DRAINAGE IMPACT ASSESSMENT & DRAINAGE PROPOSAL

PROPOSED TEMPORARY OPEN STORAGE OF CONSTRUCTION MATERIALS FOR A PERIOD OF 3 YEARS LOT 137(PART) IN DD128, HA TSUEN, YUEN LONG

APT ARCHITECTS LIMITED

Ref: 210E5/03_report_2309

PROPOSED TEMPORARY OPEN STORAGE OF CONSTRUCTION MATERIALS
LOT 137(PART) IN DD128, HA TSUEN, YUEN LONG
REVISED DRAINAGE IMPACT ASSESSMENT AND PROPOSAL

CONTENTS

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REVISED DRAINAGE IMPACT ASSESSMENT AND PROPOSAL

1.0 INTRODUCTION

1.1 This report is a drainage proposal for the Following Sites in Ha Tsuen, Yuen Long:

Site Area 510m2 (about) Lot 137 (part) in DD128

1.2 The proposed use of the site is **Temporary Open Storage of Construction Materials for a Period of 3 Years.**

2.0 THE DRAINAGE PROPOSAL

2.1 The **Condition** of the **Application Site** is as follows:

Main access of the Site is through local village road from **Fung Kong Tsuen Road**.

The Application SITE is paved with concrete and formed levelled with fall towards North-West. Gradient of Site is greater than 1:200.

The Site is adjacent to two Sites with the following Town Planning Application Ref:

A/YL-HTF/1119, **Catchment CA**, which is adjacent to APPLICATION SITE, at downstream, Area about 725m2
A/YL-HTF/1134, **Catchement CA1+CA2**, which is at west side of APPLICATION SITE

The Site is formed higher than adjacent access road (to the east of SITE / CA), therefore runoff of CA3 will not affect Application SITE and the downstream site CA.

Part of Runoff of Catchment CA4 will affect the SITE, will be handled by D11.

Revised DRAINAGE PROPOSAL plan no. D-01 (J1) is enclosed. Please refer to Response to Comments below.

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REVISED DRAINAGE IMPACT ASSESSMENT AND PROPOSAL

2.2 **DRAINAGE SCHEDULE** of the **Application Site and Downstream Drains** :

No.	Size in mm, fall	Remarks
G1	300x300 with Metal Grating, min 1:100	at entrance of SITE; higher than surrounding lands and road; discharge only to D13, via CP12 at corner
D11	400x400 min 1:70	at upper part of Site, will collect 10% of runoff of CA4 (part of CA3) *remaining CA4 discharge towards west/north west, to be collected by lower channels of other sites, D3,D3A,D6,D7,D9
D12	400x400 min 1:30	take 30% SITE RUNOFF
D13	400x400 min 1:50	take 70% SITE RUNOFF;
CP13	Catchpit min 400D, Last Manhole of SITE	TAKE 100% SITE RUNOFF, discharge to D22

The whole Site is levelled higher than access Road to the east, therefore the Site peripheral U-channel will not be affected by adjacent lands / access road;
Only minor runoff of Catchment CA4 (10%) will be handled by D11.

Accordingly all discharge from SITE is handled by D12, D13 and collected to CP13, then discharge to drain channel D22 (shared with neighbour Site).

As Application Site is small, D13 discharing to CP13, and this catchpit is shared by lower Site CA (of A/YL/HTF/1119). In case site level of CP13 serving both Site has other factors, CP13 will split into 2, one for Application Site, and one for lower Site CA.

2.3 **DOWNSTREAM DRAINAGE FACILITIES** to be used by Application Site:

2.3a **CA (drain channels handle 100% runoff from APPLICATION SITE)**

Peripheral U-Channel of minimum 1:200 fall of size 400mm x 400mm is proposed for the entire Site CA.

D13 is shared by two sites (application SITE + CA); while D13 is of upstream of CA, will handle about 10% of runoff of CA.

CA is also formed higher than road of east side, and is of about 1.2m lower than Application Site.

D22 will handle all from Site A, and 50% runoff of Site B.

2.3b **Application Site** and **CA** runoff will be collected in CP15 and discharge to CP2 via D25 (400X400), and **WILL USE facilities of Site C** (CA1+CA2).

All runoff will be discharge ultimately to drainage at public areas via **D6, D7**, and **D9** finally to existing **open village channel DD**, where it is discharged via existing underground pipe to north-west across the road to downstream public drainage network.

2.4 **Hydraulic Calculation** (attached) shows that the capacity of all downstream drains D6, D7, are adequate for the runoff of **Site** + Site CA + Site C (CA1+CA2), and has also checked neighbouring capacity of CA3, CA4, and CA5.

3.0 RESPONSE TO COMMENTS (i-viii to corresponds to DSD's comments of 28/07/2023)

i. **Drawing D-01 (rev J1)** – Proposed U Channels D13 and D13A will separately serve **Application Site** and **lower Site CA** (A/YL-HTF-1119) ; and will be collected at catchpit CP13 (shared by both sites).

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ii. Most runoff from CA4 is to be handled by D11, D3, D3A, D6, D7, D8 and D9; the percentage is for arithmetical / geometric share (refer D-02 Flow Pattern Plan) of runoff to these channels, and each of these channels are having spare capacity to handle spare percentage runoff by calculation.

iii Please refer to Revised Hydraulic Calculation for each channel.

iv. The Application Site is formed higher than the road serving the Site, and Site is designed to fall away from G1; accordingly G1, will only have minimal runoff to handle.

v. discrepancy between plan and calculation were updated;

vi. DD - photo has demonstrated it's presence; please also note that the CP10 has been updated on Plan to tally with existing site condition (refer to photo below);

vii. refer photo below, and path from D6 to D9, and CP10 – DD, all to be constructed;

viii. CP10 is the last manhole before discharging to DD (the undergound pipe).

photo of route of D6-D9, to be collected at CP10, discharging to DD

DD to discharge across the Road to Existing Village Drain Network

		Location of CP10, discharge point
		Outlet of DD at Opposite of Road

3.1 CONSTRUCTION & MAINTENANCE OF PROPOSED DRAINAGE

a. The applicant of the **Application SITE A (Application Site),** related neighbour Sites (CA, CA1+CA2) will all undertake to construct and to be responsible for the maintenance works for the proposed drainage system being constructed (D6 / D7 and related Catchpits) at their own costs.

b. Lowest common Drainage D7 (lower portion) and D9, is to be constructed by Applicant of other Site (ref: A/YL-HTF/1111). The DIA of this Site (plan attached per Appendix) was approved by PlanD/DSD in 2022. We also enclose consent letter per Appendix between Site at west (CA1+CA2) and Site CA5A for arrangement of construction of the said lowest common drain (D7/D9).

c. Inspection, cleansing and desilting will be carried out regularly and before / after the rainy season each year to ensure the drainage facilities functions efficiently. Since the system is designed to operate under gravity, the maintenance will be straightforward.

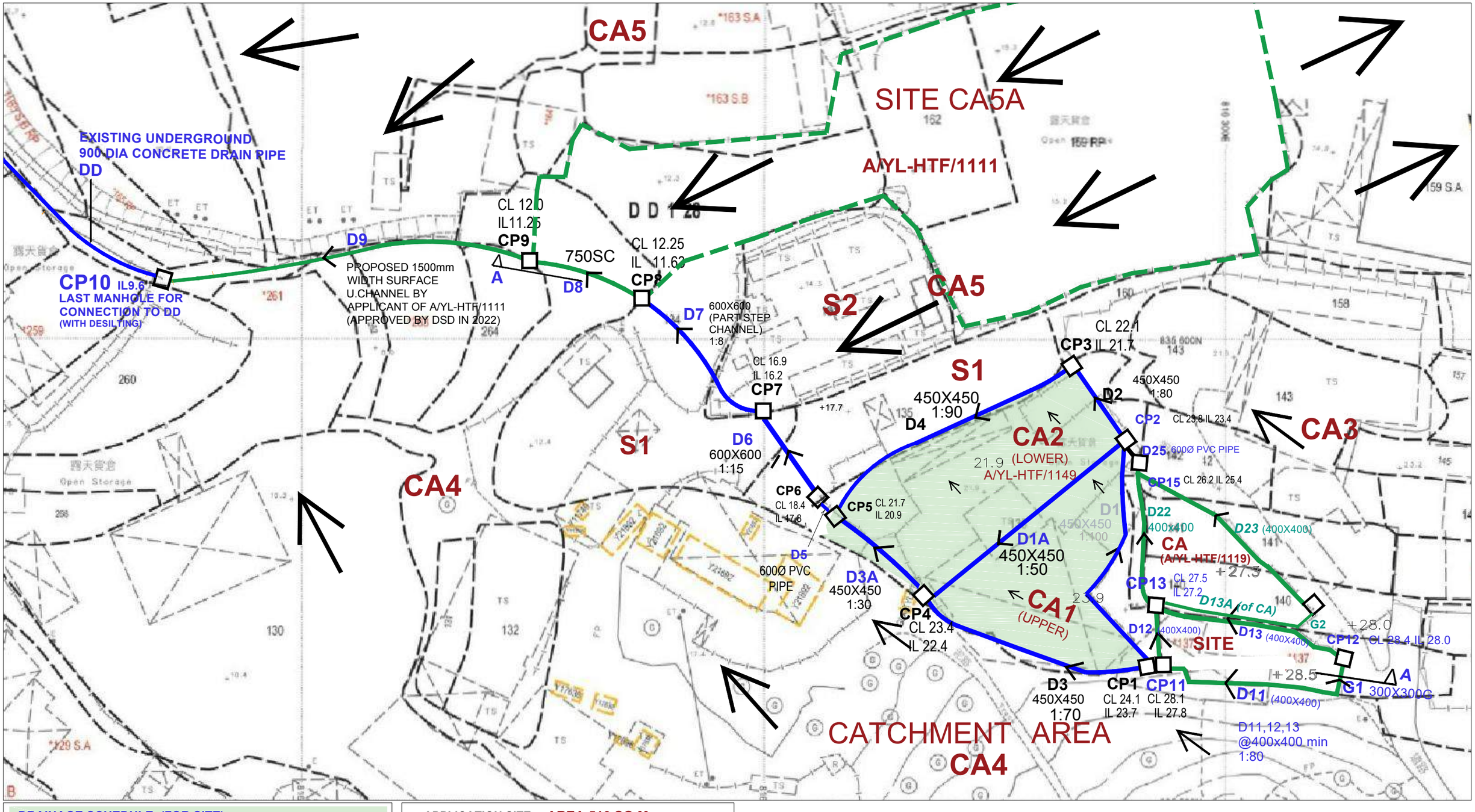
4.0 CONCLUSION

4.1 This drainage impact assessment is primarily based on site condition and existing / newly constructed drainage system at downstream of the said SITE(s). The stormwater drainage system is in a simple manner and is of adequate spare capacity without jeopardizing the neighboring areas and environment.

The development will not obstruct overland flow nor adversely affect existing village drains of the adjacent areas. And that the Site has not affect the natural fall manner of the peripheral areas, and that capacity of the Drainage system has also take into consideration the possible discharge from the neighbour.

All assumptions made were on conservative side of uniform flow in size and gradient.

4.2 From this assessment, it can be concluded that the proposed drainage will have no adverse impacts to the site and it has also maintain a good balance to the possible discharge from surrounding sites and other upstream areas.



DRAINAGE SCHEDULE (FOR SITE)

D11, D12, D13	400X400 CHANNEL
G1	300X300 ENTRANCE U CHANNEL WITH STEEL GRATING

#Note: D11,D12,D13 and G1 of APPLICATION SITE are proposed new drain channels

G2	300X300 ENTRANCE U CHANNEL WITH STEEL GRATING
D13A, D22, D23, D25	400X400 OPEN CHANNEL OF CA
D1, D3, D3A, D4,D1A	450X450 OPEN CHANNEL
D2	450X450 ENTRANCE U CHANNEL WITH STEEL GRATING
D5, D25	600Ø PVC VERTICAL PIPE CONNECTS TO LOWER LEVEL
D6, D7	600X600 OPEN CHANNEL (WITH GRATING)
D8	MIN 750 SURFACE CHANNEL
D9	MIN 1500 X 600 SURACE CHANNEL (APPROVED BY DSD IN 2022)

APPLICATION SITE	AREA 510 SQ.M.
CA	SITE AREA 725 SQ.M.
CA1+CA2	SITE AREA 2,555 SQ.M.
CA3	AREA 7,500 SQ.M.
CA4	AREA 34,500 SQ.M.
CA5	AREA 15,000 SQ.M.
(INCLUDES CA5A, S1, S2)	

DRAIN CHANNELS D1, D1A, D2, D3, D4, D5, AND CATCHPIT CP1, CP2, CP3

ARE PROPOSED DRAINAGE FACILITIES TO BE CONSTRUCTED BY APPLICANT

DRAINAGE LAYOUT PLAN

NO. D-01 (J1)

SCALE 1:800

DATE: 2023/09/14

N

APT ARCHITECTS LTD

REF:210E5-1118

CATCHMENT AREA

CA5
15,000m²

CA3
7500m²

CA
SITE

CA4
34,000 m²

CATCHMENT AREA

CA4

CA2

CA1
(UPPER)

S1

S2

S3

CP8

CP10

D9

D8

D7
600X600

D6
600X600
1:15

D5
600Ø PVC
PIPE

D4
450X450
1:90

D3
450X450
1:70

D3A
450X450
1:30

D2
450X450
1:80

D1
450X450
1:100

D1A
450X450
1:50

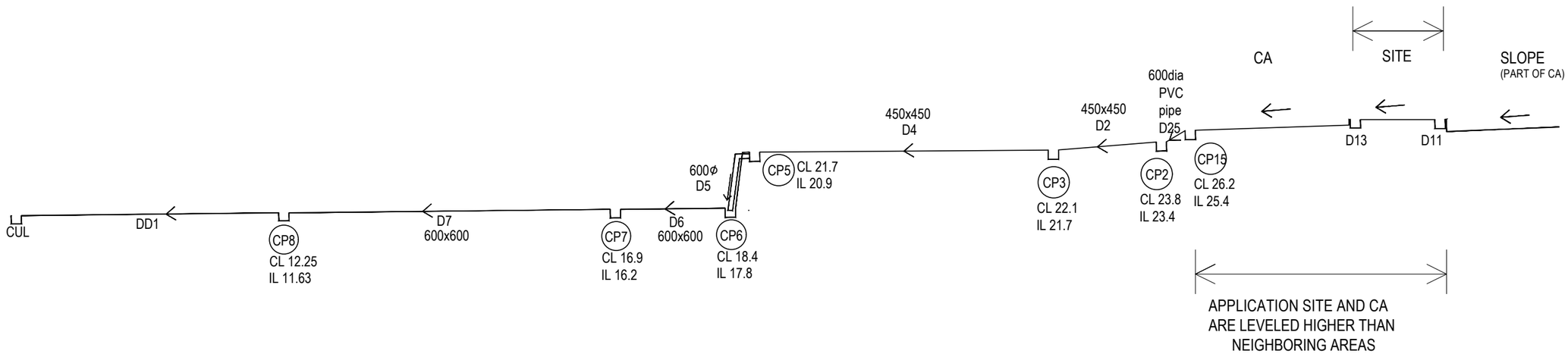
CP1 CL 24.1 IL 23.7
CP2 IL 23.4
CP3 IL 21.1
CP4 CL 23.4 IL 22.4
CP5 CL 21.7 IL 20.9
CP6 CL 19.2 IL 18.4
CP7 CL 17.3 IL 16.5
CP14 CL 27.8 IL 27.6
CP15 CL 26.2 IL 25.4
CL 22.1
CL 23.8
CL 27.5 IL 27.2
CL 28.4 IL 28.0
CL 28.1 IL 27.8

D22
D23
D13
D12
D11

G2 300X300G
G1 300X300G

21.9 (LOWER)
23.9

D-02 A
DRAINAGE PLAN
FLOW PATTERN OF
ADJACENT LANDS
1:1000



SCHEMATIC SECTION
D-03(B)

NTS

DATE: 2023/09/13

Runoff Coefficient		*Manning Coefficient*	
crush stone and asphalt	*0.7*	*Conc/Cement*	*0.013*
grassland	*0.25*	*Steel, PVC*	*0.011*
concrete	*1*	*dredged*	*0.03*

DRAINAGE PROPOSAL - HYDRAULIC CALCULATION
LOT 137 (PART) OF DD128, HA TSUEN, YUEN LONG (v23.09)

Catchment Area	CA1 (SITE at west)	CA2 SITE at west	APPLICATION SITE	CA (downstream site)	CA3	CA4				CA5
Ceiling / Paving Material	Concrete paving	Concrete paving	Concrete paving	Concrete paving	Partly paved, Grassland, Crush stone	Partly paved/Crush Stoe				Partly paved/Crush Stoe
C = Runoff Coefficient	1	1	1	1	0.75	0.75				0.75
Area (m2)	1280	1820	510	725	7500	34000				15000
A = Area (km2)	0.00128	0.00182	0.00051	0.000725	0.0075	0.034				0.015
L = site length (m)	45	70	45	50	30	300				180
Top Level	24.1	23.8	28.6	27.9	33	33				22
Low Level	23.4	21.7	27.5	26.2	21.0	10.8				10.8
H = Average slope (m per 100m)	1.56	3.00	2.44	3.40	160.00	7.40				6.22
to = Time of Conc (min.)	11.599	15.275	11.618	11.667	2.565	40.780				27.491
i (mm/h)	215.540	197.413	215.432	215.154	307.780	138.896				160.903
Qp Peak Run off (m3/s)	**0.0767**	**0.0999**	**0.0305**	**0.0434**	**0.4813**	**0.9846**				**0.5032**
Note: other runoff (m3/s)	to add 10% of CA3 **0.048**	to add 20% of CA3 **0.096**	**0.031**	**0.043**						

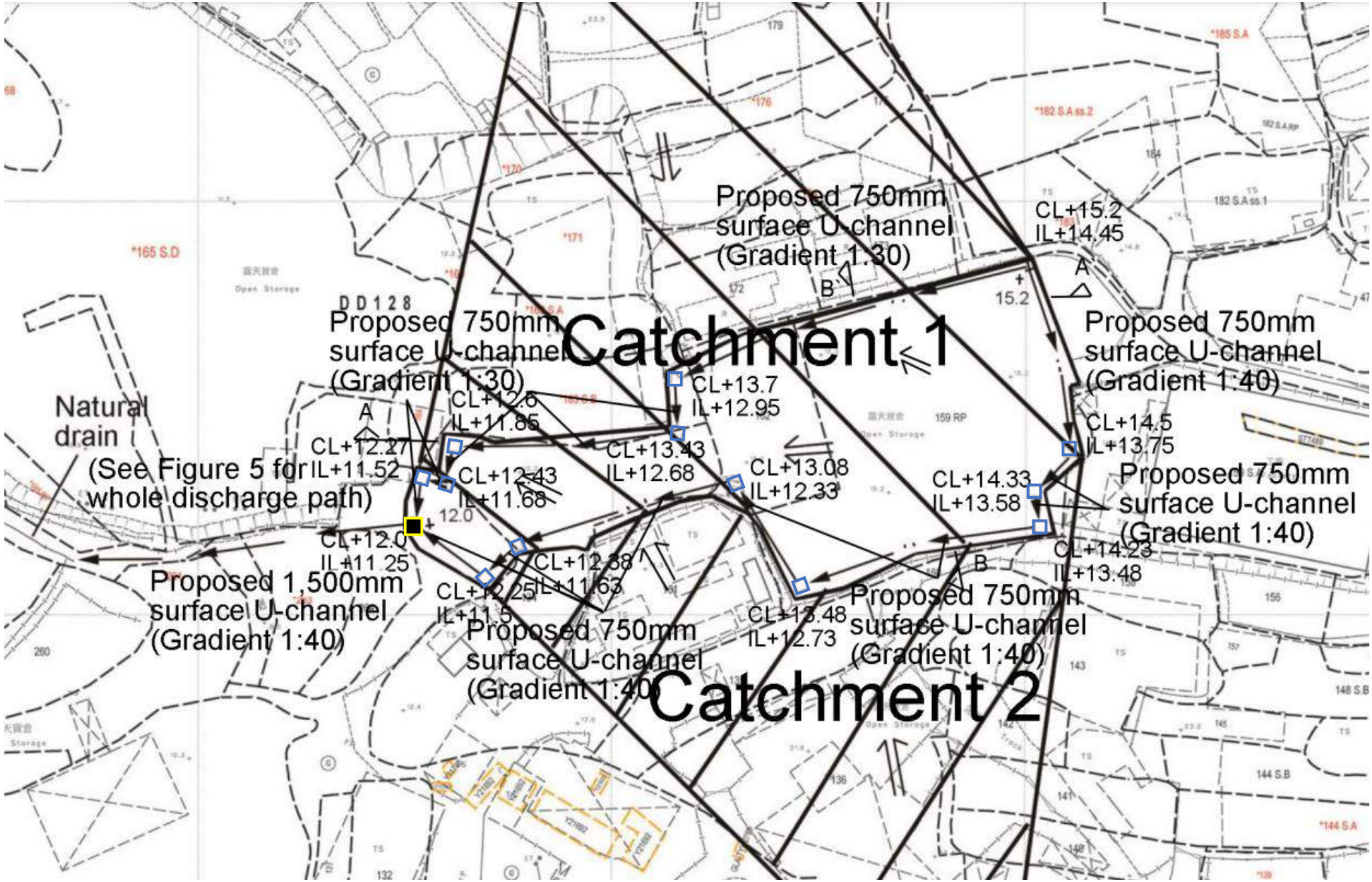
APPLICATION SITE

	D2 (entrance)	D1	D1A	D3	D3A	D6	D7	D8	D9	DD		D5	D11	D12	D13	D22	D23	D25
Shape	Rectangular U-channel	Rect. U-channel	Rect. U-channel	Rect. U-channel	Rect. U-channel	Rect. U-channel	Rect. U-channel	Rect. U-channel	Rect. U-channel	CIRCULAR		CIRCULAR	Rect. U-channel	Rect. U-channel	Rect. U-channel	Rect. U-channel	Rect. U-channel	CIRCULAR
Material	cement	cement	cement	cement	cement	cement	cement			CONCRETE		PVC	cement	cement	cement	cement	cement	PVC
Mann Coeff	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013		0.011	0.013	0.013	0.013	0.013	0.013	0.011
width	0.45	0.45	0.45	0.45	0.45	0.60	0.60	0.75	1.50	0.90	diameter	0.60	0.40	0.40	0.40	0.40	0.40	0.60
depth	0.45	0.45	0.45	0.45	0.45	0.60	0.60	0.75	0.70				0.40	0.40	0.40	0.40		
	(u-channel)		(u-channel)	(u-channel)	(u-channel)	(u-channel)	(u-channel)	(u-channel)	(u-channel)	CONCRETE U/G PIPE		PVC PIPE	(u-channel)	(u-channel)	(u-channel)	(u-channel)	(u-channel)	PVC PIPE
Length	24.0	50.0	60.0	38.0	38.0	30.0	35.0	25.0	90.0	125.0	Length	1.0	40.0	14.0	40.0	30.0	50.0	2.0
Top Level (start)	22.00	23.70	23.40	23.70	22.40	17.80	16.20	11.63	11.25	9.60	Top Level (start)	20.90	28.40	27.80	28.00	27.20	27.50	25.40
Low Level (end)	21.70	23.40	22.40	22.40	20.90	16.20	11.63	11.25	9.60	6.80	Low Level (end)	18.40	27.80	27.20	27.20	25.40	25.40	23.80
Invert Level Difference	0.30	0.30	1.00	1.30	1.50	1.60	4.57	0.38	1.65	2.80	Sf, Slope =	2.50	0.60	0.60	0.80	1.80	2.10	0.80
Sf, Slope =	0.01250	0.00600	0.01667	0.03421	0.03947	0.05333	0.13057	0.01520	0.01833	0.02240	Slope (1 to ?)		0.01500	0.04286	0.02000	0.06000	0.04200	
Slope (1 to ?)	80	167	60	35	35	19	8	66	55	45		vertical pipe	67	23	50	17	24	vertical pipe
A, Area = u channel by CAD	0.20	0.20	0.20	0.20	0.20	0.36	0.36	0.56	1.05	0.64	A, Area =	0.28	0.16	0.16	0.16	0.16	0.16	0.28
P, perimeter = u channel	1.35	1.35	1.35	1.35	1.35	1.80	1.80	2.25	3.70	0.26	HMD, Hydraulic Mean Depth	0.17	1.20	1.20	1.20	1.20	1.20	0.17
R = A/P =	0.15000	0.15000	0.15000	0.15000	0.15000	0.20000	0.20000	0.25000	0.28378		R = A/P =		0.13333	0.13333	0.13333	0.13333	0.13333	
V, Velocity = R1/6/ (n((RSf)1/2))	2.428	1.682	2.804	4.017	4.315	6.075	9.506	3.764	4.498	52.690	V, velocity	44.903	2.459	4.156	2.839	4.918	4.114	25.401
capacity =AV (m3/s)	0.492	0.341	0.568	0.813	0.874	2.187	3.422	2.117	4.723	33.520	capacity =AV (m3/s)	**12.696**	0.393	0.665	0.454	0.787	0.658	**7.182**
			(for D3, D5 similar)															
	MAX.25% of CA3 + 20% of CA2 (lower site)	MAX 25% of CA3+ 20% of CA1	take 50% CA1, **ALL OF APPLICATION SITE + SITE CA** & 10% of CA4	take 50% CA1 , & TOTAL 20% of CA4)	take all D1A, D3+40%CA2 & extra10% of CA4	take all of CA1+CA2 & S1 + 50% of CA4(upper)	take 60% CA3 (incl.Site A + Site B) +50%CA4 +70%CA5	take 60% CA3 (incl.Site A + Site B) +60%CA4 +80%CA5	take 60% CA3 (incl.Site A + Site B) +70%CA4 +90%CA5	CAPACITY OF D9 = 1.4309, compare with capcity of DD= 33.5200		take all of CA1+CA2, and 40% CA3 + 40% CA4	TAKE 10% OF CA4 RUNOFF	TAKE 30% OF SITE RUNOFF +runoff of D11	TAKE 70% OF SITE RUNOFF	TAKE 50% CA RUNOFF , all of SITE A incl 20% of CA4	TAKE 50% CA RUNOFF	TAKE ALL SITE A+ SITE B RUNOFF incl 10% of CA4
TOTAL RUNOFF TO HANDLE	0.1403	0.1357	0.3134	0.2353	0.6871	0.8438	1.1333	1.2821	1.4309	1.4309		0.7148	0.0985	0.1076	0.0214	0.1507	0.0217	0.1724
	<0.492 OK	<0.249 OK	<0.568 OK	<0.813 OK	<0.874 OK	<2.187 OK	<3.422 OK	<2.117 OK	<4.723	<33.52		<12.696 OK	<0.393 OK	<0.665 OK	<0.454 OK	<0.787 OK	<0.658 OK	<7.182 OK

D9 RUNOFF OF ALL SURROUNDING LAND ONLY OCCUPIES MINIMAL CAPACITY OF DD

COMMENTS FROM CALCULATION

1. **APPLICATION SITE (THIS APPLICATION)**, 400X400MM IS ADEQUATE TO HANDLE SITE RUNOFF; SITE IS LEVELLED HIGHER THAN ADJACENT ROAD, AND 20% RUNOFF FROM UPSTREAM (CA4)
2A. **NEIGHBOUR (LOWER) SITE CA**, D22 400X400MM IS ADEQUATE TO HANDLE RUNOFF FROM APPLICATION SITE , and 10% OF CA4
2B. **NEIBHBOUR SITE (CA1+CA2), D2, D4** IS ADEQUATE TO HANDLE RUNOFF FROM BOTH APPLICATION SITE, AND SITE CA
3. CATCHMENT CA4 INCLUDES ALL DOWNSTREAM FACILITIES FOR APPLICATION SITE AND SITE CA, **D7, D8, D9 CAN HANDLE ACCUMULATED CAPACITY OF UP TO 60% RUNOFF OF CA3, 70% OF CA4 AND 90% FROM CA5**
4. CAPACITY OF EXISTING PUBLIC U/G CHANNEL DD OF 0.9M DIAMETER, IS **ADEQUATE TO HANDLE ACCUMULATED RUNOFF OF D9**


Catchment 1
Catchment 2
Proposed 750mm surface U-channel (Gradient 1:30)
Proposed 750mm surface U-channel (Gradient 1:30)
Proposed 750mm surface U-channel (Gradient 1:40)
Proposed 750mm surface U-channel (Gradient 1:40)
Proposed 750mm surface U-channel (Gradient 1:40)
Proposed 750mm surface U-channel (Gradient 1:40)
Proposed 1,500mm surface U-channel (Gradient 1:40)
Natural drain
(See Figure 5 for whole discharge path)
CL+15.2
IL+14.45
CL+13.7
IL+12.95
CL+12.6
IL+11.85
CL+12.27
IL+11.52
CL+13.43
IL+12.68
CL+12.43
IL+11.68
CL+13.08
IL+12.33
CL+14.5
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CL+14.33
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CL+14.23
IL+13.48
CL+12.0
IL+11.25
CL+12.38
IL+11.63
CL+12.25
IL+11.5
CL+13.48
IL+12.73
A
B
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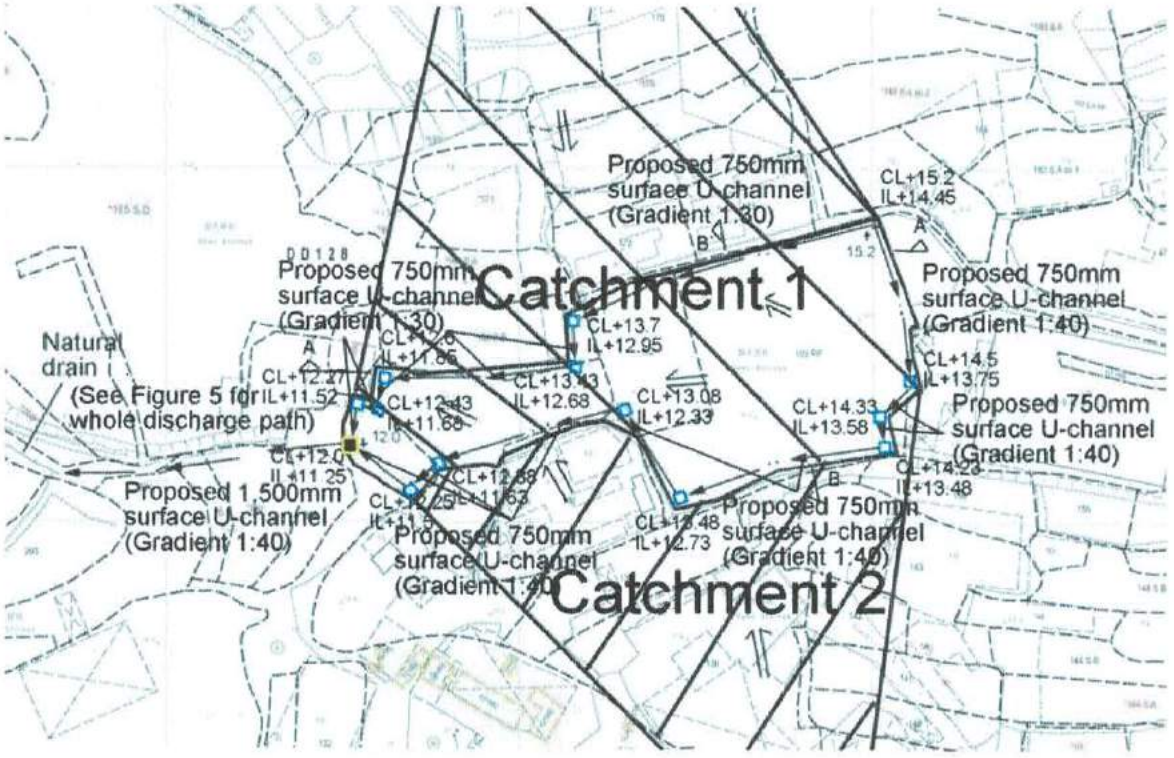
DD128

敬啟者

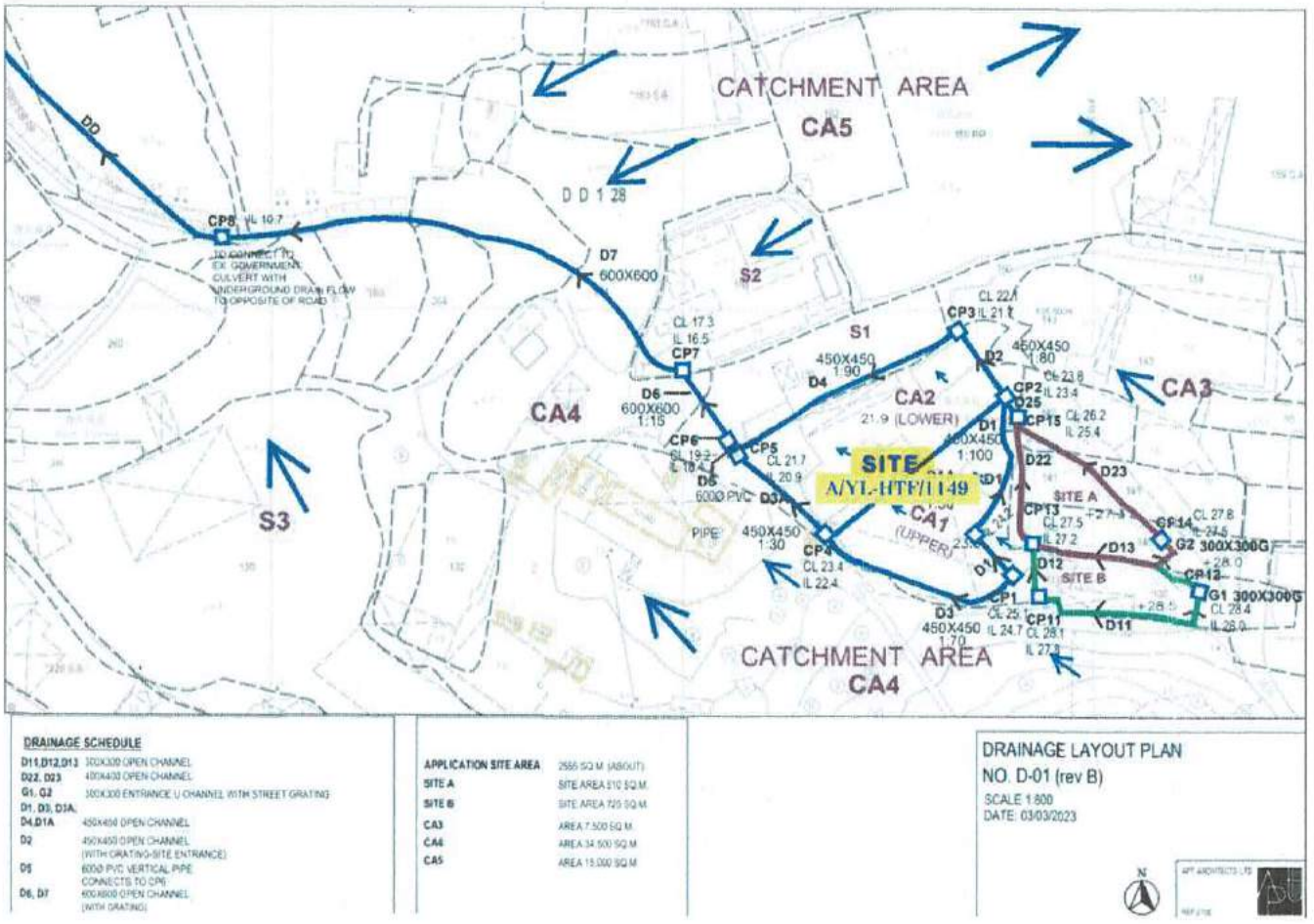
鍾柏祥先生為規劃申請編號：A/YL-HTF/1111的申請者，申請地點為新界元朗厦村丈量約份第128約地段第134號(部分)、第159號餘段(部分)、第161號(部分)、第162號(部分)、第163號B分段(部分)及第173號(部分)及毗連政府土地，用途作為期三年的臨時露天存放五金。

卓滙香港發展有限公司為規劃申請編號：A/YL-HTF/1149的申請者，申請地點為新界元朗厦村丈量約份第 128 約地段第136 號(部分)、第141號(部分)及第142號(部分)和毗連政府土地，用途作為期三年的臨時露天存放五金廢料及物流中心連附屬辦公室。

附圖一，為規劃申請：A/YL-HTF/1111的排水渠走向，於2022年獲渠務署接納。其排水走向有部分與A/YL-HTF/1149的排水渠走向 (即附圖二) 相同，出現重疊的情況。鍾先生及卓滙香港發展有限公司經商議後，鍾先生會先落實排水渠，有關部分重疊的排水渠亦會由鍾先生落實。日後，對於部分重疊的排水渠，卓滙香港發展有限公司願意使用鍾先生即A/YL-HTF/1111所擬議並落實的排水渠。鍾先生亦歡迎鄰近的場地經營者使用部分重疊的排水渠，包括A/YL-HTF/1149的申請人。



(附圖一：A/YL-HTF/1111的排水渠走向)



(附圖二：A/YL-HTF/1149的排水渠走向)

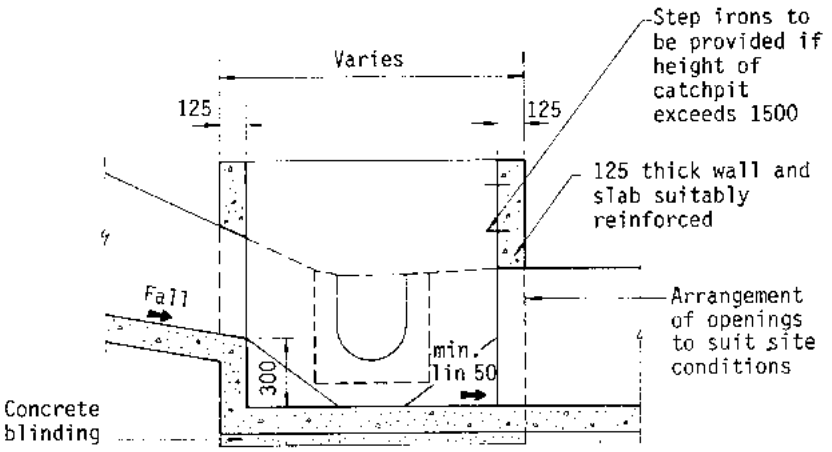
此致

城規會 / 規劃署 / 渠務署

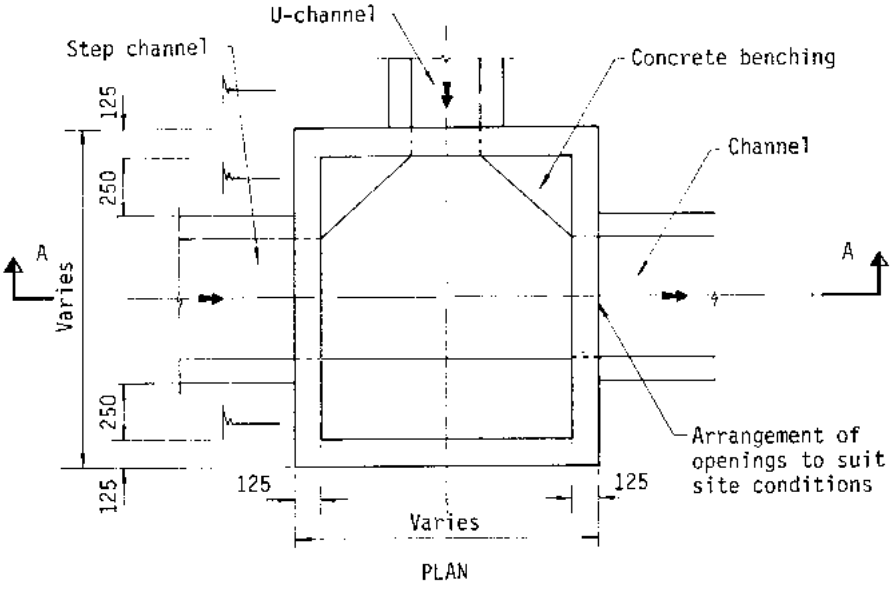
鍾柏祥先生

卓滙香港發展有限公司

2023 年 04 月 30 日

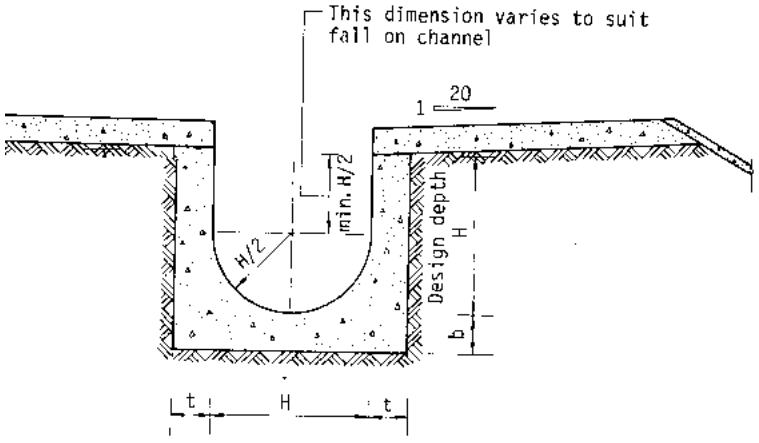


SECTION A-A



PLAN

TYPICAL DETAILS OF CATCHPIT



TYPICAL DETAILS OF U CHANNEL