

Appendix VII Sewerage Impact Assessment

**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

24 Nov 2025

Ref No: RT24152_02-SIA-03

Prepared By:



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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-03r1				
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
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3r1	24/11/2025	Issued for Comment	Various	TL	HM

Prepared By:

Checked by

Various

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

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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 2,426.05m², and comprises a 33-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 (k_s) 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. $k_s = 0.6$ 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. While roughness value of 0.3mm is adopted for the PE pipe proposed for the Project Site.

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.

(i) for circular pipes flowing full,

$$V = -\sqrt{(8gDs)} \log\left(\frac{k_s}{3.7D} + \frac{2.5 \nu}{D\sqrt{(2gDs)}}\right)$$

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

$$V = -\sqrt{(32gRs)} \log\left(\frac{k_s}{14.8R} + \frac{1.25 \nu}{R\sqrt{(32gRs)}}\right)$$

where

V = mean velocity (m/s)

g = gravitational acceleration (m/s²)

R = hydraulic radius (m)

D = internal pipe diameter (m)

k_s = hydraulic pipeline roughness (m)

ν = 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 1644.68 m³/day and 95.18 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 21.6% of the sewer capacity respectively.

Exceedance cumulative flow up to 284.0% are identified at 400mm diameter sewers FWD4048170 and the segment from FWD4048169 to FWD4048173 respectively. Hence, improvement works on the existing sewerage system are required. Mitigation measures by adjusting the invert level of FWD4048170 and the segment from FWD4048169 to FWD4048173 are proposed as shown in **Appendix E** and **Figure 2-2**. A manhole survey shall be conducted to determine the actual invert level of FWD4048170 and the segment from FWD4048169 to FWD4048173 before construction. After the upgrading works, the cumulative flow is generally no more than 87.7% of sewer capacity.

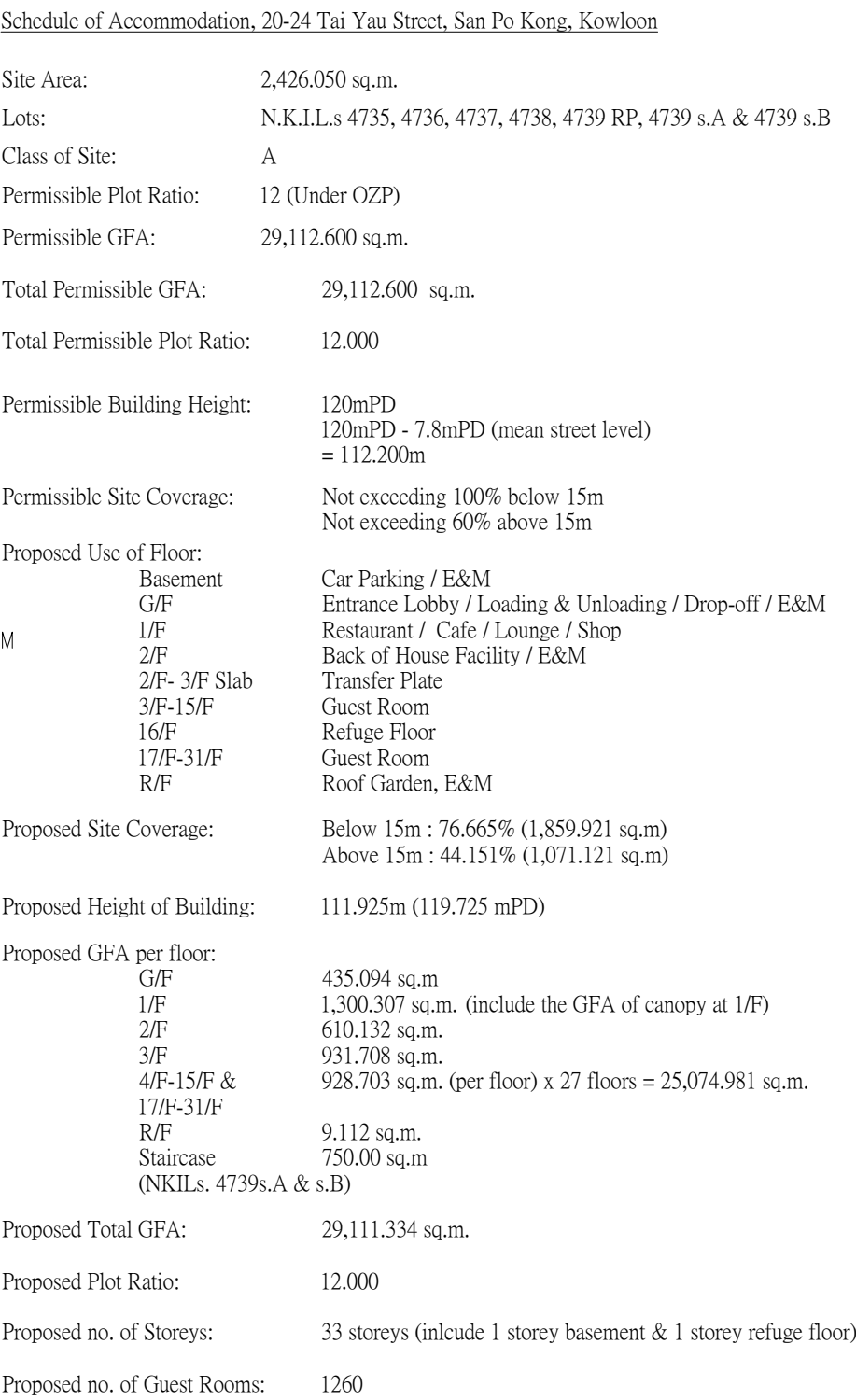
3 CONCLUSION

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.

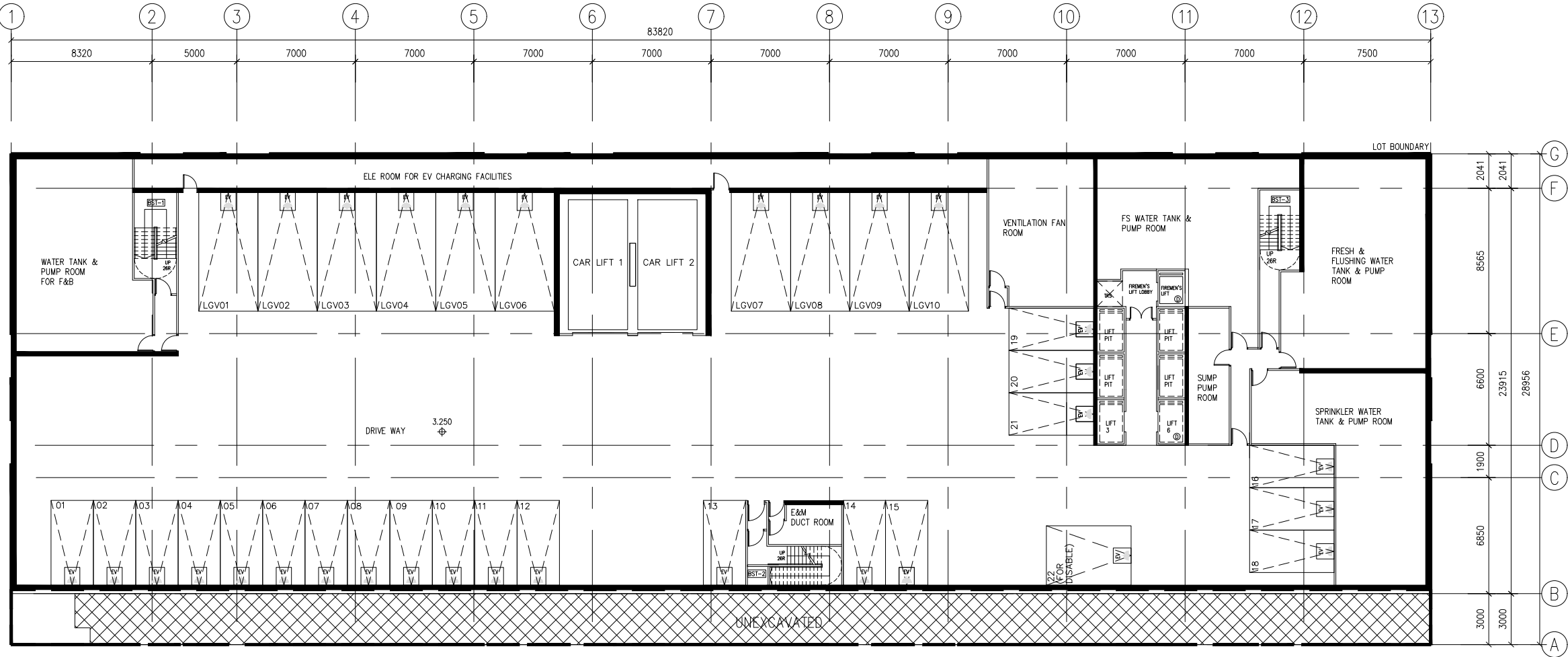
Results of the assessment show that the cumulative flow of FWD4048170 and the segment from FWD4048169 to FWD4048173 exceeded the sewer capacity. Mitigation measures by adjusting the invert level of FWD4048170 and the segment from FWD4048169 to FWD4048173 are proposed. A manhole survey shall be conducted to determine the actual invert level of FWD4048170 and the segment from FWD4048169 to FWD4048173 before construction. After the upgrading works, the cumulative flow is generally no more than 87.7% 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



-		DESIGN PROPOSAL	NOV25
REV.	DESCRIPTION	DATE	
PROJECT :			
RED/DEVELOPMENT 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 朱 倫 達 萊 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.:
NTS		CAL-01	-

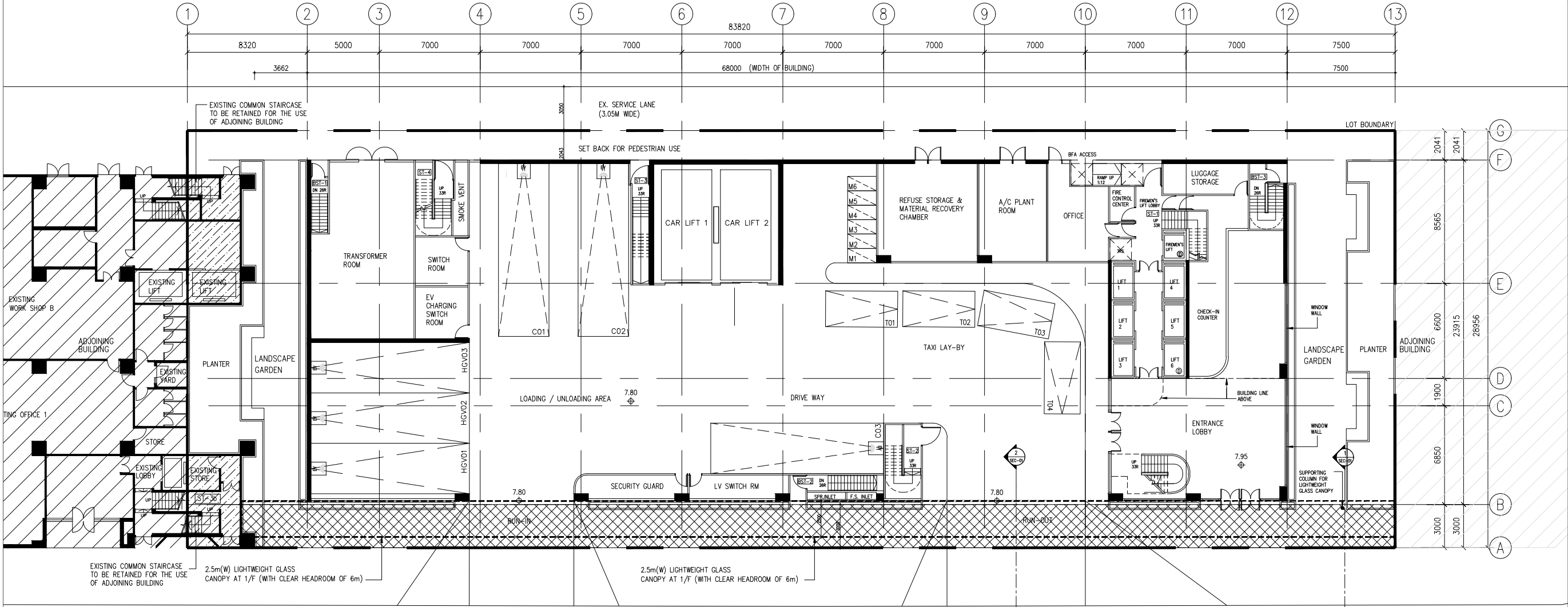


LEGEND:

 SET BACK AREA TO BE DEDICATED FOR USE AS PUBLIC PASSAGE AT GROUND FLOOR LEVEL

BASEMENT FLOOR PLAN

-	DESIGN PROPOSAL	NOV25
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 :		
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 : RL	DRAWN : NC	CHECKED : RL
PRINTED DATE :	DATE :	APPROVED : JC
SCALE AT A3 1:300	DRAWING No. : GBP-01	REV: -
TOTAL NO. OF SHEETS: 1 (THIS SHEET IS THE ONLY SHEET TO BE PRINTED)		



LEGEND:

PLANTER BOX



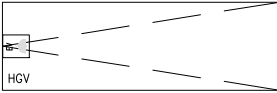
SET BACK AREA TO BE DEDICATED FOR USE AS PUBLIC PASSAGE AT GROUND FLOOR LEVEL



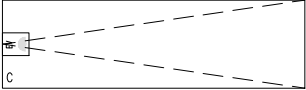
EXISTING COMMON STAIRCASES INCLUDING THE EXISTING STORE WILL BE RETAINED FOR THE USE OF ADJOINING BUILDING TO ENSURE IT COMPLIES WITH THE BUILDING ORDINANCE & REGULATIONS. THE STAIRCASE AND THE STORE WILL ONLY BE DEMOLISHED AFTER THE REDEVELOPMENT OF THE ADJOINING BUILDING.

GROUND FLOOR PLAN

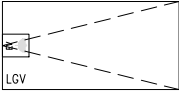
TAI YAU STREET (18.30M WIDE)



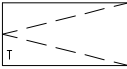
HEAVY GOODS VEHICLES 3.5m x 11m



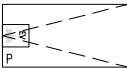
TOUR BUS LAY-BY 3.5m x 12m



LIGHT GOODS VEHICLE 3.5m x 7m



TAXI LAY-BY 2.5m x 5m



PRIVATE CAR 2.5m x 5m



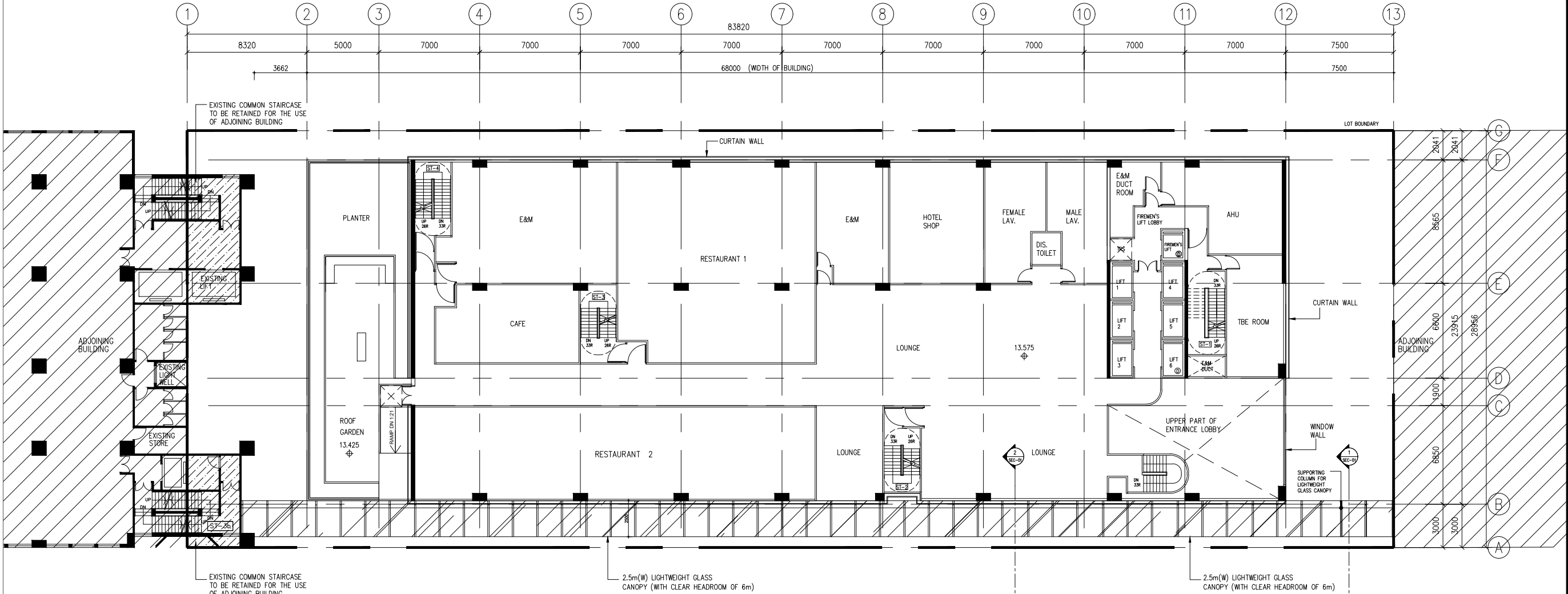
MOTORCYCLE 2m x 1m

CARPARK PROVISION CALCULATION

APPROX. NO. OF ROOMS = 1260

TYPE	ROOM/GFA	RATE	NO. REQUIRED	NO. PROVIDED
PRIVATE CAR	1260 ROOMS	1/100 ROOMS	13	22
	RESTAURANT/CAFE /800 SEAT	1/100 SEATS	8	
TAXI LAY-BY	1260 ROOMS	>600 ROOMS MIN. 4 NOS.	4	4
TOUR BUS LAY-BY	1260 ROOMS	>900 ROOMS MIN. 3 NOS.	3	3
LGV	1260 ROOMS	0.5-1/100 ROOMS	7-13	10
HGV				3
MOTORCYCLE	NOT SPECIFIED	NOT SPECIFIED	NIL	6

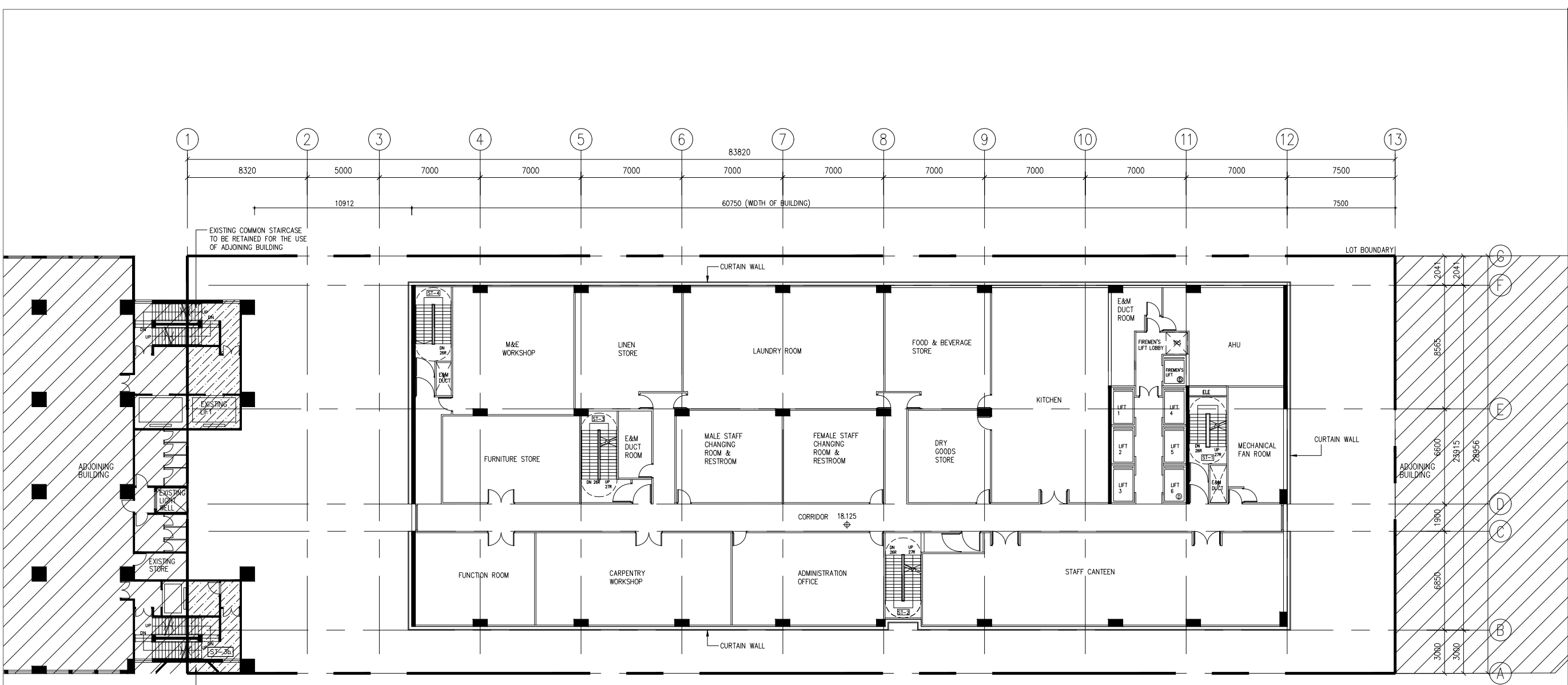
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REDEVELOPMENT OF NOS. 20-24 TAI YAU STREET SAN PO KONG, KOWLOON, N.K.I.L.s 4735, 4736, 4737, 4738, 4739 RP, 4739 S.A & 4739 S.B		
DRAWING TITLE :		
GROUND FLOOR PLAN		
AUTHORIZED PERSON :		
C&L architects & surveyors ltd 朱倫建築師測量師有限公司		
JOB No. : AA598		
DESIGNED : RL	DRAWN : NC	CHECKED : RL
PRINTED DATE :		APPROVED : JC
SCALE AT A3 1:300		DATE :
DRAWING No. : GBP-02		REV. : -



FIRST FLOOR PLAN

- LEGEND:
- EXISTING COMMON STAIRCASES INCLUDING THE EXISTING STORE WILL BE RETAINED FOR THE USE OF ADJOINING BUILDING TO ENSURE IT COMPLIES WITH THE BUILDING ORDINANCE & REGULATIONS. THE STAIRCASE AND THE STORE WILL ONLY BE DEMOLISHED AFTER THE REDEVELOPMENT OF THE ADJOINING BUILDING.
 - PLANTER BOX

-	DESIGN PROPOSAL	NOV25
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 :		
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		
DESIGNED : RL	DRAWN : NC	CHECKED : RL
PRINTED DATE :		APPROVED : JC
SCALE AT A3 1:300		DATE :
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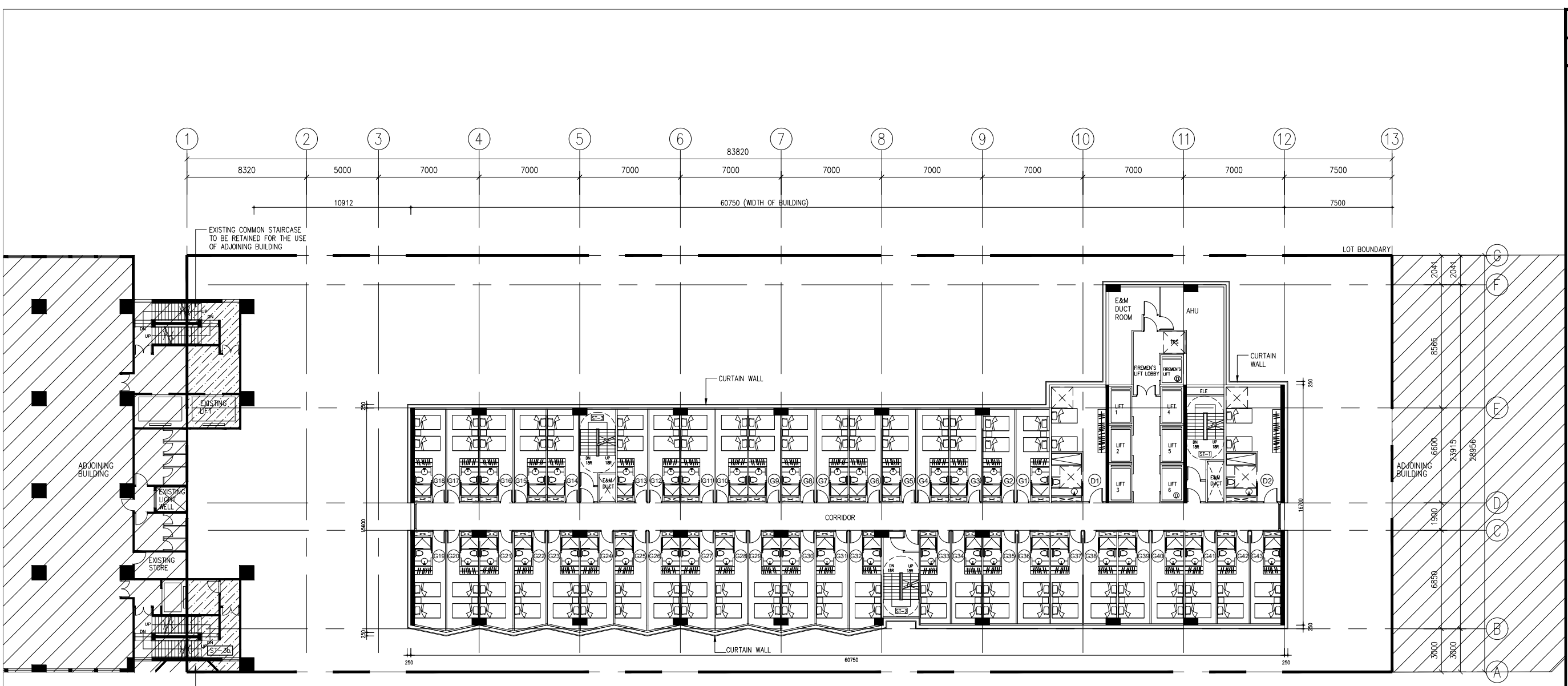
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EXISTING COMMON STAIRCASES INCLUDING THE EXISTING STORE WILL BE RETAINED FOR THE USE OF ADJOINING BUILDING TO ENSURE IT COMPLIES WITH THE BUILDING ORDINANCE & REGULATIONS. THE STAIRCASE AND THE STORE WILL ONLY BE DEMOLISHED AFTER THE REDEVELOPMENT OF THE ADJOINING BUILDING.

SECOND FLOOR PLAN

-	DESIGN PROPOSAL	NOV25
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 :		
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 : RL	DRAWN : NC	CHECKED : RL
PRINTED DATE :		APPROVED : JC
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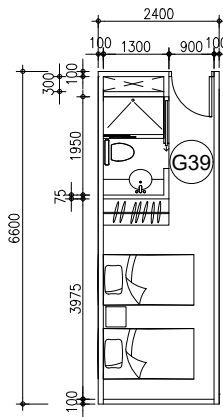


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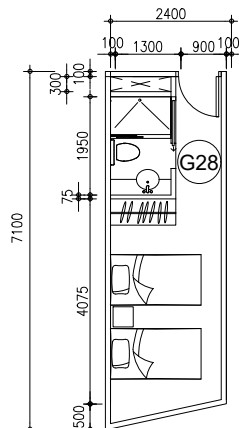


EXISTING COMMON STAIRCASES INCLUDING THE EXISTING STORE WILL BE RETAINED FOR THE USE OF ADJOINING BUILDING TO ENSURE IT COMPLIES WITH THE BUILDING ORDINANCE & REGULATIONS. THE STAIRCASE AND THE STORE WILL ONLY BE DEMOLISHED AFTER THE REDEVELOPMENT OF THE ADJOINING BUILDING.

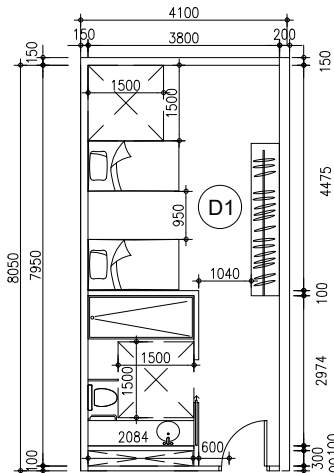
4/F TO 15/F FLOOR PLAN (GUEST ROOM)



TYPICAL GUEST ROOM LAYOUT 1
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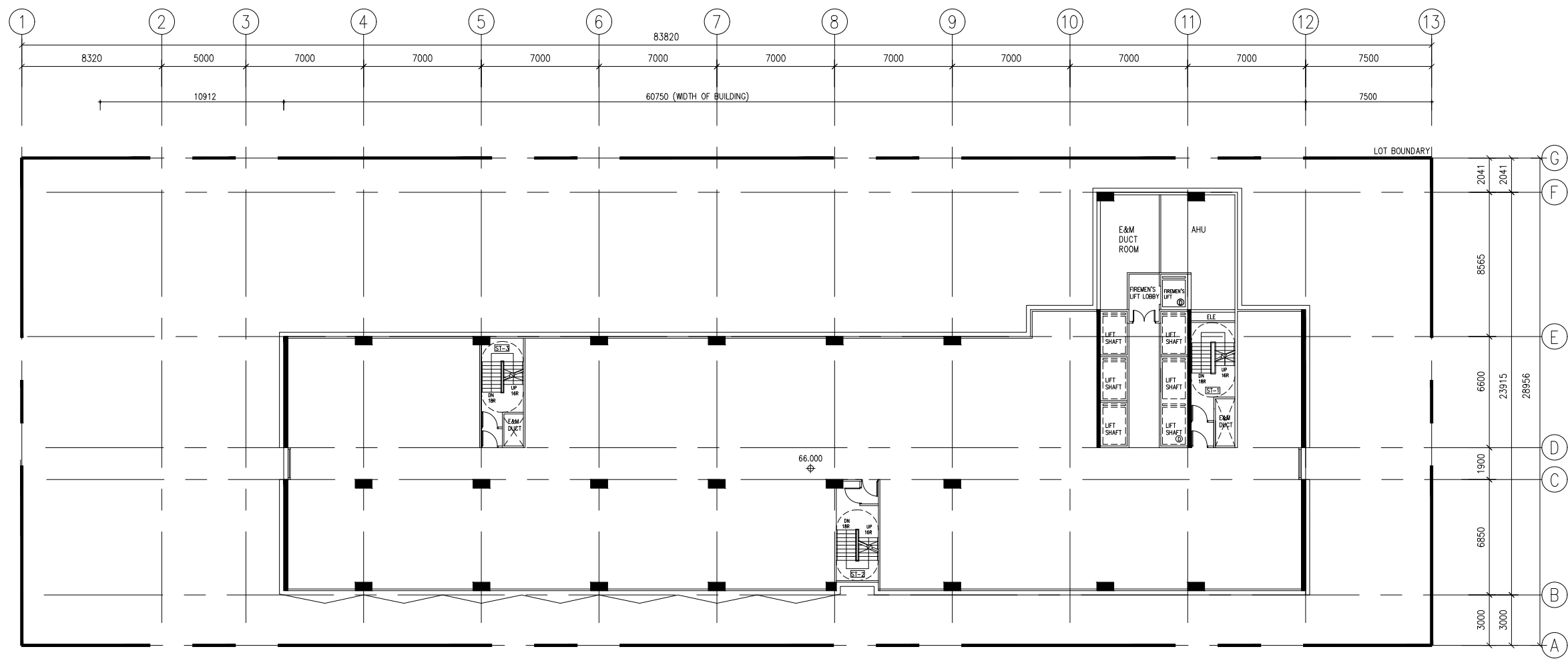


TYPICAL GUEST ROOM LAYOUT 2
UFA=11.472 m2
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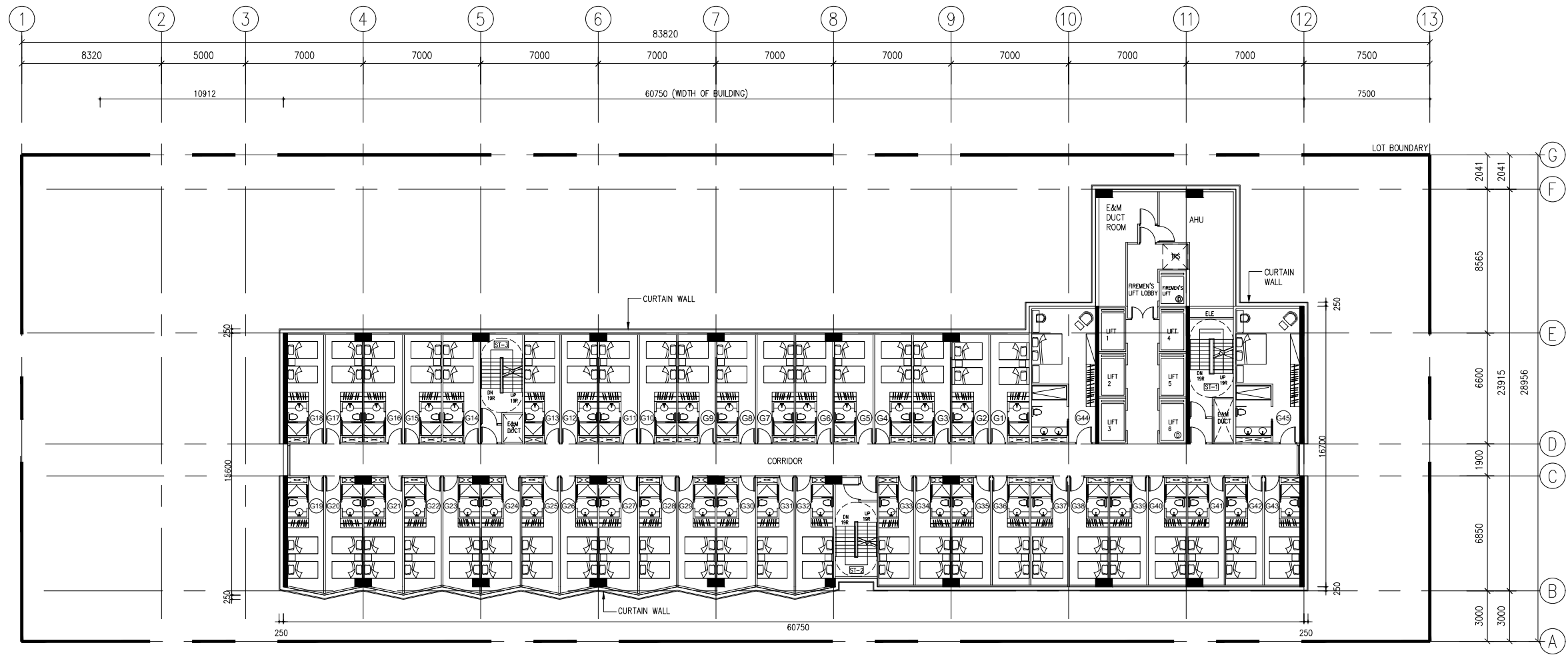
TYPICAL DOUBLE BED GUEST ROOM LAYOUT FOR DISABILITY
UFA=20.955 m2
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-	DESIGN PROPOSAL	NOV25
REV.	DESCRIPTION	DATE
PROJECT :		
REDEVELOPMENT OF NOS. 20-24 TAI YAU STREET SAN PO KONG, KOWLOON, N.K.I.L.s 4735, 4736, 4737, 4738, 4739 RP, 4739 S.A & 4739 S.B		
DRAWING TITLE :		
4TH TO 15TH 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 : RL	DRAWN : NC	CHECKED : RL
PRINTED DATE :	DATE :	APPROVED : JC
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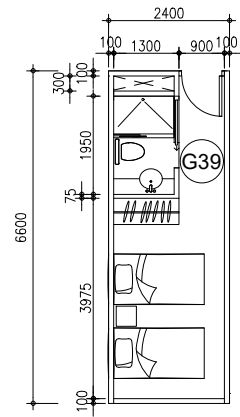


16/F FLOOR PLAN (REFUGE FLOOR)

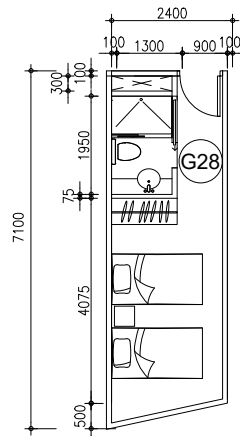
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REDEVELOPMENT OF NOS. 20-24 TAI YAU STREET SAN PO KONG, KOWLOON, N.K.I.L.s 4735, 4736, 4737, 4738, 4739 RP, 4739 S.A & 4739 S.B		
DRAWING TITLE :		
REFUGE FLOOR PLAN		
AUTHORIZED PERSON :		
C&L architects & surveyors ltd 朱倫建築師測量師有限公司		
JOB No. : AA598		
DESIGNED : RL	DRAWN : NC	CHECKED : RL
APPROVED : JC		DATE :
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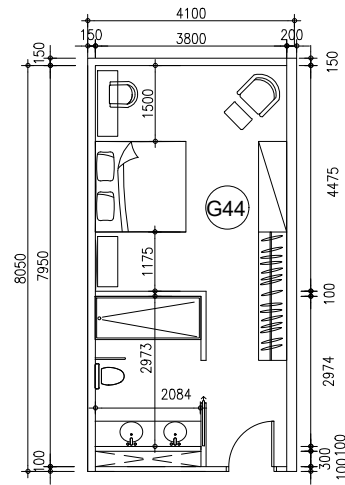
17/F TO 31/F FLOOR PLAN (GUEST ROOM)



TYPICAL GUEST ROOM LAYOUT 1
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1:150@A3

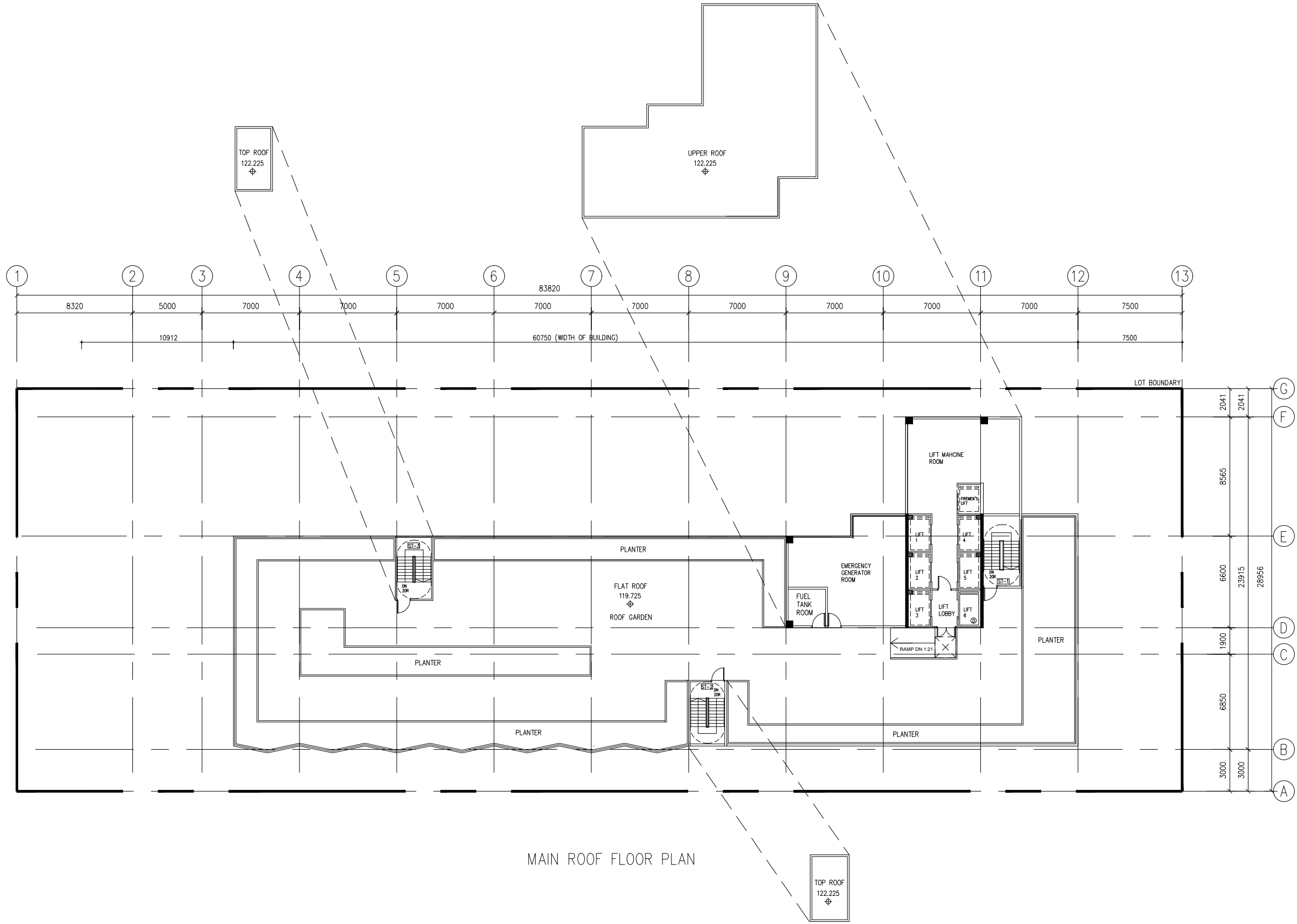


TYPICAL GUEST ROOM LAYOUT 2
UFA=11.472 m2
1:150@A3



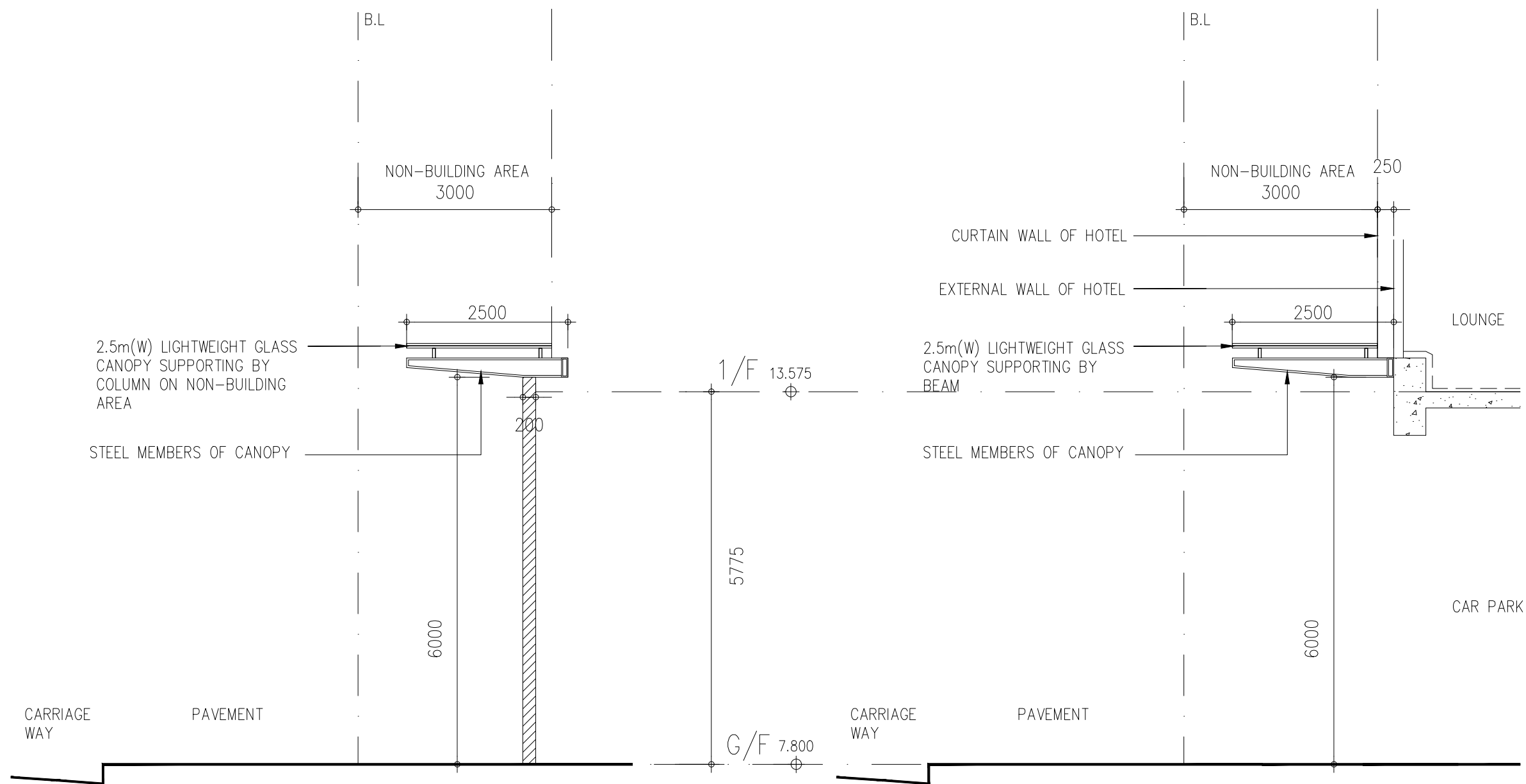
TYPICAL LAYOUT FOR SINGLE BED GUEST ROOM
UFA=20.955 m2
1:150@A3

-	DESIGN PROPOSAL	NOV25
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 :		
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 : RL	DRAWN : NC	CHECKED : RL
PRINTED DATE :	DATE :	APPROVED : JC
SCALE AT A3 1:300	DRAWING No. : GBP-08	REV : -
TOTAL NO. OF THIS DRAWING: 1 (THIS DRAWING IS THE ONLY ONE TO BE USED FOR CONSTRUCTION)		



MAIN ROOF FLOOR PLAN

-	DESIGN PROPOSAL	NOV25
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 : RL	DRAWN : NC	CHECKED : RL
APPROVED : JC		DATE :
PRINTED DATE :		REV.:
SCALE AT A3 1:300	DRAWING No. : GBP-09	-



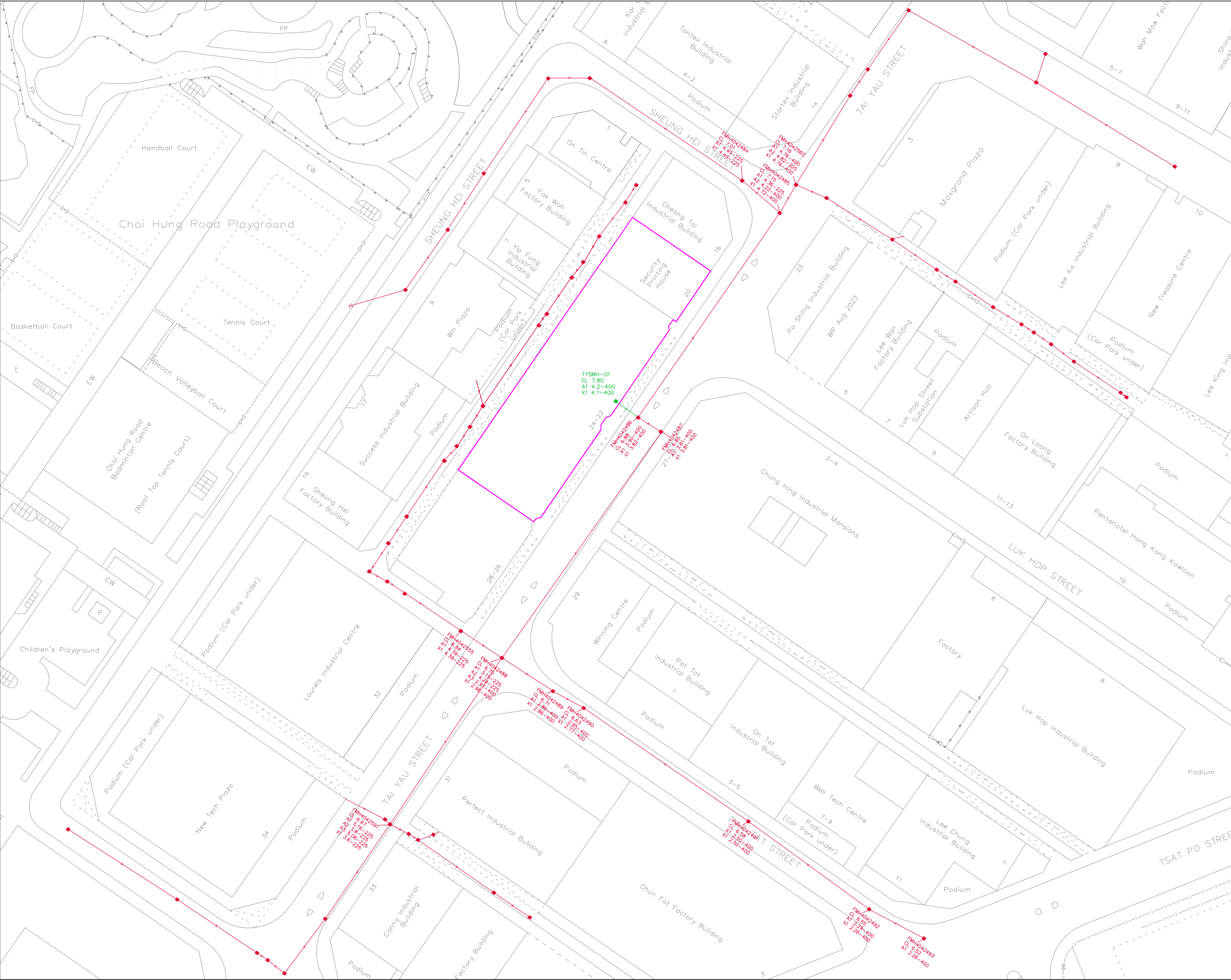
① SECTION "A" FOR 2.5m WIDTH LIGHTWEIGHT GLASS CANOPY SUPPORTED BY COLUMN

② SECTION "B" FOR 2.5m WIDTH LIGHTWEIGHT GLASS CANOPY SUPPORTED BY BEAM

-	DESIGN PROPOSAL	NOV25
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 :		
SECTIONS OF LIGHTWEIGHT CANOPY AT 1/F		
AUTHORIZED PERSON :		
C&L architects & surveyors ltd 朱倫建築師測量師有限公司		
JOB No. : AA598		
DESIGNED : RL	DRAWN : NC	CHECKED : RL
APPROVED : JC		DATE :
SCALE AT A3 1:75		REV : -

APPENDIX B

SEWERAGE RECORD PLAN FROM LANDS DEPARTMENT



Copyright by BeeXergy Consulting Limited

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.

Figure 1

Rev.

1

Scale:

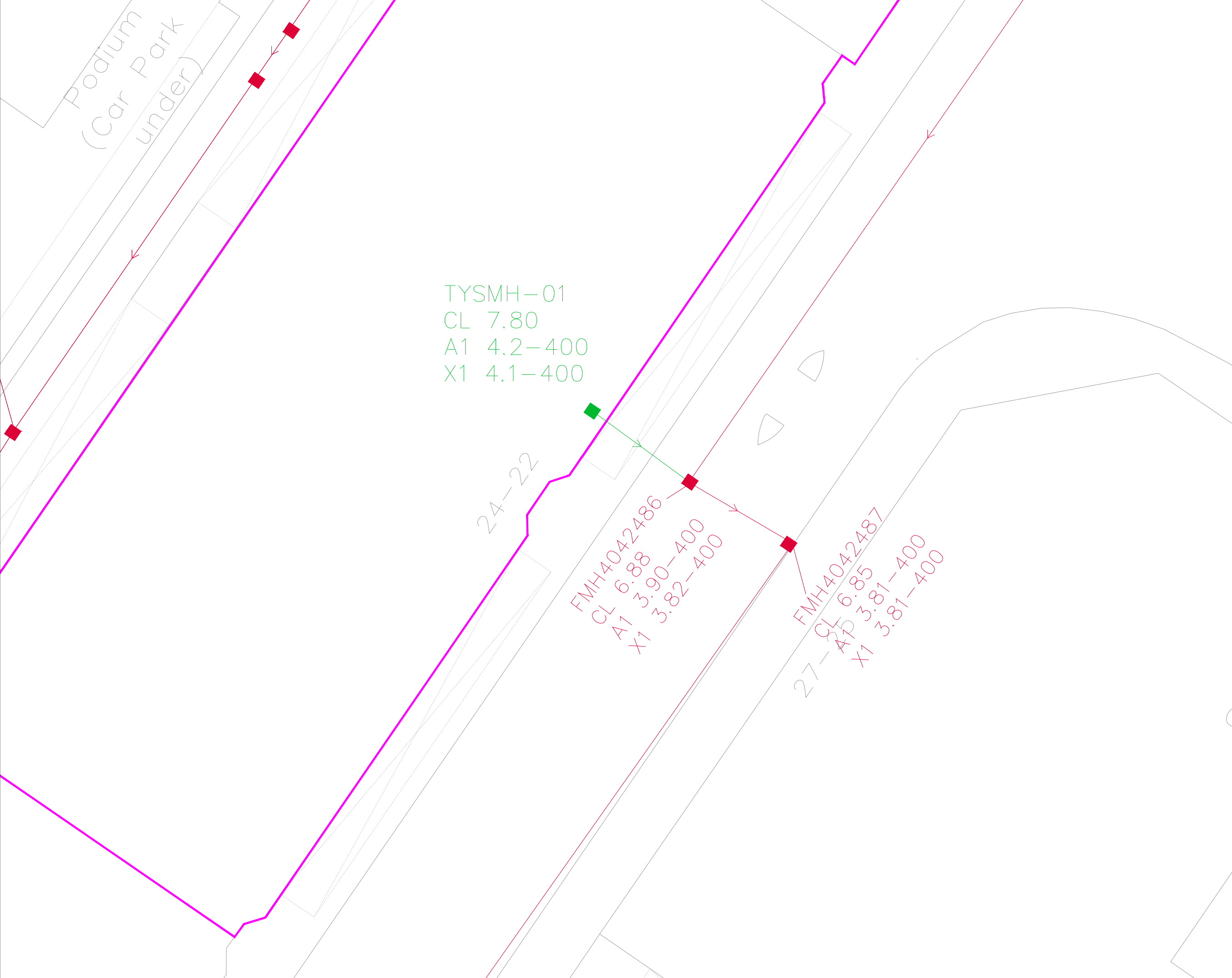
A3

BXG

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APPENDIX C

PROPOSED SEWERAGE LAYOUT PLAN



- Project Site
- Existing Sewage Connection
- Proposed Sewage Connection

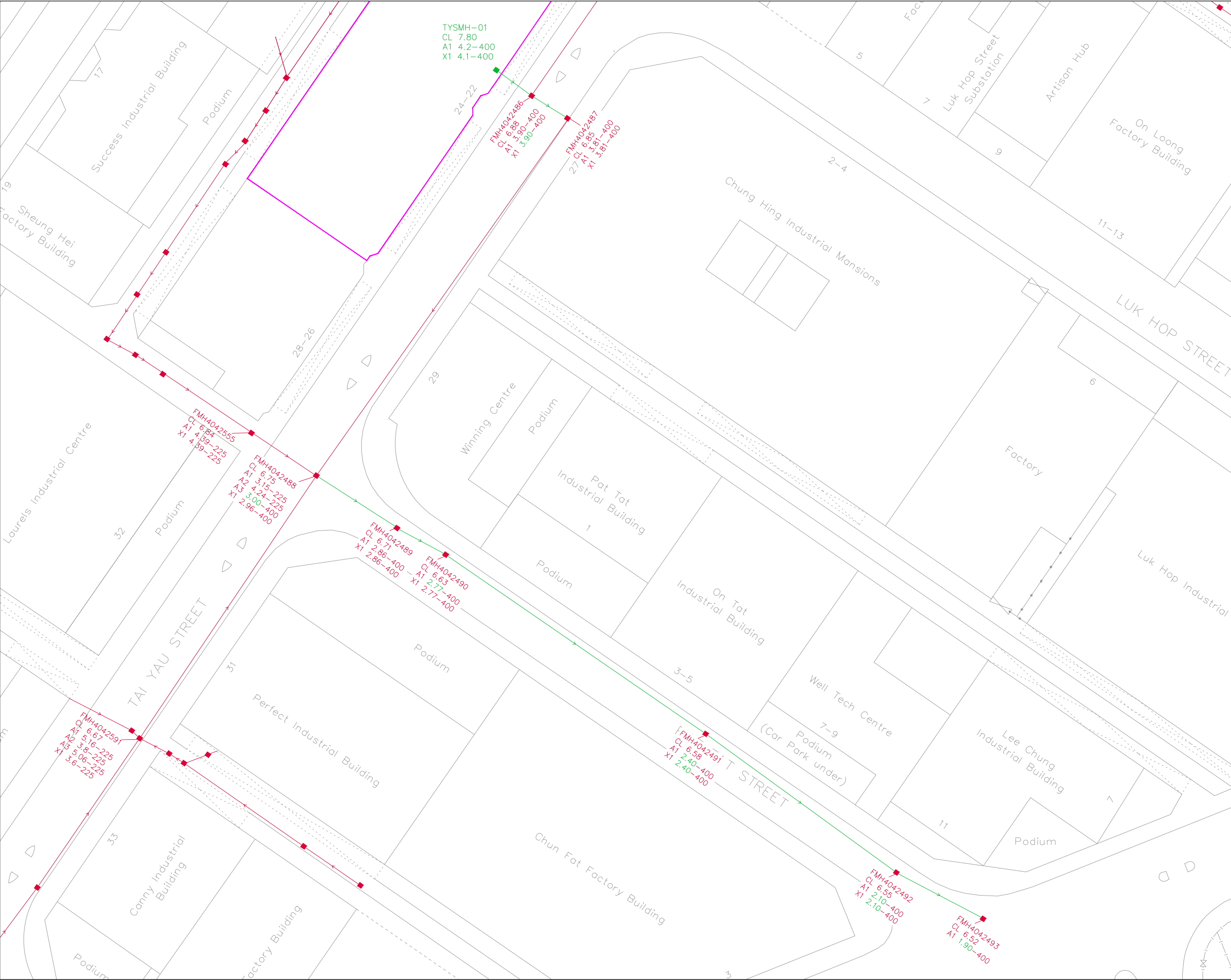
	Prepared	Checked	Approved
Initial	TL	YS	HM
Date	20241206	20241206	20241206

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

Drawing Title
Proposed Sewage Connection

Drawing No.	Rev.
Figure 2	0

Scale: A3



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Project Site

Existing Sewage Connection

Proposed Sewage Connection with mitigation measures

	Prepared	Checked	Approved
Initial	Various	TL	HM
Date	20251110	20251110	20251110

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.

2

Scale:

A3

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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)	28094.8	3.2	899	1.58	1420.475	1.10	1562.522	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)	914.5	5.1	47	1.58	73.690	1.10	81.059	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)	102.0	3.5	4	0.28	1.000	1.10	1.100	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: 0.28 m3/day for 'J4 Wholesale & Retail' based on EPD's GESF Table T-2
Total Average Daily Dry Weather Flow of Proposed Development (m³/day)							1644.681	

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 100m ² 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	m ³ /day per worker (refer to Table T-2 of GESF, Commercial Employee)
e. Design Flow for Commercial Activities	=	0.00	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Restaurants)
h. Total Number of Worker	=	4	employees
i. Design Flow for Commercial Employee	=	0.080	m ³ /day per worker (refer to Table T-2 of GESF, Commercial Employee)
j. Design Flow for Commercial Activities	=	1.5	m ³ /day per worker (refer to Table T-2 of GESF, J10)
k. Total Sewage Generation Rate x Catchment Inflow	=	24.7	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c. Total Number of Worker	=	103	employees
d. Design Flow for Industrial Employee	=	0.080	m ³ /day per worker (refer to Table T-3 of GESF, Industrial Employee)
e. Design Flow for Industrial Activities	=	0.25	m ³ /day per worker (refer to Table T-3 of GESF, San Po Kong)
f. Total Sewage Generation Rate x Catchment Inflow	=	37.38	m ³ /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 100m ² 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	m ³ /day per worker (refer to Table T-2 of GESF, Commercial Employee)
e. Design Flow for Commercial Activities	=	0.00	m ³ /day per worker (refer to Table T-2 of GESF, J6)
f. Total Sewage Generation Rate x Catchment Inflow	=	32.07	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c. Total Number of Worker	=	136	employees
d. Design Flow for Industrial Employee	=	0.080	m ³ /day per worker (refer to Table T-3 of GESF, Industrial Employee)
e. Design Flow for Industrial Activities	=	0.25	m ³ /day per worker (refer to Table T-3 of GESF, San Po Kong)
f. Total Sewage Generation Rate x Catchment Inflow	=	49.48	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c. Total Number of Worker	=	190	employees
d. Design Flow for Industrial Employee	=	0.080	m ³ /day per worker (refer to Table T-3 of GESF, Industrial Employee)
e. Design Flow for Industrial Activities	=	0.25	m ³ /day per worker (refer to Table T-3 of GESF, San Po Kong)
f. Total Sewage Generation Rate x Catchment Inflow	=	68.80	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c. Total Number of Worker	=	88	employees
d. Design Flow for Industrial Employee	=	0.080	m ³ /day per worker (refer to Table T-3 of GESF, Industrial Employee)
e. Design Flow for Industrial Activities	=	0.25	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Restaurants)
h. Total Number of Worker	=	5	employees
i. Design Flow for Commercial Employee	=	0.080	m ³ /day per worker (refer to Table T-2 of GESF, Commercial Employee)
j. Design Flow for Commercial Activities	=	1.50	m ³ /day per worker (refer to Table T-2 of GESF, J10)
k. Total Sewage Generation Rate x Catchment Inflow	=	41.29	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c. Total Number of Worker	=	380	employees
d. Design Flow for Commercial Employee	=	0.080	m ³ /day per worker (refer to Table T-3 of GESF, Industrial Employee)
e. Design Flow for Commercial Activities	=	0.25	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Restaurants)
h. Total Number of Worker	=	23	employees
i. Design Flow for Commercial Employee	=	0.080	m ³ /day per worker (refer to Table T-2 of GESF, Commercial Employee)
j. Design Flow for Commercial Activities	=	1.50	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Retail)
m. Total Number of Worker	=	16	employees
n. Design Flow for Commercial Employee	=	0.080	m ³ /day per worker (refer to Table T-2 of GESF, Commercial Employee)
o. Design Flow for Commercial Activities	=	0.20	m ³ /day per worker (refer to Table T-2 of GESF, J4)
p. Total Sewage Generation Rate x Catchment Inflow	=	183.48	m ³ /day (Catchment Inflow Factor of San Po Kong = 1.1)
Total Flow			
a. Estimated Average Dry Weather Flow	=	437.16	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c. Total Number of Worker	=	655	employees
d. Design Flow for Industrial Employee	=	0.080	m ³ /day per worker (refer to Table T-3 of GESF, Industrial Employee)
e. Design Flow for Industrial Activities	=	0.25	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Restaurants)
h. Total Number of Worker	=	40	employees
i. Design Flow for Commercial Employee	=	0.080	m ³ /day per worker (refer to Table T-2 of GESF, Commercial Employee)
j. Design Flow for Commercial Activities	=	1.50	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Retail)
m. Total Number of Worker	=	28	employees
n. Design Flow for Commercial Employee	=	0.080	m ³ /day per worker (refer to Table T-2 of GESF, Commercial Employee)
o. Design Flow for Commercial Activities	=	0.20	m ³ /day per worker (refer to Table T-2 of GESF, J4)
p. Total Sewage Generation Rate x Catchment Inflow	=	316.43	m ³ /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 100m ² 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	m ³ /day per worker (refer to Table T-2 of GESF, Commercial Employee)
e. Design Flow for Commercial Activities	=	0.00	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Retail)
h. Total Number of Worker	=	8	employees
i. Design Flow for Commercial Employee	=	0.080	m ³ /day per worker (refer to Table T-2 of GESF, Commercial Employee)
j. Design Flow for Commercial Activities	=	0.20	m ³ /day per worker (refer to Table T-2 of GESF, J4)
k. Total Sewage Generation Rate x Catchment Inflow	=	56.60	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c. Total Number of Worker	=	234	employees
d. Design Flow for Industrial Employee	=	0.080	m ³ /day per worker (refer to Table T-3 of GESF, Industrial Employee)
e. Design Flow for Industrial Activities	=	0.25	m ³ /day per worker (refer to Table T-3 of GESF, San Po Kong)
f. Total Sewage Generation Rate x Catchment Inflow	=	84.99	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c. Total Number of Worker	=	103	employees
d. Design Flow for Industrial Employee	=	0.080	m ³ /day per worker (refer to Table T-3 of GESF, Industrial Employee)
e. Design Flow for Industrial Activities	=	0.25	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Restaurants)
h. Total Number of Worker	=	6	employees
i. Design Flow for Commercial Employee	=	0.080	m ³ /day per worker (refer to Table T-2 of GESF, Commercial Employee)
j. Design Flow for Commercial Activities	=	1.50	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Retail)
m. Total Number of Worker	=	4	employees
n. Design Flow for Commercial Employee	=	0.080	m ³ /day per worker (refer to Table T-2 of GESF, Commercial Employee)
o. Design Flow for Commercial Activities	=	0.20	m ³ /day per worker (refer to Table T-2 of GESF, J4)
p. Total Sewage Generation Rate x Catchment Inflow	=	49.53	m ³ /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 100m ² 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	m ³ /day per worker (refer to Table T-2 of GESF, Commercial Employee)
e. Design Flow for Commercial Activities	=	0.00	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Restaurants)
h. Total Number of Worker	=	19	employees
i. Design Flow for Commercial Employee	=	0.080	m ³ /day per worker (refer to Table T-2 of GESF, Commercial Employee)
j. Design Flow for Commercial Activities	=	1.50	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Retail)
m. Total Number of Worker	=	13	employees
n. Design Flow for Commercial Employee	=	0.080	m ³ /day per worker (refer to Table T-2 of GESF, Commercial Employee)
o. Design Flow for Commercial Activities	=	0.20	m ³ /day per worker (refer to Table T-2 of GESF, J4)
p. Total Sewage Generation Rate x Catchment Inflow	=	121.09	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c. Total Number of Worker	=	255	employees
d. Design Flow for Industrial Employee	=	0.080	m ³ /day per worker (refer to Table T-3 of GESF, Industrial Employee)
e. Design Flow for Industrial Activities	=	0.25	m ³ /day per worker (refer to Table T-3 of GESF, San Po Kong)
f. Total Sewage Generation Rate x Catchment Inflow	=	92.67	m ³ /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 100m ² 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	m ³ /day per worker (refer to Table T-2 of GESF, Commercial Employee)
e. Design Flow for Commercial Activities	=	0.00	m ³ /day per worker (refer to Table T-2 of GESF, J6)
f. Total Sewage Generation Rate x Catchment Inflow	=	55.10	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c. Total Number of Worker	=	102	employees
d. Design Flow for Commercial Employee	=	0.080	m ³ /day per worker (refer to Table T-3 of GESF, Industrial Employee)
e. Design Flow for Commercial Activities	=	0.25	m ³ /day per worker (refer to Table T-3 of GESF, San Po Kong)
f. Total Sewage Generation Rate x Catchment Inflow	=	36.88	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c. Total Number of Worker	=	106	employees
d. Design Flow for Industrial Employee	=	0.080	m ³ /day per worker (refer to Table T-3 of GESF, Industrial Employee)
e. Design Flow for Industrial Activities	=	0.25	m ³ /day per worker (refer to Table T-3 of GESF, San Po Kong)
f. Total Sewage Generation Rate x Catchment Inflow	=	38.51	m ³ /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 100m ² 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	m ³ /day per worker (refer to Table T-2 of GESF, Commercial Employee)
e. Design Flow for Commercial Activities	=	0.00	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Retail)
h. Total Number of Worker	=	4	employees
i. Design Flow for Commercial Employee	=	0.080	m ³ /day per worker (refer to Table T-2 of GESF, Commercial Employee)
j. Design Flow for Commercial Activities	=	0.20	m ³ /day per worker (refer to Table T-2 of GESF, J4)
k. Total Sewage Generation Rate x Catchment Inflow	=	28.39	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c. Total Number of Worker	=	239	employees
d. Design Flow for Industrial Employee	=	0.080	m ³ /day per worker (refer to Table T-3 of GESF, Industrial Employee)
e. Design Flow for Industrial Activities	=	0.25	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Restaurants)
h. Total Number of Worker	=	14	employees
i. Design Flow for Commercial Employee	=	0.080	m ³ /day per worker (refer to Table T-2 of GESF, Commercial Employee)
j. Design Flow for Commercial Activities	=	1.50	m ³ /day per worker (refer to Table T-2 of GESF, J10)
k. Total Sewage Generation Rate x Catchment Inflow	=	111.83	m ³ /day (Catchment Inflow Factor of San Po Kong = 1.1)
Total Flow			
a. Estimated Average Dry Weather Flow	=	992.01	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c. Total Number of Worker	=	250	employees
d. Design Flow for Industrial Employee	=	0.080	m ³ /day per worker (refer to Table T-3 of GESF, Industrial Employee)
e. Design Flow for Industrial Activities	=	0.25	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Retail)
h. Total Number of Worker	=	10	employees
i. Design Flow for Commercial Employee	=	0.080	m ³ /day per worker (refer to Table T-2 of GESF, Commercial Employee)
j. Design Flow for Commercial Activities	=	0.20	m ³ /day per worker (refer to Table T-2 of GESF, J4)
k. Total Sewage Generation Rate x Catchment Inflow	=	93.88	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c. Total Number of Worker	=	130	employees
d. Design Flow for Industrial Employee	=	0.080	m ³ /day per worker (refer to Table T-3 of GESF, Industrial Employee)
e. Design Flow for Industrial Activities	=	0.25	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Restaurants)
h. Total Number of Worker	=	8	employees
i. Design Flow for Commercial Employee	=	0.080	m ³ /day per worker (refer to Table T-2 of GESF, Commercial Employee)
j. Design Flow for Commercial Activities	=	1.50	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Retail)
m. Total Number of Worker	=	5	employees
n. Design Flow for Commercial Employee	=	0.080	m ³ /day per worker (refer to Table T-2 of GESF, Commercial Employee)
o. Design Flow for Commercial Activities	=	0.20	m ³ /day per worker (refer to Table T-2 of GESF, J4)
p. Total Sewage Generation Rate x Catchment Inflow	=	62.58	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c. Total Number of Worker	=	189	employees
d. Design Flow for Industrial Employee	=	0.080	m ³ /day per worker (refer to Table T-3 of GESF, Industrial Employee)
e. Design Flow for Industrial Activities	=	0.25	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Retail)
h. Total Number of Worker	=	8	employees
i. Design Flow for Commercial Employee	=	0.080	m ³ /day per worker (refer to Table T-2 of GESF, Commercial Employee)
j. Design Flow for Commercial Activities	=	0.20	m ³ /day per worker (refer to Table T-2 of GESF, J4)
k. Total Sewage Generation Rate x Catchment Inflow	=	71.16	m ³ /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 100m ² 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	m ³ /day per worker (refer to Table T-2 of GESF, Commercial Employee)
e. Design Flow for Commercial Activities	=	0.00	m ³ /day per worker (refer to Table T-2 of GESF, J6)
f. Total Sewage Generation Rate x Catchment Inflow	=	50.98	m ³ /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 100m ² 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	m ³ /day per worker (refer to Table T-2 of GESF, Commercial Employee)
e. Design Flow for Commercial Activities	=	0.00	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Restaurants)
h. Total Number of Worker	=	21	employees
i. Design Flow for Commercial Employee	=	0.080	m ³ /day per worker (refer to Table T-2 of GESF, Commercial Employee)
j. Design Flow for Commercial Activities	=	1.5	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Retail)
m. Total Number of Worker	=	14	employees
n. Design Flow for Commercial Employee	=	0.080	m ³ /day per worker (refer to Table T-2 of GESF, Commercial Employee)
o. Design Flow for Commercial Activities	=	0.20	m ³ /day per worker (refer to Table T-2 of GESF, J4)
p. Total Sewage Generation Rate x Catchment Inflow	=	130.77	m ³ /day (Catchment Inflow Factor of San Po Kong = 1.1)
Total Flow			
a. Estimated Average Dry Weather Flow	=	409.37	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c. Total Number of Worker	=	56	employees
d. Design Flow for Industrial Employee	=	0.080	m ³ /day per worker (refer to Table T-3 of GESF, Industrial Employee)
e. Design Flow for Industrial Activities	=	0.25	m ³ /day per worker (refer to Table T-3 of GESF, San Po Kong)
f. Sewage Generation Rate	=	20.51	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c. Total Number of Worker	=	80	employees
d. Design Flow for Industrial Employee	=	0.080	m ³ /day per worker (refer to Table T-3 of GESF, Industrial Employee)
e. Design Flow for Industrial Activities	=	0.25	m ³ /day per worker (refer to Table T-3 of GESF, San Po Kong)
f. Sewage Generation Rate	=	29.06	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c. Total Number of Worker	=	107	employees
d. Design Flow for Industrial Employee	=	0.080	m ³ /day per worker (refer to Table T-3 of GESF, Industrial Employee)
e. Design Flow for Industrial Activities	=	0.25	m ³ /day per worker (refer to Table T-3 of GESF, San Po Kong)
f. Sewage Generation Rate	=	38.99	m ³ /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 100m ² of GFA (refer to Table 8 of CIFSUS - Manufacturing)
c. Total Number of Worker	=	208	employees
d. Design Flow for Industrial Employee	=	0.080	m ³ /day per worker (refer to Table T-3 of GESF, Industrial Employee)
e. Design Flow for Industrial Activities	=	0.25	m ³ /day per worker (refer to Table T-3 of GESF, San Po Kong)
f. Sewage Generation Rate	=	75.60	m ³ /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 100m ² 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	m ³ /day per worker (refer to Table T-2 of GESF, Commercial Employee)
e. Design Flow for Commercial Activities	=	0.20	m ³ /day per worker (refer to Table T-2 of GESF, J11)
f. Sewage Generation Rate	=	94.64	m ³ /day
Total Flow			
a. Estimated Average Dry Weather Flow	=	258.80	m ³ /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

ASSESSMENT OF EXISTING/ PROPOSED SEWERS

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⁾	Pipe Material	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								L/s	m ³ /day			L/s	%		
TYSMH-01	FMH4042486	TYSFWD-1	400	6.80	4.100	3.900	9.81	PE	0.0003	0.0294	1.306E-06	3.5144	0.1257	0.4416	441.63	1644.68	6091.41	5	95.18	21.6%	Yes	PS
FMH4042484	FMH4042485	FWD4048165	225	12.74	4.490	4.360	9.81	Clayware	0.0006	0.0102	1.306E-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	Clayware	0.0006	0.0123	1.306E-06	2.0890	0.1257	0.2625	262.51	1250.80	4632.60	6	86.86	33.1%	Yes	D1 - D5, B1 - B11
FMH4042486	FMH4042487	FWD4048167	400	6.78	3.820	3.810	9.81	Clayware	0.0030	0.0015	1.306E-06	0.5761	0.1257	0.0724	72.39	2895.48	10724.01	4	134.05	185.2%	No	D1 - D5, B1 - B11, PS
FMH4042487	FMH4042488	FWD4048168	400	74.49	3.810	2.970	9.81	Clayware	0.0006	0.0113	1.306E-06	2.0012	0.1257	0.2515	251.48	2895.48	10724.01	4	134.05	53.3%	Yes	D1 - D5, B1 - B11, PS
FMH4042555	FMH4042488	FWD4048234	225	12.82	4.390	4.240	9.81	Clayware	0.0006	0.0117	1.306E-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	Clayware	0.0006	0.0083	1.306E-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	Clayware	0.0006	0.0063	1.306E-06	1.4952	0.1257	0.1879	187.89	3742.01	13859.31	4	173.24	92.2%	No	A1 - A7, B1 - B11, PS, C1 - C5, D1 - D5
FMH4042489	FMH4042490	FWD4048170	400	9.53	2.860	2.850	9.81	Clayware	0.0030	0.0010	1.306E-06	0.4854	0.1257	0.0610	60.99	3742.01	13859.31	4	173.24	284.0%	No	A1 - A7, B1 - B11, PS, C1 - C5, D1 - D5
FMH4042490	FMH4042491	FWD4048171	400	52.97	2.770	2.500	9.81	Clayware	0.0006	0.0051	1.306E-06	1.3402	0.1257	0.1684	168.41	3742.01	13859.31	4	173.24	102.9%	No	A1 - A7, B1 - B11, PS, C1 - C5, D1 - D5
FMH4042491	FMH4042492	FWD4048172	400	40.89	2.500	2.290	9.81	Clayware	0.0006	0.0051	1.306E-06	1.3453	0.1257	0.1691	169.05	3742.01	13859.31	4	173.24	102.5%	No	A1 - A7, B1 - B11, PS, C1 - C5, D1 - D5
FMH4042492	FMH4042493	FWD4048173	400	16.29	2.260	2.17	9.81	Clayware	0.0006	0.0055	1.306E-06	1.3959	0.1257	0.1754	175.42	3742.01	13859.31	4	173.24	98.8%	No	A1 - A7, B1 - B11, 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 calculated by the Colebrook-White Equation for circular pipes:

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

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

(3) k_s = 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⁾	Pipe Material	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 ³ /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	PE	0.0003	0.0294	1.306E-06	3.5144	0.1257	0.4416	441.63	1644.68	6091.41	5	95.18	21.6%	Yes	PS
FMH4042484	FMH4042485	FWD4048165	225	12.74	4.490	4.360	9.81	Clayware	0.0006	0.0102	1.306E-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	Clayware	0.0006	0.0123	1.306E-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	3.900	3.810	9.81	Clayware	0.0006	0.0133	1.306E-06	2.1727	0.1257	0.2730	273.03	2895.48	10724.01	4	134.05	49.1%	Yes	D1 - D5, B1 - B12, PS
FMH4042487	FMH4042488	FWD4048168	400	74.49	3.810	2.970	9.81	Clayware	0.0006	0.0113	1.306E-06	2.0012	0.1257	0.2515	251.48	2895.48	10724.01	4	134.05	53.3%	Yes	D1 - D5, B1 - B12, PS
FMH4042555	FMH4042488	FWD4048234	225	12.82	4.390	4.240	9.81	Clayware	0.0006	0.0117	1.306E-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	Clayware	0.0006	0.0083	1.306E-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	3.000	2.860	9.81	Clayware	0.0006	0.0089	1.306E-06	1.7721	0.1257	0.2227	222.69	3742.01	13859.31	4	173.24	77.8%	Yes	A1 - A7, B1 - B12, PS, C1 - C5, D1 - D5
FMH4042489	FMH4042490	FWD4048170	400	9.53	2.860	2.770	9.81	Clayware	0.0006	0.0094	1.306E-06	1.8300	0.1257	0.2300	229.97	3742.01	13859.31	4	173.24	75.3%	Yes	A1 - A7, B1 - B12, PS, C1 - C5, D1 - D5
FMH4042490	FMH4042491	FWD4048171	400	52.97	2.770	2.400	9.81	Clayware	0.0006	0.0070	1.306E-06	1.5716	0.1257	0.1975	197.49	3742.01	13859.31	4	173.24	87.7%	Yes	A1 - A7, B1 - B12, PS, C1 - C5, D1 - D5
FMH4042491	FMH4042492	FWD4048172	400	40.89	2.400	2.100	9.81	Clayware	0.0006	0.0073	1.306E-06	1.6111	0.1257	0.2025	202.45	3742.01	13859.31	4	173.24	85.6%	Yes	A1 - A7, B1 - B12, PS, C1 - C5, D1 - D5
FMH4042492	FMH4042493	FWD4048173	400	16.29	2.100	1.90	9.81	Clayware	0.0006	0.0123	1.306E-06	2.0889	0.1257	0.2625	262.50	3742.01	13859.31	4	173.24	66.0%	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 calculated by the Colebrook-White Equation for circular pipes:

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

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

(3) k_s = 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