Annex D

Revised Sewerage Impact Assessment

Prepared by

Ramboll Hong Kong Limited

THE PROPOSED HOTEL AT NO. 118 WAI YIP STREET, KWUN TONG, KOWLOON

SEWERAGE IMPACT ASSESSMENT

Date	**October 2026**
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Signed	
Project Reference	**KTAWYSKTEI00**
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1. INTRODUCTION

1.1 Background

1.1.1 The Application Site at 118 Wai Yip Street. The project proponent is proposing to convert the existing development to hotel development.

1.1.2 Ramboll Hong Kong Limited is commissioned to prepare this Sewerage Impact Assessment (SIA) for the Proposed Development at the Application Site. This SIA report has been prepared with respect to the proposed scheme to assess the likely sewerage flows from the proposed development, and recommend measures and upgrading proposal where necessary.

1.1.3 The design of the proposed scheme and other technical information on the Proposed Development are provided by the project proponent.

1.2 Project Location

1.2.1 The Application Site is located in urbanised area in Kwun Tong. It is bounded by Kwun Kee Tailor Industrial Centre and China-Trade Centre to the southeast, MG Tower to the southwest, Union Industrial Building and C-Bons International Centre to the northwest and Wai Yip Street to the northeast.

1.3 Existing Development

1.3.1 The Application Site is occupied by the existing development. There are 9 storeys with total GFA of 3520.75m^2.

1.4 Proposed Development

1.4.1 The Proposed Development involves alterations to the existing building block including demolition of a small portion of the existing building block (from 2/F to 8/F) and the addition of one storey resulting in a total 10 storeys. The total GFA will become 3521m^2. Therefore, the development will comprise one tower, consistent with the existing development.

1.4.2 The existing building will be converted into 99 guest rooms. In addition, an F&B area with GFA of approximately 45m^2 will be provided after the conversion. No swimming pool will be provided after the conversion. The Master Layout Plan (MLP) of the Proposed Development is included in **Appendix 1**.

1.4.3 The completion year is 2028 tentatively.

2. SEWERAGE IMPACT ASSESSMENT

2.1 Scope of Work

2.1.1 The aim of this study is to assess whether the existing sewerage facilities serving the Application Site are sufficient to cope with the sewage flow from the Proposed Development and, if appropriate, to identify necessary improvement works and/or alternative disposal options.

2.2 Assessment Criteria and Methodology

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

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

- F&B employee: 1.58 m^3/day (J10 – Restaurants & Hotels)
- Office employee: 0.08 m^3/day (J6 – Finance, Insurance, Real Estate & Business Services)
- Manufacturing employee: 0.53 m^3/day (J1 – Manufacturing + East Kowloon)

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

2.3 Existing and Future Sewerage System

2.3.1 Reference has been made to Geoinfo Map, which cover the vicinity of the site. **Figure 2** shows the existing sewerage system.

2.3.2 According to existing drainage plan (**Appendix 3**), the terminal manhole of the existing development at the Subject Site is currently located on the southwestern side. Sewage generated from the Application Site is discharged to the existing government manhole no. FMH4042808 (S1), which is connected to a 150mm diameter pipe. Downstream of it, the pipe is enlarged to 225mm diameter and subsequently connects to a 2-cell box culvert (2300mm x 800mm and 2300mm x 3000mm).

2.3.3 The existing terminal manhole and 150mm diameter sewerage pipe will be abandoned. New 225mm diameter sewerage pipeline will be proposed to connect the existing government manhole FMH4042808 (S1) via terminal manhole.

2.4 Wastewater generated by the Proposed Development

2.4.1 Sewage flows generated from the Proposed Development will be primarily contributed by the employees among hotel and F&B areas.

2.4.2 Detailed calculations for the Proposed Development are given in Table 1 below and **Appendix 2**.

Table 1 Future Sewage Flow arising from the Application Site

Development Parameters	Proposed Development	
	Hotel	F&B Area
Assumed Area (m^2)	3,476	45
Number of Population	111	2
Design Flow (m^3/person/day)	1.58(1)	1.58(1)
Flow Rate (m^3/day)	**175.4**	**3.2**
Total Flow Rate with P_{CIF} (m^3/day)	**196.4**	
Peak Flow (L/s)	**18.2**	

(1) Refer to Table T-1 of GESF – J10 Restaurants & Hotels

2.5 Discussion

2.5.1 The sewage generated from the Application Site will be discharged to the existing government manhole no. FMH4028808 (S1).

2.5.2 The potential sewerage impact arising from the Proposed Development has been quantitatively assessed. The sewage generation rate from the Proposed Development is estimated to be 196.4 m^3/day (i.e. peak flow of 18.2 litre/sec).

2.5.3 According to Table 4a of **Appendix 1**, which summarises the sewage generation rate from the Proposed Development and surrounding catchment areas (**Figure 3**), there are two of the existing sewers (S6-S7 and S7-S8) have not adequate capacity to accommodate the flow.

2.5.4 However, it is found that the freeboard to be sufficient as presented in Table 5a and 5b of **Appendix 2** so that further upgrading of these sections are not considered necessary.

2.5.5 Based on the hydraulic calculations and estimated flow, no adverse sewerage impact on the public sewerage network is anticipated as a result of the Proposed Development.

3. CONCLUSION

3.1.1 A hotel development is proposed at 118 Wai Yip Street through the conversion of the existing building.

3.1.2 Based on the findings of the sewerage impact assessment, the existing sewerage system serving the area and freeboard would be sufficient to accommodate the sewage generated from the Proposed Development and the nearby catchment areas.

3.1.3 With the proposed sewerage work and adequate freeboard, no adverse sewerage impact is anticipated.

Figure

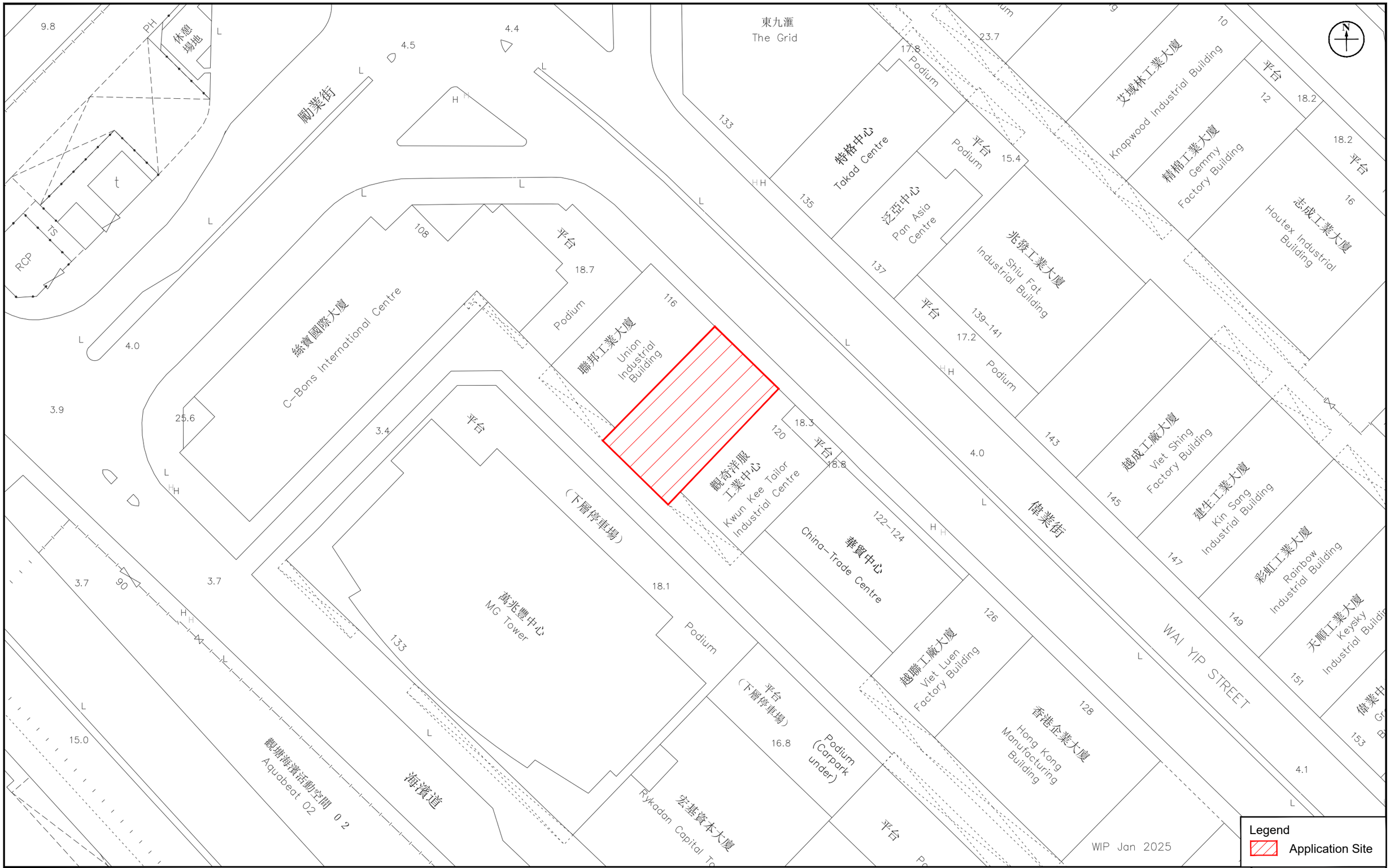


Figure: 1

Title: Location of the Application Site and its Environs

Project: Proposed Wholesale Conversion of Existing Building Into Hotel Development at 118 Wai Yip Street, Kwun Tong, Kowloon

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Date:	Oct 2026

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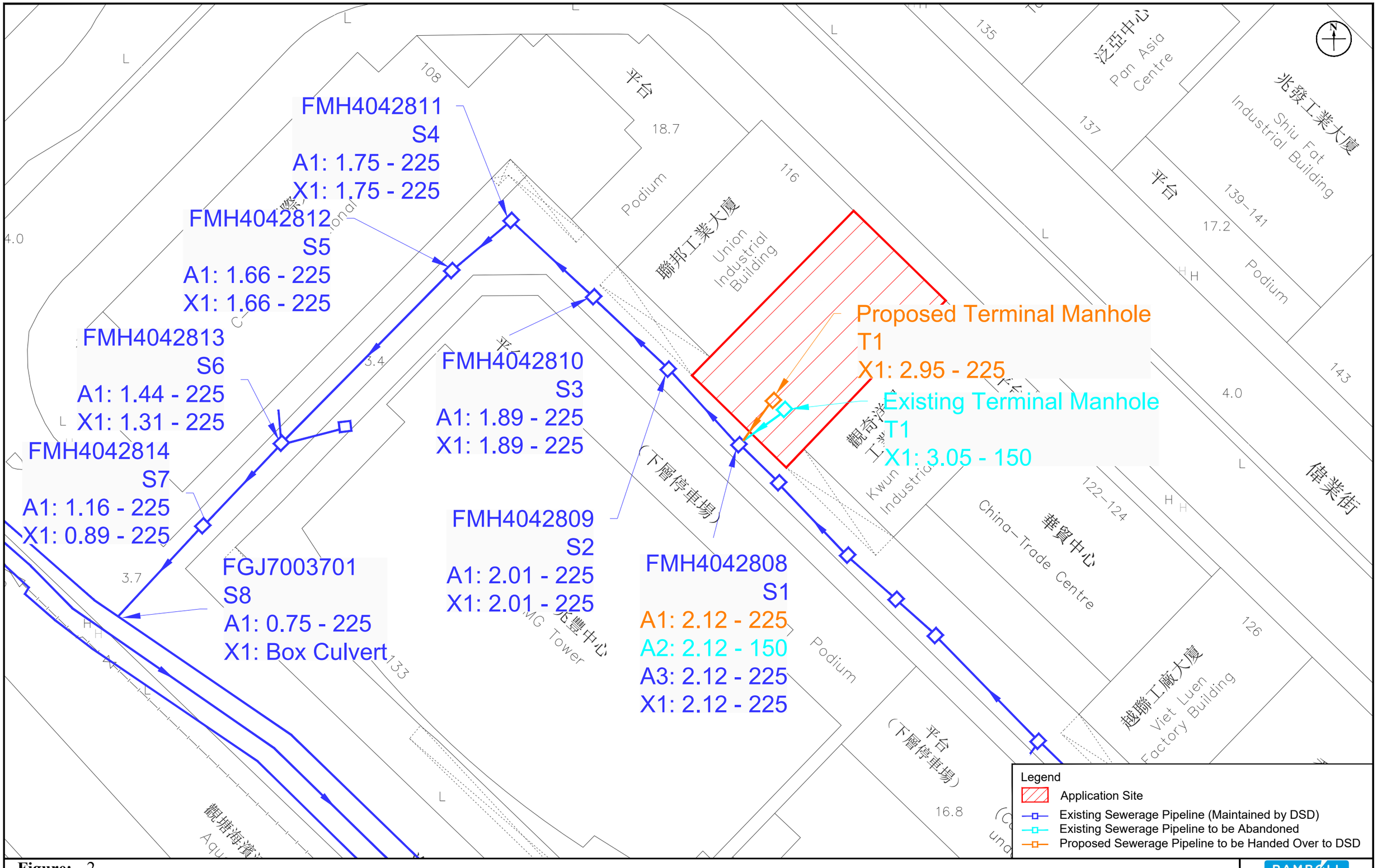


Figure: 2

Title: Existing Sewerage System in Vicinity of Application Site

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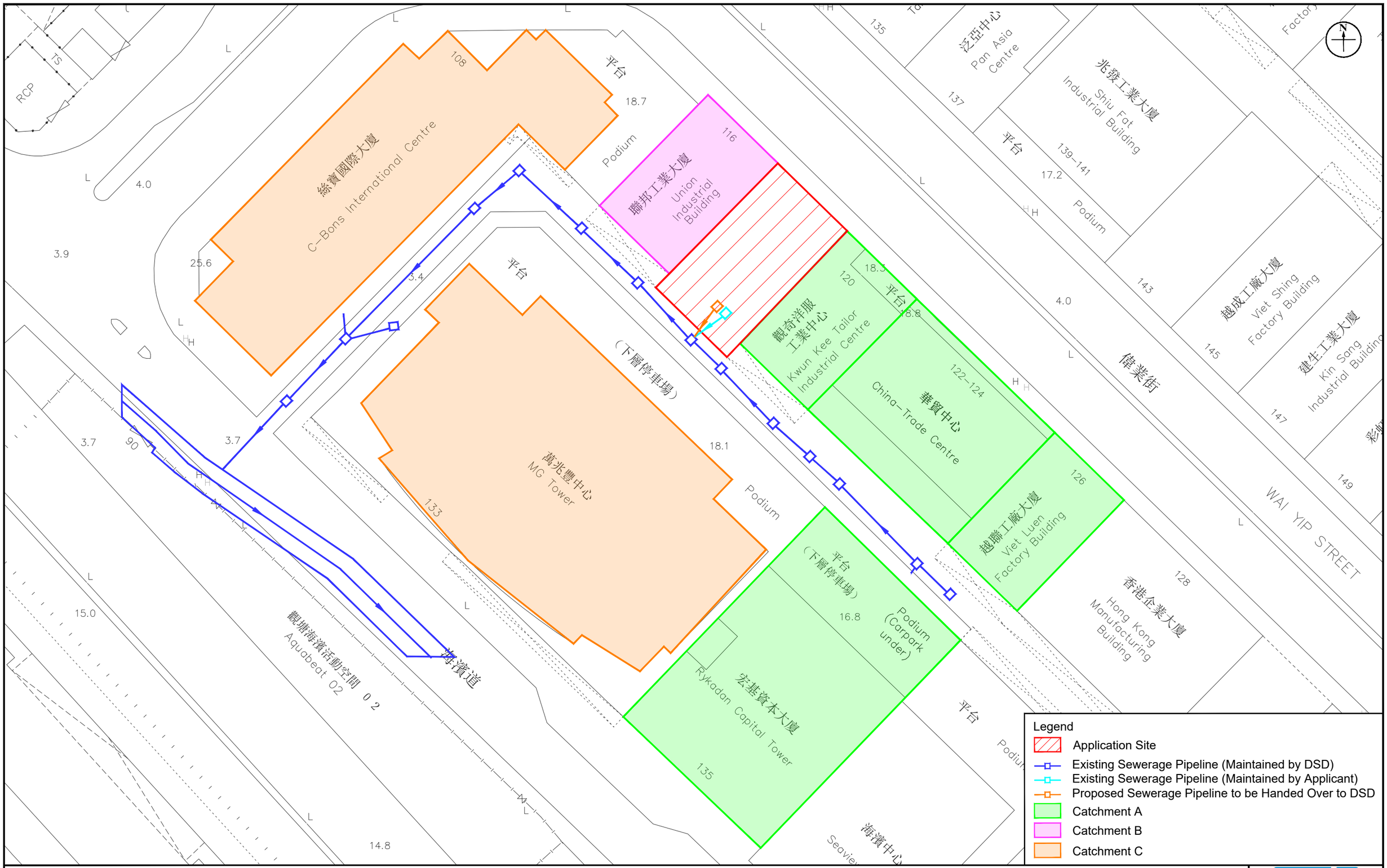


Figure: 3

Title: Catchment Areas in Vicinity of Application Site

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Appendix 1 Master Layout Plan (MLP)

LANE

A B C D E F

15240

3181 3029 3029 3181 2820

N

1 2 3 4 5 6 7

3048 6096 6096 27432 6096 6096 2743

LIGHT GOODS VEHICLE L/UL BAY /
LIGHT BUS LAY-BY

8000

4.115

PRIVATE CAR PARKING SPACE /
TAXI LAY-BY

PRESCRIBED
WINDOWS IN
COMPLIANCE
WITH B(P)R 30-33

4.267

LOUNGE
(F&B)

RM1
(ACCESSIBLE
ROOM)

RM2

RM3
(ACCESSIBLE
ROOM)

2400 7300 2340 5870 2400 9480

PROTECTED
LOBBY

UP

UP

F.S. CONTROL
ROOM

HOTEL LOBBY

ADJOINING LOT

ADJOINING LOT

4.267

EXISTING
TRANSFORMER
ROOM

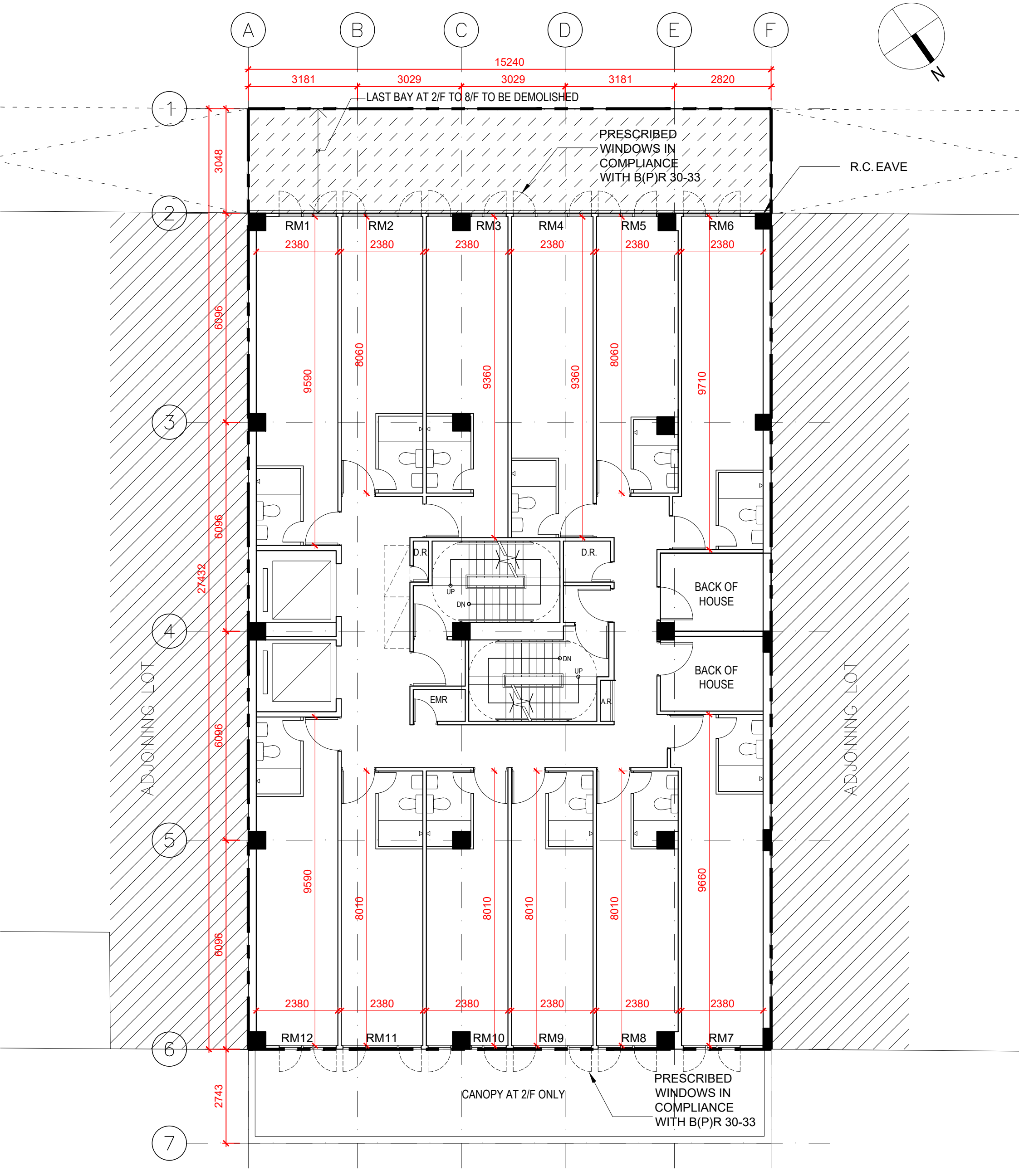
EXISTING
SWITCH
ROOM

4.115

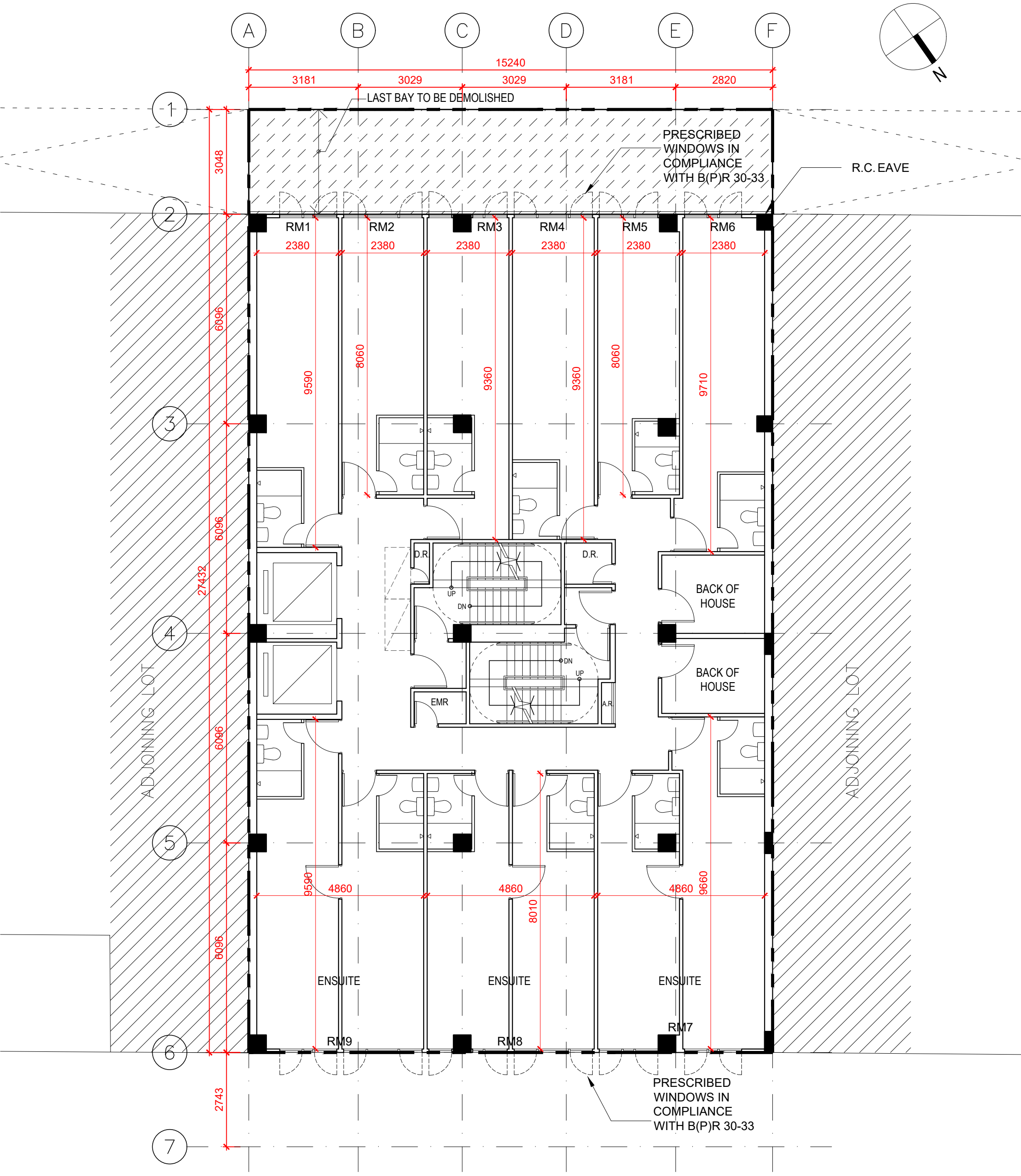
PAVEMENT

WAI YIP STREET

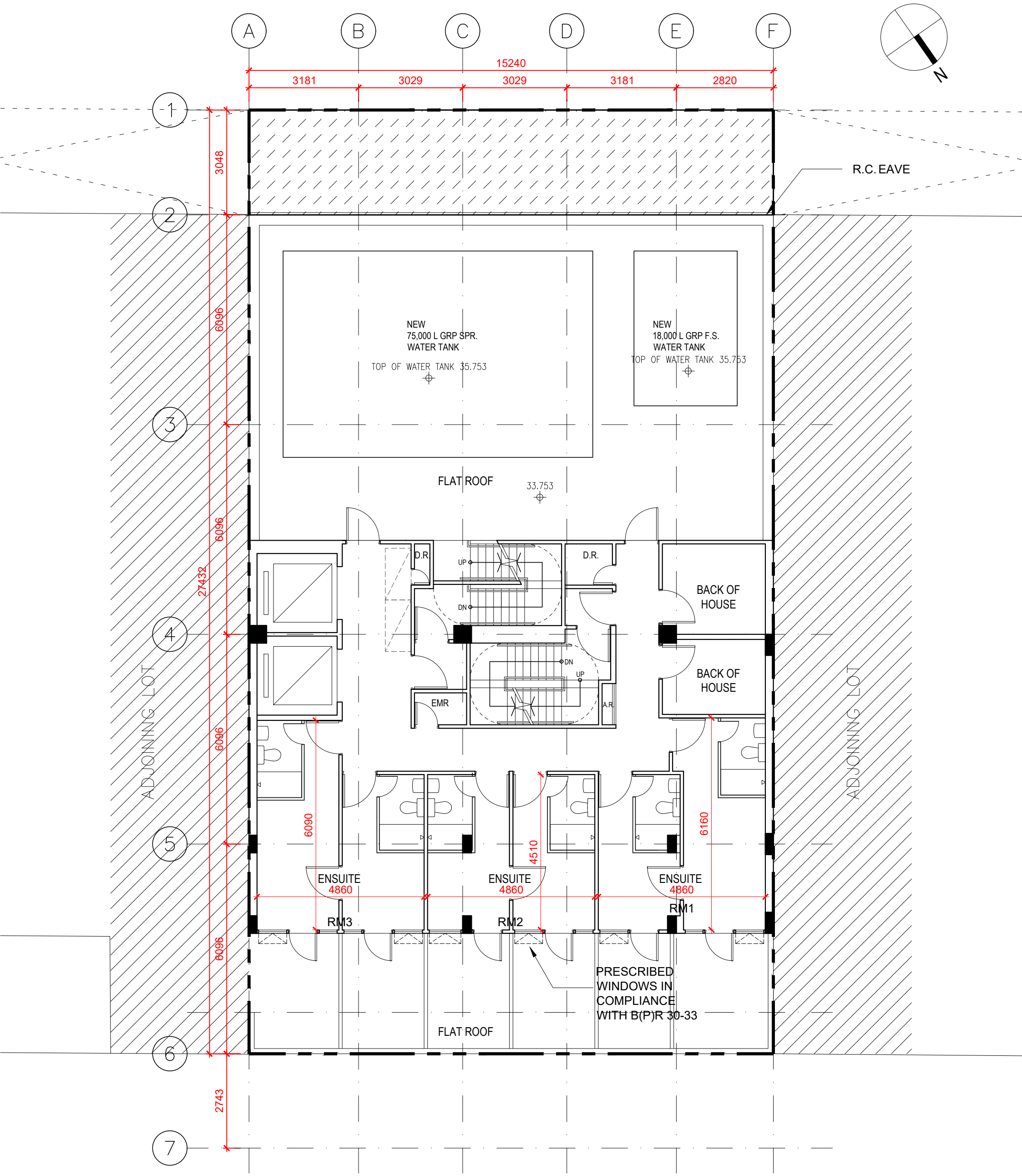
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	DWG. TILE: G/F PLAN	DRAWN BY	DATE 14-10-2026	



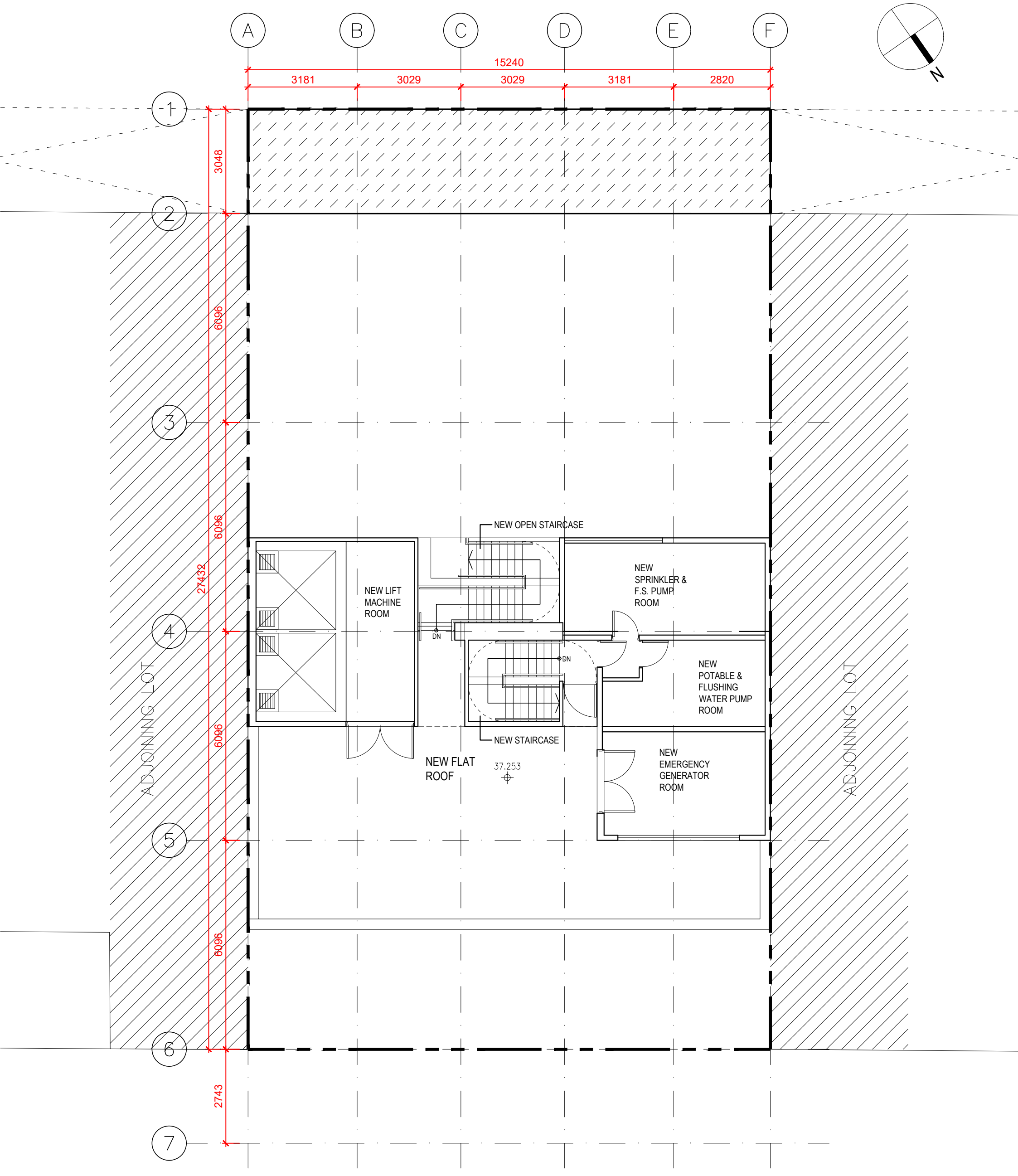
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	DWG. TILE: 1-7/F PLAN	DRAWN BY	DATE 14-10-2026	



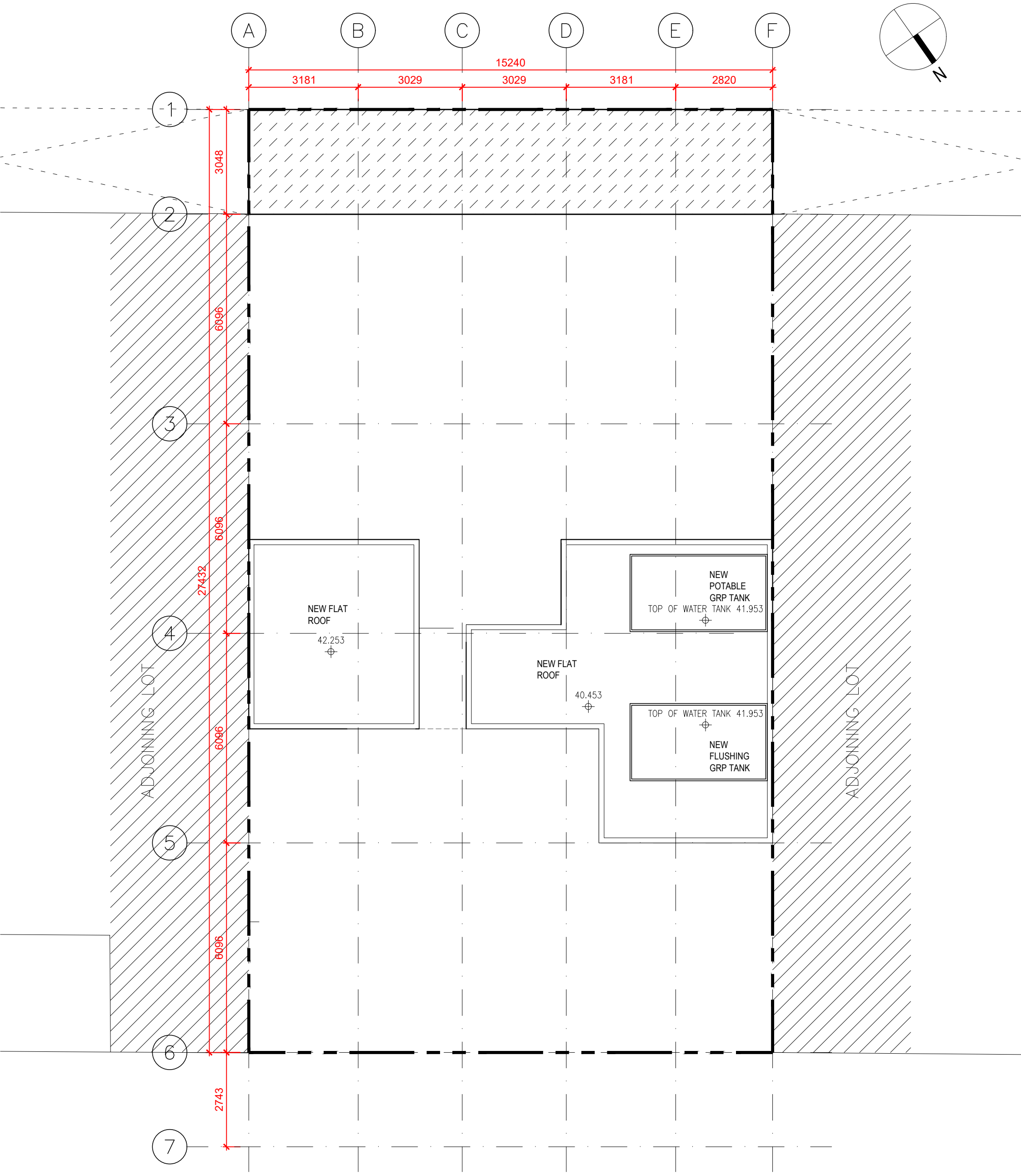
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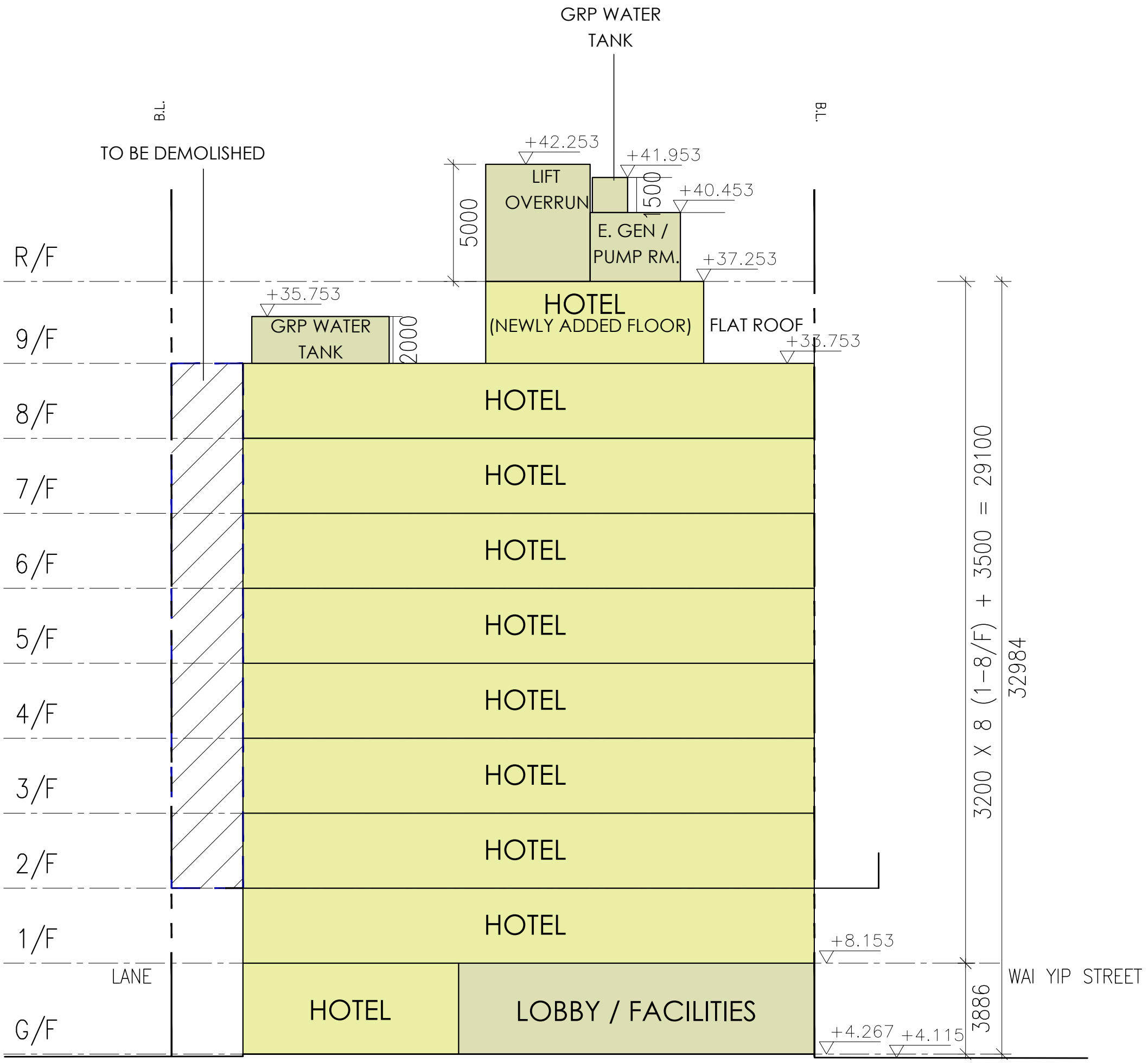
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	DWG. TILE: SCHEMATIC SECTION	DRAWN BY	DATE 14-10-2026	

Appendix 2 Detailed Sewerage Impact Assessment Calculations

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

Hotel			
Assumed Area	=	3476	m^2
Assumed floor area per employee	=	31.25	m^2 per worker -- (refer to Table 8 of CIFSUS - Hotels and Boarding Houses)
Total number of employees	=	111	employees
Design flow for commercial activities	=	1.58	m^3/employee/day -- (refer to Table T-2 of GESF Job Type J10)
Sewage Generation rate	=	**175.4**	m^3/day
Commercial Area (F&B)			
Assumed Area	=	45	m^2
Assumed floor area per employee	=	19.61	m^2 per worker -- (refer to Table 8 of CIFSUS - Restaurants)
Total number of employees	=	2	employees
Design flow for commercial activities	=	1.58	m^3/employee/day -- (refer to Table T-2 of GESF - J10)
Sewage Generation rate	=	**3.2**	m^3/day
Total Flow from Proposed Development			
Flow Rate (without Catchmnet Inflow Factor)	=	**178.5**	m^3/day
Catchment Inflow Factor	=	1.1	Catchment Inflow Factor for East Kowloon in Table T-4 of GEFS
Flow Rate (with Catchmnet Inflow Factor)	=	**196.4**	m^3/day
Contributing Population	=	727	people
Peaking factor	=	8	Refer to Table T-5 of GESF for population < 1,000 excl. stormwater allowance
Peak Flow	=	**18.2**	litre/sec

Table 2a Hydraulic Capacity of Existing Sewers

Segment	Manhole Reference	Manhole Reference	Pipe Dia.	Pipe Length	Invert Level 1	Invert Level 2	g	k_s	s	v	V	Area	Q	Estimated Capacity
			mm	m	mPD	mPD	m/s^2	m		m^2/s	m/s	m^2	m^3/s	L/s
T1-S1	-	FMH4042808	150	6.3	3.05	2.12	9.81	0.00060	0.148	0.000001	3.91	0.02	0.07	69
S1-S2	FMH4042808	FMH4042809	225	12.3	2.12	2.01	9.81	0.00060	0.009	0.000001	1.23	0.04	0.05	49
S2-S3	FMH4042809	FMH4042810	225	12.4	2.01	1.89	9.81	0.00060	0.010	0.000001	1.29	0.04	0.05	51
S3-S4	FMH4042810	FMH4042811	225	13.3	1.89	1.75	9.81	0.00060	0.011	0.000001	1.34	0.04	0.05	53
S4-S5	FMH4042811	FMH4042812	225	9.1	1.75	1.66	9.81	0.00060	0.010	0.000001	1.30	0.04	0.05	52
S5-S6	FMH4042812	FMH4042813	225	28.9	1.66	1.44	9.81	0.00060	0.008	0.000001	1.14	0.04	0.05	45
S6-S7	FMH4042813	FMH4042814	225	13.6	1.31	1.16	9.81	0.00060	0.011	0.000001	1.37	0.04	0.05	55
S7-S8	FMH4042814	FGJ7003701	225	14.5	0.89	0.75	9.81	0.00060	0.010	0.000001	1.28	0.04	0.05	51

Table 2b Hydraulic Capacity of Propoaws Sewers

Segment	Manhole Reference	Manhole Reference	Pipe Dia.	Pipe Length	Invert Level 1	Invert Level 2	g	k_s	s	v	V	Area	Q	Estimated Capacity
			mm	m	mPD	mPD	m/s^2	m		m^2/s	m/s	m^2	m^3/s	L/s
T1-S1	-	FMH4042808	225	6.3	2.95	2.72	9.81	0.00030	0.037	0.000001	2.75	0.04	0.11	109

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

(2) Table 2: The value of k_s = 0.6mm is used for the calculation of slimed clayware sewer, poor condition (based on Table 5: Recommended roughness values in Sewerage Manual)

(3) Table 2: The value of k_s = 3.0mm is used for the calculation of uPVC sewer, poor condition (based on Table 5: Recommended roughness values in Sewerage Manual)

(4) Table 2: The value of k_s is interpolated for pipe velocities between 0.75 m/s and 1.2 m/s.

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

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

Table 3 Calculation for Sewage Generation Rate of the Existing Surrounding Building

Catchment A (S1)
1. Rykadan Capital Tower
Office

Assumed Area	=	23410	m^2
Assumed floor area per employee	=	18.18	m^2 per worker -- (refer to Table 8 of CIFSUS - Financial, Insurance, Real Estate & Bunsiness Services)
Total number of employees	=	1288	employees
Design flow for commercial activities	=	0.08	m^3/employee/day -- (refer to Table T-2 of GESF - J6)
Sewage Generation rate	=	**103.0**	m^3/day

2. Viet Luen Factory Building
Office

Assumed Area	=	9535	m^2
Assumed floor area per employee	=	18.18	m^2 per worker -- (refer to Table 8 of CIFSUS - Financial, Insurance, Real Estate & Bunsiness Services)
Total number of employees	=	524	employees
Design flow for commercial activities	=	0.08	m^3/employee/day -- (refer to Table T-2 of GESF - J6)
Sewage Generation rate	=	**42.0**	m^3/day

3. China Trade Centre
Office

Assumed Area	=	6613	m^2
Assumed floor area per employee	=	18.18	m^2 per worker -- (refer to Table 8 of CIFSUS - Financial, Insurance, Real Estate & Bunsiness Services)
Total number of employees	=	364	employees
Design flow for commercial activities	=	0.08	m^3/employee/day -- (refer to Table T-2 of GESF - J6)
Sewage Generation rate	=	**29.1**	m^3/day

Manufacturing (assumes as 30%)

Assumed Area	=	2834	m^2
Assumed floor area per employee	=	43.48	m^2 per worker -- (refer to Table 8 of CIFSUS - Manufacturing)
Total number of employees	=	65	employees
Design flow for commercial activities	=	0.53	m^3/employee/day -- (refer to Table T-2 of GESF - J1)
Sewage Generation rate	=	**34.5**	m^3/day

4. Kwun Kee Tailor Industrial Centre
Office

Assumed Area	=	4294	m^2
Assumed floor area per employee	=	18.18	m^2 per worker -- (refer to Table 8 of CIFSUS - Financial, Insurance, Real Estate & Bunsiness Services)
Total number of employees	=	236	employees
Design flow for commercial activities	=	0.08	m^3/employee/day -- (refer to Table T-2 of GESF - J6)
Sewage Generation rate	=	**18.9**	m^3/day

Overall Catchment A

Flow Rate (without Catchmnet Inflow Factor)	=	227.5	m^3/day
Catchment Inflow Factor	=	1.1	Catchment Inflow Factor for East Kowloon in Table T-4 of GEFS
Flow Rate (with Catchment Inflow Factor)	=	**250.2**	m^3/day

Catchment B (S2)
1.Union Industrial Building
Office

Assumed Area	=	2923	m^2
Assumed floor area per employee	=	18.18	m^2 per worker -- (refer to Table 8 of CIFSUS - Financial, Insurance, Real Estate & Bunsiness Services)
Total number of employees	=	161	employees
Design flow for commercial activities	=	0.08	m^3/employee/day -- (refer to Table T-2 of GESF - J6)
Sewage Generation rate	=	**12.9**	m^3/day

Manufacturing (assumes as 40%)

Assumed Area	=	1949	m^2
Assumed floor area per employee	=	43.48	m^2 per worker -- (refer to Table 8 of CIFSUS - Manufacturing)
Total number of employees	=	45	employees
Design flow for commercial activities	=	0.53	m^3/employee/day -- (refer to Table T-2 of GESF - J1)
Sewage Generation rate	=	**23.8**	m^3/day

Overall Catchment B

Flow Rate (without Catchmnet Inflow Factor)	=	36.6	m^3/day
Catchment Inflow Factor	=	1.1	Catchment Inflow Factor for East Kowloon in Table T-4 of GEFS
Flow Rate (with Catchment Inflow Factor)	=	**40.3**	m^3/day

Catchment C
1. C-Bons International Centre
Office

Assumed Area	=	27128	m^2
Assumed floor area per employee	=	18.18	m^2 per worker -- (refer to Table 8 of CIFSUS - Financial, Insurance, Real Estate & Bunsiness Services)
Total number of employees	=	1492	employees
Design flow for commercial activities	=	0.08	m^3/employee/day -- (refer to Table T-2 of GESF - J6)
Sewage Generation rate	=	**119.4**	m^3/day

2. MG Tower
Office

Assumed Area	=	59179	m^2
Assumed floor area per employee	=	18.18	m^2 per worker -- (refer to Table 8 of CIFSUS - Financial, Insurance, Real Estate & Bunsiness Services)
Total number of employees	=	3255	employees
Design flow for commercial activities	=	0.08	m^3/employee/day -- (refer to Table T-2 of GESF - J6)
Sewage Generation rate	=	**260.4**	m^3/day

Commercial Area (F&B)

Assumed Area	=	2120	m^2
Assumed floor area per employee	=	19.61	m^2 per worker -- (refer to Table 8 of CIFSUS - Restaurants)
Total number of employees	=	108	employees
Design flow for commercial activities	=	1.58	m^3/employee/day -- (refer to Table T-2 of GESF - J10)
Sewage Generation rate	=	**170.6**	m^3/day

Overall Catchment C

Flow Rate (without Catchmnet Inflow Factor)	=	550.4	m^3/day
Catchment Inflow Factor	=	1.1	Catchment Inflow Factor for East Kowloon in Table T-4 of GEFS
Flow Rate (with Catchment Inflow Factor)	=	**605.4**	m^3/day

Note:
1. The assuption of the proportion of office and manufactiring area is based on the site visit. The photo record is shown in Appendix 4.

Table 4a Comparision of the Hydraulic Capacity of Existing Sewers for Sewerage generated from the Proposed Development and Surrounding Catchment Areas

Segment	Pipe Dia. (mm)	Pipe Length (m)	Gradient	Estimated Capacity (L/s)	Catchment	ADWF (m^3/day)	Contributing Population	Peaking Factor	Swimming Pool (L/s)	Peak Flow from the Proposed Development and Catchment Areas (L/s)	Contribution from the Proposed Development and the Surrounding Catchment Areas (%)	Status
T1-S1	150	6.3	0.148	69	S	196.4	727	8	0.0	18.2	26.4%	OK
S1-S2	225	12.3	0.009	49	S, A	446.6	1654	6	0.0	31.0	63.2%	OK
S2-S3	225	12.4	0.010	51	S, A, B	486.9	1803	6	0.0	33.8	66.1%	OK
S3-S4	225	13.3	0.011	53	S, A, B	486.9	1803	6	0.0	33.8	63.4%	OK
S4-S5	225	9.1	0.010	52	S, A, B	486.9	1803	6	0.0	33.8	65.3%	OK
S5-S6	225	28.9	0.008	45	S, A, B	486.9	1803	6	0.0	33.8	74.6%	OK
S6-S7	225	13.6	0.011	55	S, A, B, C	1092.3	4046	6	0.0	75.9	139.0%	Not OK
S7-S8	225	14.5	0.010	51	S, A, B, C	1092.3	4046	6	0.0	75.9	148.6%	Not OK

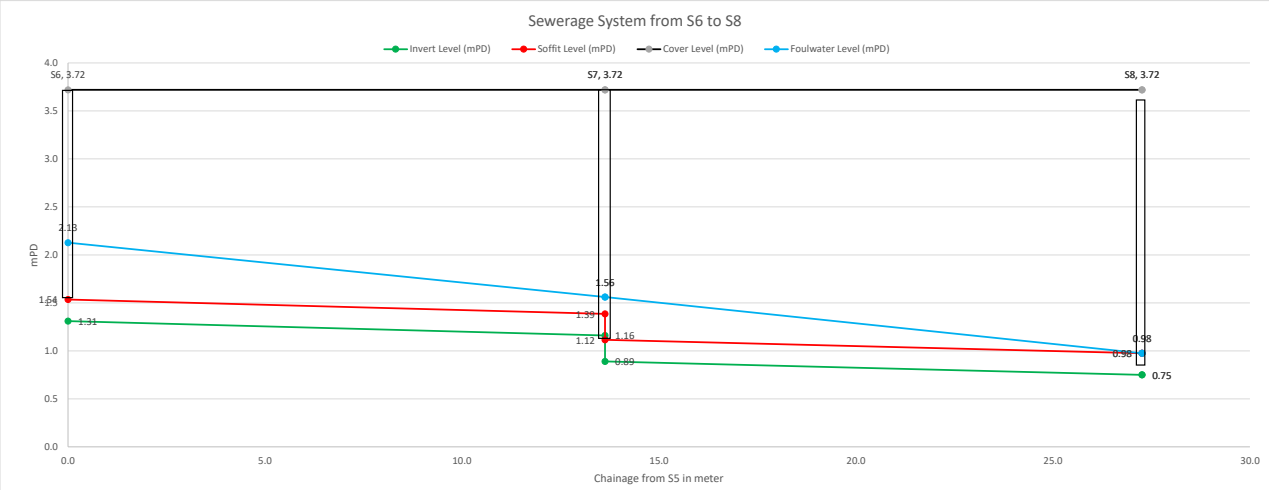
Table 4b Comparision of the Hydraulic Capacity of Proposed Sewers for Sewerage generated from the Proposed Development and Surrounding Catchment Areas

Segment	Pipe Dia. (mm)	Pipe Length (m)	Gradient	Estimated Capacity (L/s)	Catchment	ADWF (m^3/day)	Contributing Population	Peaking Factor	Swimming Pool (L/s)	Peak Flow from the Proposed Development and Catchment Areas (L/s)	Contribution from the Proposed Development and the Surrounding Catchment Areas (%)	Status
T1-S1	225	6.3	0.037	109	S	196.4	727	8	0.0	18.2	16.6%	OK

Note: 1. The value of peaking factor = 8 is used for population <1,000 incl. stormwater allowance (refers to Table T-5 of GESF)
2. The value of peaking factor = 6 is used for population 1,000-5,000 incl. stormwater allowance (refers to Table T-5 of GESF)

Table 5a Hydraulic Capacity of Existing Sewers - Surcharged Condition

Segment	Manhole Reference	Manhole Reference	Pipe Dia.	Pipe Length	Invert Level 1	Invert Level 2	Foulwater Level 1	Foulwater Level 2	Cover Level 1	Cover Level 2	Freeboard 1	Freeboard 2	Friction Loss	Entry and Exit Loss	g	k_s	Required $s_{hydraulic}$	v	V	Area	Q	Delivered Flow rate
			mm	m	mPD	mPD	mPD	mPD	mPD	mPD	m	m	m	m	m/s^2	m		m^2/s	m/s	m^2	m^3/s	L/s
S6-S7	FMH4042813	FMH4042814	225	13.6	1.31	1.16	2.13	1.56	3.72	3.72	1.59	2.16	0.29	0.28	9.81	0.0006	0.0212	0.000001	1.91	0.04	0.08	75.9
S7-S8	FMH4042814	FGJ7003701	225	14.5	0.89	0.75	1.56	0.98	3.72	3.72	2.16	2.75	0.31	0.28	9.81	0.0006	0.0212	0.000001	1.91	0.04	0.08	75.9
S8	FGJ7003701		225		0.75		0.98															



Note:
1. Backwater calculation is conducted downstream manhole S8. Foulwater level at S8 is assumed to be: 0.75 (IL) + 0.225 (pipe dia.) = 0.98mPD as a conservative approach
2. For this assessment, the Colebrook-White Equation has been used to calculate the friction loss. (Sewerage Mannual section 5.2.1)
3. According to DSD's Sewerage Manual (Part 1) section 5.2.2, Local losses are usually small in realtion to the pipeline head losses and are not normally considered. However, as a conservative approach, further allowances
4. Comparing the Cover levels and foulwater levels at each manhole, the freeboards are found sufficient (>1m). Therefore, no unacceptable adverse sewerage impacts are identified.
5. Friction loss is deduced by required hydraulic gradient x pipe length, while the local loss is deduced by the equation: $h_f = K\frac{V^2}{2g}$

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

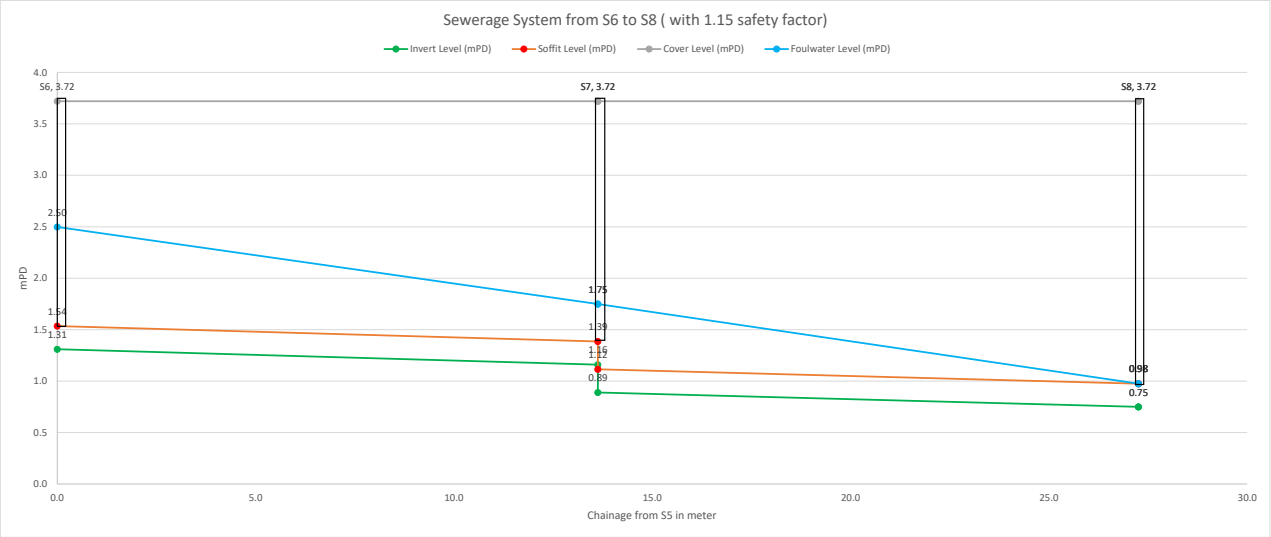
(2) Table 5a & 5b: The value of ks = 0.6mm is used for the calculation of slimed clayware sewer, poor condition (based on Table 5: Recommended roughness values in Sewerage Manual)

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

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

Table 5b Hydraulic Capacity of Existing Sewers - Surcharged Condition with 1.15 Safety Factor

Segment	Manhole Reference	Manhole Reference	Pipe Dia.	Pipe Length	Invert Level 1	Invert Level 2	Foulwater Level 1	Foulwater Level 2	Cover Level 1	Cover Level 2	Freeboard 1	Freeboard 2	Friction Loss	Entry and Exit Loss	g	k_s	Required $s_{hydraulic}$	v	V	Area	Q	Required Peak Flow
			mm	m	mPD	mPD	mPD	mPD	mPD	mPD	m	m	m	m	m/s^2	m		m^2/s	m/s	m^2	m^3/s	L/s
S6-S7	FMH4042813	FMH4042814	225	13.6	1.31	1.16	2.50	1.75	3.72	3.72	1.22	1.97	0.38	0.37	9.81	0.0006	0.0279	0.000001	2.19	0.04	0.09	87.2
S7-S8	FMH4042814	FGJ7003701	225	14.5	0.89	0.75	1.75	0.98	3.72	3.72	1.97	2.75	0.41	0.37	9.81	0.0006	0.0279	0.000001	2.19	0.04	0.09	87.2
S8	FGJ7003701		225		0.75		0.98															



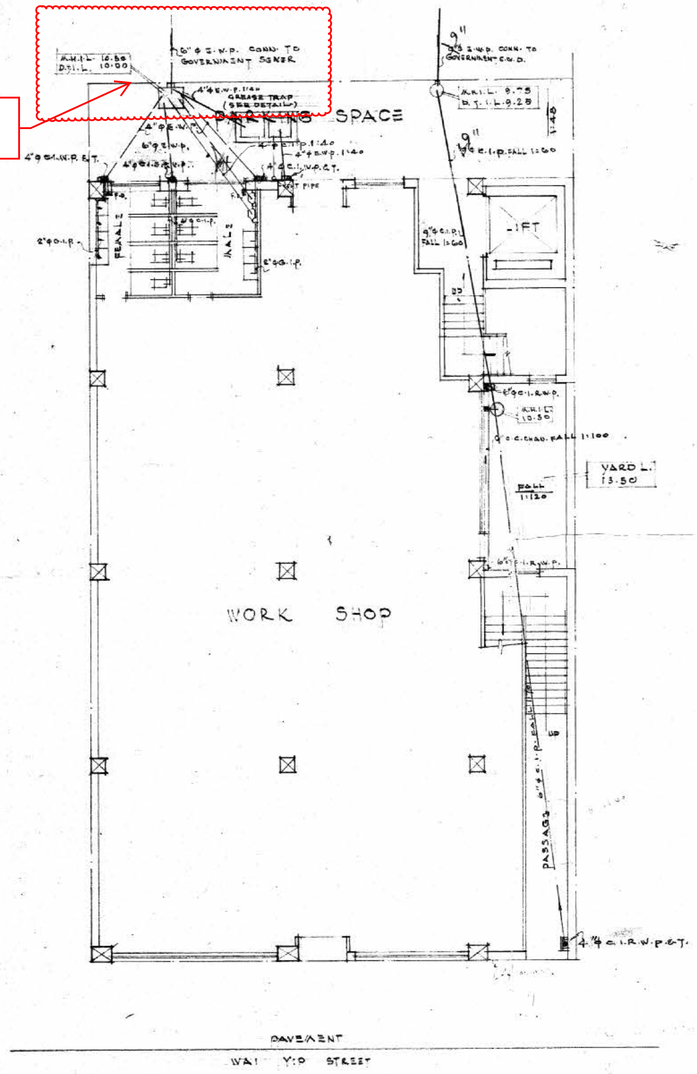
Note: 1. Backwater calculation is conducted downstream manhole S8. Foulwater level at S8 is assumed to be: 0.75 (IL) + 0.225 (pipe dia.) = 0.98mPD as a conservative approach
2. For this assessment, the Colebrook-White Equation has been used to calculate the friction loss. (Sewerage Mannual section 5.2.1)
3. According to DSD's Sewerage Manual (Part 1) section 5.2.2, Local losses are usually small in realtion to the pipeline head losses and are not normally considered. However, as a conservative approach, further allowances have been included for local losses at pipe entry (K = 0.5) and exit (K = 1), with a total local loss coefficient of 1.5
4. Comparing the Cover levels and foulwater levels at each manhole, no overflowing is found (freeboard >0m). Therefore, no unacceptable adverse sewerage impacts are identified.
5. Friction loss is deduced by required hydraulic gradient x pipe length, while the local loss is deduced by the equation: $h_f = K\frac{V^2}{2g}$

Remarks: (1) g=gravitational acceleration; k_s=equivalent sand roughness; s=gradient; v=kinematic viscosity of water; V=mean velocity
(2) Table 5a & 5b: The value of ks = 0.6mm is used for the calculation of slimed clayware sewer, poor condition (based on Table 5: Recommended roughness values in Sewerage Manual)
(3) The value of velocity (V) is referred to the Tables for the hydraulic design of pipes, sewers and channels (8th edition)
(4) Equation used: $V=-\sqrt{(8gDs)}\log\left(\frac{k_s}{3.7D}+\frac{2.51\nu}{D\sqrt{(2gDs)}}\right)$

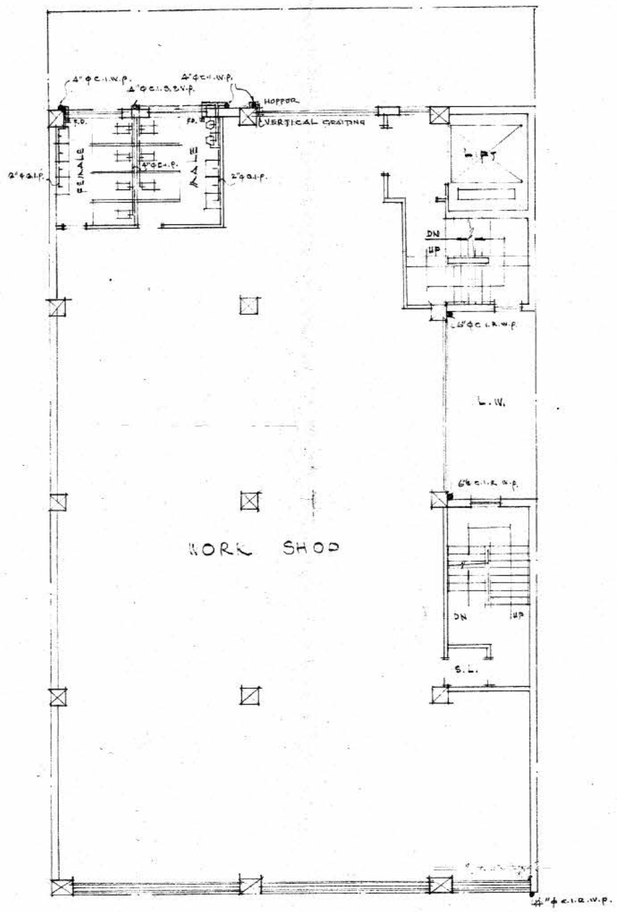
Appendix 3 Existing Drainage Plan

6" S.W.P connect to
gov. sewer
D.T.I.L 10ft

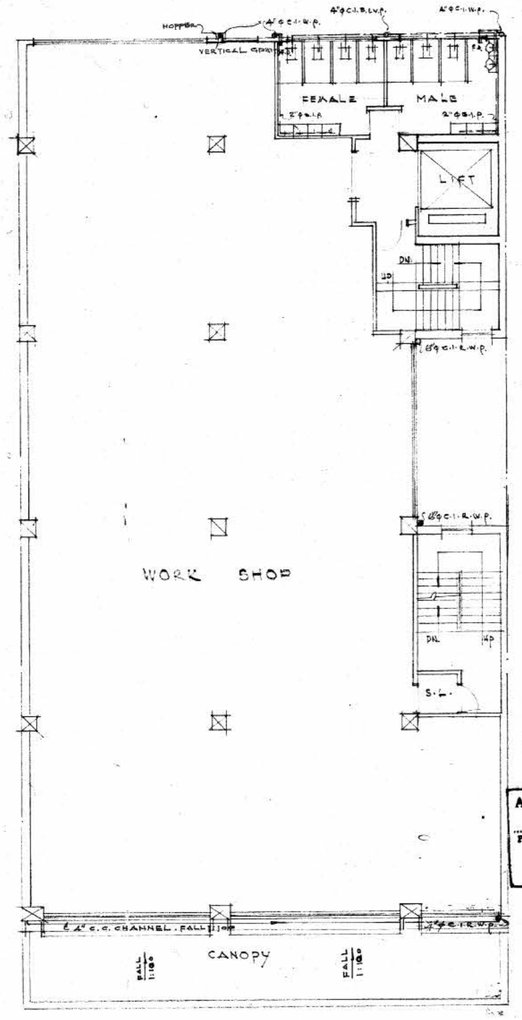
BUILDINGS ORDINANCE OFFICE
REF. NO. 4/537/63



GROUND FLOOR PLAN



FIRST FLOOR PLAN



SECOND TO 8TH FLOOR PLAN

Approved
PRO BUILDING AUTHORITY
-4 AUG 1964

RECEIVED BY
19 JUN 1964
BUILDING ORDINANCE OFFICE
KOWLOON
P. W. D.

RECEIVED BY
18 JUL 1964
BUILDING ORDINANCE OFFICE
KOWLOON
P. W. D.

DRAINAGE PLAN

PROPOSED WORKSHOP AT WAI YIP STREET ON K. T. I. L. No. 511

DATE 16-6-64
DWG. NO. 1/2
JOB NO. H.D.657

CHARTERED STRUCTURAL ENGINEER
AUTHORISED ARCHITECT
OFFICE: ROOM 801 KING'S BUILDING
QUEEN'S ROAD CENTRAL
HONG KONG
TELEPHONE 33-069 24759

Ye'

Date

Check By

Appendix 4 Photo Record of Site Visit

China Trade Centre (5 storey of Manufacturing/ 17 total storey = around 30% of manufacturing)





Kwun Kee Tailor Industrial Centre



Union Industrial Building (5 storey of Manufacturing/ 13 total storey = around 40% of manufacturing)

