Appendix VI – Sewerage Impact Assessment

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REDEVELOPMENT OF NOS. 20-24 TAI YAU STREET, SAN PO KONG, KOWLOON, N.K.I.L.S 4735, 4736, 4737, 4738, 4739 RP, 4739 S.A & 4739 S.B

SEWERAGE IMPACT ASSESSMENT

28 July 2025

Ref No: RT24152_02-SIA-01r2

Prepared By:

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712 Prince Edward Road East,
Kowloon, Hong Kong
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Project:	REDEVELOPMENT OF NOS. 20-24 TAI YAU STREET, SAN PO KONG, KOWLOON, N.K.I.L.S 4735, 4736, 4737, 4738, 4739 RP, 4739 S.A & 4739 S.B SEWERAGE IMPACT ASSESSMENT
Report No.:	RT24152_02-SIA-01r2

Revision	Issue Date	Description	Author	Checker	Approver
1	11/07/2025	Issued for Comment	Various	TL	HM
1r1	22/07/2025	Issued for Comment	Various	TL	HM
1r2	28/07/2025	Issued for Comment	Various	TL	HM

Prepared By:

Various

Checked by

Theo Lai

Senior Consultant

Approved by:

Henry Mak

Director

Disclaimer:

- This report is prepared and submitted by Beexergy Consulting Limited with all reasonable skill to the best of our knowledge, incorporating our Terms and Conditions and taking account of the resources devoted to it by agreement with the client.
- We disclaim any responsibility to the client and others in respect of any matters outside the project scope.
- This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies upon the report at their own risk

TABLE OF CONTENTS

1 INTRODUCTION

1.1 PROJECT BACKGROUND

BeeXergy Consulting Limited (the Consultant) was commissioned by the Project Proponent to conduct a Sewerage Impact Assessment for the planning application under Section 16 of the Town Planning Ordinance (Cap. 131) for the Proposed Development. at 20 – 24 Tai Yau Street, San Po Kong, Kowloon.

1.2 PROJECT LOCATION

The Project Site is located at 20 - 24 Tai Yau Street, San Po Kong, Kowloon. It is bounded by Cheong Tai Industrial Building to the north, Tai Yau Street to the west and Tin Hung Industrial Building to the south. **Figure 1** shows the project site location and its surrounding area.

Figure 1 Location of the Project Site

1.3 DESCRIPTION OF THE SITE AND PROPOSED DEVELOPMENT

The Site is currently zoned “Other Specified Uses” annotated “Business” under the Approved Tsz Wan Shan, Diamond Hill and San Po Kong Outline Zoning Plan No. S/K11/31 (“the OZP”).

The Project Site covers an area of approximately 2,426.05m^2, and comprises a 34-storey hotel, including 1-storey of refuge floor, and 1-storey of basement carpark. The master layout plan provided by Project Architect is enclosed in **Appendix A**. The tentative intake year of the proposed development is 2030.

2 SEWERAGE IMPACT ASSESSMENT

2.1 SCOPE OF WORKS

The objectives of this Sewerage Impact Assessment (SIA) is to assess whether the capacity of the sewerage networking is sufficient to cope with the peak sewage flow arising from the proposed hotel development.

2.2 EXISTING AND PLANNED SEWERAGE FACILITIES

The existing sewerage record from the GeoInfo Map of the Lands Department (LandsD) and Drainage Service Department (DSD) are obtained for this SIA and attached in **Appendix B**. Existing public sewer in a 400mm diameter pipe running along Tai Yau Street from FMH4042560 to FMH4042488, and further connect to FMH4042493 at Pat Tat Street.

2.3 PROPOSED SEWERAGE ARRANGEMENT

A proposed terminal manhole (namely TMH1) will be used to collect the sewage generated from the Proposed Development and connect to the existing manhole FMH4042486 via a 400mm diameter sewer pipe. The capacity check of sewer will start from upstream FMH4042560 to downstream FMH4042493. The location of terminal manhole, proposed sewer connection and catchments are shown in **Appendix C** and **Appendix D**.

2.4 ASSESSMENT CRITERIA, METHODOLOGY AND ASSUMPTIONS

The adopted unit flow factor and global peaking factors will adopt the figures stipulated in the Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning (GESF) (Version 1.0)[1] issued by the Environmental Protection Department (EPD) in March 2005 to estimate the sewage flows generated from the site.

With reference to Table T-2: Unit Flow Factors of Commercial Flows and Table T-3: Unit Flow Factors for Industrial Flows in the GESF (Version 1.0), total unit flow generated is the sum of the unit flow factor of employee and the corresponding commercial/ industrial activities of a particular trade under consideration.

With reference to Table T-5: Peaking Factors, P in the GESF (Version 1.0), a global peaking factor of 8 to 4 (including stormwater allowance) is adopted for populations ranging from less than 1,000 to between 10,000 to 50,000 respectively.

[1] http://www.epd.gov.hk/epd/sites/default/files/epd/english/environmentinhk/water/guide_ref/files/gesf.pdf

With reference to Table 5 – Recommended Roughness Values (ks) in the Sewerage Manual (Part 1)[2] issued by the DSD in May 2013, the roughness values for slimed sewers are used to take into account the slime that builds up inside the pipes for both new and existing sewers. The roughness of existing clayware sewers along Tai Yau Street is also assumed as poor condition for worst case, i.e. ks = 0.6 mm and 3mm for clayware slimed sewers with half full flow velocity of 1.2 m/s and 0.75m/s respectively in poor condition.

With reference to Sewerage Manual (Part 1)₂ issued by the DSD in May 2013, the Colebrook- White Equation will be used to analyze the flow conditions. Equation (i) for circular pipes flowing full is adopted to estimate the sewage flow for the Site and following sewers along Pat Tat Street.

(i) for circular pipes flowing full,

$$V = -\sqrt{(8gDs)}\log\left(\frac{ks}{3.7D} + \frac{2.51v}{D\sqrt{(2gDs)}}\right)$$

(ii) for partially full pipes or pipes with non-circular cross-sections,

$$V = -\sqrt{(32gRs)}\log\left(\frac{ks}{14.8R} + \frac{1.255v}{R\sqrt{(32gRs)}}\right)$$

where

V = mean velocity (m/s)
g = gravitational acceleration (m/s2)
R = hydraulic radius (m)
D = internal pipe diameter (m)
ks = hydraulic pipeline roughness (m)
v = kinematic viscosity of fluid (m2/s)
s = hydraulic gradient (energy loss per unit length due to friction)

Figure 2 Colebrook – White Equation

[2] http://www.dsd.gov.hk/EN/Files/Technical_Manual/technical_manuals/Sewerage_Manual_1_Eurocodes.pdf

2.5 ESTIMATION OF SEWAGE FLOW

The estimated average flow rate (ADWF) and total peak flow of the Site are approximately 1232.81 m^3/day and 85.61 L/s respectively. Details of the sewage calculation are included in Table 1 of **Appendix D**. The hydraulic capacity of the proposed 400mm diameter sewer connected between the foul water last manhole and the public sewage manhole FMH4042486 has been checked. The peak flow from the Site contributes to 21.0% of the sewer capacity respectively.

Exceedance cumulative flow of 198.5% and 252.8% are identified at 400mm diameter sewers FWD4048170 and FWD4048167 respectively. Hence, improvement works on the existing sewerage system are required. Mitigation measures by upgrading these two 400mm diameter sewers into 600 mm diameter sewers are proposed as shown in **Appendix E**. After the upgrading works, the cumulative flow is generally no more than 91.5% of sewer capacity.

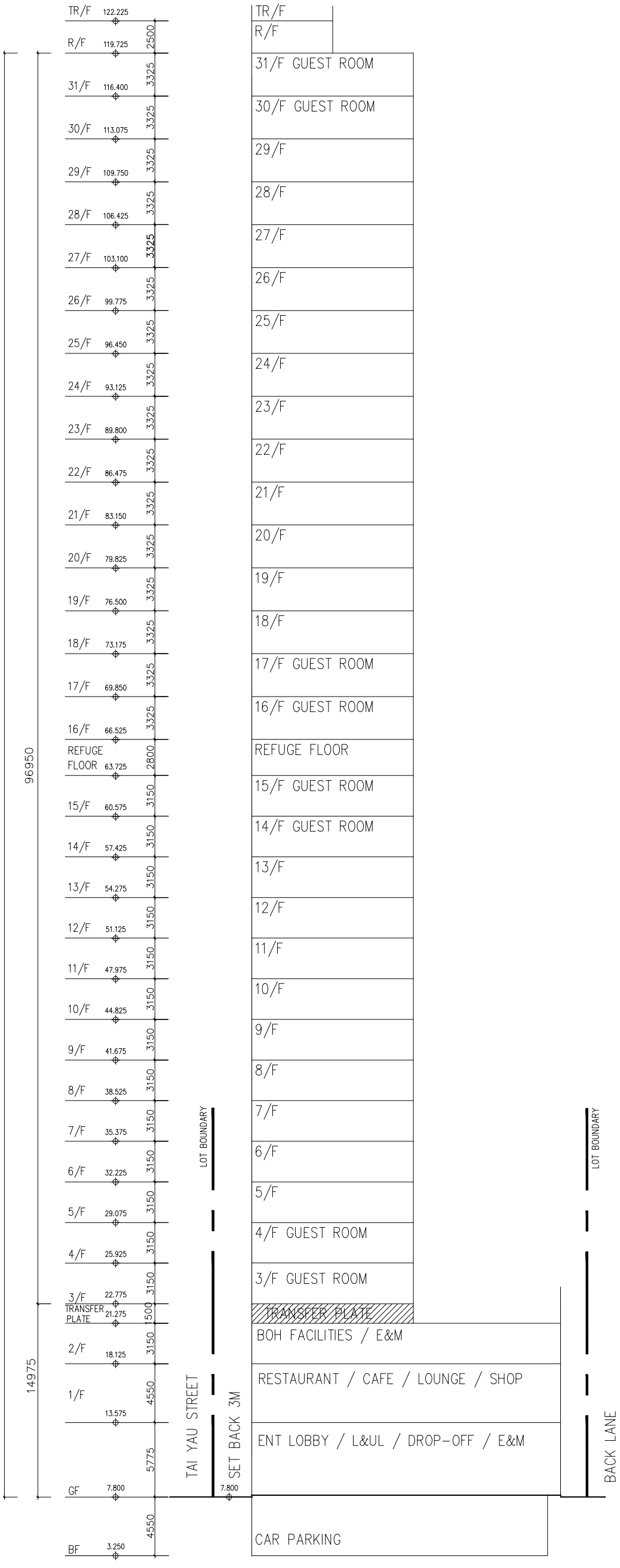
3 CONCLUSION

The sewage flow generated from the Site will be collected by the proposed foul water last manhole for discharging to the public sewage manhole FMH4042486 at Tai Yau Street via a proposed 400mm dia. sewer.

The Site will generate an average flow and peak flow of approximately 1232.81 m^3/day and 85.61 L/s respectively.

Results of the assessment show that the cumulative flow of FWD4048170 and FWD4048167 is 198.5% and 252.8% respectively, which exceeded the sewer capacity. Mitigation measures by upgrading these two 400mm diameter sewers into 600mm diameter sewers are proposed. After the upgrading works, the cumulative flow is generally no more than 91.5% of sewer capacity. Details of the improvement works shall be submitted to the relevant departments during the detailed design stage.

APPENDIX A
MASTER LAYOUT PLAN OF THE PROPOSED DEVELOPMENT



DIAGRAMMATIC SECTION (N.T.S.)

Schedule of Accommodation, 20-24 Tai Yau Street, San Po Kong, Kowloon

Site Area:	2,426.050 sq.m.
Lots:	N.K.I.L.s 4735, 4736, 4737, 4738, 4739 RP, 4739 s.A & 4739 s.B
Class of Site:	A
Permissible Plot Ratio:	12 (Under OZP)
Permissible GFA:	29,112.600 sq.m.
Bonus GFA for Setting Back 3m:	237.975 sq.m. x 5 = 1,189.875 sq.m.
Total Permissible GFA:	30,302.475 sq.m.
Total Permissible Plot Ratio:	12.490
Permissible Building Height:	120mPD 120mPD - 7.8mPD (mean street level) = 112.200m
Permissible Site Coverage:	Not exceeding 100% below 15m Not exceeding 60% above 15m
Proposed Use of Floor:	
Basement	Car Parking / E&M
G/F	Entrance Lobby / Loading & Unloading / Drop-off / E&M
1/F	Restaurant / Cafe / Lounge / Shop
2/F	Back of House Facility / E&M
2/F- 3/F Slab	Transfer Plate
3/F-15/F & 16/F-31/F	Guest Rooms
R/F	E&M
Proposed Site Coverage:	Below 15m : 76.665% (1,859.921 sq.m) Above 15m : 44.151% (1,071.121 sq.m)
Proposed Height of Building:	111.925m (119.725 mPD)
Proposed GFA per floor:	
G/F	466.094 sq.m
1/F	1,437.307 sq.m.
2/F	677.332 sq.m.
3/F	942.662 sq.m.
4/F-30/F	940.742 sq.m. (per floor) x 27 floors = 25,400.034 sq.m.
31/F	628.603 sq.m.
Staircase (NKILs. 4739s.A & s.B)	750.00 sq.m
Proposed Total GFA:	30,302.032 sq.m.
Proposed Plot Ratio:	12.490
Proposed no. of Storeys:	34 storeys (inlcude 1 storey basement & 1 storey refuge floor)
Proposed no. of Guest Rooms:	1286

REV. - DESIGN PROPOSAL JUL'25
DESCRIPTION DATE

PROJECT :
REDEVELOPMENT OF NOS. 20-24 TAI YAU STREET SAN PO KONG, KOWLOON, N.K.I.L.s 4735, 4736, 4737, 4738, 4739 RP, 4739 S.A & 4739 S.B

DRAWING TITLE :
SCHEDULE OF ACCOMMODATION

AUTHORIZED PERSON :

C&L architects & surveyors ltd 宋倫建築師測量師有限公司

JOB No. : AA598

DESIGNED : RL | DRAWN : NC | CHECKED : RL | APPROVED : JC

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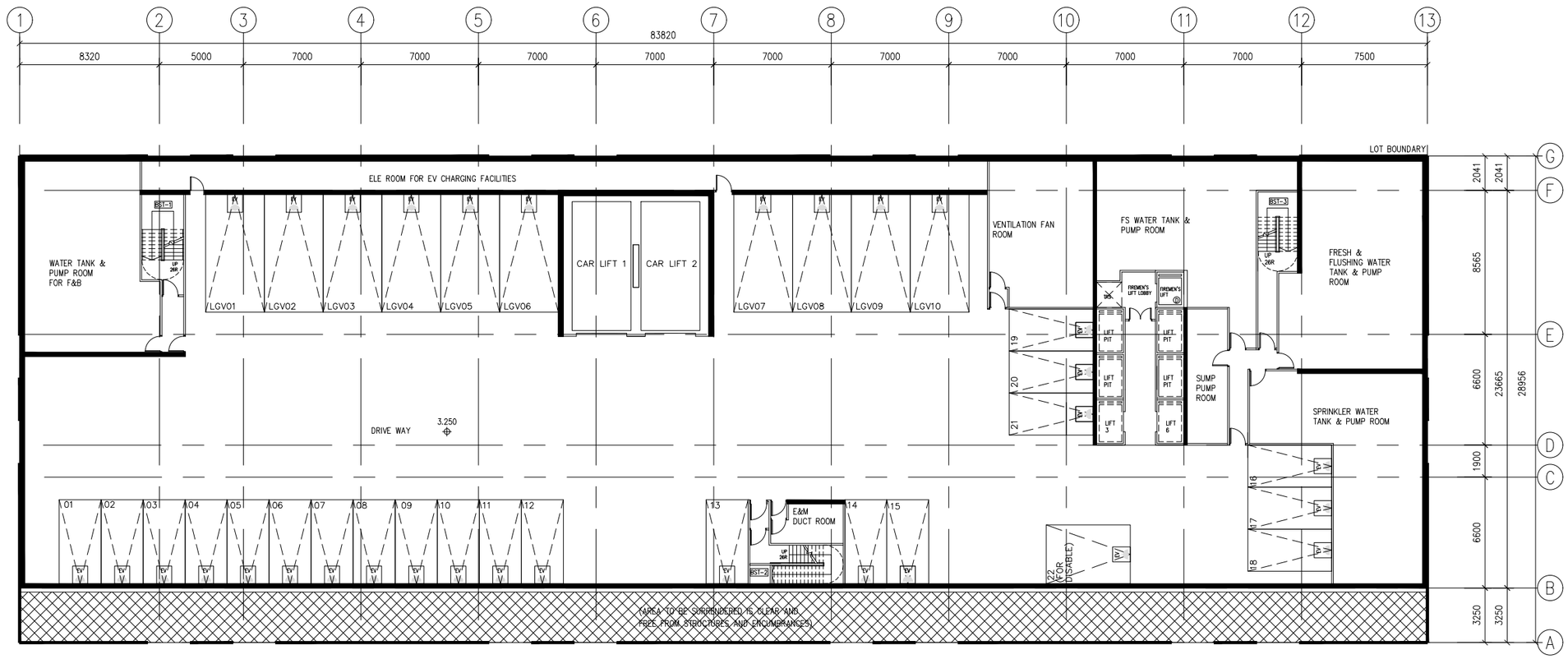

LEGEND:

AREA TO BE SURRENDED TO THE GOVERNMENT FOR ROAD WIDENING PURPOSES

BASEMENT FLOOR PLAN

REV.	DESCRIPTION	DATE
-	DESIGN PROPOSAL	JUL'25

PROJECT :

REDEVELOPMENT OF NOS. 20-24 TAI YAU STREET
SAN PO KONG, KOWLOON, N.K.I.L.s
4735, 4736, 4737, 4738, 4739 RP, 4739 S.A & 4739 S.B

DRAWING TITLE :

BASEMENT FLOOR PLAN

AUTHORIZED PERSON :

C&L architects & surveyors ltd
朱倫建築師測量師有限公司

JOB No. : AA598

DESIGNED :	DRAWN :	CHECKED :	APPROVED :
RL	NC	RL	JC

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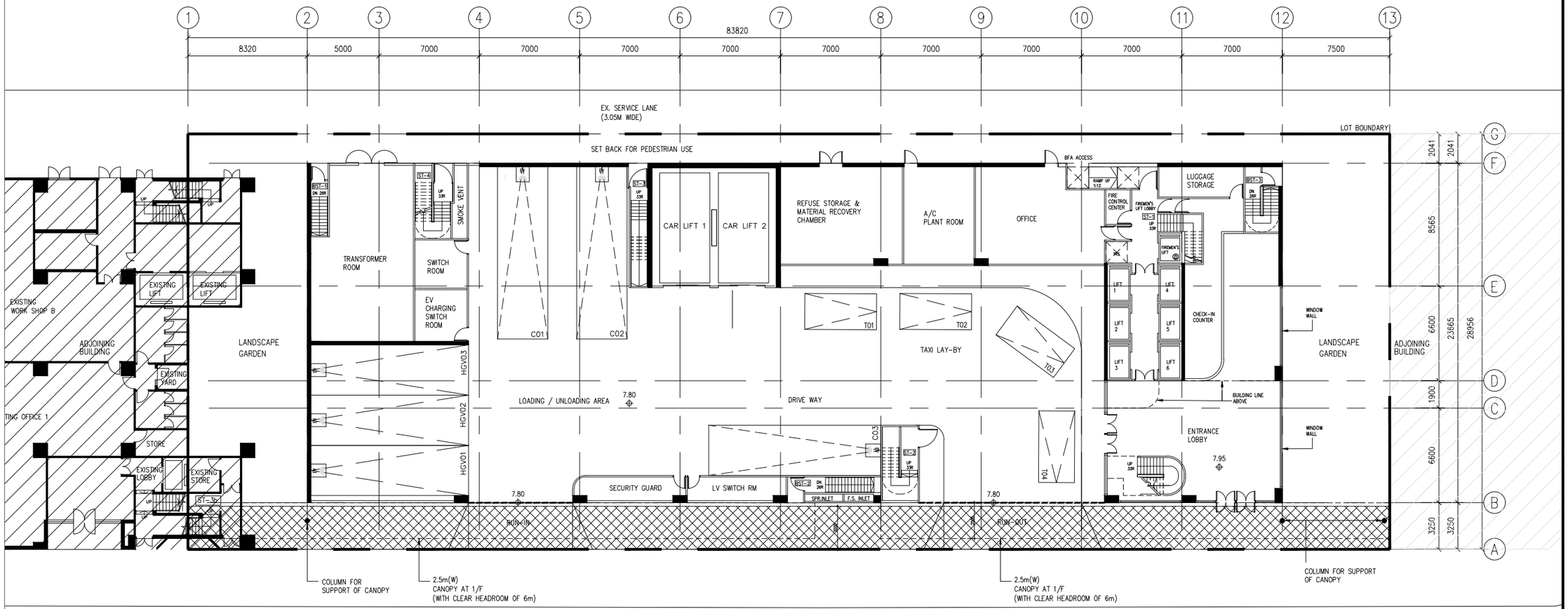
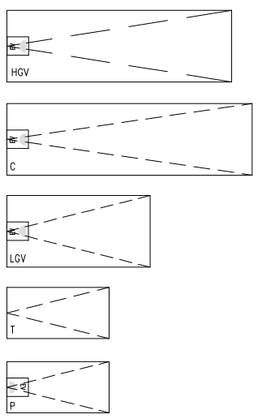


LEGEND:

AREA TO BE SURRENDED TO THE GOVERNMENT FOR ROAD WIDENING PURPOSES

GROUND FLOOR PLAN

TAI YAU STREET (18.30M WIDE)



HEAVY GOODS VEHICLES 3.5m x 11m

TOUR BUS LAY-BY 3.5m x 12m

LIGHT GOODS VEHICLE 3.5m x 7m

TAXI LAY-BY 2.5m x 5m

PRIVATE CAR 2.5m x 5m

CARPARK PROVISION CALCULATION

APPROX. NO. OF ROOMS = 1286

TYPE	ROOM/GFA	RATE	NO. REQUIRED	NO. PROVIDED
PRIVATE CAR	1286 ROOMS RESTUATANT/CAFE /800 SEAT	1/100 ROOMS 1/100 SEATS	13 8	22
TAXI LAY-BY	1286 ROOMS	>600 ROOMS MIN. 4 NOS.	4	4
TOUR BUS LAY-BY	1286 ROOMS	>900 ROOMS MIN. 3 NOS.	3	3
LGV HGV	1286 ROOMS	0.5-1/100 ROOMS	7-13	10 3

REV.	DESCRIPTION	DATE
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SAN PO KONG, KOWLOON, N.K.I.L.s
4735, 4736, 4737, 4738, 4739 RP, 4739 S.A & 4739 S.B

DRAWING TITLE :

GROUND FLOOR PLAN

AUTHORIZED PERSON :

C&L architects & surveyors ltd
朱倫建築師測量師有限公司

JOB No. : AA598

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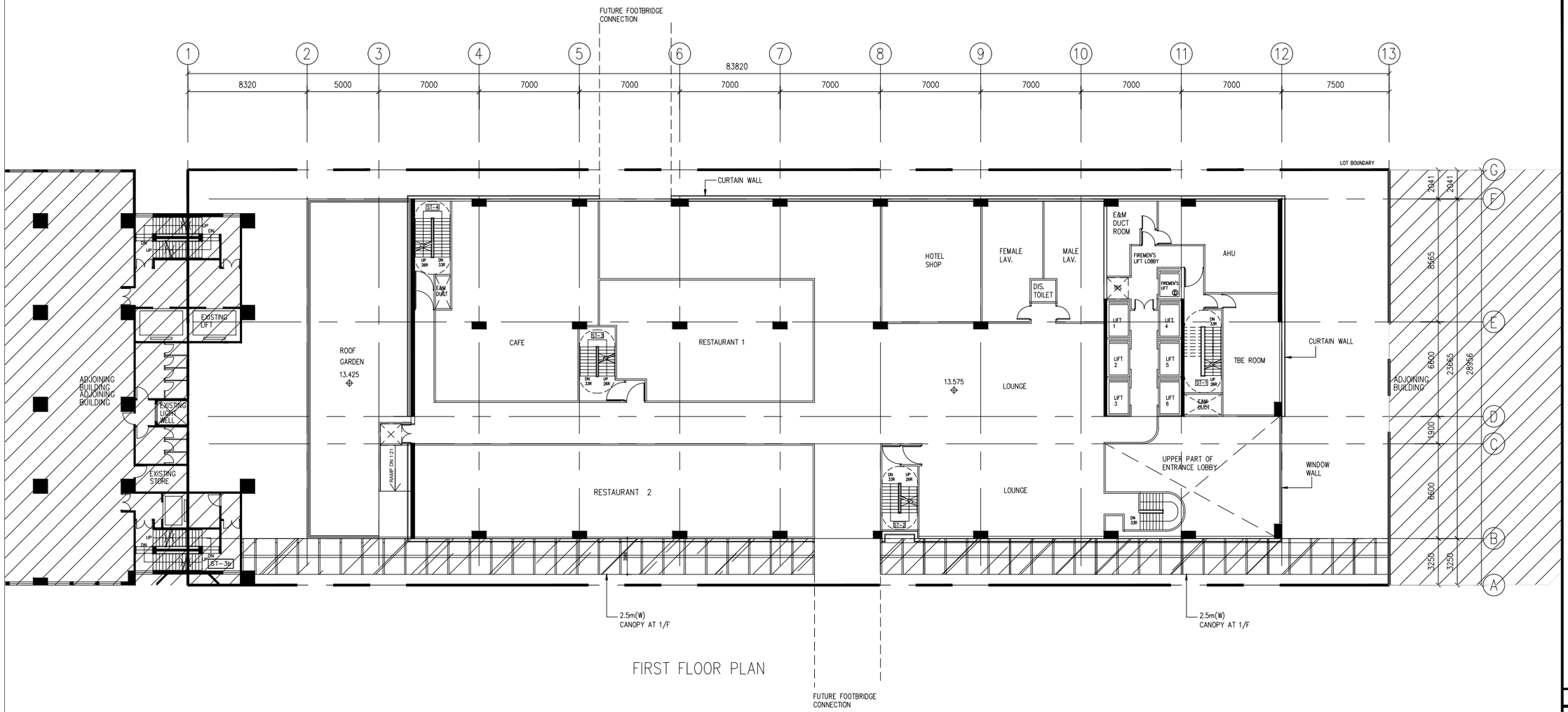

FIRST FLOOR PLAN

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REDEVELOPMENT OF NOS. 20-24 TAI YAU STREET
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4735, 4736, 4737, 4738, 4739 RP, 4739 S.A & 4739 S.B

DRAWING TITLE :

FIRST FLOOR PLAN

AUTHORIZED PERSON :

C&L architects & surveyors ltd
朱倫建築師測量師有限公司

JOB No. : AA598

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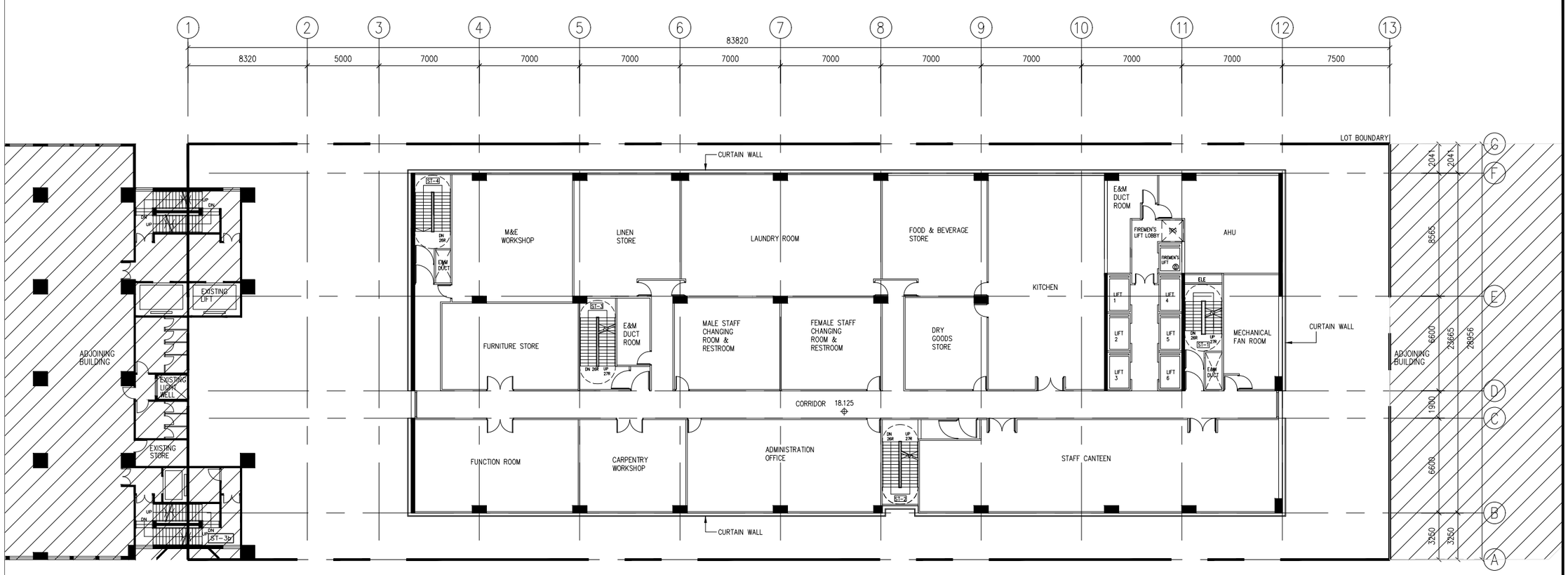

SECOND FLOOR PLAN

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PROJECT :

REDEVELOPMENT OF NOS. 20-24 TAI YAU STREET
SAN PO KONG, KOWLOON, N.K.I.L.s
4735, 4736, 4737, 4738, 4739 RP, 4739 S.A & 4739 S.B

DRAWING TITLE :

SECOND FLOOR PLAN

AUTHORIZED PERSON :

C&L architects & surveyors ltd
朱倫建築師測量師有限公司

JOB No. : AA598

DESIGNED :	DRAWN :	CHECKED :	APPROVED :
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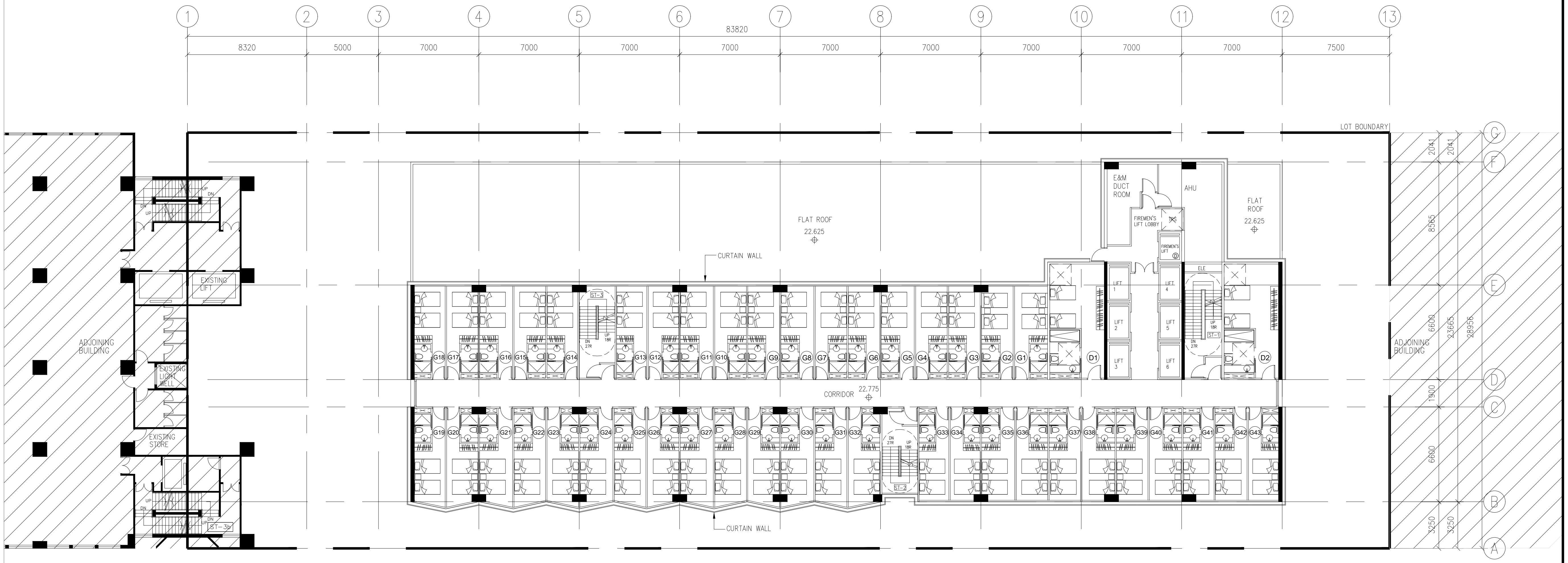
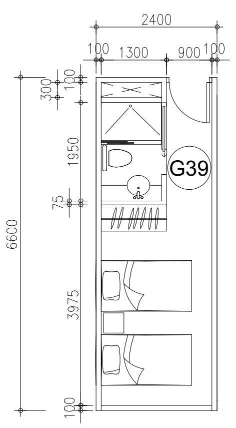


THIRD FLOOR PLAN (GUEST ROOM)



TYPICAL LAYOUT 1 FOR SINGLE BED GUEST ROOM
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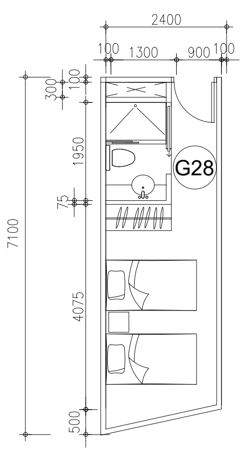

TYPICAL LAYOUT 2 FOR SINGLE BED GUEST ROOM
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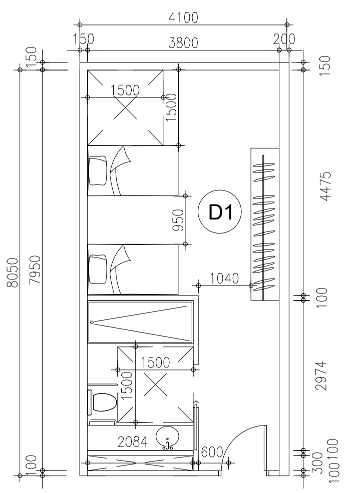

TYPICAL LAYOUT FOR GUEST ROOM FOR DISABILITY (D1 & D2)
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REV.	DESCRIPTION	DATE
-	DESIGN PROPOSAL	JUL'25

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REDEVELOPMENT OF NOS. 20-24 TAI YAU STREET
SAN PO KONG, KOWLOON, N.K.I.L.s
4735, 4736, 4737, 4738, 4739 RP, 4739 S.A & 4739 S.B

DRAWING TITLE :

THIRD FLOOR PLAN

AUTHORIZED PERSON :

C&L architects & surveyors ltd
朱倫建築師測量師有限公司

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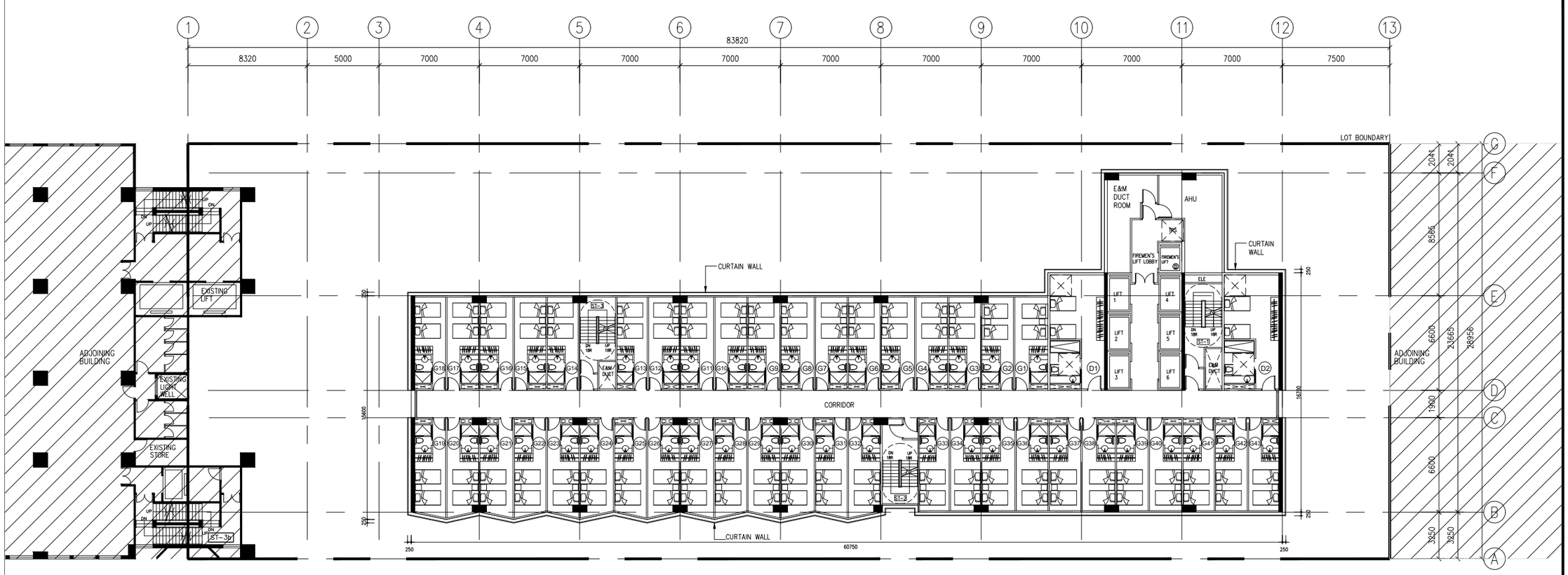
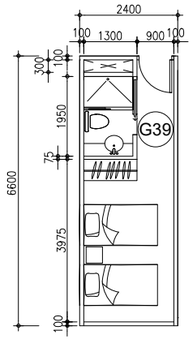


4/F TO 15/F FLOOR PLAN (GUEST ROOM)



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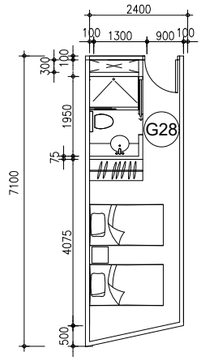

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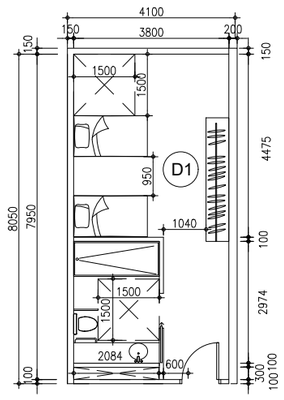

TYPICAL LAYOUT FOR GUEST ROOM FOR DISABILITY (D1 & D2)
UFA=20.955 m2
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REDEVELOPMENT OF NOS. 20-24 TAI YAU STREET
SAN PO KONG, KOWLOON, N.K.I.L.s
4735, 4736, 4737, 4738, 4739 RP, 4739 S.A & 4739 S.B

DRAWING TITLE :

4TH TO 15TH FLOOR PLAN

AUTHORIZED PERSON :

C&L architects & surveyors ltd
朱倫建築師測量師有限公司

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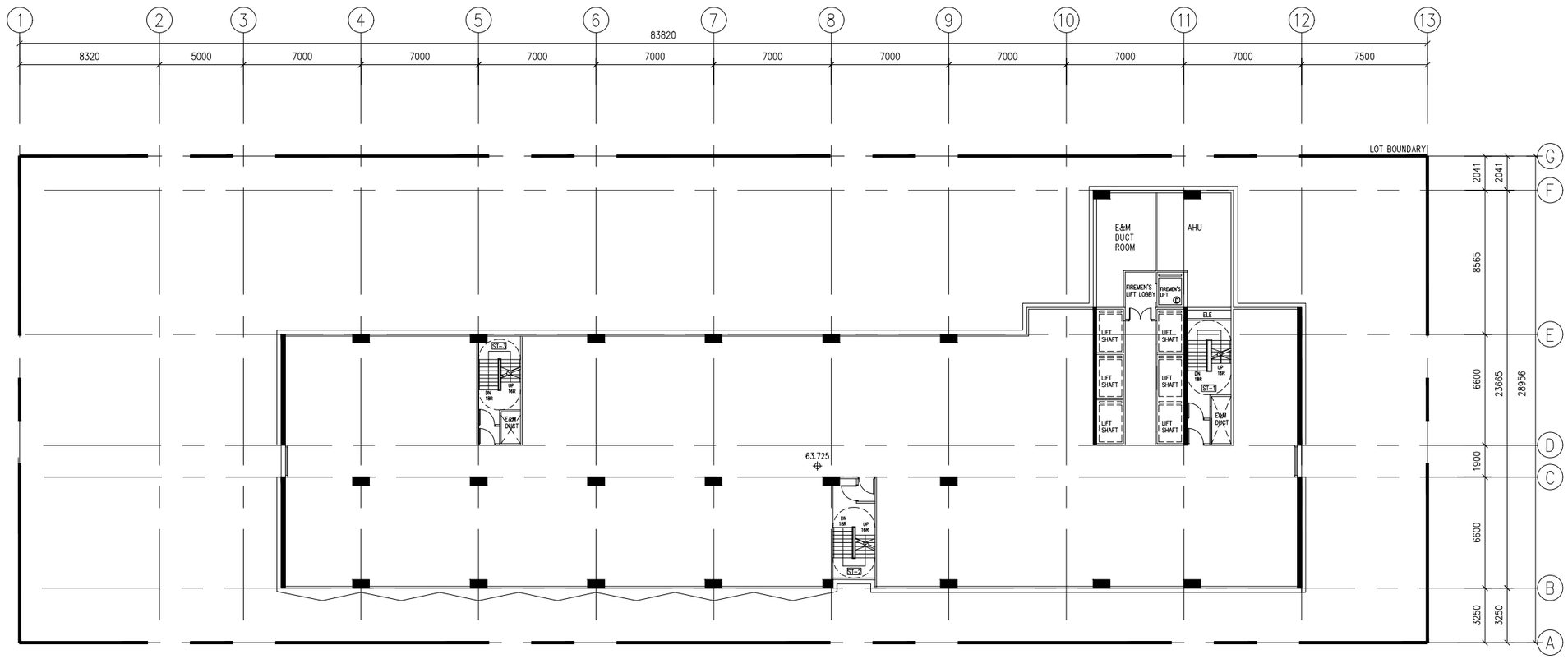

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REDEVELOPMENT OF NOS. 20-24 TAI YAU STREET
SAN PO KONG, KOWLOON, N.K.I.L.s
4735, 4736, 4737, 4738, 4739 RP, 4739 S.A & 4739 S.B

DRAWING TITLE :

REFUGE FLOOR PLAN

AUTHORIZED PERSON :

C&L architects & surveyors ltd
朱倫建築師測量師有限公司

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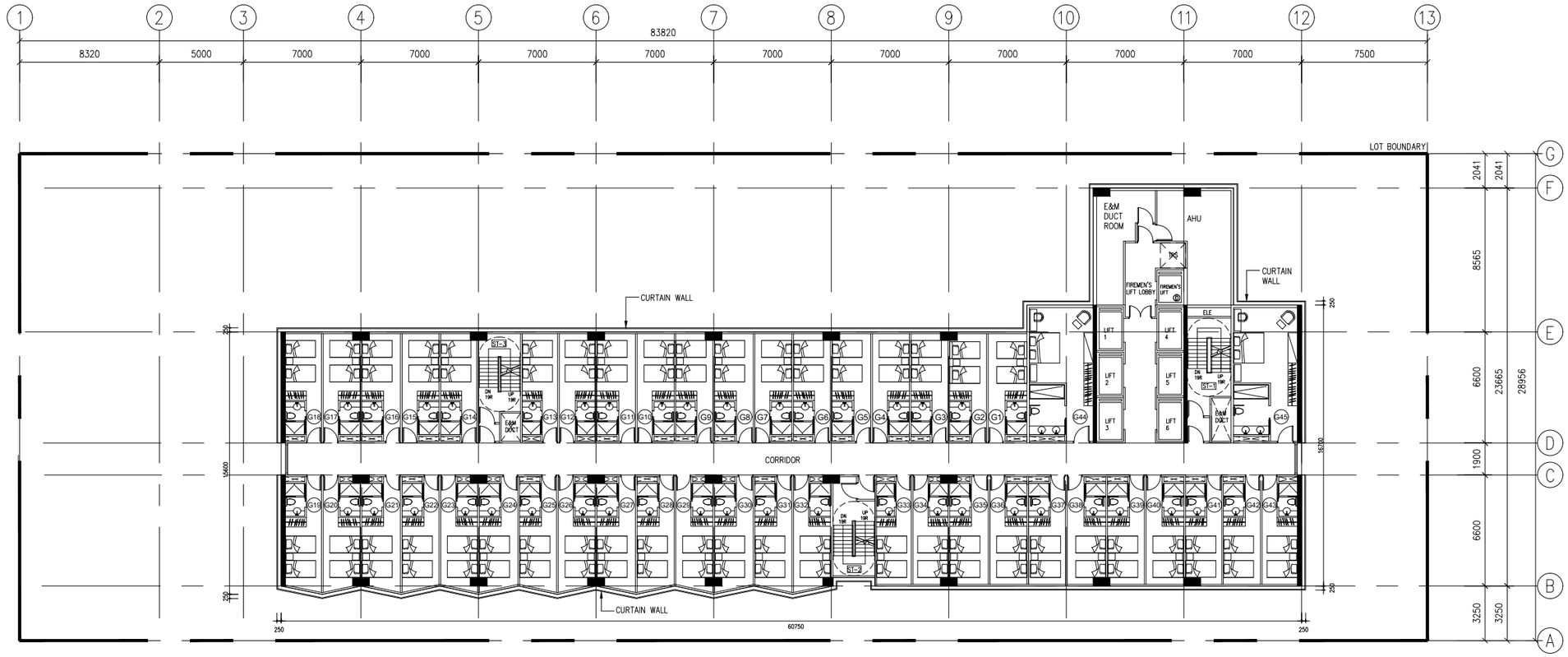
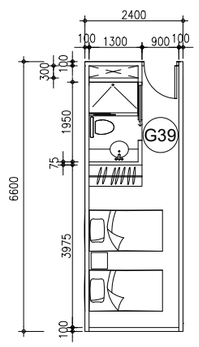


16/F TO 30/F FLOOR PLAN (GUEST ROOM)



TYPICAL LAYOUT 1 FOR SINGLE BED GUEST ROOM
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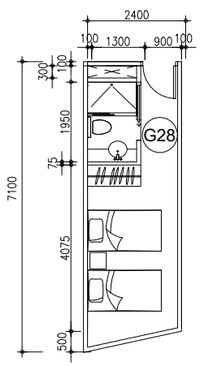

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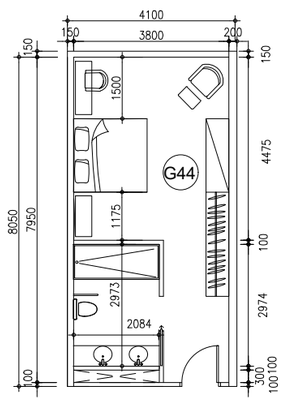

TYPICAL LAYOUT FOR DOUBLE BED GUEST ROOM (G44 & G45)
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-	DESIGN PROPOSAL	JUL'25
REV.	DESCRIPTION	DATE

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REDEVELOPMENT OF NOS. 20-24 TAI YAU STREET
SAN PO KONG, KOWLOON, N.K.I.L.s
4735, 4736, 4737, 4738, 4739 RP, 4739 S.A & 4739 S.B

DRAWING TITLE :

16TH TO 30TH FLOOR PLAN

AUTHORIZED PERSON :

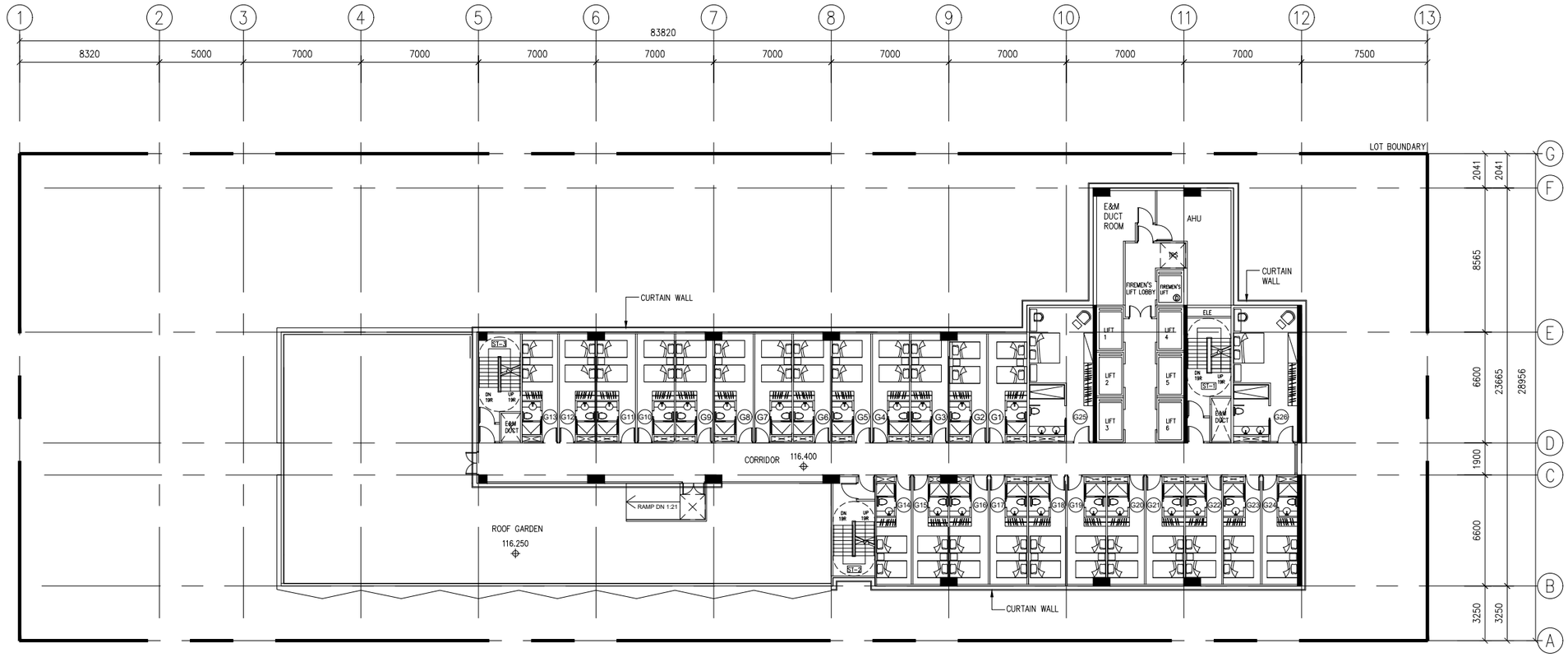
C&L architects & surveyors ltd
朱倫建築師測量師有限公司

JOB No. : AA598

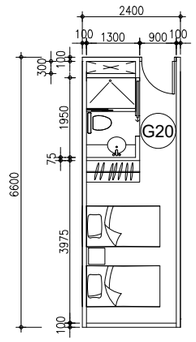
DESIGNED :	DRAWN :	CHECKED :	APPROVED :
RL	NC	RL	JC

PRINTED DATE :	DATE :

SCALE AT A3	DRAWING No. :	REV:
1:300	GBP-08	-



31ST FLOOR PLAN (GUEST ROOM)



TYPICAL LAYOUT 1 FOR SINGLE BED GUEST ROOM
UFA=10.927 m2
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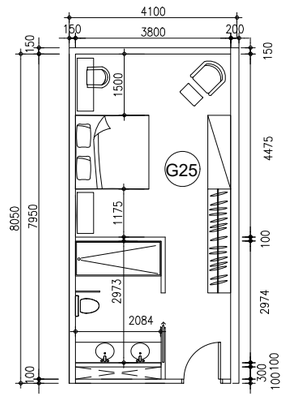


TYPICAL LAYOUT FOR DOUBLE BED GUEST ROOM (G25 & G26)
UFA=20.955 m2
1:150@A3

-	DESIGN PROPOSAL	JUL'25
REV.	DESCRIPTION	DATE

PROJECT :

REDEVELOPMENT OF NOS. 20-24 TAI YAU STREET
SAN PO KONG, KOWLOON, N.K.I.L.s
4735, 4736, 4737, 4738, 4739 RP, 4739 S.A & 4739 S.B

DRAWING TITLE :

31ST FLOOR PLAN

AUTHORIZED PERSON :

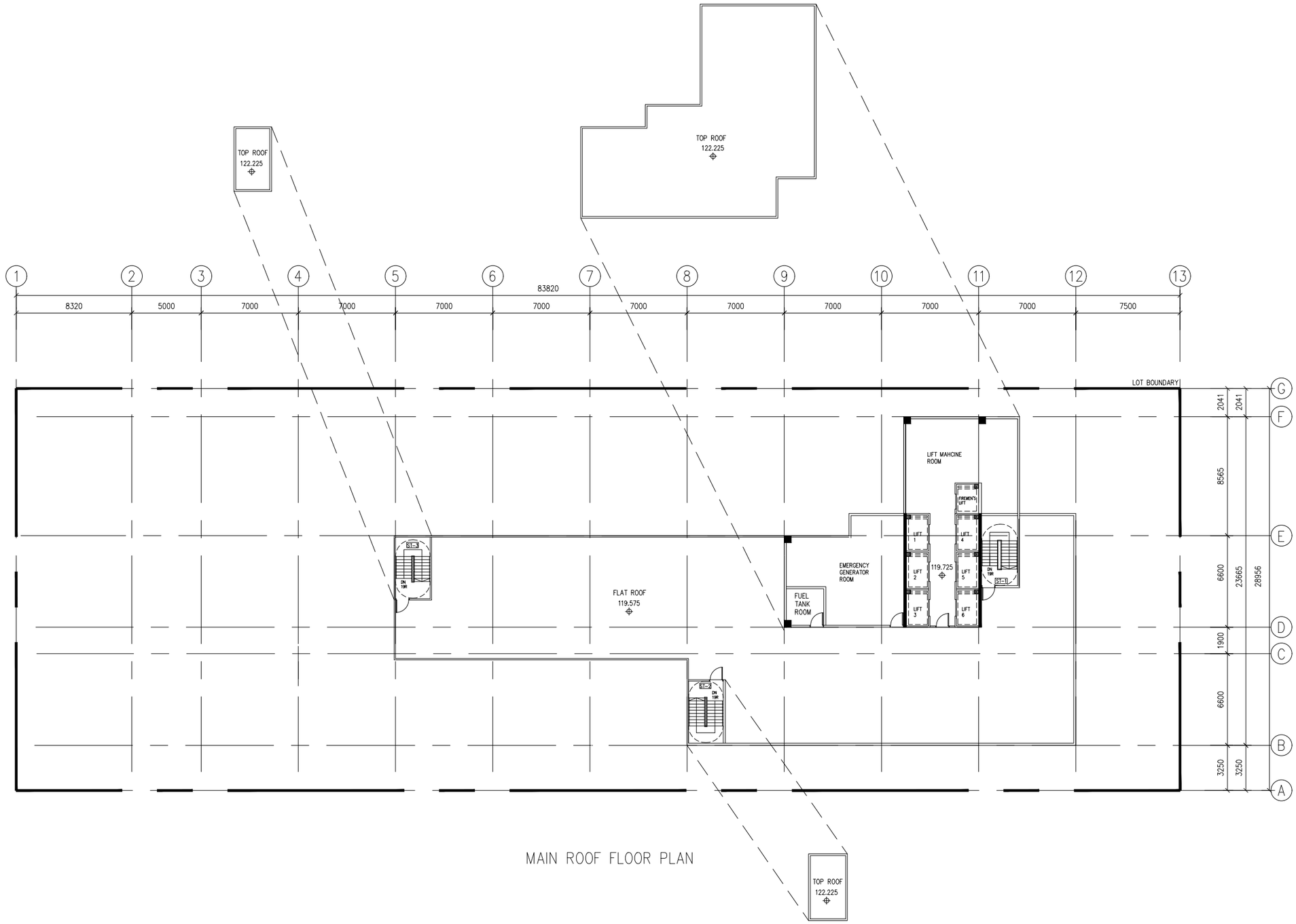
C&L architects & surveyors ltd
朱倫建築師測量師有限公司

JOB No. : AA598

DESIGNED :	DRAWN :	CHECKED :	APPROVED :
RL	NC	RL	JC

PRINTED DATE : | DATE :

SCALE AT A3	DRAWING No. :	REV:
1:300	GBP-09	-



MAIN ROOF FLOOR PLAN

-	DESIGN PROPOSAL	JUL'25
REV.	DESCRIPTION	DATE

PROJECT :

REDEVELOPMENT OF NOS. 20-24 TAI YAU STREET
SAN PO KONG, KOWLOON, N.K.I.L.s
4735, 4736, 4737, 4738, 4739 RP, 4739 S.A & 4739 S.B

DRAWING TITLE :

ROOF FLOOR PLAN

AUTHORIZED PERSON :

C&L architects & surveyors ltd
朱倫建築師測量師有限公司

JOB No. : AA598

DESIGNED :	DRAWN :	CHECKED :	APPROVED :
RL	NC	RL	JC

PRINTED DATE : | DATE :

SCALE AT A3	DRAWING No. :	REV:
1:300	GBP-10	-

APPENDIX B
SEWERAGE RECORD PLAN FROM LANDS DEPARTMENT

Project Site

Existing Sewage Connection

	Prepared	Checked	Approved
Initial	TL	YS	HM
Date	20250114	20250114	20250114

Project Title

Redevelopment of Nos 20- 24 Tai Yau Street, San Po Kong, Kowloon

Drawing Title

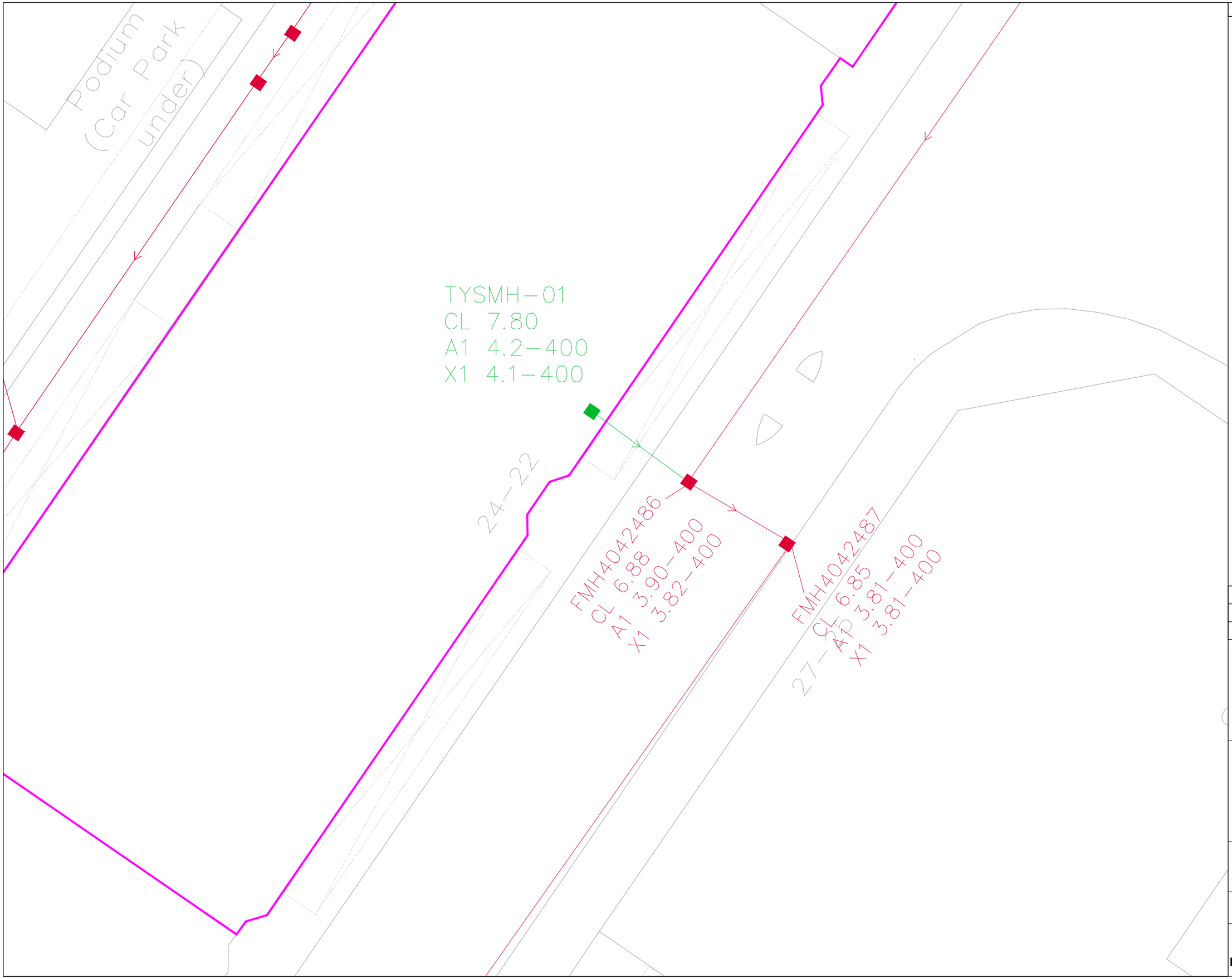
Existing Sewage Connection

Drawing No.	Rev.
Figure 1	1

Scale: A3

BeeXergy Consulting Limited

APPENDIX C
PROPOSED SEWERAGE LAYOUT PLAN



Project Site

Existing Sewage Connection

Proposed Sewage Connection

	Prepared	Checked	Approved
Initial	TL	YS	HM
Date	20241206	20241206	20241206

Project Title

Redevelopment of Nos 20- 24 Tai Yau Street, San Po Kong, Kowloon

Drawing Title

Proposed Sewage Connection

Drawing No.

Figure 2

Rev.

0

Scale:

A3

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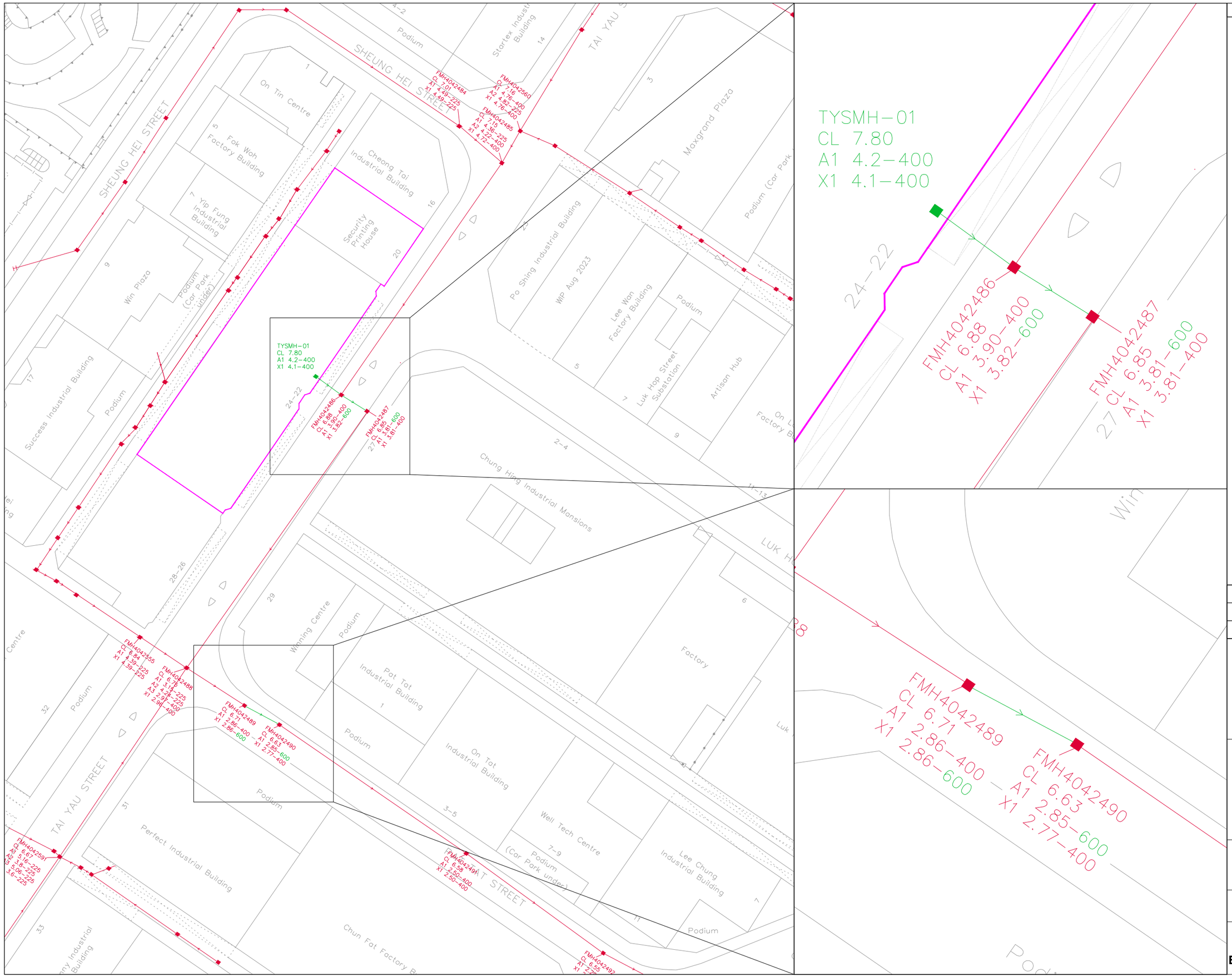

Project Site

Existing Sewage Connection

Proposed Sewage Connection with mitigation measures

	Prepared	Checked	Approved
Initial	TL	YS	HM
Date	20250114	20250114	20250114

Project Title

Redevelopment of Nos 20- 24 Tai Yau Street, San Po Kong, Kowloon

Drawing Title

Proposed Sewage Connection with Mitigation Measures

Drawing No.

Figure 2.2

Rev.

0

Scale:

A3

BeeXergy Consulting Limited

APPENDIX D

SEWERAGE CALCULATION FOR THE PROPOSED DEVELOPMENT

Table D-1 Calculation of Sewage Generation Rate for Proposed Hotel Development at 20-24 Tai Yau Street

1) Proposed Development

Development	GFA (m^2)	Occupancy Density [(a), (b)] (Number of Persons) (Workers per GFA in $100m^2$)	Estimated Population	Unit Flow Factor (m^3/day)	Estimated Average Dry Weather Flow (m^3/day)	Catchment Inflow Factor	Estimated Average Dry Weather Flow X Catchment Inflow Factor (m^3/day)	Remarks
Proposed Development (Hotel)	21090.0	3.2	675	1.58	1066.310	1.10	1172.941	GFA as advised by Project Proponent Occupancy Density: 3.2 per 100m2 GFA for 'Hotel' based on PlanD's CIFSUS Table 8 Unit Flow Factor: 1.58m3/day for 'J10 Restaurants & hotels' based on EPD's GESF Table T-2
Proposed Development (Restaurant)	670.0	5.1	34	1.58	53.989	1.10	59.387	GFA as advised by Project Proponent Occupancy Density: 5.1 per 100m2 GFA for 'Restaurant' based on PlanD's CIFSUS Table 8 Unit Flow Factor: 1.58m3/day for 'J10 Restaurants & hotels' based on EPD's GESF Table T-2
Proposed Development (Retail)	62	3.5	2	0.2	0.434	1.10	0.477	GFA as advised by Project Proponent Occupancy Density: 3.5 employee per 100m2 GFA for 'Retail Trade' based on Commercial and Industrial Floor Space Utilization Survey published by PlanD UFF: 0.20 m3/day for 'J4 Wholesale & Retail' based on EPD's GESF Table T-2
Total Average Daily Dry Weather Flow of Proposed Development (m^3/day)							**1232.806**	

APPENDIX E
ASSESSMENT OF EXISTING/ PROPOSED SEWERS

Table D-2 Calculation for Sewage Generation Rate of the Surrounding Buildings

	Surrounding Development (Catchment A)			Remarks
A1	**On Ti Centre**			
a.	Assumed Used Area (Office)	=	3666	m^2 (site area x (plot ratio = 12) - (f))
b.	Worker Density	=	5.5	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Financial & Business Services)
c.	Total Number of Worker	=	202	employees
d.	Design Flow for Commercial Employee	=	0.080	m3/day per worker (refer to Table T-2 of GESF, Commercial Employee)
e.	Design Flow for Commercial Activities	=	0.00	m3/day per worker (refer to Table T-2 of GESF, J6)
f.	Assumed Used Area (Restaurant)	=	78	m^2
g.	Worker Density	=	5.1	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Restaurants)
h.	Total Number of Worker	=	4	employees
i.	Design Flow for Commercial Employee	=	0.080	m3/day per worker (refer to Table T-2 of GESF, Commercial Employee)
j.	Design Flow for Commercial Activities	=	1.5	m3/day per worker (refer to Table T-2 of GESF, J10)
k.	Total Sewage Generation Rate x Catchment Inflow	=	24.7	m3/day (Catchment Inflow Factor of San Po Kong = 1.1)
A2	**Cheong Tai Industrial Building**			
a.	Assumed Used Area (Industrial)	=	4477	m^2 (site area x (plot ratio = 9.5))
b.	Worker Density	=	2.3	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c.	Total Number of Worker	=	103	employees
d.	Design Flow for Industrial Employee	=	0.080	m3/day per worker (refer to Table T-3 of GESF, Industrial Employee)
e.	Design Flow for Industrial Activities	=	0.25	m3/day per worker (refer to Table T-3 of GESF, San Po Kong)
f.	Total Sewage Generation Rate x Catchment Inflow	=	37.38	m3/day (Catchment Inflow Factor of San Po Kong = 1.1)
A3	**Win Plaza**			
a.	Assumed Used Area (Office)	=	6626	m^2 (site area x plot ratio = 12)
b.	Worker Density	=	5.5	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Financial & Business Services)
c.	Total Number of Worker	=	364	employees
d.	Design Flow for Commercial Employee	=	0.080	m3/day per worker (refer to Table T-2 of GESF, Commercial Employee)
e.	Design Flow for Commercial Activities	=	0.00	m3/day per worker (refer to Table T-2 of GESF, J6)
f.	Total Sewage Generation Rate x Catchment Inflow	=	32.07	m3/day (Catchment Inflow Factor of San Po Kong = 1.1)
A4	**Success Industrial Building**			
a.	Assumed Used Area (Industrial)	=	5926	m^2 (site area x (plot ratio = 9.5))
b.	Worker Density	=	2.3	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c.	Total Number of Worker	=	136	employees
d.	Design Flow for Industrial Employee	=	0.080	m3/day per worker (refer to Table T-3 of GESF, Industrial Employee)
e.	Design Flow for Industrial Activities	=	0.25	m3/day per worker (refer to Table T-3 of GESF, San Po Kong)
f.	Total Sewage Generation Rate x Catchment Inflow	=	49.48	m3/day (Catchment Inflow Factor of San Po Kong = 1.1)
A5	**Tin Hung Industrial Building**			
a.	Assumed Used Area (Industrial)	=	8240	m^2 (site area x (plot ratio = 9.5))
b.	Worker Density	=	2.3	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c.	Total Number of Worker	=	190	employees
d.	Design Flow for Industrial Employee	=	0.080	m3/day per worker (refer to Table T-3 of GESF, Industrial Employee)
e.	Design Flow for Industrial Activities	=	0.25	m3/day per worker (refer to Table T-3 of GESF, San Po Kong)
f.	Total Sewage Generation Rate x Catchment Inflow	=	68.80	m3/day (Catchment Inflow Factor of San Po Kong = 1.1)
A6	**Sheung Hei Factory Building**			
a.	Assumed Used Area (Industrial)	=	3843	m^2 (site area x (plot ratio = 9.5))
b.	Worker Density	=	2.3	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c.	Total Number of Worker	=	88	employees
d.	Design Flow for Industrial Employee	=	0.080	m3/day per worker (refer to Table T-3 of GESF, Industrial Employee)
e.	Design Flow for Industrial Activities	=	0.25	m3/day per worker (refer to Table T-3 of GESF, San Po Kong)
f.	Assumed Used Area (Restaurant)	=	104	m^2
g.	Worker Density	=	5.1	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Restaurants)
h.	Total Number of Worker	=	5	employees
i.	Design Flow for Commercial Employee	=	0.080	m3/day per worker (refer to Table T-2 of GESF, Commercial Employee)
j.	Design Flow for Commercial Activities	=	1.50	m3/day per worker (refer to Table T-2 of GESF, J10)
k.	Total Sewage Generation Rate x Catchment Inflow	=	41.29	m3/day (Catchment Inflow Factor of San Po Kong = 1.1)
A7	**Laurels Industrial Centre**			
a.	Assumed Used Area (Industrial)	=	16514	m^2 (site area x (plot ratio = 9.5) - (f) - (k))
b.	Worker Density	=	2.3	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c.	Total Number of Worker	=	380	employees
d.	Design Flow for Commercial Employee	=	0.080	m3/day per worker (refer to Table T-3 of GESF, Industrial Employee)
e.	Design Flow for Commercial Activities	=	0.25	m3/day per worker (refer to Table T-3 of GESF, San Po Kong)
f.	Assumed Used Area (Restaurant)	=	459	m^2
g.	Worker Density	=	5.1	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Restaurants)
h.	Total Number of Worker	=	23	employees
i.	Design Flow for Commercial Employee	=	0.080	m3/day per worker (refer to Table T-2 of GESF, Commercial Employee)
j.	Design Flow for Commercial Activities	=	1.50	m3/day per worker (refer to Table T-2 of GESF, J10)
k.	Assumed Used Area (Retail)	=	459	m^2
l.	Worker Density	=	3.5	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Retail)
m.	Total Number of Worker	=	16	employees
n.	Design Flow for Commercial Employee	=	0.080	m3/day per worker (refer to Table T-2 of GESF, Commercial Employee)
o.	Design Flow for Commercial Activities	=	0.20	m3/day per worker (refer to Table T-2 of GESF, J4)
p.	Total Sewage Generation Rate x Catchment Inflow	=	183.48	m3/day (Catchment Inflow Factor of San Po Kong = 1.1)

	Total Flow			
a.	Estimated Average Dry Weather Flow	=	437.16	m3/day
b.	Contributing Population	=	1619	people

Table D-2 Calculation for Sewage Generation Rate of the Surrounding Buildings

Surrounding Development (Catchment B)				Remarks
B1	**Wong King Industrial Building**			
a.	Assumed Used Area (Industrial)	=	28480	m^2 (site area x (plot ratio = 9.5) - (f) - (k))
b.	Worker Density	=	2.3	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c.	Total Number of Worker	=	655	employees
d.	Design Flow for Industrial Employee	=	0.080	m3/day per worker (refer to Table T-3 of GESF, Industrial Employee)
e.	Design Flow for Industrial Activities	=	0.25	m3/day per worker (refer to Table T-3 of GESF, San Po Kong)
f.	Assumed Used Area (Restaurant)	=	791	m^2
g.	Worker Density	=	5.1	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Restaurants)
h.	Total Number of Worker	=	40	employees
i.	Design Flow for Commercial Employee	=	0.080	m3/day per worker (refer to Table T-2 of GESF, Commercial Employee)
j.	Design Flow for Commercial Activities	=	1.50	m3/day per worker (refer to Table T-2 of GESF, J10)
k.	Assumed Used Area (Retail)	=	791	m^2
l.	Worker Density	=	3.5	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Retail)
m.	Total Number of Worker	=	28	employees
n.	Design Flow for Commercial Employee	=	0.080	m3/day per worker (refer to Table T-2 of GESF, Commercial Employee)
o.	Design Flow for Commercial Activities	=	0.20	m3/day per worker (refer to Table T-2 of GESF, J4)
p.	Total Sewage Generation Rate x Catchment Inflow	=	316.43	m3/day (Catchment Inflow Factor of San Po Kong = 1.1)
B2	**Midas Plaza**			
a.	Assumed Used Area (Office)	=	11165	m^2 (site area x (plot ratio = 12) - (f))
b.	Worker Density	=	5.5	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Financial & Business Services)
c.	Total Number of Worker	=	614	employees
d.	Design Flow for Commercial Employee	=	0.080	m3/day per worker (refer to Table T-2 of GESF, Commercial Employee)
e.	Design Flow for Commercial Activities	=	0.00	m3/day per worker (refer to Table T-2 of GESF, J6)
f.	Assumed Used Area (Retail)	=	238	m^2
g.	Worker Density	=	3.5	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Retail)
h.	Total Number of Worker	=	8	employees
i.	Design Flow for Commercial Employee	=	0.080	m3/day per worker (refer to Table T-2 of GESF, Commercial Employee)
j.	Design Flow for Commercial Activities	=	0.20	m3/day per worker (refer to Table T-2 of GESF, J4)
k.	Total Sewage Generation Rate x Catchment Inflow	=	56.60	m3/day (Catchment Inflow Factor of San Po Kong = 1.1)
B3	**Wah Mow Factory Building**			
a.	Assumed Used Area (Industrial)	=	10180	m^2 (site area x (plot ratio = 9.5))
b.	Worker Density	=	2.3	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c.	Total Number of Worker	=	234	employees
d.	Design Flow for Industrial Employee	=	0.080	m3/day per worker (refer to Table T-3 of GESF, Industrial Employee)
e.	Design Flow for Industrial Activities	=	0.25	m3/day per worker (refer to Table T-3 of GESF, San Po Kong)
f.	Total Sewage Generation Rate x Catchment Inflow	=	84.99	m3/day (Catchment Inflow Factor of San Po Kong = 1.1)
B4	**Startex Industrial Building**			
a.	Assumed Used Area (Industrial)	=	4458	m^2 (site area x (plot ratio = 9.5) - (f) - (g))
b.	Worker Density	=	2.3	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c.	Total Number of Worker	=	103	employees
d.	Design Flow for Industrial Employee	=	0.080	m3/day per worker (refer to Table T-3 of GESF, Industrial Employee)
e.	Design Flow for Industrial Activities	=	0.25	m3/day per worker (refer to Table T-3 of GESF, San Po Kong)
f.	Assumed Used Area (Restaurant)	=	124	m^2
g.	Worker Density	=	5.1	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Restaurants)
h.	Total Number of Worker	=	6	employees
i.	Design Flow for Commercial Employee	=	0.080	m3/day per worker (refer to Table T-2 of GESF, Commercial Employee)
j.	Design Flow for Commercial Activities	=	1.50	m3/day per worker (refer to Table T-2 of GESF, J10)
k.	Assumed Used Area (Retail)	=	124	m^2
l.	Worker Density	=	3.5	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Retail)
m.	Total Number of Worker	=	4	employees
n.	Design Flow for Commercial Employee	=	0.080	m3/day per worker (refer to Table T-2 of GESF, Commercial Employee)
o.	Design Flow for Commercial Activities	=	0.20	m3/day per worker (refer to Table T-2 of GESF, J4)
p.	Total Sewage Generation Rate x Catchment Inflow	=	49.53	m3/day (Catchment Inflow Factor of San Po Kong = 1.1)
B5	**Maxgrand Plaza**			
a.	Assumed Used Area (Office)	=	17295	m^2 (site area x (plot ratio = 12) - (f) - (k))
b.	Worker Density	=	5.5	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Financial & Business Services)
c.	Total Number of Worker	=	951	employees
d.	Design Flow for Commercial Employee	=	0.080	m3/day per worker (refer to Table T-2 of GESF, Commercial Employee)
e.	Design Flow for Commercial Activities	=	0.00	m3/day per worker (refer to Table T-2 of GESF, J6)
f.	Assumed Used Area (Restaurant)	=	376	m^2
g.	Worker Density	=	5.1	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Restaurants)
h.	Total Number of Worker	=	19	employees
i.	Design Flow for Commercial Employee	=	0.080	m3/day per worker (refer to Table T-2 of GESF, Commercial Employee)
j.	Design Flow for Commercial Activities	=	1.50	m3/day per worker (refer to Table T-2 of GESF, J10)
k.	Assumed Used Area (Retail)	=	376	m^2
l.	Worker Density	=	3.5	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Retail)
m.	Total Number of Worker	=	13	employees
n.	Design Flow for Commercial Employee	=	0.080	m3/day per worker (refer to Table T-2 of GESF, Commercial Employee)
o.	Design Flow for Commercial Activities	=	0.20	m3/day per worker (refer to Table T-2 of GESF, J4)
p.	Total Sewage Generation Rate x Catchment Inflow	=	121.09	m3/day (Catchment Inflow Factor of San Po Kong = 1.1)
B6	**Lee Ka Industrial Building**			
a.	Assumed Used Area (Industrial)	=	11099	m^2 (site area x (plot ratio = 9.5))
b.	Worker Density	=	2.3	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c.	Total Number of Worker	=	255	employees
d.	Design Flow for Industrial Employee	=	0.080	m3/day per worker (refer to Table T-3 of GESF, Industrial Employee)
e.	Design Flow for Industrial Activities	=	0.25	m3/day per worker (refer to Table T-3 of GESF, San Po Kong)
f.	Total Sewage Generation Rate x Catchment Inflow	=	92.67	m3/day (Catchment Inflow Factor of San Po Kong = 1.1)

Table D-2 Calculation for Sewage Generation Rate of the Surrounding Buildings

B7 New Treasure Centre

a.	Assumed Used Area (Office)	=	11384	m^2 (site area x (plot ratio = 12))
b.	Worker Density	=	5.5	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Financial & Business Services)
c.	Total Number of Worker	=	626	employees
d.	Design Flow for Commercial Employee	=	0.080	m3/day per worker (refer to Table T-2 of GESF, Commercial Employee)
e.	Design Flow for Commercial Activities	=	0.00	m3/day per worker (refer to Table T-2 of GESF, J6)
f.	Total Sewage Generation Rate x Catchment Inflow	=	55.10	m3/day (Catchment Inflow Factor of San Po Kong = 1.1)

B8 Po Shing Industrial Building

a.	Assumed Used Area (Industrial)	=	4417	m^2 (site area x (plot ratio = 9.5))
b.	Worker Density	=	2.3	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c.	Total Number of Worker	=	102	employees
d.	Design Flow for Commercial Employee	=	0.080	m3/day per worker (refer to Table T-3 of GESF, Industrial Employee)
e.	Design Flow for Commercial Activities	=	0.25	m3/day per worker (refer to Table T-3 of GESF, San Po Kong)
f.	Total Sewage Generation Rate x Catchment Inflow	=	36.88	m3/day (Catchment Inflow Factor of San Po Kong = 1.1)

B9 Lee Wan Factory Building

a.	Assumed Used Area (Industrial)	=	4612	m^2 (site area x (plot ratio = 9.5))
b.	Worker Density	=	2.3	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c.	Total Number of Worker	=	106	employees
d.	Design Flow for Industrial Employee	=	0.080	m3/day per worker (refer to Table T-3 of GESF, Industrial Employee)
e.	Design Flow for Industrial Activities	=	0.25	m3/day per worker (refer to Table T-3 of GESF, San Po Kong)
f.	Total Sewage Generation Rate x Catchment Inflow	=	38.51	m3/day (Catchment Inflow Factor of San Po Kong = 1.1)

B10 Artisan Hub

a.	Assumed Used Area (Office)	=	5601	m^2 (site area x (plot ratio = 12) - (f))
b.	Worker Density	=	5.5	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Financial & Business Services)
c.	Total Number of Worker	=	308	employees
d.	Design Flow for Commercial Employee	=	0.080	m3/day per worker (refer to Table T-2 of GESF, Commercial Employee)
e.	Design Flow for Commercial Activities	=	0.00	m3/day per worker (refer to Table T-2 of GESF, J6)
f.	Assumed Used Area (Retail)	=	119	m^2
g.	Worker Density	=	3.5	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Retail)
h.	Total Number of Worker	=	4	employees
i.	Design Flow for Commercial Employee	=	0.080	m3/day per worker (refer to Table T-2 of GESF, Commercial Employee)
j.	Design Flow for Commercial Activities	=	0.20	m3/day per worker (refer to Table T-2 of GESF, J4)
k.	Total Sewage Generation Rate x Catchment Inflow	=	28.39	m3/day (Catchment Inflow Factor of San Po Kong = 1.1)

B11 On Loong Factory Building

a.	Assumed Used Area (Industrial)	=	10408	m^2 (site area x (plot ratio = 9.5) - (f))
b.	Worker Density	=	2.3	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c.	Total Number of Worker	=	239	employees
d.	Design Flow for Industrial Employee	=	0.080	m3/day per worker (refer to Table T-3 of GESF, Industrial Employee)
e.	Design Flow for Industrial Activities	=	0.25	m3/day per worker (refer to Table T-3 of GESF, San Po Kong)
f.	Assumed Used Area (Restaurant)	=	281	m^2
g.	Worker Density	=	5.1	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Restaurants)
h.	Total Number of Worker	=	14	employees
i.	Design Flow for Commercial Employee	=	0.080	m3/day per worker (refer to Table T-2 of GESF, Commercial Employee)
j.	Design Flow for Commercial Activities	=	1.50	m3/day per worker (refer to Table T-2 of GESF, J10)
k.	Total Sewage Generation Rate x Catchment Inflow	=	111.83	m3/day (Catchment Inflow Factor of San Po Kong = 1.1)

	Total Flow			
a.	Estimated Average Dry Weather Flow	=	992.01	m3/day
b.	Contributing Population	=	3674	people

Table D-2 Calculation for Sewage Generation Rate of the Surrounding Buildings

	Surrounding Development (Catchment C)			Remarks
C1	**Perfect Industrial Building**			
a.	Assumed Used Area (Industrial)	=	10865	m^2 (site area x (plot ratio = 9.5) - (f))
b.	Worker Density	=	2.3	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c.	Total Number of Worker	=	250	employees
d.	Design Flow for Industrial Employee	=	0.080	m3/day per worker (refer to Table T-3 of GESF, Industrial Employee)
e.	Design Flow for Industrial Activities	=	0.25	m3/day per worker (refer to Table T-3 of GESF, San Po Kong)
f.	Assumed Used Area (Retail)	=	294	m^2
g.	Worker Density	=	3.5	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Retail)
h.	Total Number of Worker	=	10	employees
i.	Design Flow for Commercial Employee	=	0.080	m3/day per worker (refer to Table T-2 of GESF, Commercial Employee)
j.	Design Flow for Commercial Activities	=	0.20	m3/day per worker (refer to Table T-2 of GESF, J4)
k.	Total Sewage Generation Rate x Catchment Inflow	=	93.88	m3/day (Catchment Inflow Factor of San Po Kong = 1.1)
C2	**Canny Industrial Building**			
a.	Assumed Used Area (Industrial)	=	5632	m^2 (site area x (plot ratio = 9.5) - (f) -(k))
b.	Worker Density	=	2.3	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c.	Total Number of Worker	=	130	employees
d.	Design Flow for Industrial Employee	=	0.080	m3/day per worker (refer to Table T-3 of GESF, Industrial Employee)
e.	Design Flow for Industrial Activities	=	0.25	m3/day per worker (refer to Table T-3 of GESF, San Po Kong)
f.	Assumed Used Area (Restaurant)	=	156	m^2
g.	Worker Density	=	5.1	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Restaurants)
h.	Total Number of Worker	=	8	employees
i.	Design Flow for Commercial Employee	=	0.080	m3/day per worker (refer to Table T-2 of GESF, Commercial Employee)
j.	Design Flow for Commercial Activities	=	1.50	m3/day per worker (refer to Table T-2 of GESF, J10)
k.	Assumed Used Area (Retail)	=	156	m^2
l.	Worker Density	=	3.5	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Retail)
m.	Total Number of Worker	=	5	employees
n.	Design Flow for Commercial Employee	=	0.080	m3/day per worker (refer to Table T-2 of GESF, Commercial Employee)
o.	Design Flow for Commercial Activities	=	0.20	m3/day per worker (refer to Table T-2 of GESF, J4)
p.	Total Sewage Generation Rate x Catchment Inflow	=	62.58	m3/day (Catchment Inflow Factor of San Po Kong = 1.1)
C3	**Kai Yip Factory Building**			
a.	Assumed Used Area (Industrial)	=	8236	m^2 (site area x (plot ratio = 9.5) - (f))
b.	Worker Density	=	2.3	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c.	Total Number of Worker	=	189	employees
d.	Design Flow for Industrial Employee	=	0.080	m3/day per worker (refer to Table T-3 of GESF, Industrial Employee)
e.	Design Flow for Industrial Activities	=	0.25	m3/day per worker (refer to Table T-3 of GESF, San Po Kong)
f.	Assumed Used Area (Retail)	=	223	m^2
g.	Worker Density	=	3.5	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Retail)
h.	Total Number of Worker	=	8	employees
i.	Design Flow for Commercial Employee	=	0.080	m3/day per worker (refer to Table T-2 of GESF, Commercial Employee)
j.	Design Flow for Commercial Activities	=	0.20	m3/day per worker (refer to Table T-2 of GESF, J4)
k.	Total Sewage Generation Rate x Catchment Inflow	=	71.16	m3/day (Catchment Inflow Factor of San Po Kong = 1.1)
C4	**Mini Cube**			
a.	Assumed Used Area (Office)	=	10533	m^2 (site area x (plot ratio = 12))
b.	Worker Density	=	5.5	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Financial & Business Services)
c.	Total Number of Worker	=	579	employees
d.	Design Flow for Commercial Employee	=	0.080	m3/day per worker (refer to Table T-2 of GESF, Commercial Employee)
e.	Design Flow for Commercial Activities	=	0.00	m3/day per worker (refer to Table T-2 of GESF, J6)
f.	Total Sewage Generation Rate x Catchment Inflow	=	50.98	m3/day (Catchment Inflow Factor of San Po Kong = 1.1)
C5	**New Tech Plaza**			
a.	Assumed Used Area (Office)	=	18678	m^2 (site area x (plot ratio = 12) - (f) - (k))
b.	Worker Density	=	5.5	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Financial & Business Services)
c.	Total Number of Worker	=	1027	employees
d.	Design Flow for Commercial Employee	=	0.080	m3/day per worker (refer to Table T-2 of GESF, Commercial Employee)
e.	Design Flow for Commercial Activities	=	0.00	m3/day per worker (refer to Table T-2 of GESF, J6)
f.	Assumed Used Area (Restaurant)	=	406	m^2
g.	Worker Density	=	5.1	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Restaurants)
h.	Total Number of Worker	=	21	employees
i.	Design Flow for Commercial Employee	=	0.080	m3/day per worker (refer to Table T-2 of GESF, Commercial Employee)
j.	Design Flow for Commercial Activities	=	1.5	m3/day per worker (refer to Table T-2 of GESF, J10)
k.	Assumed Used Area (Retail)	=	406	m^2
l.	Worker Density	=	3.5	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Retail)
m.	Total Number of Worker	=	14	employees
n.	Design Flow for Commercial Employee	=	0.080	m3/day per worker (refer to Table T-2 of GESF, Commercial Employee)
o.	Design Flow for Commercial Activities	=	0.20	m3/day per worker (refer to Table T-2 of GESF, J4)
p.	Total Sewage Generation Rate x Catchment Inflow	=	130.77	m3/day (Catchment Inflow Factor of San Po Kong = 1.1)

	Total Flow			
a.	Estimated Average Dry Weather Flow	=	409.37	m3/day
b.	Contributing Population	=	1516	people

Table D-2 Calculation for Sewage Generation Rate of the Surrounding Buildings

Surrounding Development (Catchment D)				Remarks
D1	**Yip Fung Industrial Building**			
a.	Assumed Used Area (Industrial)	=	2457	m^2 (site area x (plot ratio = 9.5))
b.	Worker Density	=	2.3	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c.	Total Number of Worker	=	56	employees
d.	Design Flow for Industrial Employee	=	0.080	m3/day per worker (refer to Table T-3 of GESF, Industrial Employee)
e.	Design Flow for Industrial Activities	=	0.25	m3/day per worker (refer to Table T-3 of GESF, San Po Kong)
f.	Sewage Generation Rate	=	20.51	m3/day (Catchment Inflow Factor of San Po Kong = 1.1)
D2	**Fok Woh Factory Building**			
a.	Assumed Used Area (Industrial)	=	3481	m^2 (site area x (plot ratio = 9.5))
b.	Worker Density	=	2.3	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c.	Total Number of Worker	=	80	employees
d.	Design Flow for Industrial Employee	=	0.080	m3/day per worker (refer to Table T-3 of GESF, Industrial Employee)
e.	Design Flow for Industrial Activities	=	0.25	m3/day per worker (refer to Table T-3 of GESF, San Po Kong)
f.	Sewage Generation Rate	=	29.06	m3/day (Catchment Inflow Factor of San Po Kong = 1.1)
D3	**Kar Chau Industrial Building**			
a.	Assumed Used Area (Industrial)	=	4670	m^2 (site area x (plot ratio = 9.5))
b.	Worker Density	=	2.3	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c.	Total Number of Worker	=	107	employees
d.	Design Flow for Industrial Employee	=	0.080	m3/day per worker (refer to Table T-3 of GESF, Industrial Employee)
e.	Design Flow for Industrial Activities	=	0.25	m3/day per worker (refer to Table T-3 of GESF, San Po Kong)
f.	Sewage Generation Rate	=	38.99	m3/day (Catchment Inflow Factor of San Po Kong = 1.1)
D4	**Tontex Industrial Building**			
a.	Assumed Used Area (Industrial)	=	9055	m^2 (site area x (plot ratio = 9.5))
b.	Worker Density	=	2.3	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c.	Total Number of Worker	=	208	employees
d.	Design Flow for Industrial Employee	=	0.080	m3/day per worker (refer to Table T-3 of GESF, Industrial Employee)
e.	Design Flow for Industrial Activities	=	0.25	m3/day per worker (refer to Table T-3 of GESF, San Po Kong)
f.	Sewage Generation Rate	=	75.60	m3/day (Catchment Inflow Factor of San Po Kong = 1.1)
D5	**Proposed Redevelopment of Choi Hung Road Playground**			
a.	Assumed Used Area	=	26000	m^2
b.	Worker Density	=	1.3	workers per 100m2 of GFA (refer to Table 8 of CIFSUS - Community, Social & Personal Services)
c.	Total Number of Worker	=	338	employees
d.	Design Flow for Commercial Employee	=	0.080	m3/day per worker (refer to Table T-2 of GESF, Commercial Employee)
e.	Design Flow for Commercial Activities	=	0.20	m3/day per worker (refer to Table T-2 of GESF, J11)
f.	Sewage Generation Rate	=	94.64	m3/day

	Total Flow			
a.	Estimated Average Dry Weather Flow	=	258.80	m3/day
b.	Contributing Population	=	959	people

Reference:

[1] Plot ratio of 9.5 for industrial building is referenced from Chapter 5 Industry of the HKPSG.

[2] Plot ratio of 12 for office building in the area (OU) is referenced from the approved OZP (no. S/K11/31).

[3] Assumed Used Area for restaurant and retail is based on desktop study.

Appendix E

Hydraulic Capacity of Proposed Sewers at Proposed Hotel Development at 20-24 Tai Yau Street without Mitigation Measures

Manhole Reference	Manhole Reference	Sewer Reference	Pipe Dia.	Pipe Length	US IL	DS IL	g (1)	k_s (1), (3)	s (1)	v (1)	V (1), (2)	A	Q (4)	Estimated Capacity	ADWF	Contributing Population	Peaking Factor	Peak Flow	Capacity	Compliance	Remarks
			mm	m	mPD	mPD	m/s^2	m		m^2/s	m/s	m^2	m^3/s	L/s	m^3/day			L/s	%		
TYSMH-01	FMH4042486	TYSFWD-1	400	6.80	4.100	3.900	9.81	0.0006	0.0294	1.31E-06	3.2417	0.1257	0.4074	407.37	1232.81	4565.95	6	85.61	21.0%	Yes	PS
FMH4042484	FMH4042485	FWD4048165	225	12.74	4.490	4.360	9.81	0.0006	0.0102	1.31E-06	1.3170	0.0398	0.0524	52.37	258.80	958.51	8	23.96	45.8%	Yes	D1 - D5
FMH4042485	FMH4042486	FWD4048166	400	66.78	4.720	3.900	9.81	0.0006	0.0123	1.31E-06	2.0890	0.1257	0.2625	262.51	1250.80	4632.60	6	86.86	33.1%	Yes	D1 - D5, B1 - B12
FMH4042486	FMH4042487	FWD4048167	400	6.78	3.820	3.810	9.81	0.0030	0.0015	1.31E-06	0.5761	0.1257	0.0724	72.39	2483.61	9198.55	5	143.73	198.5%	No	D1 - D5, B1 - B12, PS
FMH4042487	FMH4042488	FWD4048168	400	74.49	3.810	2.970	9.81	0.0006	0.0113	1.31E-06	2.0012	0.1257	0.2515	251.48	2483.61	9198.55	5	143.73	57.2%	Yes	D1 - D5, B1 - B12, PS
FMH4042555	FMH4042488	FWD4048234	225	12.82	4.390	4.240	9.81	0.0006	0.0117	1.31E-06	1.4112	0.0398	0.0561	56.11	437.16	1619.12	6	30.36	54.1%	Yes	A1 - A7
FMH4042591	FMH4042488	FWD4048270	225	54.29	3.600	3.150	9.81	0.0006	0.0083	1.31E-06	1.1855	0.0398	0.0471	47.13	409.37	1516.18	6	28.43	60.3%	Yes	C1 - C5
FMH4042488	FMH4042489	FWD4048169	400	15.80	2.960	2.860	9.81	0.0006	0.0063	1.31E-06	1.4952	0.1257	0.1879	187.89	3330.14	12333.85	4	154.17	82.1%	Yes	A1 - A7, B1 - B12, PS, C1 - C5, D1 - D5
FMH4042489	FMH4042490	FWD4048170	400	9.53	2.860	2.850	9.81	0.0030	0.0010	1.31E-06	0.4854	0.1257	0.0610	60.99	3330.14	12333.85	4	154.17	252.8%	No	A1 - A7, B1 - B12, PS, C1 - C5, D1 - D5
FMH4042490	FMH4042491	FWD4048171	400	52.97	2.770	2.500	9.81	0.0006	0.0051	1.31E-06	1.3402	0.1257	0.1684	168.41	3330.14	12333.85	4	154.17	91.5%	Yes	A1 - A7, B1 - B12, PS, C1 - C5, D1 - D5
FMH4042491	FMH4042492	FWD4048172	400	40.89	2.500	2.290	9.81	0.0006	0.0051	1.31E-06	1.3453	0.1257	0.1691	169.05	3330.14	12333.85	4	154.17	91.2%	Yes	A1 - A7, B1 - B12, PS, C1 - C5, D1 - D5
FMH4042492	FMH4042493	FWD4048173	400	16.29	2.260	2.17	9.81	0.0006	0.0055	1.31E-06	1.3959	0.1257	0.1754	175.42	3330.14	12333.85	4	154.17	87.9%	Yes	A1 - A7, B1 - B12, PS, C1 - C5, D1 - D5

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

(2) The mean velocity (V) is claculated by the Colebrook-White Equation for circular pipes:

$$V = -\sqrt{(8gDs)}\,\log\left(\frac{ks}{3.7D} + \frac{2.51v}{D\sqrt{(2gDs)}}\right)$$

where

V = mean velocity (m/s)
g = gravitational acceration (m/s2)
D = internal pipe diameter (m)
s = slope
ks = roughness coefficient(m)
v = kinematic viscosity of fluid (m2/s)

(3) ks = 0.6 mm and 3mm for clayware slimed sewers with half full flow velocity of 1.2 m/s and 0.75m/s respectively in poor condition.

(4) Peak flow (Q) is calculated by Q = V x A

Appendix E

Hydraulic Capacity of Proposed Sewers at Proposed Hotel Development at 20-24 Tai Yau Street with Mitigation Measures

Manhole Reference	Manhole Reference	Sewer Reference	Pipe Dia.	Pipe Length	US IL	DS IL	g (1)	k_s (1), (3)	s (1)	v (1)	V (1), (2)	A	Q (4)	Estimated Capacity	ADWF	Contributing Population	Peaking Factor	Peak Flow	Capacity	Compliance	Remarks
			mm	m	mPD	mPD	m/s^2	m		m^2/s	m/s	m^2	m^3/s	L/s	m^3/day			L/s	%		
TYSMH-01	FMH4042486	TYSFWD-1	400	6.80	4.100	3.900	9.81	0.0006	0.0294	1.31E-06	3.2417	0.1257	0.4074	407.37	1232.81	4565.95	6	85.61	21.0%	Yes	PS
FMH4042484	FMH4042485	FWD4048165	225	12.74	4.490	4.360	9.81	0.0006	0.0102	1.31E-06	1.3170	0.0398	0.0524	52.37	258.80	958.51	8	23.96	45.8%	Yes	D1 - D5
FMH4042485	FMH4042486	FWD4048166	400	66.78	4.720	3.900	9.81	0.0006	0.0123	1.31E-06	2.0890	0.1257	0.2625	262.51	1250.80	4632.60	6	86.86	33.1%	Yes	D1 - D5, B1 - B12
FMH4042486	FMH4042487	FWD4048167	600	6.78	3.820	3.810	9.81	0.0030	0.0015	1.31E-06	0.7527	0.2827	0.2128	212.82	2483.61	9198.55	5	143.73	67.5%	Yes	D1 - D5, B1 - B12, PS
FMH4042487	FMH4042488	FWD4048168	400	74.49	3.810	2.970	9.81	0.0006	0.0113	1.31E-06	2.0012	0.1257	0.2515	251.48	2483.61	9198.55	5	143.73	57.2%	Yes	D1 - D5, B1 - B12, PS
FMH4042555	FMH4042488	FWD4048234	225	12.82	4.390	4.240	9.81	0.0006	0.0117	1.31E-06	1.4112	0.0398	0.0561	56.11	437.16	1619.12	6	30.36	54.1%	Yes	A1 - A7
FMH4042591	FMH4042488	FWD4048270	225	54.29	3.600	3.150	9.81	0.0006	0.0083	1.31E-06	1.1855	0.0398	0.0471	47.13	409.37	1516.18	6	28.43	60.3%	Yes	C1 - C5
FMH4042488	FMH4042489	FWD4048169	400	15.80	2.960	2.860	9.81	0.0006	0.0063	1.31E-06	1.4952	0.1257	0.1879	187.89	3330.14	12333.85	4	154.17	82.1%	Yes	A1 - A7, B1 - B12, PS, C1 - C5, D1 - D5
FMH4042489	FMH4042490	FWD4048170	600	9.53	2.860	2.850	9.81	0.0030	0.0010	1.31E-06	0.6343	0.2827	0.1794	179.35	3330.14	12333.85	4	154.17	86.0%	Yes	A1 - A7, B1 - B12, PS, C1 - C5, D1 - D5
FMH4042490	FMH4042491	FWD4048171	400	52.97	2.770	2.500	9.81	0.0006	0.0051	1.31E-06	1.3402	0.1257	0.1684	168.41	3330.14	12333.85	4	154.17	91.5%	Yes	A1 - A7, B1 - B12, PS, C1 - C5, D1 - D5
FMH4042491	FMH4042492	FWD4048172	400	40.89	2.500	2.290	9.81	0.0006	0.0051	1.31E-06	1.3453	0.1257	0.1691	169.05	3330.14	12333.85	4	154.17	91.2%	Yes	A1 - A7, B1 - B12, PS, C1 - C5, D1 - D5
FMH4042492	FMH4042493	FWD4048173	400	16.29	2.260	2.17	9.81	0.0006	0.0055	1.31E-06	1.3959	0.1257	0.1754	175.42	3330.14	12333.85	4	154.17	87.9%	Yes	A1 - A7, B1 - B12, PS, C1 - C5, D1 - D5

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

(2) The mean velocity (V) is claculated by the Colebrook-White Equation for circular pipes:

$$V = -\sqrt{(8gDs)}\,\log\left(\frac{ks}{3.7D} + \frac{2.51v}{D\sqrt{(2gDs)}}\right)$$

where

V = mean velocity (m/s)
g = gravitational acceration (m/s2)
D = internal pipe diameter (m)
s = slope
ks = roughness coefficient(m)
v = kinematic viscosity of fluid (m2/s)

(3) ks = 0.6 mm and 3mm for clayware slimed sewers with half full flow velocity of 1.2 m/s and 0.75m/s respectively in poor condition.

(4) Peak flow (Q) is calculated by Q = V x A