Annex F - Water Supply Impact Assessment

JOINT-USER COMPLEX AND JOINT-USER GENERAL OFFICE BUILDING
AT AREA 29, KWU TUNG NORTH

JOINT-USER COMPLEX AND JOINT-USER GENERAL OFFICE BUILDING AT AREA 29, KWU TUNG NORTH

WATER SUPPLY IMPACT ASSESSMENT

08 April 2025

Ref No: RT24431-WSIA-01

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Project:	JOINT-USER COMPLEX AND JOINT-USER GENERAL OFFICE BUILDING AT AREA 29, KWU TUNG NORTH WATER SUPPLY IMPACT ASSESSMENT
Report No.:	RT24431-WSIA-01

Revision	Issue Date	Description	Author	Checker	Approver
0	08/04/2025	Submission to TPB	Various	YS	HM

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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.
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1 INTRODUCTION

1.1 PROJECT SCOPE AND DESCRIPTION

The proposed Joint-user Complex ("JUC") and Joint-user General Office Building ("JUB") project is one of the projects under the "single site, multiple use" ("SSMU") initiative as selected by Development Bureau (DEVB) to be taken forward expeditiously at Area 29, Kwu Tung North. The proposed JUC and JUB would provide postal facilities, a sports center, indoor heated swimming pools, a district library, a community hall, a 6-classroom kindergarten, welfare facilities, healthcare facilities and government offices.

The policy objectives of constructing a JUC are to provide more community and public services to residents of the nearby residential developments to be completed in phases starting from 2026 as well as to optimize the use of limited land resources under the SSMU initiative. Apart from that, a JUB is to provide suitable government accommodation to enable efficient delivery of public services. This involves, among others, "meeting Government's needs for general use accommodation through planning and construction of new government office buildings". The JUB would also accommodate government offices to be relocated from the Central Business Districts ("CBDs") and other areas in the territory, thus releasing floor space and land elsewhere for alternative use(s).

BeeXergy Consulting Limited was commissioned by UDP International to conduct a Water Supply Impact Assessment (WSIA) in support of its planning application under Section 16 of the Town Planning Ordinance (TPO) for the Proposed Development. Latest architectural drawings and technical information on the Project Site were provided by the Project Architect.

1.2 PROJECT LOCATION

The Project Site is located in Kwu Tung North. The Site is close to the future Mass Transit Railway Kwu Tung Station which is under construction with target completion date of 2031. The Project site was mostly occupied by the Dills Corner Garden which has been handed over to CEDD to commence site clearance works since the fourth quarter of 2023, and bounded by the existing Castle Peak Road to the south and would be bounded by the future Road L1 to be constructed by CEDD to the north.

1.3 DESCRIPTION OF THE SUBJECT SITE AND PROPOSED DEVELOPMENT

The site area of the Project Site is about 2.1 hectares, comprised of department offices, ancillary facilities including a postal facilities, a sports center, indoor heated swimming pools,

a district library, a community hall, a 6-classroom kindergarten, welfare facilities, healthcare facilities and government offices. The master layout plan provided by Project Architect is enclosed in **Appendix A**.

2 WATER SUPPLY IMPACT ASSESSMENT

2.1 SCOPE OF WORK

The objectives of Water Supply Impact Assessment (WSIA) is to assess whether the capacity of the existing water supply is sufficient to cope with the water demands to be required by the Project Site and to provide appropriate mitigation measures where necessary.

Existing record plan and data from the Water Supplies Department (WSD) is obtained for this WSIA.

2.2 ASSESSMENT CRITERIA, METHODOLOGY AND ASSUMPTIONS

The Departmental Instruction No. 1309 (DI No. 1309) issued by the Water Supplies Department (WSD) and the WSIA of Agreement No. CE19/2019 (CE) were both references for the estimation of water demand and relevant peaking factors used for this assessment. The Project Site's population, daily unit demand and peaking factor for freshwater and flushing water are presented in **Table 2.1** below.

Table 2.1 Adopted Freshwater and Flushing Water Unit Demand and Peaking Factor for the Project Site

Parameter	Value	Justification
Population		
Proposed Development JUB (Office)	4409 people	The worker density is 25 m^2 per worker as advised by Planning Department.
Proposed Development JUC (GIC)	920 people	The worker density is 25 m^2 per worker as advised by Planning Department.
Proposed Development JUC (Restaurant)	46 people	The worker density is 25 m^2 per worker as advised by Planning Department.
Proposed Development JUC (Shop)	12 people	The worker density is 25 m^2 per worker as advised by Planning Department.
Proposed Development JUC (Sport Centre)	680 people	The worker density is 25 m^2 per worker as advised by Planning Department.
Daily Unit Demand for freshwater		

Proposed Development JUB (Office)	0.04 m^3/head/day	Based on WSIA of Agreement No. CE19/2019 (CE)
Proposed Development JUC (GIC)	0.04 m^3/head/day	Based on WSIA of Agreement No. CE19/2019 (CE)
Proposed Development JUC (Restaurant)	0.04 m^3/head/day	Based on WSIA of Agreement No. CE19/2019 (CE)
Proposed Development JUC (Shop)	0.04 m^3/head/day	Based on WSIA of Agreement No. CE19/2019 (CE)
Proposed Development JUC (Sport Centre)	0.04 m^3/head/day	Based on WSIA of Agreement No. CE19/2019 (CE)
Daily Unit Demand for flushing water		
Proposed Development JUB (Office)	0.07 m^3/head/day	Based on WSIA of Agreement No. CE19/2019 (CE)
Proposed Development JUC (GIC)	0.05 m^3/head/day	Based on WSIA of Agreement No. CE19/2019 (CE)
Proposed Development JUC (Restaurant)	0.07 m^3/head/day	Based on WSIA of Agreement No. CE19/2019 (CE)
Proposed Development JUC (Shop)	0.07 m^3/head/day	Based on WSIA of Agreement No. CE19/2019 (CE)
Proposed Development JUC (Sport Centre)	0.07 m^3/head/day	Based on WSIA of Agreement No. CE19/2019 (CE)
Peaking Factor		
Peaking Factor of Freshwater	3	Based on The Departmental Instruction No. 1309 (DI No. 1309)
Peaking Factor of Flushing water	2	Based on The Departmental Instruction No. 1309 (DI No. 1309)

The results of the water demand calculations for Proposed Development JUB (Office) and Proposed Development JUC are shown in **Appendix B.** The estimation of daily water demand and peak flow of freshwater and flushing water is shown in **Table 2.2**.

Table 2.2 The Estimation of Daily Water Demand and Peak Flow of Freshwater and Flushing

water

Type	Population	Daily Demand	Peaking Factor	Peak Flow
Freshwater				
Proposed Development JUB (Office)	4409 people	176.4 m^3/day	3	529.1 m^3/day
Proposed Development JUC (GIC)	920 people	36.8 m^3/day	3	110.4 m^3/day
Proposed Development JUC (Restaurant)	46 people	1.8 m^3/day	3	5.5 m^3/day
Proposed Development JUC (Shop)	12 people	0.5 m^3/day	3	1.4 m^3/day
Proposed Development JUC (Sport Centre)	680 people	27.2 m^3/day	3	81.6 m^3/day
Flushing Water				
Proposed Development JUB (Office)	4409 people	308.6 m^3/day	2	617.3 m^3/day
Proposed Development JUC (GIC)	920 people	46 m^3/day	2	92 m^3/day
Proposed Development JUC (Restaurant)	46 people	3.2 m^3/day	2	6.4 m^3/day
Proposed Development JUC (Shop)	12 people	0.84 m^3/day	2	1.68 m^3/day

Proposed Development JUC (Sport Centre)	680 people	47.6 m^3/day	2	95.2 m^3/day

From the results in **Table 2.2**, the total daily demand of freshwater and flushing water of the whole Project Site are 483.9 m^3/day and 406.3 m^3/day. The total peak flow of freshwater and flushing water of the whole Project Site are 728 m^3/day and 812.6 m^3/day respectively.

Fresh water shall be used for firefighting. Based on the WSD's DI No. 1309, the fire-fighting requirement for residential zone is 6000m3/d with discharge pressure of 17m head. The requirements are tabulated in **Table 2.3**.

Table 2.2 Fire-fighting Requirement

Items	**Demand**
Minimum Fresh Water Supply	6000m^3/day
Discharge Pressure	17m head

2.3 HYDRAULIC ASSESSMENT OF PROPOSED WATER SUPPLY SYSTEM

According to the planned water supply network shown in the CEDD plans, there are 6 connection points to the planned 150 mm diameter fresh water mains and 3 connection points to the planned 100 mm diameter flushing water mains at the north side of Project Site respectively as shown in **Appendix C**.

The Project Site is located within the fresh water supply zone of the Kwu Tung North Fresh Water Service Reservoir. According to information provided by CEDD, the total volumetric capacity of the service reservoir is 34,000 m^3 as shown in **Appendix D**. The checking of the adequacy of the fresh water service reservoir is shown in the **Table 2.3** below. As shown in **Table 2.3**, the sum of existing and proposed demand accounts for 4.28% of the existing fresh water service reservoirs.

The flushing water in the Project Site is supplied by Kwu Tung North Flushing Water Service Reservoir. According to information provided by CEDD, the volumetric capacity of the reservoir is 9,900 m^3 as shown in **Appendix D**. The checking of the adequacy of the flushing water service reservoir is shown in the **Table 2.3** below. As shown in **Table 2.3**, the sum of existing and proposed demand accounts for 8.79% of the flushing water service reservoir.

In view of small volume of water demand, it is unlikely that the (Kwu Tung North Fresh Water Service Reservoir & Fanling North Fresh Water Service Reservoir /Kwu Tung North Flushing Water Service Reservoir) would be overloaded due to the proposed development. It is understood that the service reservoir would have adequate capacity to cater for a minimal increase in water demand from the proposed development.

Table 2.3 Checking of Adequacy of Fresh Water / Flushing Water Service Reservoirs

Fresh Water						
Reservoir	**Volume**	**Proposed Demand**	**Total Demand**	**Conversion Factor from DI 1309**	**Converted Demand**	**Percentage**
Kwu Tung North Fresh Water Service Reservoir	34,000 m^3	483.9 m^3/day	483.9 m^3/day	0.75	/362.9 m^3	1.07%
Flushing Water						
Reservoir	**Volume**	**Proposed Demand**	**Total Demand**	**Conversion Factor from**	**Converted Demand**	**Percentage**

				DI 1309		
Kwu Tung North Flushing Water Service Reservoir	9,900 m^3	406.3 m^3/day	406.3 m^3/day	0.64	260.0 m^3/day	2.63%

Details of the internal water supply system for supply of fresh and flushing water will be further developed in the detailed design stage.

To determine the peak flow velocity at extremity of the proposed water supply system, a hydraulic assessment has been conducted, which is presented in **Appendix E**.

For the proposed 150 mm diameter flushing water main, when the minimum flow velocity is 1 m/s, the flow rate of the existing flushing water main is 0.0177 m^3/s and the peak flow rate is 0.0094 m^3/s. The peak flow rate accounts for 53% of the proposed 150 mm flushing water main. When the maximum flow velocity is 1.5 m/s, the flow rate of the proposed flushing water main is 0.0256 m^3/s and the peak flow rate is 0.00940 m^3/s. The peak flow rate of the Project Site accounts for 35% of the proposed 150 mm flushing water main. It has been determined that the capacity of the proposed 150 mm diameter flushing water main for Project Site could cope with the flushing water demand. Therefore, upgrading works on the existing flushing water main is not anticipated.

According to the requirement stipulated in WSD DI-1309, the minimum residual heads at extremity of system for fresh water and flushing water are 20m and 15m respectively and the minimum discharge pressure for fresh water used for firefighting is 17m. According to information provided by AECOM, the consultant under CEDD for the development of Kwu Tung North and Fanling North New Development Areas (CE19/2019(CE)), the residual head of fresh and flushing water are approximately 50m and 40m respectively in the vicinity of the Project Site. This shows that requirement of residual heads at extremity and of firefighting are satisfied. Therefore, negative impact to the surrounding area from the Project Site is not anticipated.

3 CONCLUSION

According to the Water Supply Impact Assessment, the total daily demand for fresh water and flushing water for whole Project Site are 483.9 m^3/day and 406.3 m^3/day. The total peak demand for fresh water and flushing water for whole Project Site are 728 m^3/day and 812.6 m^3/day respectively. For fresh water, the proposed 150 mm fresh water main have sufficient capacity to cater for the fresh water demand of Project Site. For flushing water, the proposed 728 m^3/day and 812.6 150 mm flushing water main have sufficient capacity to cater for the flushing water demand of Project Site.

APPENDIX A
MASTER LAYOUT PLAN OF THE PROJECT SITE

SECTION A-A

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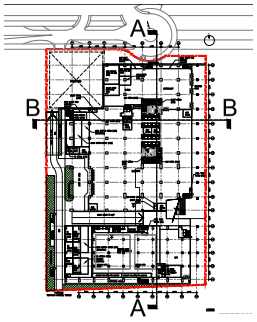
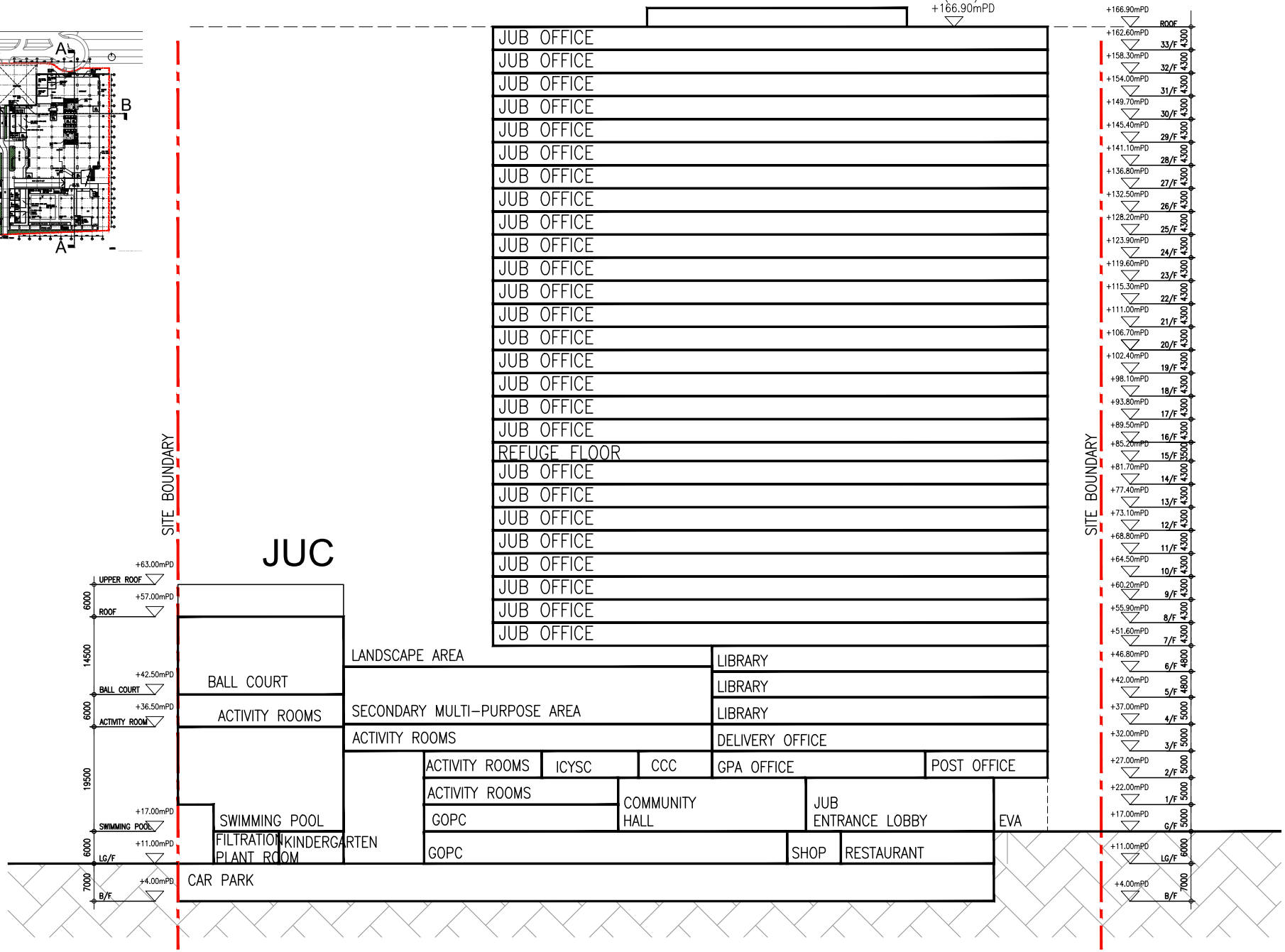
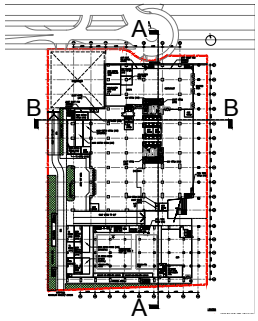
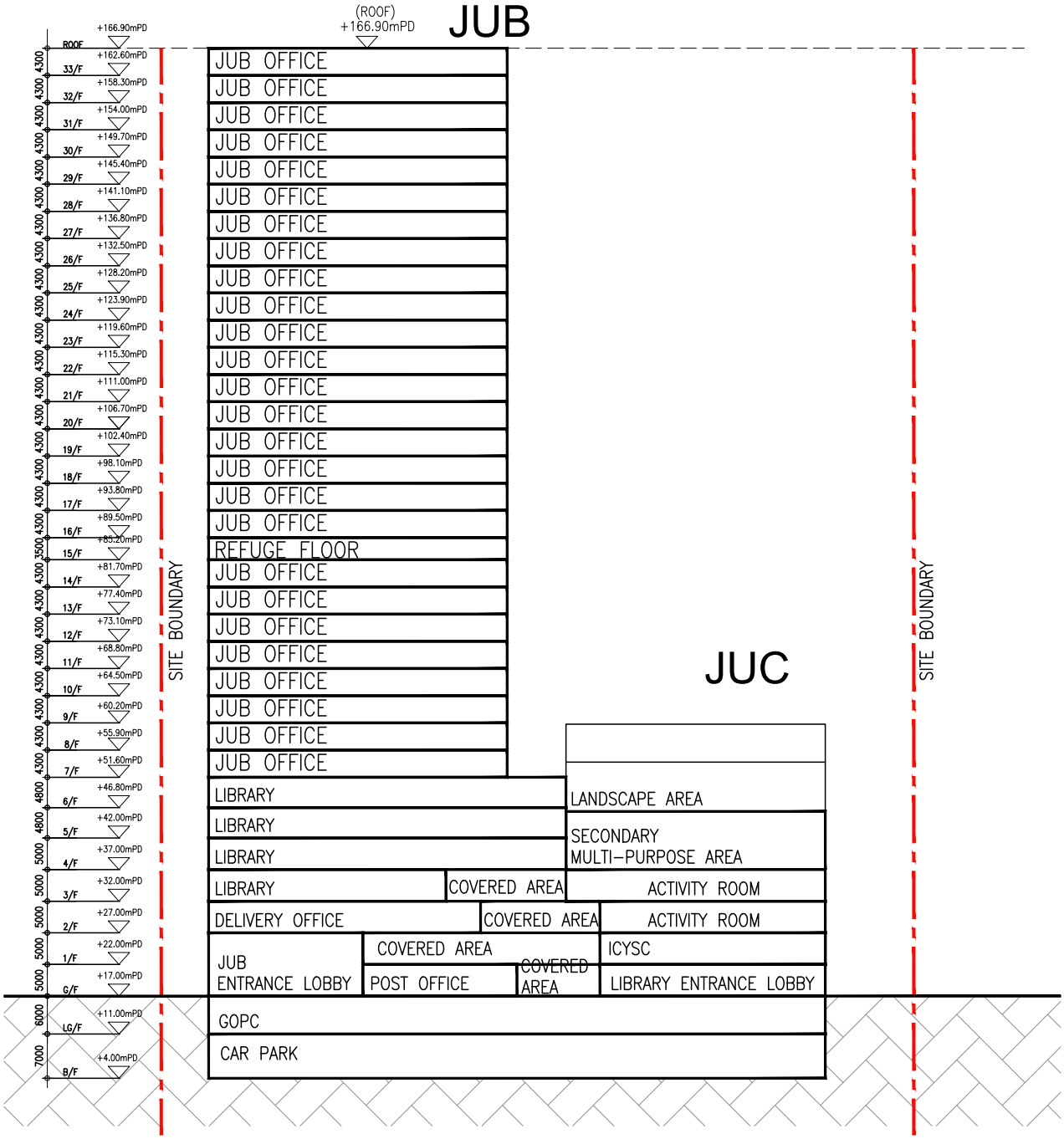
DEVELOPMENT OF KWU TUNG NORTH AREA 29, GIC SITE PLANNING PROPOSAL





SECTION A-A

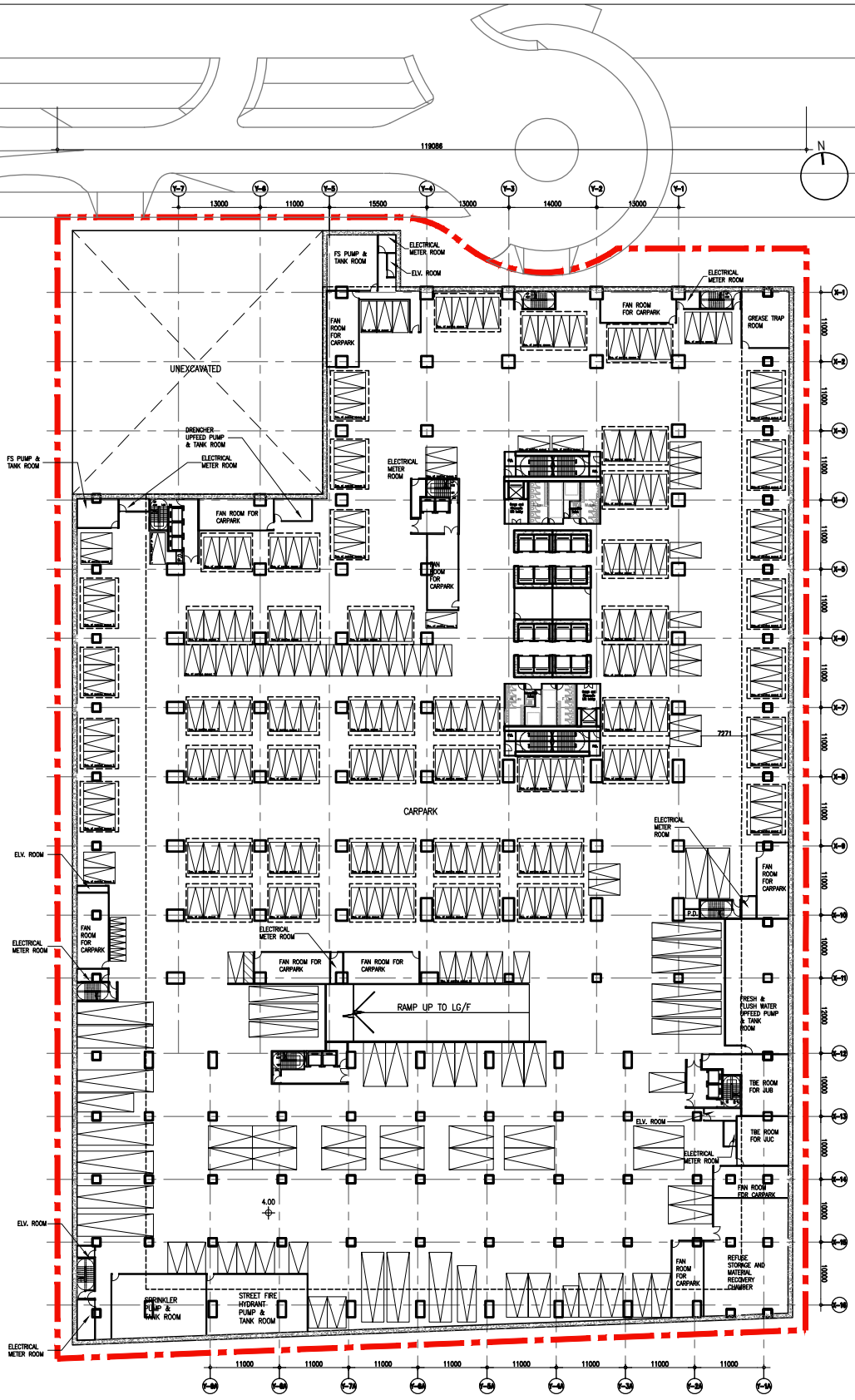




SECTION B–B

10m 0 20m

SECTION B-B 1:1000 @ A4	DEVELOPMENT OF KWU TUNG NORTH AREA 29, GIC SITE PLANNING PROPOSAL	



LEGEND

DEVELOPMENT SITE BOUNDARY

青山公路 — 洲頭段 CASTLE PEAK ROAD — CHAU TAU

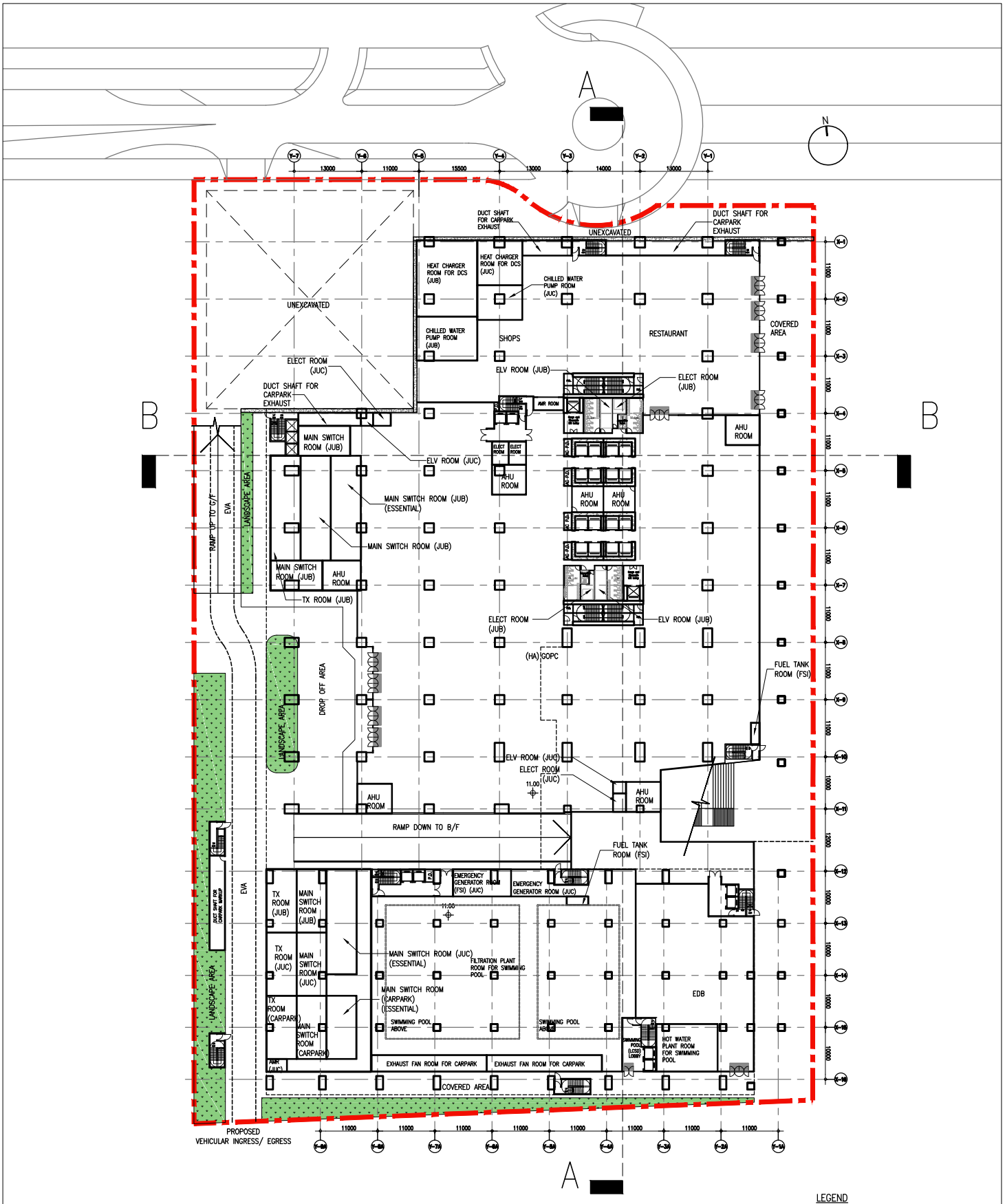
粉嶺公路 FANLING HIGHWAY

10m 0 20m

B/F PLAN

1:1000 @ A4

DEVELOPMENT OF KWU TUNG NORTH AREA 29, GIC SITE PLANNING PROPOSAL



LG/F PLAN

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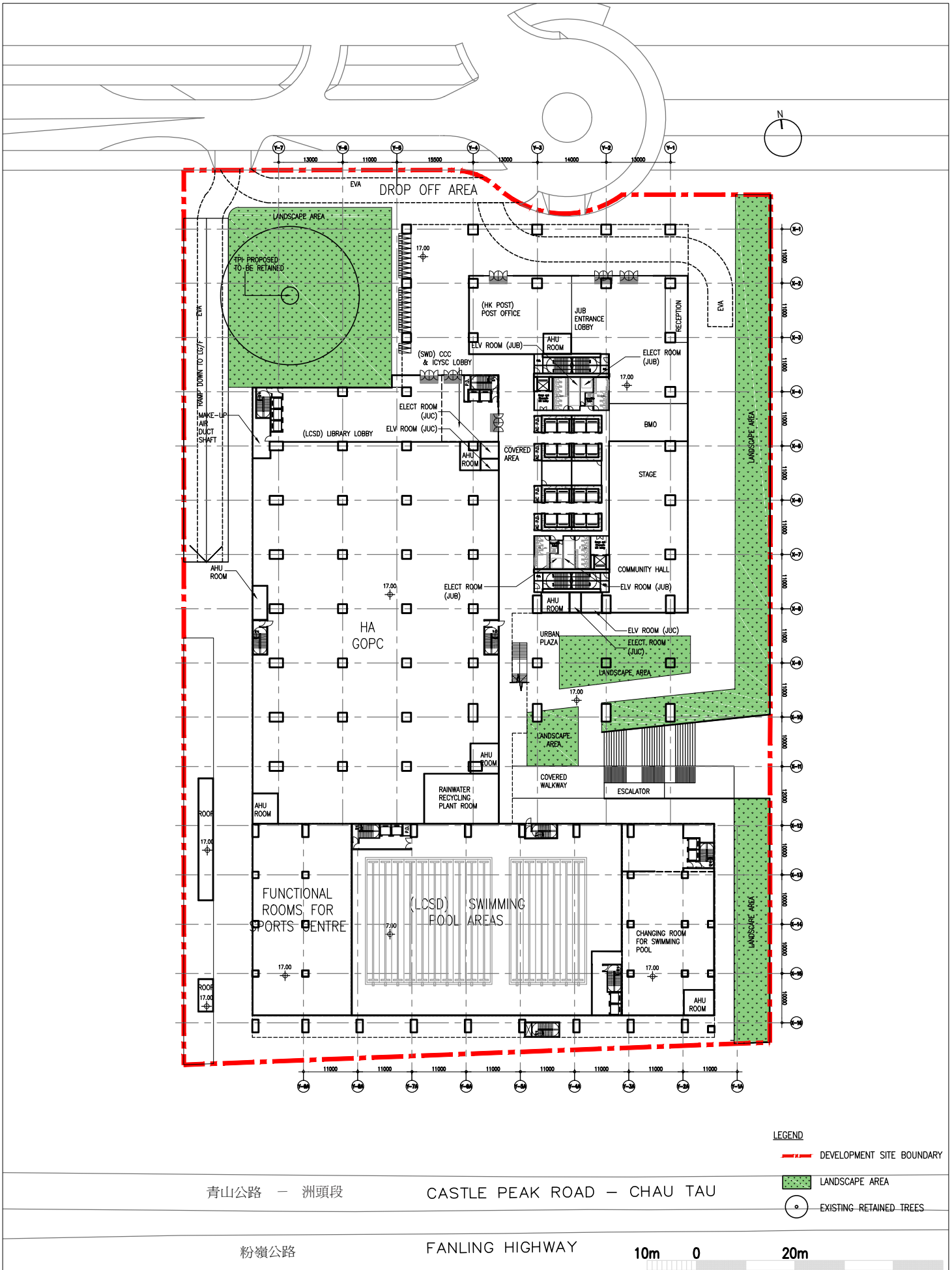
DEVELOPMENT OF KWU TUNG NORTH AREA 29, GIC SITE PLANNING PROPOSAL



G/F PLAN

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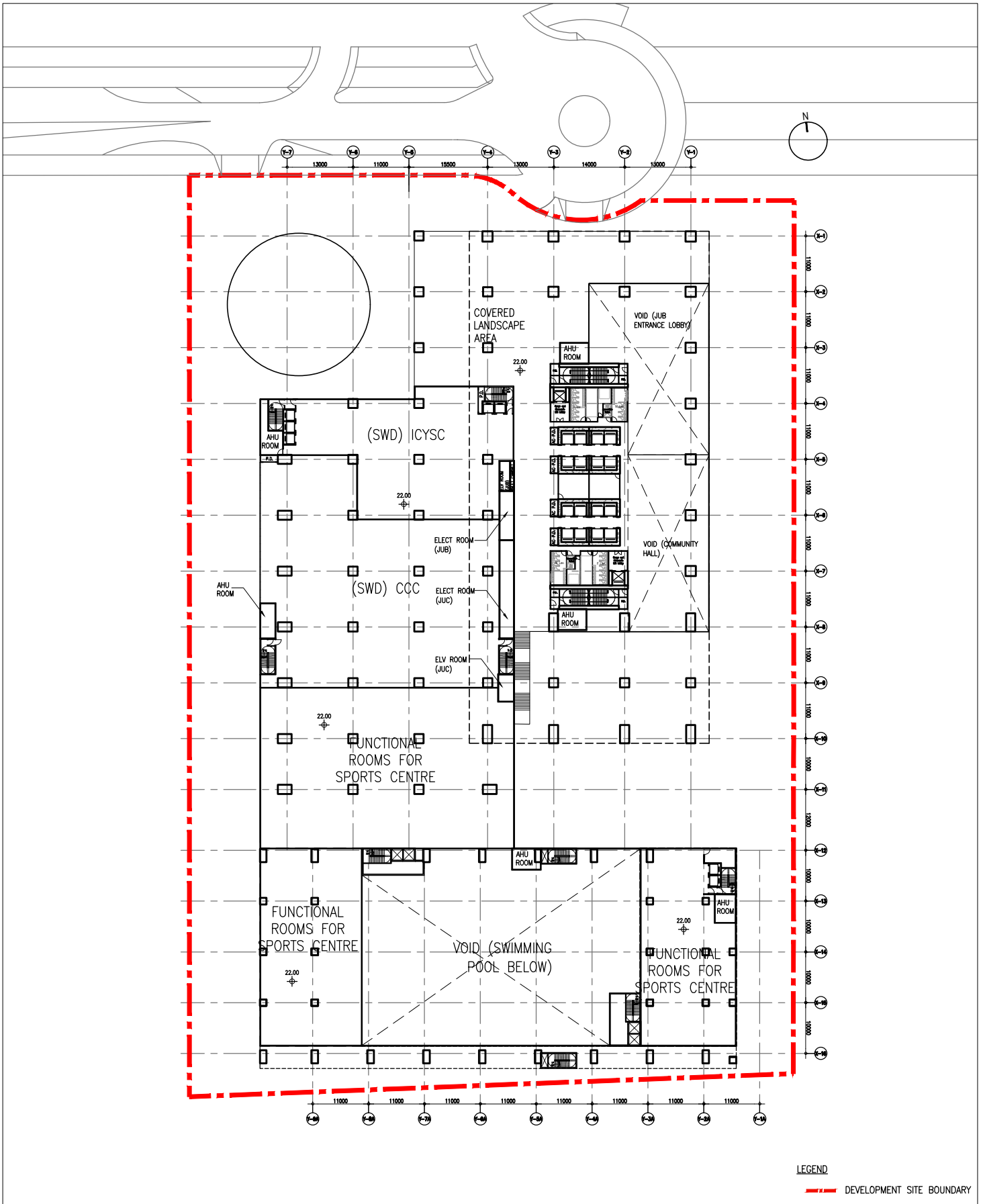
DEVELOPMENT OF KWU TUNG NORTH AREA 29, GIC SITE PLANNING PROPOSAL



青山公路 — 洲頭段 CASTLE PEAK ROAD — CHAU TAU

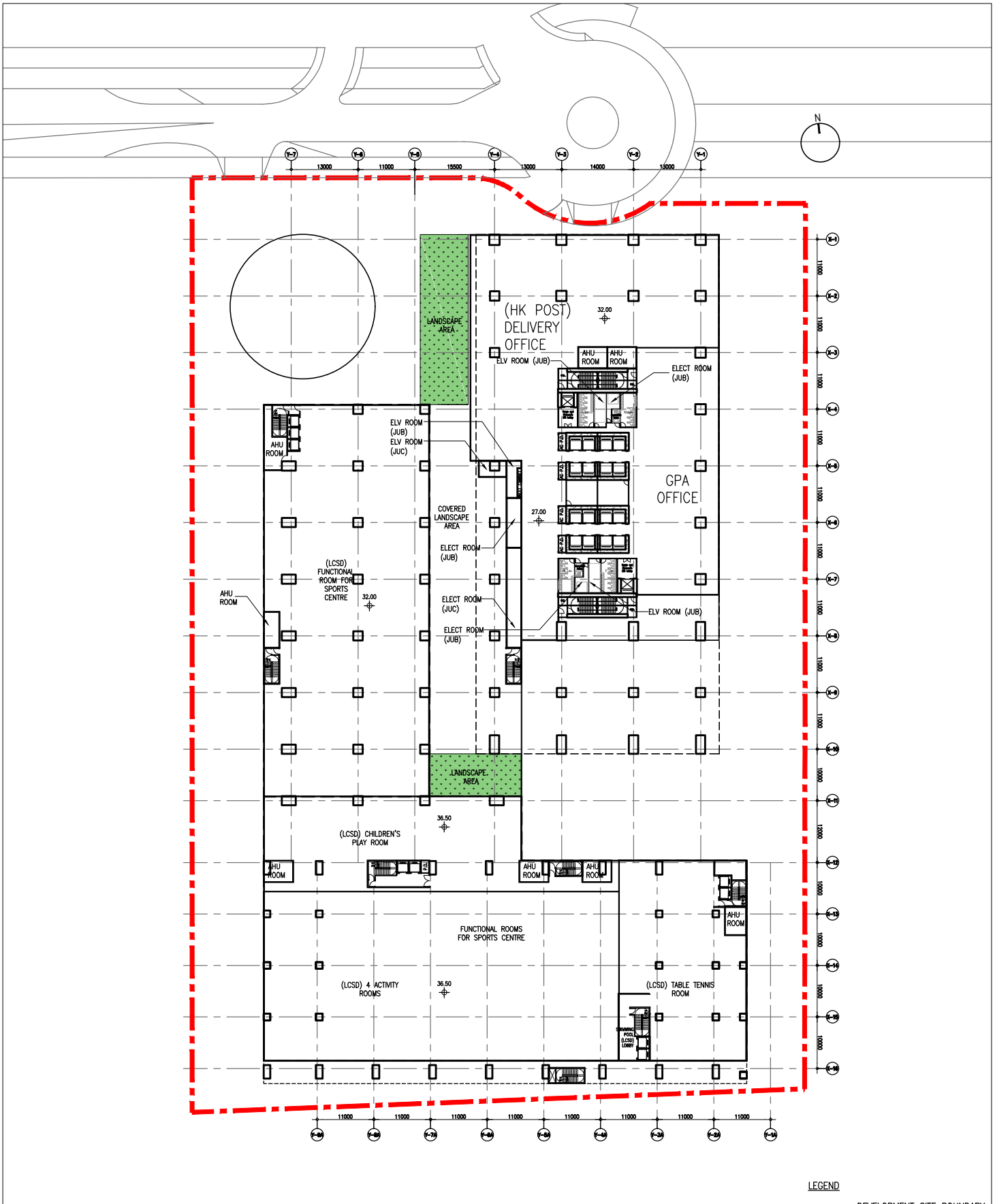
粉嶺公路 FANLING HIGHWAY

10m 0 20m

1/F PLAN

1:1000 @ A4

DEVELOPMENT OF KWU TUNG NORTH AREA 29, GIC SITE PLANNING PROPOSAL



2/F PLAN

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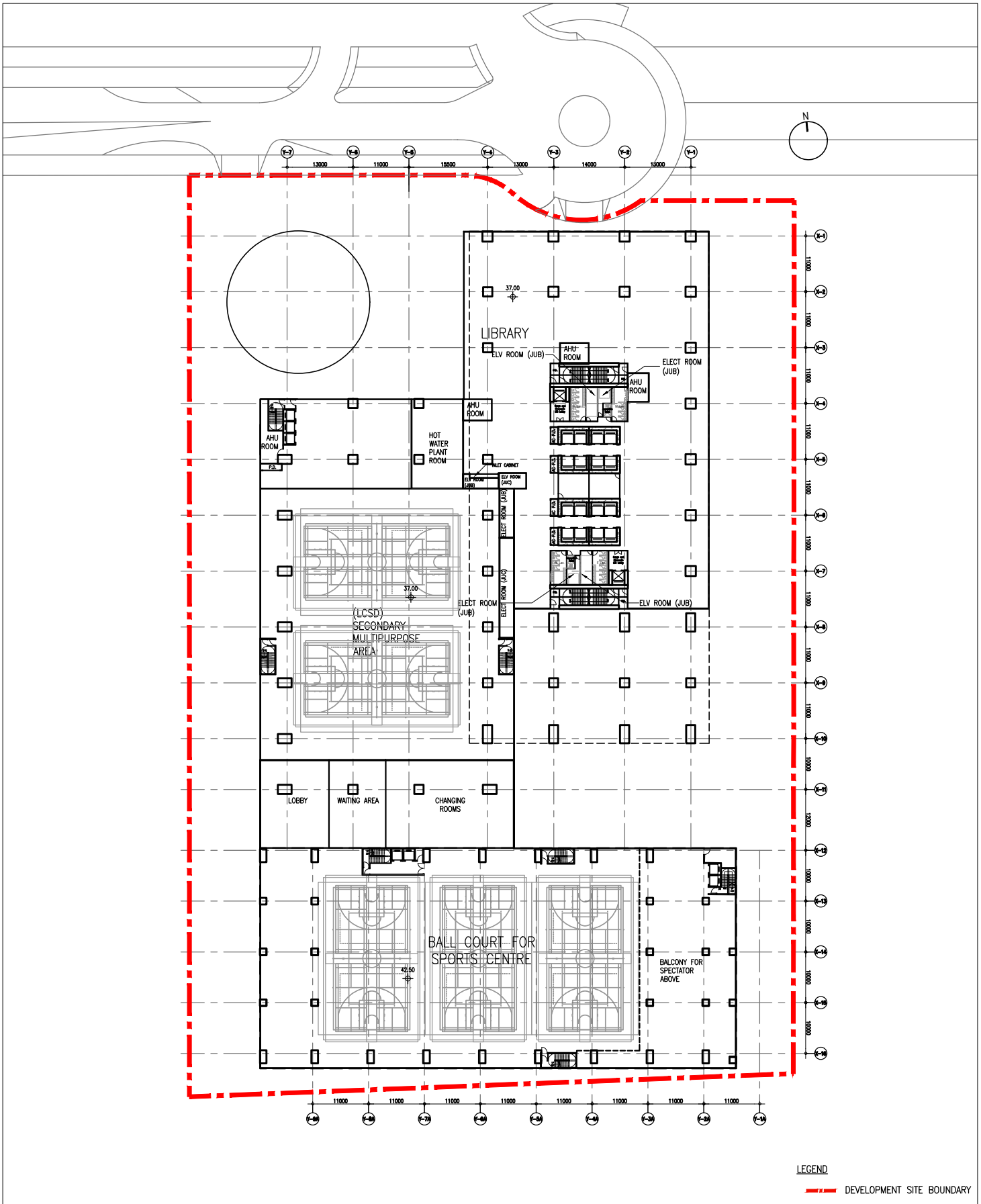
DEVELOPMENT OF KWU TUNG NORTH AREA 29, GIC SITE PLANNING PROPOSAL



3/F PLAN

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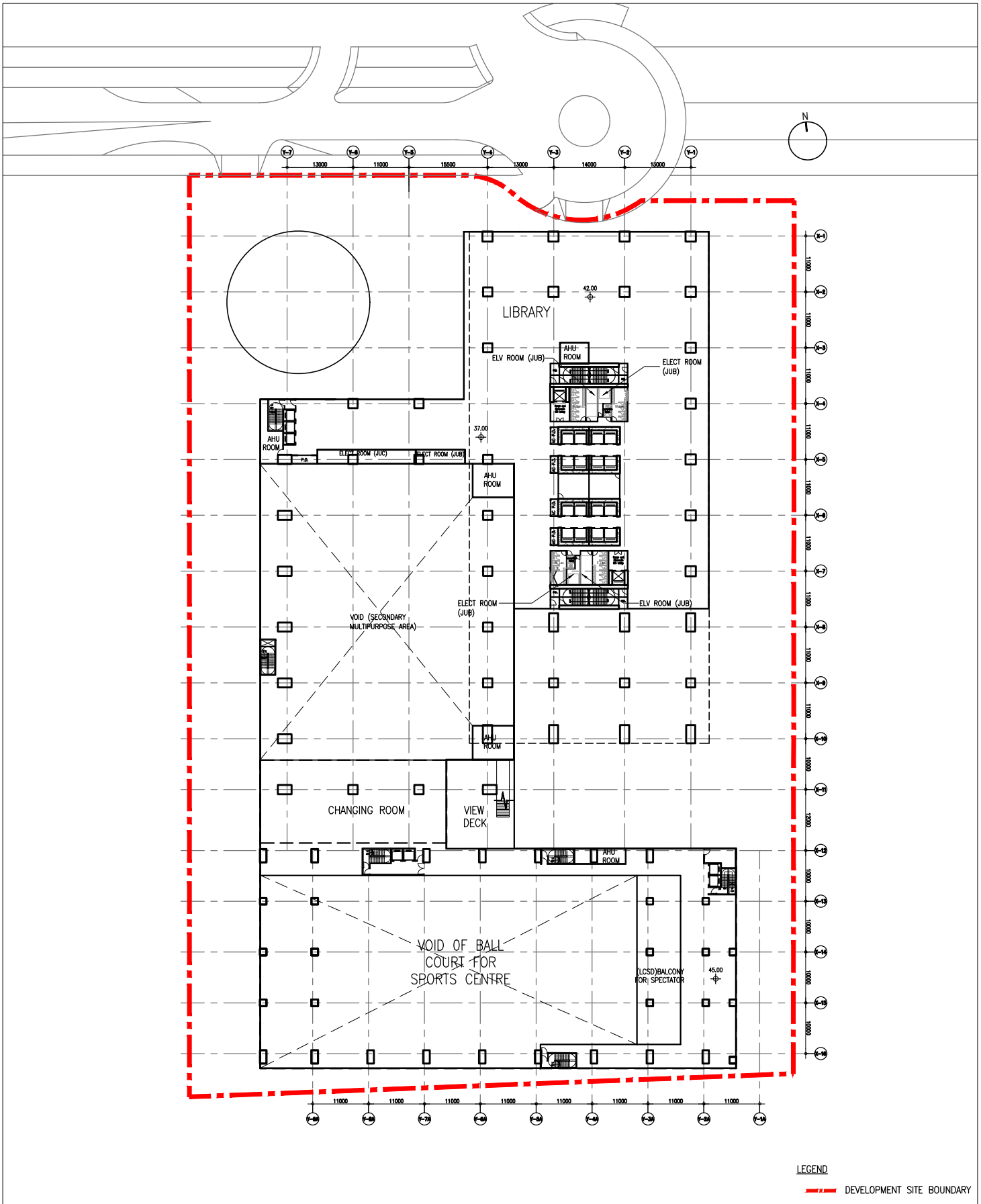
DEVELOPMENT OF KWU TUNG NORTH AREA 29, GIC SITE PLANNING PROPOSAL



4/F PLAN

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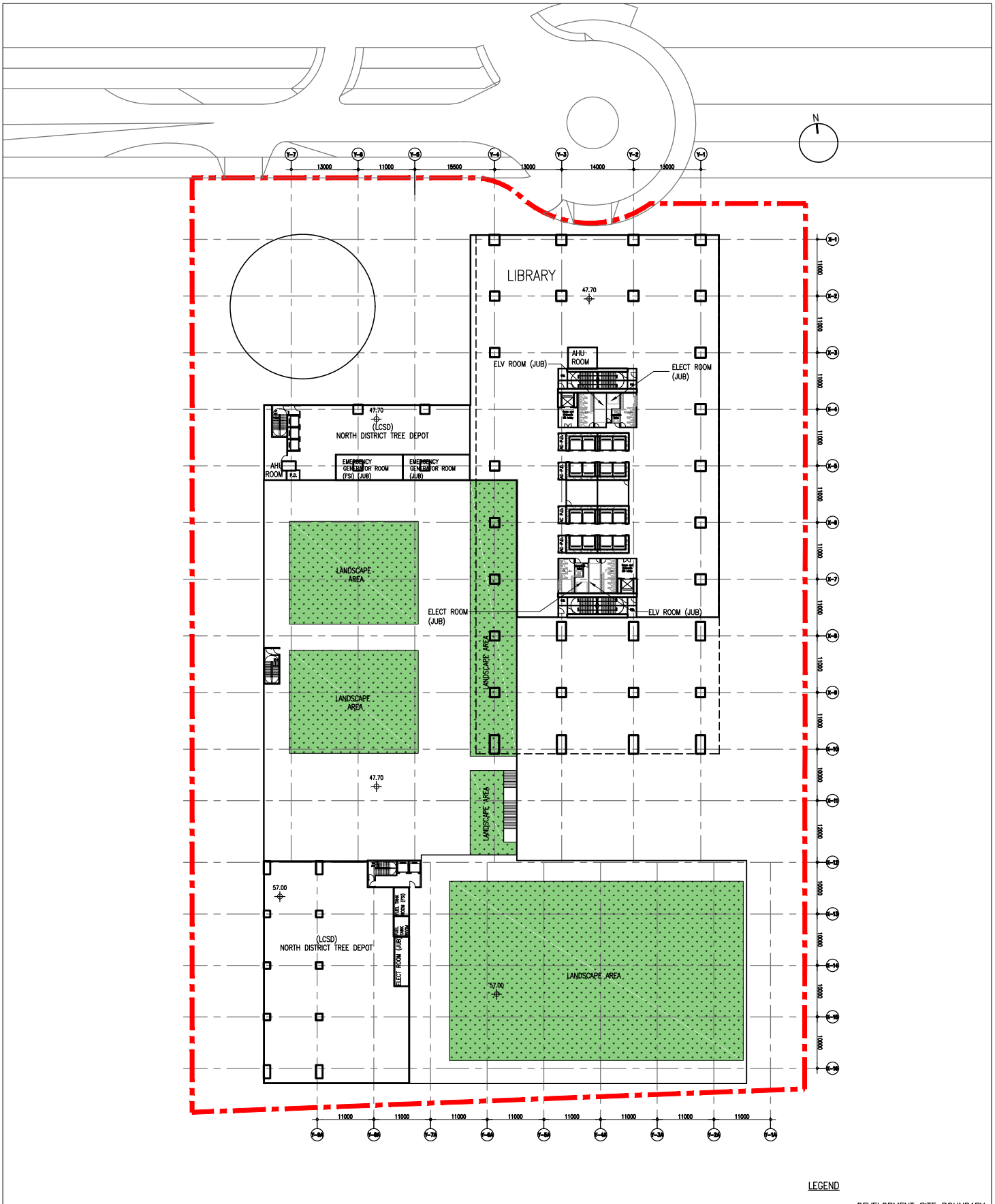

5/F PLAN

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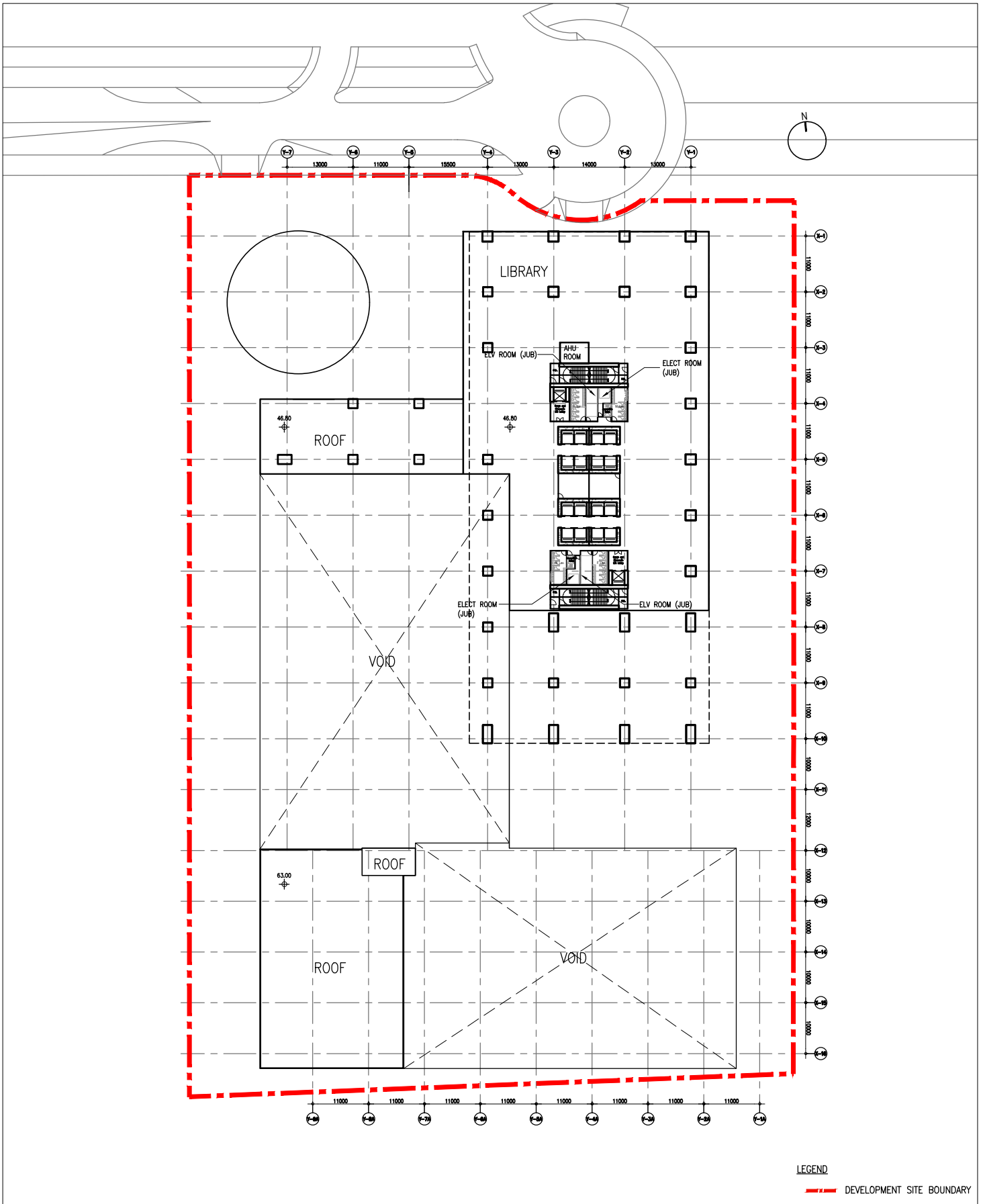
DEVELOPMENT OF KWU TUNG NORTH AREA 29, GIC SITE PLANNING PROPOSAL



6/F PLAN

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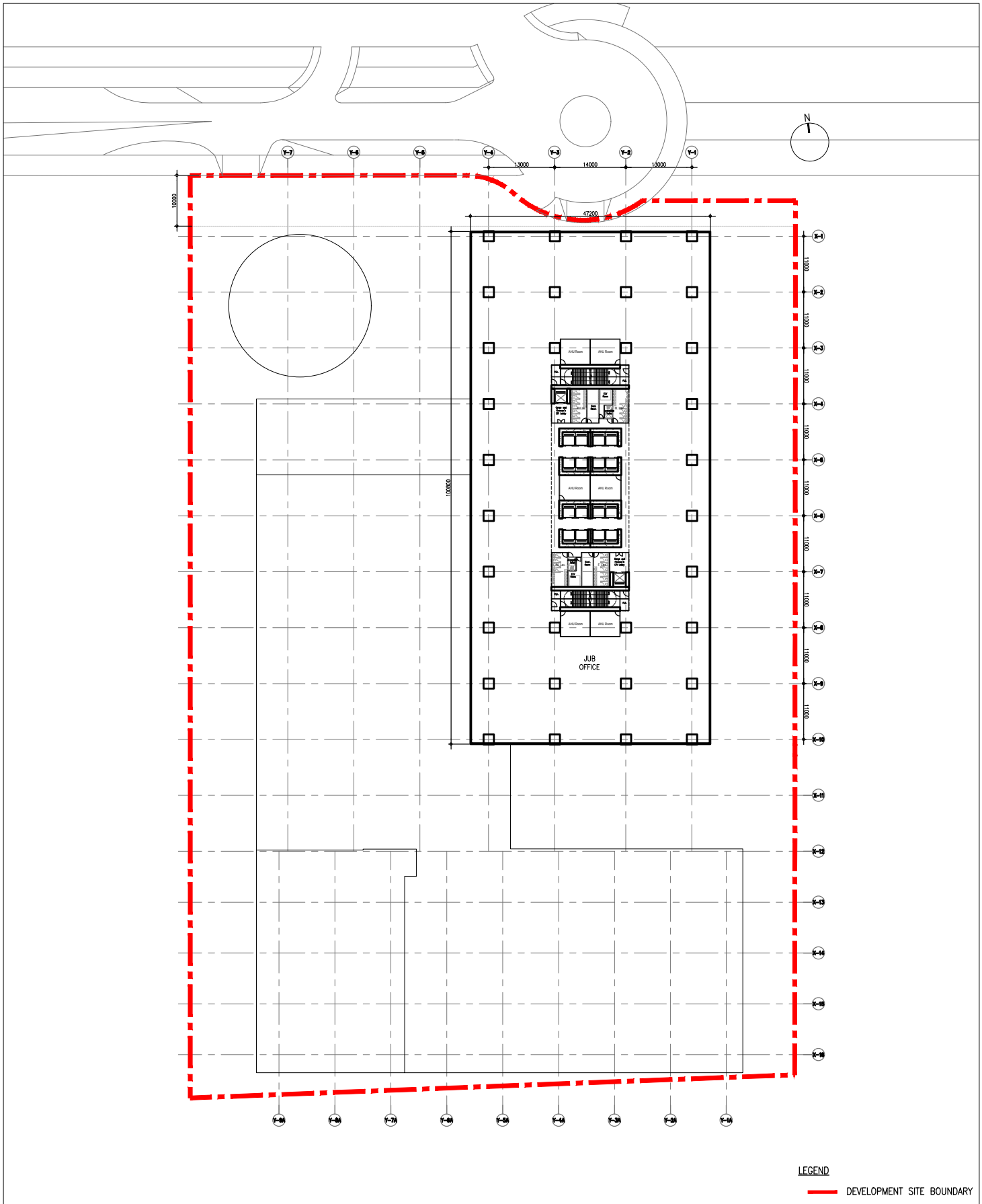

7-14/F PLAN

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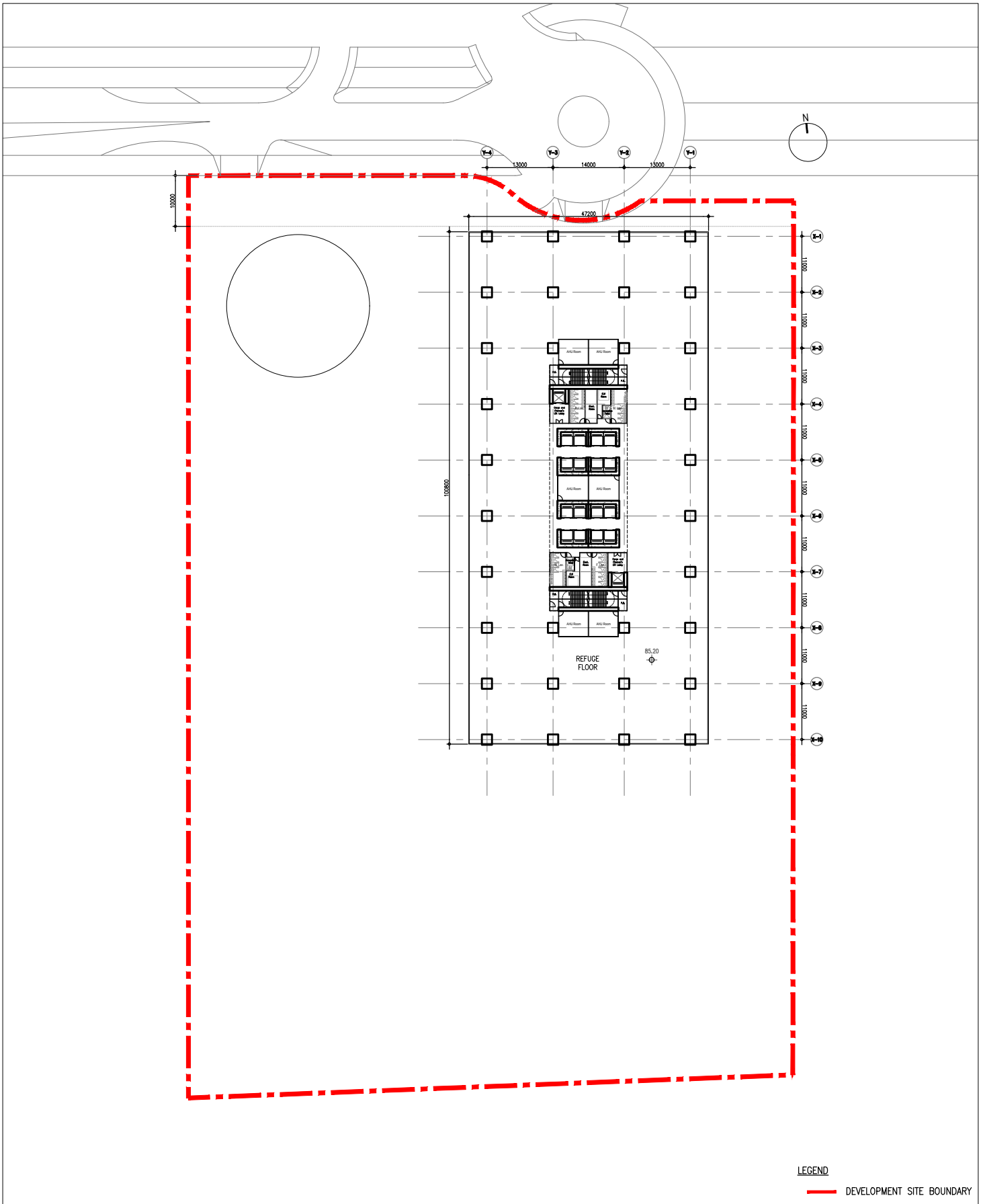
DEVELOPMENT OF KWU TUNG NORTH AREA 29, GIC SITE PLANNING PROPOSAL



15/F PLAN

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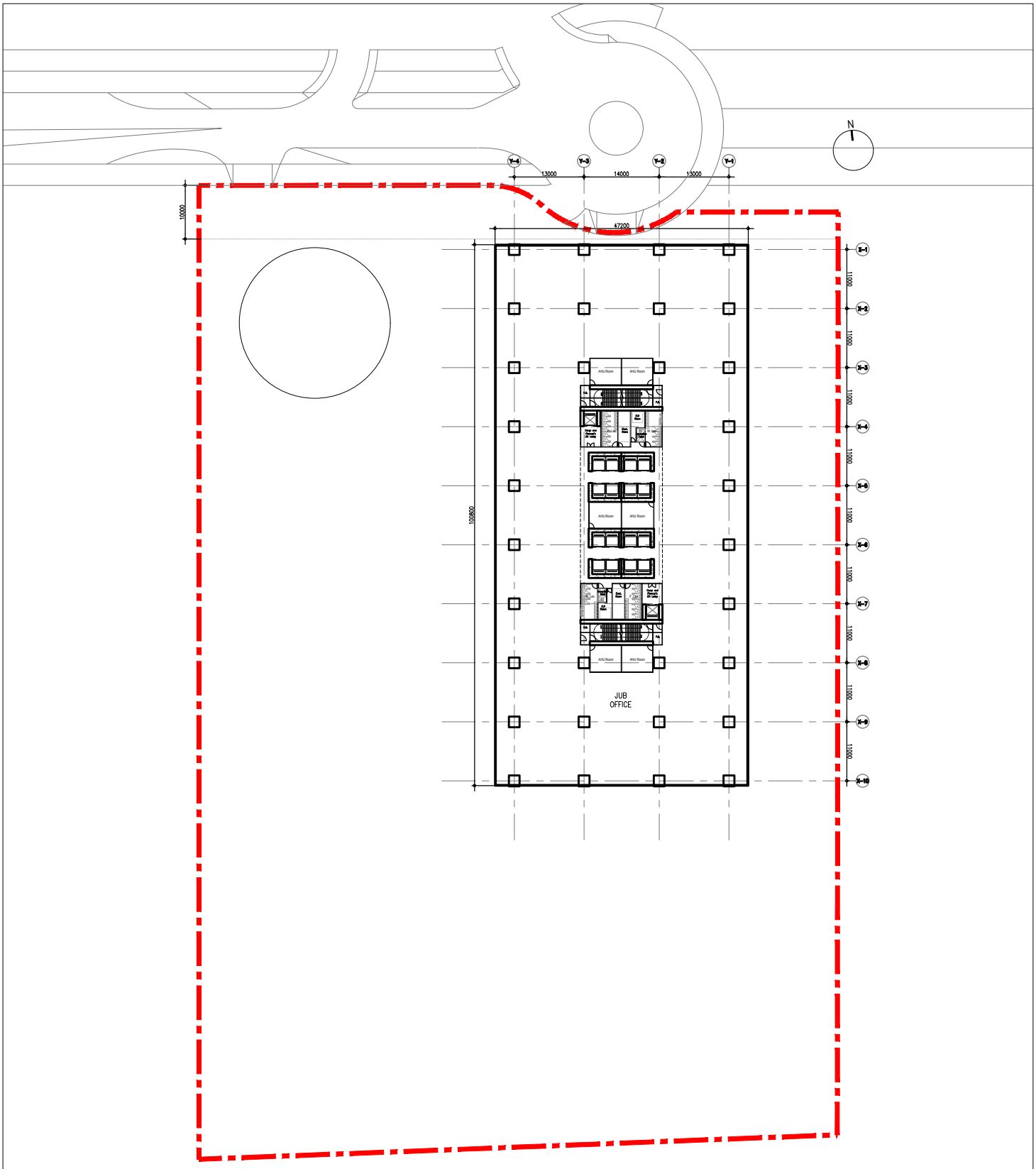
DEVELOPMENT OF KWU TUNG NORTH AREA 29, GIC SITE PLANNING PROPOSAL



16-33/F PLAN

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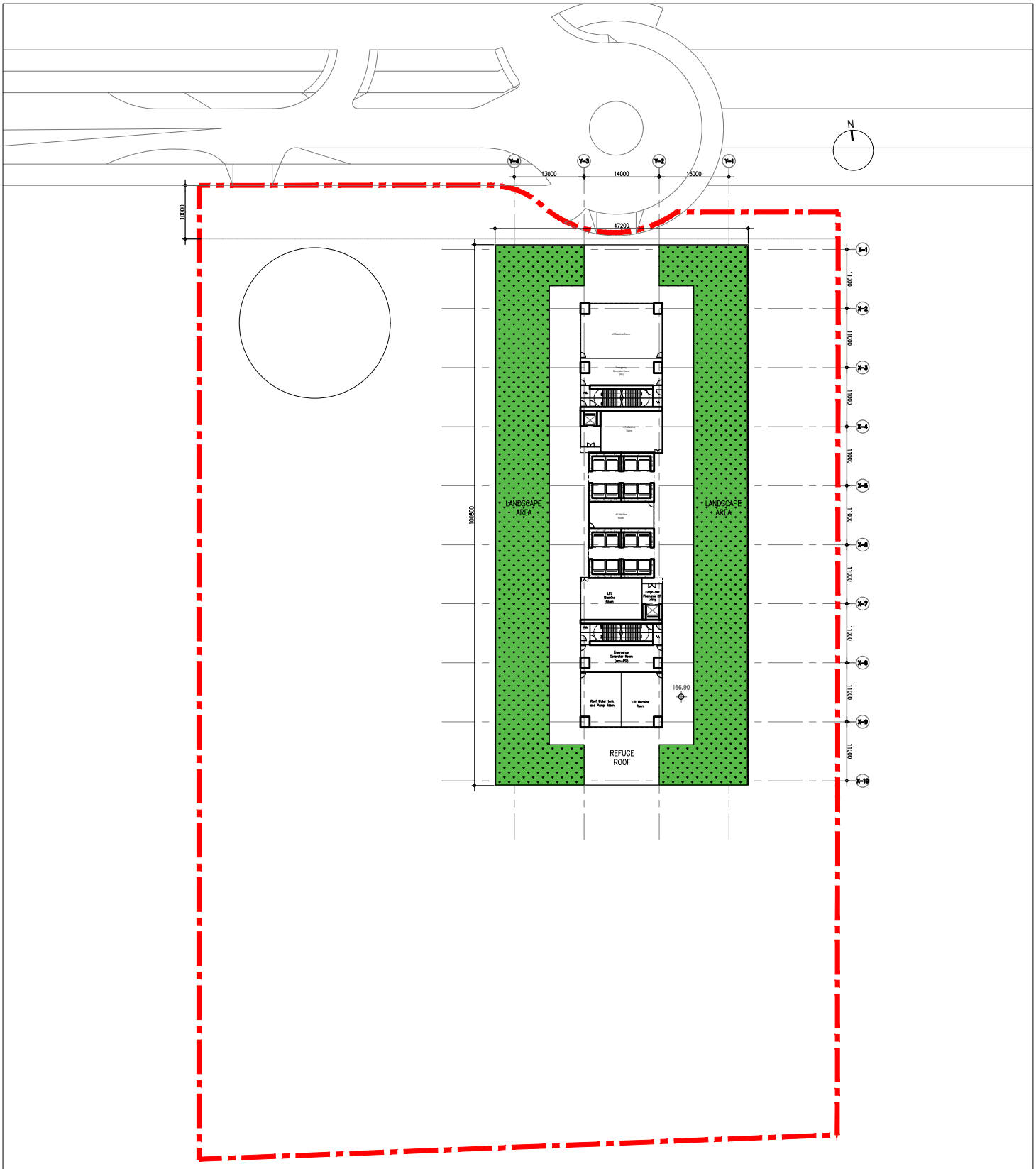

R/F PLAN

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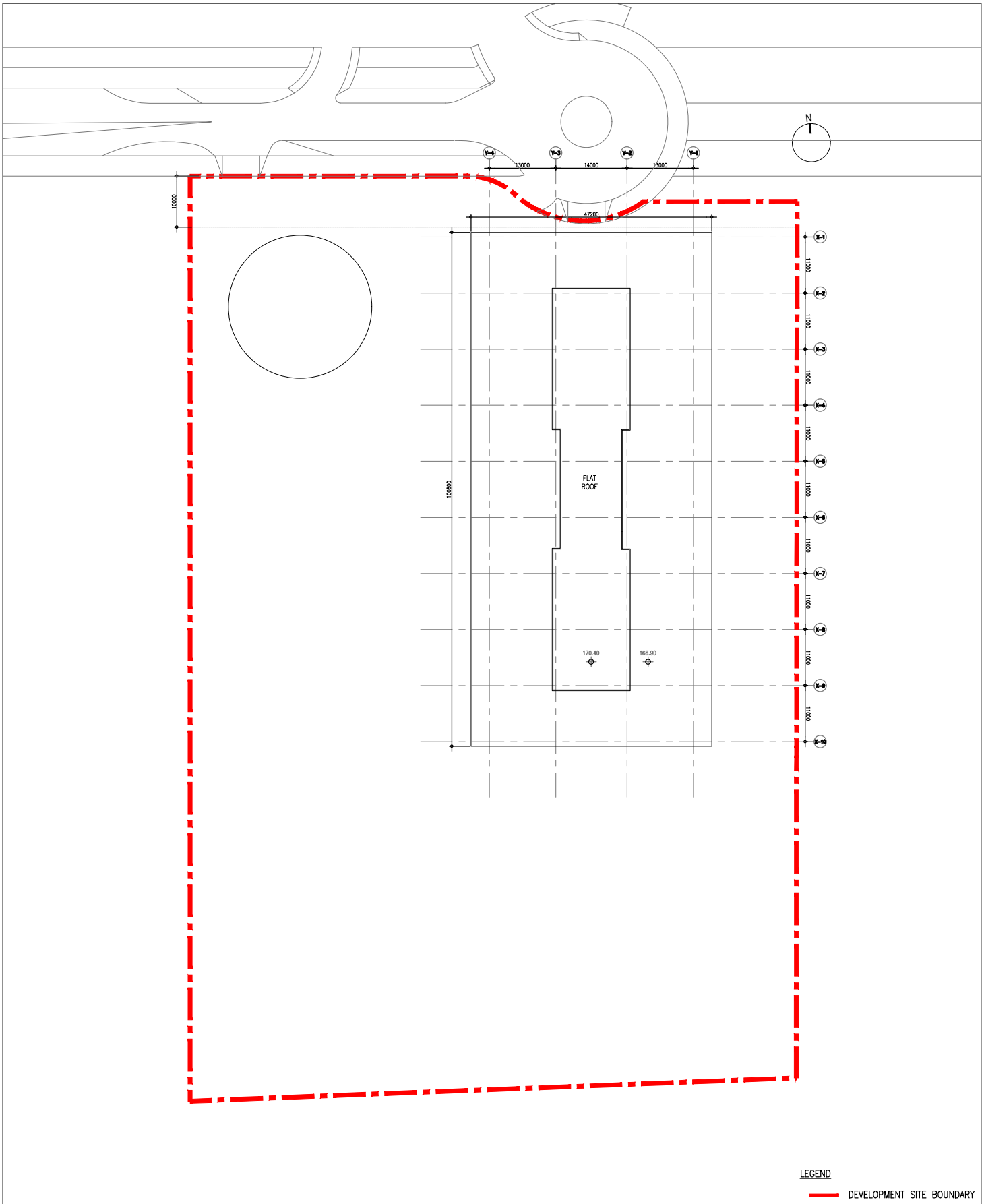
DEVELOPMENT OF KWU TUNG NORTH AREA 29, GIC SITE PLANNING PROPOSAL



UR/F PLAN

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DEVELOPMENT OF KWU TUNG NORTH AREA 29, GIC SITE PLANNING PROPOSAL

APPENDIX B
CALCULATIONS OF WATER DEMAND

Appendix B Calculations of Water Demand

DEVELOPMENT OF JOINT-USER COMPLEX AND JOINT-USER GENERAL OFFICE BUILDING AT AREA 29, KWU TUNG NORTH

Water Supply Impact Assessment

Estimation of Daily Water Demand for the Project Site

Type	Fresh Water Unit Demand (m^3/head/day) [1]	Flushing Water Unit Demand (m^3/head/day) [2]
Employee	0.04	0.07

Estimated Population for the Proposed Development

	GFA (m^2)	Occupancy Density (m2/person)	Estimated Population	Volume (m^3)
Proposed Development JUB (Office)	110222	25	4409	N/A
Proposed Development JUC (GIC)	22994	25	920	N/A
Proposed Development JUC (Restaurant)	1146.9	25	46	N/A
Proposed Development JUC (Shop)	286.7	25	12	N/A
Proposed Development JUC (Sport Centre)	16991.6	25	680	N/A
Proposed Swimming Pool (6-lane)	N/A	N/A	N/A	393.75
Proposed Swimming Pool (10-lane)	N/A	N/A	N/A	812.5

Design Assumption

Peak Factors of Distribution Mains as per Clause 19, WSD's DI No.1309

Fresh Water = 3

Flushing Water = 2

Future Water Demands of Joint-User Complex and Joint-User General Office Building at Area 29, Kwu Tung North

		Freshwater				Flushing Water			
	Population	Daily Unit Demand (m^3/head/day)	Daily Demand (m^3/day)	Peak Factor	Peak Flow (m^3/day)	Daily Unit Demand (m^3/head/day)	Daily Demand (m^3/day)	Peak Factor	Peak Flow (m^3/day)
Proposed Development JUB (Office)	4409	0.04	176.36	3	529.08	0.07	308.63	2	617.26
			176.4		**529.1**		**308.6**		**617.3**
Proposed Development JUC (GIC)	920	0.04	36.8	3	110.4	0.05	46	2	92
			36.8		**110.4**		**46.00**		**92**
Proposed Development JUC (Restaurant)	46	0.04	1.84	3	5.52	0.07	3.22	2	6.44
			1.8		**5.5**		**3.2**		**6.4**
Proposed Development JUC (Shop)	12	0.04	0.48	3	1.44	0.07	0.84	2	1.68
			0.5		**1.4**		**0.84**		**1.68**
Proposed Development JUC (Sport Centre)	680	0.04	27.2	3	81.6	0.07	47.6	2	95.2
			27.2		**81.6**		**47.60**		**95.2**

Sub-total Fresh water Demand (JUB + JUC) (m^3/day) = **242.7**

Sub-total Fresh water Demand (Swimming Pool) (m^3/day) = **241.3** **Remark: Assume the partial replacement of fresh water for the whole swimming pools 20% of water daily**

Total Fresh water Demand (m^3/day) = **483.9**

Total Fresh water Peak Flow (m^3/day) = **728.0**

Total Flushing water Demand (m^3/day) = **406.3**

Total Flushing water Peak Flow (m^3/day) = **812.6**

Remarks

[1] 0.04 m3/head/day based on WSIA of Agreement No. CE19/2019 (CE)

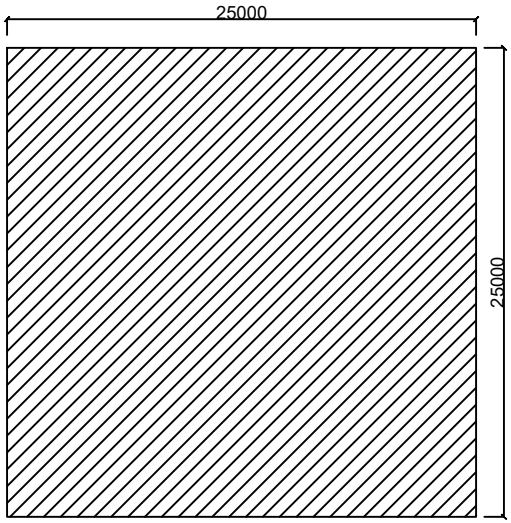
[2] Flushing Water Unit Demand: 0.07 m3/head/day based on WSIA of Agreement No. CE19/2019 (CE)

[3] The worker density is 25 m2 per worker as advised by Planning Department.

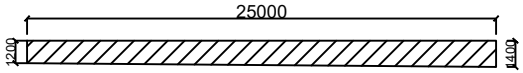
Swimming Pool Volume Calculation

10-LANE SWIMMING POOL

PLANE A



PLANE B



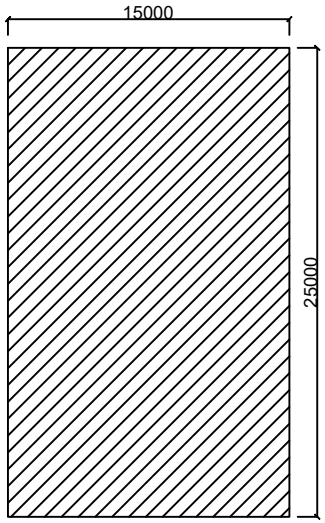
CALCULATION:

PLANE B = (1.200 +1.400) x 25.000/2
= 32.500 m^2

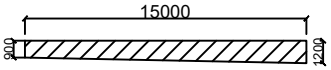
VOLUME OF SWIMMING POOL:
= 32.500 x 25.000
= 812.500 m^2

6-LANE SWIMMING POOL

PLANE A



PLANE B



CALCULATION:

PLANE B = (0.900 +1.200) x 15.000/2
= 15.750 m^2

VOLUME OF SWIMMING POOL:
= 15.750 x 25.000
= 393.750 m^2

APPENDIX C

PLAN FROM CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Project Management Initials: Designer: JLN Checked: YHH Approved: IHWL ISO A1 594mm x 841mm

CUT LINE 5-5
SEE DRAWING NO. 60335576/C1/C00/1458

828130 E
828200 E
828300 E
840900 N
840800 N
840700 N

CUT LINE 6-6
SEE DRAWING NO. 60335576/C1/C00/1455

CUT LINE 2-2
SEE DRAWING NO. 60335576/C1/C00/1453

Project Site

KWU TUNG

NOTES:

1. FOR NOTES AND LEGEND REFER TO DRAWING NO. 60335576/C1/C00/1450 & 1451.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60335576/C1/C00/1451 TO 1469.

Plot File by: LIANJ2 2019/6/19
PATH: p:\projects\60335576\drawing\contract\c1\1\000\C1_C00_1456.dgn

AECOM

PROJECT 項目

DEVELOPMENT OF KWU TUNG NORTH AND FANLING NORTH NEW DEVELOPMENT AREAS, PHASE 1

CONTRACT TITLE:

KWU TUNG NORTH NEW DEVELOPMENT AREA, PHASE 1: SITE FORMATION AND INFRASTRUCTURE WORKS

CLIENT 業主

土木工程拓展署
Civil Engineering and Development Department

CONSULTANT 工程顧問公司

AECOM Asia Company Ltd.
www.aecom.com

SUB-CONSULTANTS 分判工程顧問公司

ISSUE/REVISION 修訂

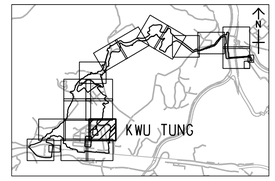
I/R 修訂	DATE 日期	DESCRIPTION 內容摘要	CHK. 複核
-	JUN-19	TENDER DRAWING	YHH

STATUS 階段

SCALE 比例
A1 1 : 500

DIMENSION UNIT 尺寸單位
METRES

KEY PLAN 索引圖 A1 1 : 75000



PROJECT NO. 項目編號
60335576

CONTRACT NO. 合約編號
ND/2019/01

SHEET TITLE 圖紙名稱
FRESH WATER MAINS LAYOUT

SHEET 6 OF 19

SHEET NUMBER 圖紙編號
60335576/C1/C00/1456

Project Management Initials: Designer: JLN Checked: YHH Approved: IHWL ISO A1 594mm x 841mm

NOTES:

1. FOR NOTES AND LEGEND REFER TO DRAWING NO. 60335576/C1/C00/1450 & 1491.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60335576/C1/C00/1491 TO 1509.

Plot File by: LIANJ2 2019/6/19
PATH: p:\projects\60335576\drawing\contract\c1\11000\C1_C00_1496.dgn

AECOM

PROJECT 項目

DEVELOPMENT OF KWU TUNG NORTH AND FANLING NORTH NEW DEVELOPMENT AREAS, PHASE 1

CONTRACT TITLE:

KWU TUNG NORTH NEW DEVELOPMENT AREA, PHASE 1: SITE FORMATION AND INFRASTRUCTURE WORKS

CLIENT 業主

土木工程拓展署
Civil Engineering and Development Department

CONSULTANT 工程顧問公司

AECOM Asia Company Ltd.
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SUB-CONSULTANTS 分判工程顧問公司

ISSUE/REVISION 修訂

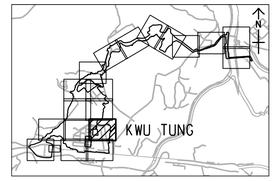
I/R 修訂	DATE 日期	DESCRIPTION 內容摘要	CHK. 複核
-	JUN-19	TENDER DRAWING	YHH

STATUS 階段

SCALE 比例
A1 1 : 500

DIMENSION UNIT 尺寸單位
METRES

KEY PLAN 索引圖 A1 1 : 40000



PROJECT NO. 項目編號
60335576

CONTRACT NO. 合約編號
ND/2019/01

SHEET TITLE 圖紙名稱
FLUSHING WATER MAINS LAYOUT

SHEET 6 OF 19

SHEET NUMBER 圖紙編號
60335576/C1/C00/1496

APPENDIX D

PLANS OF SERVICE RESERVOIRS SUPPLYING THE PROJECT SITE

LEGEND:

SITE BOUNDARY

SLOPE CUTTING

+92.25 FINISH LEVEL

829000 E

841900 N

842000 N

MAX.1:5 FALL

3500

7500

+90.50

+90.20

+88.60

+87.50

6000

+86.65

+86.85

OUTLET COMBINED CHAMBER

A

STAIRCASE

C.L.
RECORDER HOUSE

+92.25

KWU TUNG NORTH
FRESH WATER SERVICE
RESERVOIR

CAP. 34000.000m³
T.W.L. 92.770m A.P.D.
I.L. 85.000m A.P.D.

A

60000

77000

PENTHOUSE

SPACE RESEVED FOR
LOK MA CHAU LOOP
FRESHWATER SERVICE
RESERVOIR

MAX. 1:5 FALL

2nd BATT SCOTS GUARDS

1m CLEARANCE

MAX. 1:5 FALL

+92.00

+92.35

+92.50

INLET COMBINED CHAMBER

+92.30

+92.30

7500

3500

7500

+92.00

MAX. FALL 1:100

EXTENSION OF ACCESS ROAD
(UNDER SEPARATE DRAWING)

829100 E

829200 E

REV.	DATE	DESCRIPTION	DRAWN	PRE.	APP.
A	16/09/21	DETAIL AMENDED	HLH	YHW	SL

CLIENT

CEDD 土木工程拓展署 Civil Engineering and Development Department

CONSULTANT

AECOM

PROJECT

DEVELOPMENT OF
KWU TUNG NORTH AND
FANLING NORTH
NEW DEVELOPMENT
AREAS, PHASE 1

CONTRACT TITLE

KWU TUNG NORTH NEW
DEVELOPMENT AREA, PHASE 1:
SITE FORMATION AND
INFRASTRUCTURE WORKS

REMARK :

1. SUPERSEDE DRG NO. 60335576/C1/C00/1531

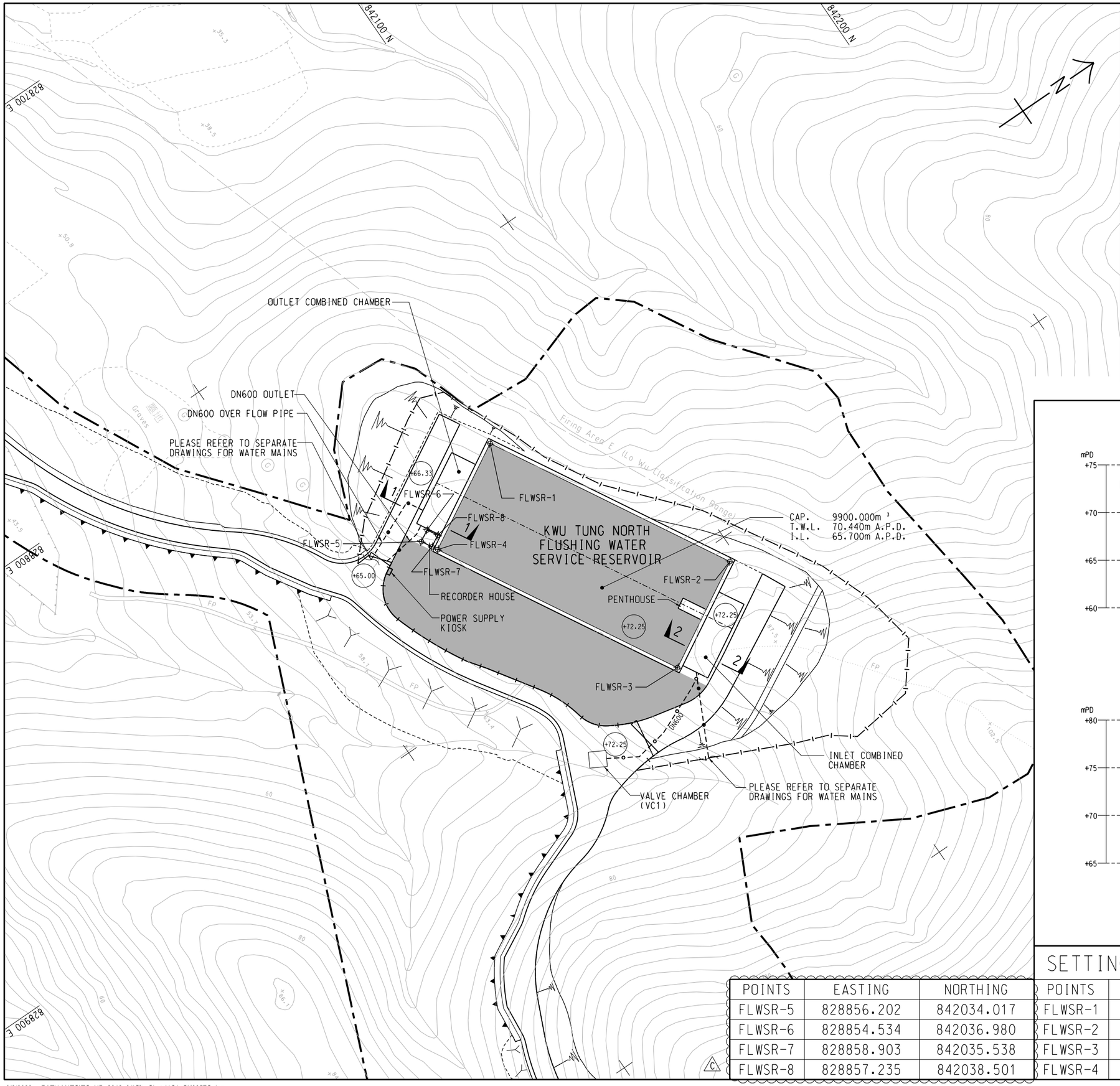
TITLE

KWU TUNG NORTH
FRESH WATER
SERVICE RESERVOIR -
SITE LAYOUT PLAN

PROJECT NO.	CONTRACT NO.
60335576	ND/2019/01
SCALE: 1:500 (A1)	DATE: 28-JUL-21
DRAWN: HLH	PREPARED: CL
APPROVED: SL	
SKETCH NO.: ND/2019/01/R10/130/0582	REV.: A

6/6/2023 PATH: Y:\TO\TO_ND_2019_01\Site Sketch\C1_SK0582A.dgn

Y:\TO\TO_ND_2019_01\Site Sketch\C1_SK0582A.dgn 6/6/2023 13:21:34

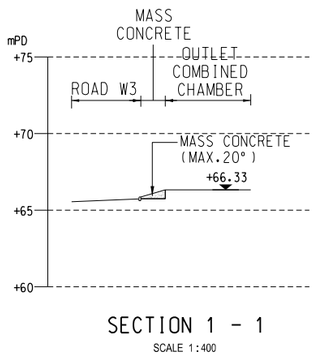


NOTES:

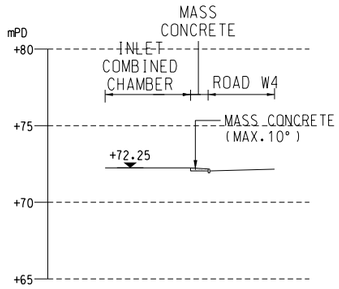
1. FOR GENERAL NOTES AND ABBREVIATIONS, REFER TO DRAWING NO. 60335576/C1/C00/1530.
2. FRESH AND FLUSHING WATER MAIN LAYOUT, REFER TO DRAWING NO. 60335576/C1/C00/1465 AND 1505.

LEGEND:

- SITE BOUNDARY
- FRESH WATER MAIN
- FLUSHING WATER MAINS
- BOUNDARY FENCE
- MAIN GATE
- RETAINING WALL
- SLOPE CUTTING
- SLOPE FILLING
- SURFACE TO BE HYDROSEED
- +65.00 FINISH LEVEL
- MASS CONCRETE



SECTION 1 - 1
SCALE 1:400



SECTION 2 - 2
SCALE 1:400

SETTING OUT TABLE:

POINTS	EASTING	NORTHING	POINTS	EASTING	NORTHING
FLWSR-5	828856.202	842034.017	FLWSR-1	828845.174	842063.384
FLWSR-6	828854.534	842036.980	FLWSR-2	828906.168	842097.732
FLWSR-7	828858.903	842035.538	FLWSR-3	828921.379	842070.720
FLWSR-8	828857.235	842038.501	FLWSR-4	828860.385	842036.373

REV.	DATE	DESCRIPTION	DRAWN	PRE.	APP.
C	09/08/22	SETTING OUT POINE ADDED	HLH	YHW	SL
B	06/06/22	SETTING OUT POINE ADDED	HLH	YHW	SL
A	19/07/21	SECTION ADDED	HLH	CL	SL

CLIENT

CEDD 土木工程拓展署 Civil Engineering and Development Department

CONSULTANT

AECOM

PROJECT

DEVELOPMENT OF KWU TUNG NORTH AND FANLING NORTH NEW DEVELOPMENT AREAS, PHASE 1

CONTRACT TITLE

KWU TUNG NORTH NEW DEVELOPMENT AREA, PHASE 1: SITE FORMATION AND INFRASTRUCTURE WORKS

REMARK:

1. SUPERSEDE DRG NO. 60335576/C1/C00/1550

TITLE

KWU TUNG NORTH FLUSHING WATER SERVICE RESERVOIR - SITE LAYOUT PLAN

PROJECT NO.	CONTRACT NO.
60335576	ND/2019/01
SCALE: 1:1000 (A3)	DATE: 23-MAR-20
DRAWN: KLC	PREPARED: TC / APPROVED: SL
SKETCH NO.: ND/2019/01/R10/130/0057	REV.: C

9/8/2022 PATH: Y:\TO\TO_ND_2019_01\Site Sketch\C1_SK0057C.dgn

APPENDIX E

HYDRAULIC ASSESSMENT OF PROPOSED WATER SUPPLY SYSTEM

Appendix E Hydraulic Assessment of the Proposed Water Supply System

Assuming 1 m/s flow of velocity of the water mains for Project Site

Hydraulic Review for Proposed 150mm Fresh Water Main		
Estimated Fresh Water Demand	483.93	m^3/day
	0.0056010417	m^3/s
Peak factor for distribution main	3	
Peak Flow rate	0.016803125	m^3/s
Size of proposed water main	180	mm
Internal Diameter	150	mm
Cross Section Area	0.0176715	m^2
Velocity of water main	1	m/s
Flow Rate of water main	0.0176715	m^3/s
Total Flow Rate of water main (2 Proposed 300mm Fresh Water Main)	0.035343	m^3/s
The percentage of watermain occupied by the Rezoning Area	48%	

Hydraulic Review for Proposed 150mm Flushing Water Main		
Estimated Fresh Water Demand	406.29	m^3/day
	0.0047024306	m^3/s
Peak factor for distribution main	2	
Peak Flow rate	0.009404861	m^3/s
Size of proposed water main	180	mm
Internal Diameter	150	mm
Cross Section Area	0.0176715	m^2
Velocity of water main	1	m/s
Flow Rate of water main	0.0176715	m^3/s
The percentage of watermain occupied by the Rezoning Area	53%	

Minimum Velocity at peak flow rate of each pipe	0.940286361	m/s
Compliance Check (>0.9 m/s)	Yes	

Minimum Velocity at peak flow rate of each pipe	0.910338452	m/s
Compliance Check (>0.9 m/s)	Yes	

Assuming 1.5 m/s flow velocity of the water mains for Project Site

Hydraulic Review for Proposed 150mm Fresh Water Main		
Estimated Fresh Water Demand	483.93	m^3/day
	0.0056010417	m^3/s
Peak factor for distribution main	3	
Peak Flow rate	0.016803125	m^3/s
Size of proposed water main	180	mm
Internal Diameter	150	mm
Cross Section Area	0.0176715	m^2
Velocity of water main	1.5	m/s
Flow Rate of water main	0.02650725	m^3/s
Total Flow Rate of water main (2 Proposed 300mm Fresh Water Main)	0.0530145	m^3/s
The percentage of watermain occupied by the Rezoning Area	32%	

Hydraulic Review for Proposed 150mm Flushing Water Main		
Estimated Fresh Water Demand	406.29	m^3/day
	0.0047024306	m^3/s
Peak factor for distribution main	2	
Peak Flow rate	0.009404861	m^3/s
Size of proposed water main	180	mm
Internal Diameter	150	mm
Cross Section Area	0.0176715	m^2
Velocity of water main	1.5	m/s
Flow Rate of water main	0.02650725	m^3/s
The percentage of watermain occupied by the Rezoning Area	35%	

Note:

[1] Peak factors for fresh and flushing water main are referred to Departmental Instruction No. 1309 from Water Supplies Department

[2] Desirable velocities for hydraulic cheacking is 1 m/s (minimum) and 1.5 m/s (maximum) based on flow velocity limit provided by WSD