	m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

2. One Harbour Square (181 Hoi Bun Road, Kwun Tong)

Sewage generation rate	=	**157.8**	m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)

Sub-total Catchment H

Flow Rate	=	391.0	m3/day (With reference to the Approved SIA in the Planning Application A/K14/808)
Flow Rate with Catchment Inflow Factor	=	430.1	m^3/day (refer to Table T-4 of GESF - East Kowloon)
Contributing Population	=	1593	people
Peaking factor	=	6	Refer to Table T-5 of GESF for population 1,000 - 5,000 incl. stormwater allowance
Peak Flow	=	**2580.9**	m^3/day

Total Flow including Proposed Development and Catchment A+B+C+D1+D2+E+F+G+H

Flow Rate	=	15752.4	m^3/day
Flow Rate with Catchment Inflow Factor	=	17327.6	m^3/day (refer to Table T-4 of GESF - East Kowloon)
Contributing Population	=	64176	people
Peaking factor	=	4	Refer to Table T-5 of GESF for population >50,000 incl. stormwater allowance
Peak Flow [1]	=	127358.8	m^3/day
		1474.1	litre/sec

[1] Sewage from D1 and G are added in the Peak Flow directly.

Table 11. Catchment Summary

Subject Site			
Flow Rate	=	1488.9	m^3/day
Flow Rate with Catchment Inflow Factor	=	1637.8	m^3/day (refer to Table T-4 of GESF - East Kowloon)
Contributing Population	=	6066	people
Peaking factor	=	5	Refer to Table T-5 of GESF for population 1,000-5,000 incl. stormwater allowance
Peak Flow	=	8189.0	m^3/day
	=	**94.8**	litre/sec
Subject Site + Catchment A			
Flow Rate	=	1718.2	m^3/day
Flow Rate with Catchment Inflow Factor	=	1890.1	m^3/day (refer to Table T-4 of GESF - East Kowloon)
Contributing Population	=	7000	people
Peaking factor	=	5	Refer to Table T-5 of GESF for population 1,000 - 5,000 incl. stormwater allowance
Peak Flow	=	9450.3	m^3/day
	=	**109.4**	litre/sec
Subject Site + Catchment A + Catchment B			
Flow Rate	=	1775.1	m^3/day
Flow Rate with Catchment Inflow Factor	=	1952.6	m^3/day (refer to Table T-4 of GESF - East Kowloon)
Contributing Population	=	7232	people
Peaking factor	=	5	Refer to Table T-5 of GESF for population 1,000 - 5,000 incl. stormwater allowance
Peak Flow	=	9763.2	m^3/day
	=	**113.0**	litre/sec
Subject Site + Catchment A + Catchment B + Catchment C + Catchment D1 + Catchment D2 + Catchment E			
Flow Rate	=	15360.3	m^3/day
Flow Rate with Catchment Inflow Factor	=	16896.4	m^3/day (refer to Table T-4 of GESF - East Kowloon)
Contributing Population	=	62579	people
Peaking factor	=	4	Refer to Table T-5 of GESF for population 10,000-50,000 incl. stormwater allowance
Peak Flow	=	114821.9	m^3/day
	=	**1329.0**	litre/sec
Subject Site + Catchment A + Catchment B + Catchment C + Catchment D1 + Catchment D2 + Catchment E + Catchment F			
Flow Rate	=	15361.3	m^3/day
Flow Rate with Catchment Inflow Factor	=	16897.5	m^3/day (refer to Table T-4 of GESF - East Kowloon)
Contributing Population	=	62583	people
Peaking factor	=	4	Refer to Table T-5 of GESF for population 10,000-50,000 incl. stormwater allowance
Peak Flow	=	114825.5	m^3/day
	=	**1329.0**	litre/sec
Subject Site + Catchment A + Catchment B + Catchment C + Catchment D1 + Catchment D2 + Catchment E + Catchment F + Catchment G + Catchment H			
Flow Rate	=	15752.4	m^3/day
Flow Rate with Catchment Inflow Factor	=	17327.6	m^3/day (refer to Table T-4 of GESF - East Kowloon)
Contributing Population	=	64176	people
Peaking factor	=	4	Refer to Table T-5 of GESF for population 10,000-50,000 incl. stormwater allowance
Peak Flow	=	127358.8	m^3/day
	=	**1474.1**	litre/sec

Table 12. Comparision of the Hydraulic Capacity of Existing and Proposed Sewers for Sewerage generated from the Proposed Development and Surrounding Catchment Areas

Manhole Reference	Manhole Reference	Pipe Diameter	Area	Wetted Perimeter	Pipe Length	Invert Level 1	Invert Level 2	k_s	R	s	V	Q	Estimated Cumulative Peak Flow	Percentage of Pipe Capacity	Status	Remarks
		m	m^2	m	m	mPD	mPD	mm	m		m/s	L/s	L/s	%		
Terminal Manhole	FMH4043092	0.300	0.071	0.942	3.0	1.57	1.53	0.3	0.075	0.0133	1.9662	139.0	94.8	68%	OK	Subject Site
FMH4043092	FMH4043093	0.225	0.040	0.707	4.9	1.53	1.48	0.6	0.056	0.0102	1.3194	52.5	109.4	208%	Spill	Subject Site + Catchment A
FMH4043093	FMH4043094	0.225	0.040	0.707	9.0	1.46	1.43	3.0	0.056	0.0033	0.5902	23.5	113.0	482%	Spill	Subject Site + Catchment A + Catchment B
FMH4043094	FMH4043095	0.225	0.040	0.707	7.6	1.43	1.37	3.0	0.056	0.0079	0.9092	36.2	113.0	313%	Spill	Subject Site + Catchment A + Catchment B
FMH4043095	FMH4042874	0.375	0.110	1.178	5.3	1.28	0.50	0.6	0.094	0.1460	6.9542	768.1	113.0	15%	OK	Subject Site + Catchment A + Catchment B
FMH4042874	FMH4042875	1.050	0.866	3.299	23.6	-1.17	-1.21	0.6	0.263	0.0017	1.4086	1219.7	1329.0	109%	Spill	Subject Site + Catchment A + Catchment B + Catchment C + Catchment D1 + Catchment D2 + Catchment E
FMH4042875	FMH4042876	1.050	0.866	3.299	101.3	-1.21	-1.36	0.6	0.263	0.0015	1.3146	1138.3	1329.0	117%	Spill	Subject Site + Catchment A + Catchment B + Catchment C + Catchment D1 + Catchment D2 + Catchment E + Catchment F
FMH4042876	FMH4042877	1.050	0.866	3.299	37.0	-1.36	-1.41	0.6	0.263	0.0014	1.2548	1086.5	1474.1	136%	Spill	Subject Site + Catchment A + Catchment B + Catchment C + Catchment D1 + Catchment D2 + Catchment E + Subject F + Subject G + Subject H
FMH4042877	FGJ4003400	1.050	0.866	3.299	24.0	-1.41	/	0.6	0.263	0.0014	1.2548	1086.5	1474.1	136%	Spill	Subject Site + Catchment A + Catchment B + Catchment C + Catchment D1 + Catchment D2 + Catchment E + Subject F + Subject G + Subject H
FGJ4003400	FGJ4003380	1.050	0.866	3.299	2.5	-1.41	/	0.6	0.263	0.0014	1.2778	1106.4	1474.1	133%	Spill	Subject Site + Catchment A + Catchment B + Catchment C + Catchment D1 + Catchment D2 + Catchment E + Subject F + Subject G + Subject H

Remarks:

(1) g=gravitational acceleration; k_s=equivalent sand roughness; s=gradient; v=kinematic viscosity of water; V=mean velocity

(2) Table 2: The value of ks = 0.6mm is used for the calculation of slimed clayware sewer, poor condition, with velocity flowing half full to be at least 1.2m/s (based on Table 5: Recommended roughness values in Sewerage Manual);
The value of ks = 3mm is used for the calculation of slimed clayware sewer, poor condition, with velocity flowing half full to be less than 1.2m/s (based on Table 5: Recommended roughness values in Sewerage Manual)

(3) The value of velocity (V) is referred to the Tables for the hydraulic design of pipes, sewers and channels (8th edition)

(4) Equation used:

$$V = -2(2gDS)^{0.5}\log\left(\frac{k}{3.7D} + \frac{2.5\nu}{D(2gDS)^{0.5}}\right)$$

(5) As there is no downstream invert level for the sewers connecting FMH402877 to FGJ4003380, the slopes for the sewers are assumed to follow the sewer FWD4048556.

Table 13. Comparision of the Hydraulic Capacity of Existing and Proposed Sewers for Sewerage generated from the Proposed Development and Surrounding Catchment Areas

Manhole Reference	Manhole Reference	Pipe Diameter	Area	Wetted Perimeter	Pipe Length	Invert Level 1	Invert Level 2	k_s	R	s	V	Q	Estimated Cumulative Peak Flow	Percentage of Pipe Capacity	Status	Remarks
		m	m^2	m	m	mPD	mPD	mm	m		m/s	L/s	m^3/s	%		
Terminal Manhole	FMH4043092	0.300	0.071	0.942	3.0	1.57	1.53	0.3	0.075	0.0133	1.9662	139.0	94.8	68%	OK	Subject Site
FMH4043092	FMH4043093	0.375	0.110	1.178	4.9	1.53	1.48	0.6	0.094	0.0102	1.8298	202.1	109.4	54%	OK	Subject Site + Catchment A
FMH4043093	FMH4043094	0.375	0.110	1.178	9.0	1.48	1.37	3.0	0.094	0.0123	1.5974	176.4	113.0	64%	OK	Subject Site + Catchment A + Catchment B
FMH4043094	FMH4043095	0.375	0.110	1.178	7.6	1.37	1.28	3.0	0.094	0.0119	1.5707	173.5	113.0	65%	OK	Subject Site + Catchment A + Catchment B
FMH4043095	FMH4042874	0.375	0.110	1.178	5.3	1.28	0.50	0.6	0.094	0.1460	6.9542	768.1	113.0	15%	OK	Subject Site + Catchment A + Catchment B
FMH4042874	FMH4042875	1.250	1.227	3.927	23.6	-1.17	-1.21	0.6	0.313	0.0017	1.5693	1925.8	1329.0	69%	OK	Subject Site + Catchment A + Catchment B + Catchment C + Catchment D1 + Catchment D2 + Catchment E
FMH4042875	FMH4042876	1.250	1.227	3.927	101.3	-1.21	-1.36	0.6	0.313	0.0015	1.4646	1797.3	1329.0	74%	OK	Subject Site + Catchment A + Catchment B + Catchment C + Catchment D1 + Catchment D2 + Catchment E + Catchment F
FMH4042876	FMH4042877	1.500	1.767	4.712	37.0	-1.36	-1.41	0.6	0.375	0.0014	1.5646	2764.8	1474.1	53%	OK	Subject Site + Catchment A + Catchment B + Catchment C + Catchment D1 + Catchment D2 + Catchment E + Subject F + Subject G + Subject H
FMH4042877	FGJ4003400	1.500	1.767	4.712	24.0	-1.41	/	0.6	0.375	0.0014	1.5932	2815.4	1474.1	52%	OK	Subject Site + Catchment A + Catchment B + Catchment C + Catchment D1 + Catchment D2 + Catchment E + Subject F + Subject G + Subject H
FGJ4003400	FGJ4003380	1.500	1.767	4.712	2.5	-1.41	/	0.6	0.375	0.0014	1.5932	2815.4	1474.1	52%	OK	Subject Site + Catchment A + Catchment B + Catchment C + Catchment D1 + Catchment D2 + Catchment E + Subject F + Subject G + Subject H

Remarks:

(1) g=gravitational acceleration; k_s=equivalent sand roughness; s=gradient; v=kinematic viscosity of water; V=mean velocity

(2) Table 2: The value of ks = 0.6mm is used for the calculation of slimed clayware sewer, poor condition, with velocity flowing half full to be at least 1.2m/s (based on Table 5: Recommended roughness values in Sewerage Manual);
The value of ks = 3mm is used for the calculation of slimed clayware sewer, poor condition, with velocity flowing half full to be less than 1.2m/s (based on Table 5: Recommended roughness values in Sewerage Manual)

(3) The value of velocity (V) is referred to the Tables for the hydraulic design of pipes, sewers and channels (8th edition)

(4) Equation used: $V = -\sqrt{(8gDs)}\log\left(\frac{k_s}{3.7D} + \frac{2.51v}{D\sqrt{(2gDs)}}\right)$

(5) As there is no downstream invert level for the sewers connecting FMH402877 to FGJ4003380, the slopes for the sewers are assumed to follow the sewer FWD4048556.

(6) The proposed information for upgrading sewers are highlighted in orange.