From: [redacted]
Sent: Wednesday, August 6, 2025 11:10 AM
To: [redacted]
Subject: A/YL-PH/1063

致梁小姐

1.有關構築物。會於通過規劃後會向地政署申請 stw/stt。

2.不會對周邊樹木進行破壞，會保留所有樹木。

3.因為電力申請有難度，所以該地未能申請電車充電的問題

4.本場地停泊有牌私家車，不會在場地進行任何修改車輛。

5.附上渠務報告。

Best regards
sunny

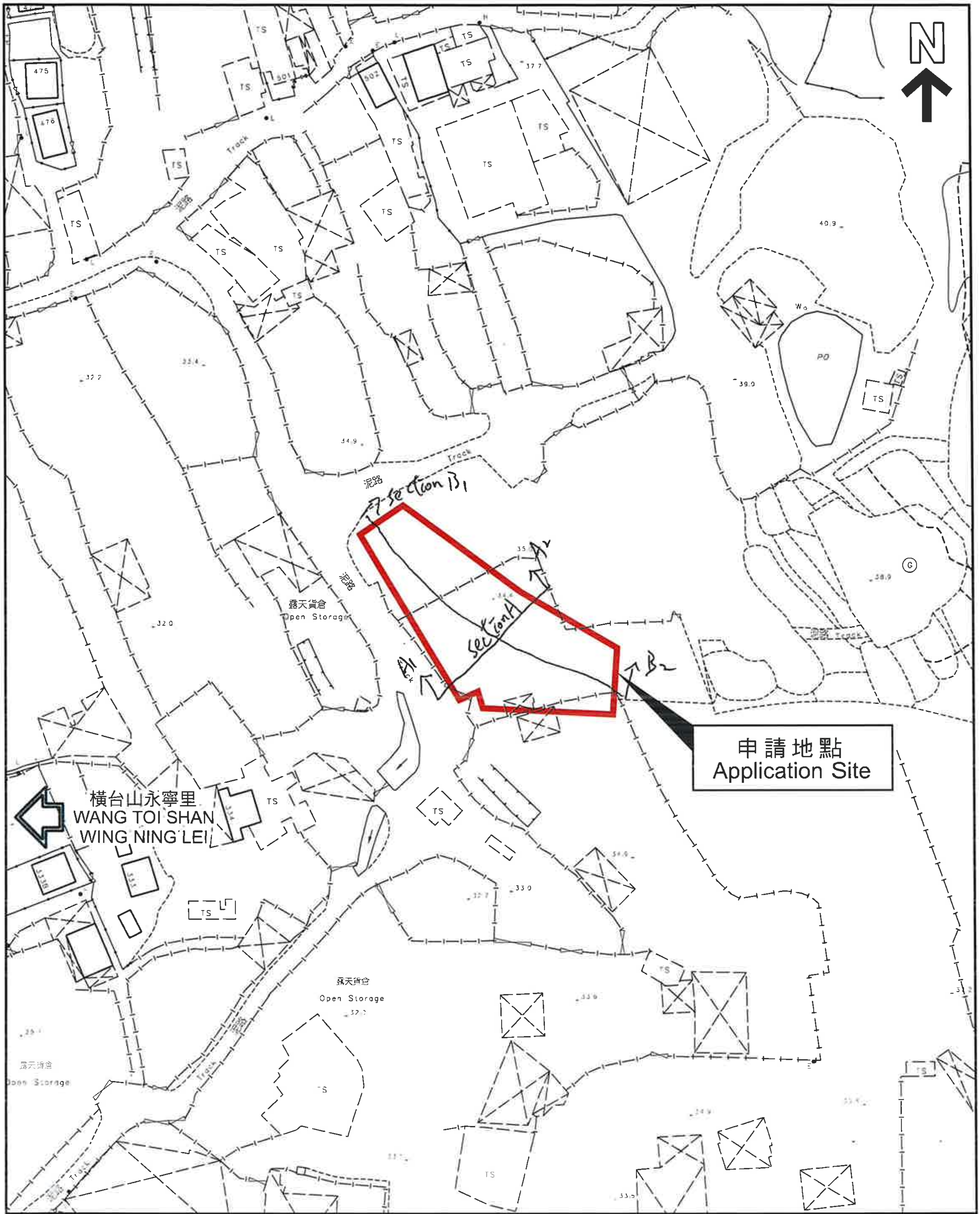
DRAINAGE PROPOSAL
(STORMWATER)
AT

Lots 2813 (Part), 2823 RP (Part), 2825 (Part) and 2826 (Part) in D.D. 111 and Adjoining Government Land, Pat Heung, Yuen Long, New Territories

Date : Aug 2025

Revision : A

CONTENT



本摘要圖於2025年4月22日擬備
所根據的資料為測量圖編號
6-NE-9D 及 14B
EXTRACT PLAN PREPARED ON 22.4.2025
BASED ON SURVEY SHEETS No.
6-NE-9D & 14B

(a)

平面圖 SITE PLAN

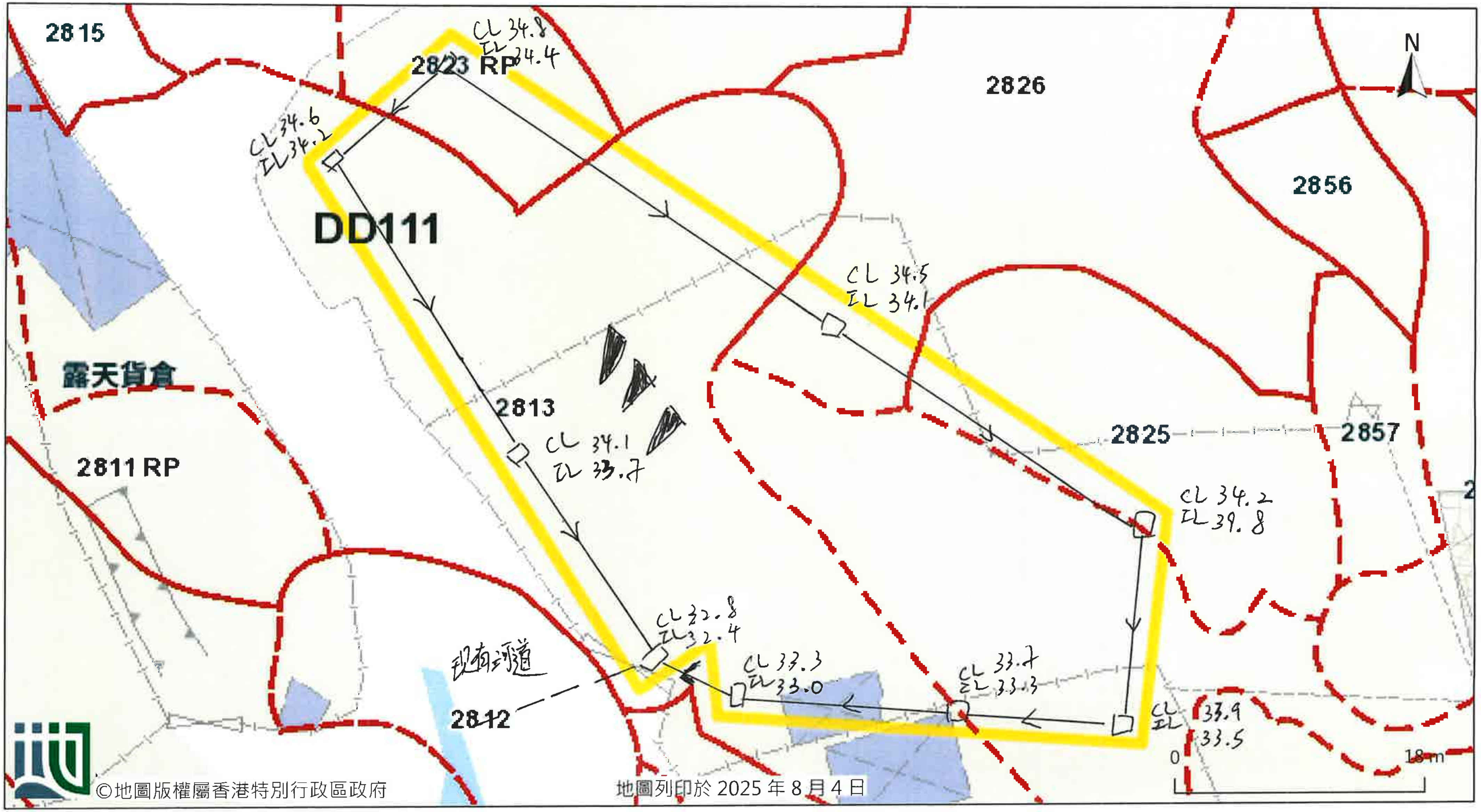
申請地點界線只作識別用
APPLICATION SITE BOUNDARY
FOR IDENTIFICATION PURPOSE ONLY

參考編號
REFERENCE No.
A/YL-PH/1063

GEOINFO MAP
地理資訊地圖

(b) Proposed Drainage Plan

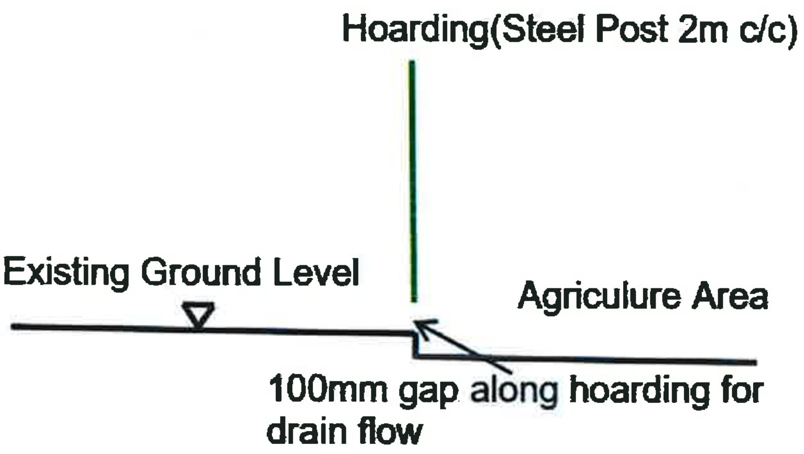
前往地圖: https://www.map.gov.hk/gm/geo:22.4429,114.0984?z=564



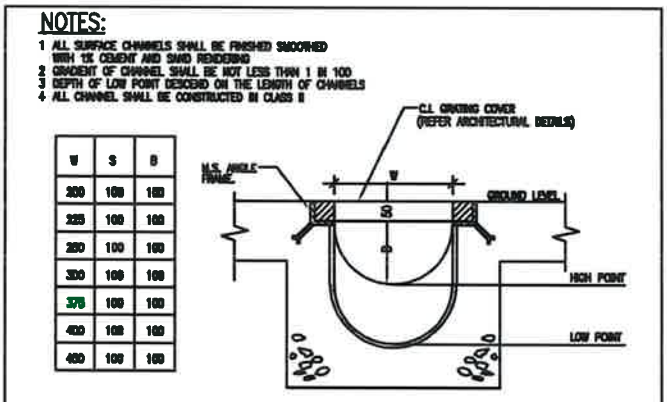
由「地理資訊地圖」網站提供: https://www.map.gov.hk

(c)Standard Details for catchpit and hoarding opening

Typical details for along hoarding

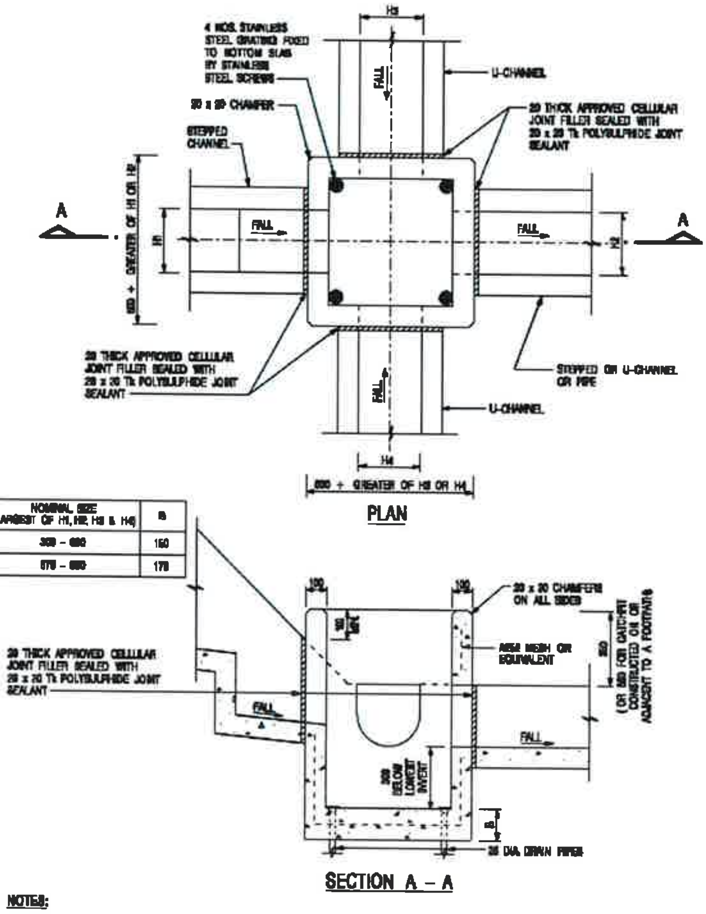


Standard Details for Proposed U channel



DETAIL OF C.I. COVER CHANNEL (U-TYPE)

Standard Details for Catch Pit with Sand Trap

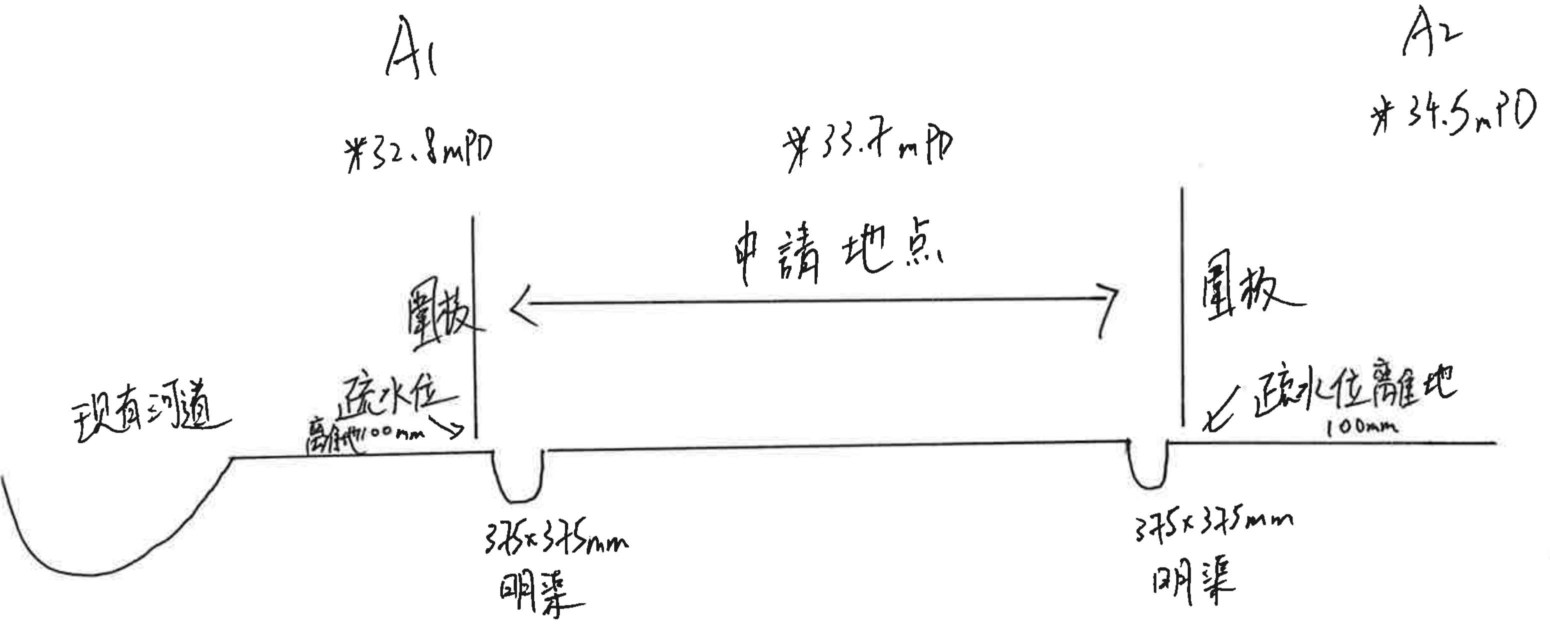


NOMINAL SIZE (LARGEST OF H1, H2, H3 & H4)	B
300 – 600	150
675 – 900	175

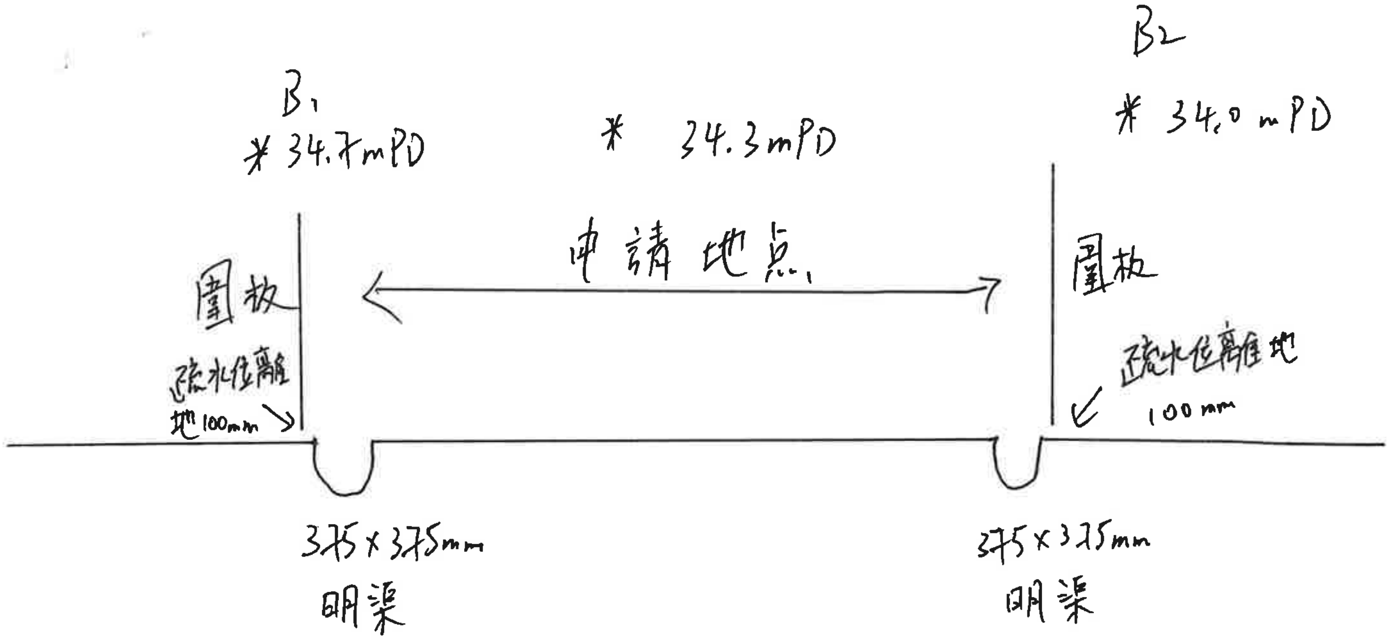
NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. REFER TO SHEET 2 FOR OTHER NOTES.

(d) Cross section of existing and proposed ground levels



A1 - A2 橫切面圖



B1 - B2 橫切面圖

(e)Existing Site Photo

(B)Stormwater Drain Calculation

(a)Stormwater Discharge Calculation

(i) Design Date

Return year : 1 in 50 years

Run off coefficient : C = 1.0

Approximate Catchment = 1610m2

Duration : 5 min

The Rational Method

Estimation of Storm water run-off, $Q=0.278 \times C \times i \times A$

Where Q = Peak run-off in m3/s

C = Run-off coefficient

i = Rainfall intensity in mm/hr

A = Area of catchment in m2

(ii) Rainfall Intensity Referring to Stormwater Drainage Manual (SDM) :

The delineation of Rainfall zones = HKO Headquarters

(Refer to SDM, Figure 3)

The rainfall intensity = 218 mm/h (Refer to SDM, Table 2a)

Rainfall Increase due to Climate Change.

The rainfall increase = End of 21st Century = 16% (Refer to SDM, Table 28)

Rainfall Increase due to Design Allowance.

The rainfall increase = End of 21st Century = 12.1% (Refer to SDM, Table 31)

Therefore, the rainfall increase = 218mm/h x (16%+12.1%)

= 61.258mm/h

= 218mm/h + 61.258mm/h = 279.258mm/h

(iii) Maximum run-off from the discharge point

For Domestic structure:

Qp = 0.278 x 1 x 279.258 x 1610 x 10^-6

=0.1249m/s

=124.9 L/s

300 mm U channel with gradient 1 in 100 at velocity at 2.097 m/s, can accommodate for 231.63 L/s (Please refer Appendix b).

Drainage Capacity 231.63L/s > 124.9L/s

(53.9% Capacity Occupied)

(with over 10% reduction in flow area)

(C) Reference

a) Storm Water Drainage Manual

STORMWATER DRAINAGE MANUAL

Update in the fifth edition highlighted in blue

Planning, Design and Management

Fifth Edition, January 2018

DRAINAGE SERVICES DEPARTMENT

Government of the Hong Kong
Special Administrative Region

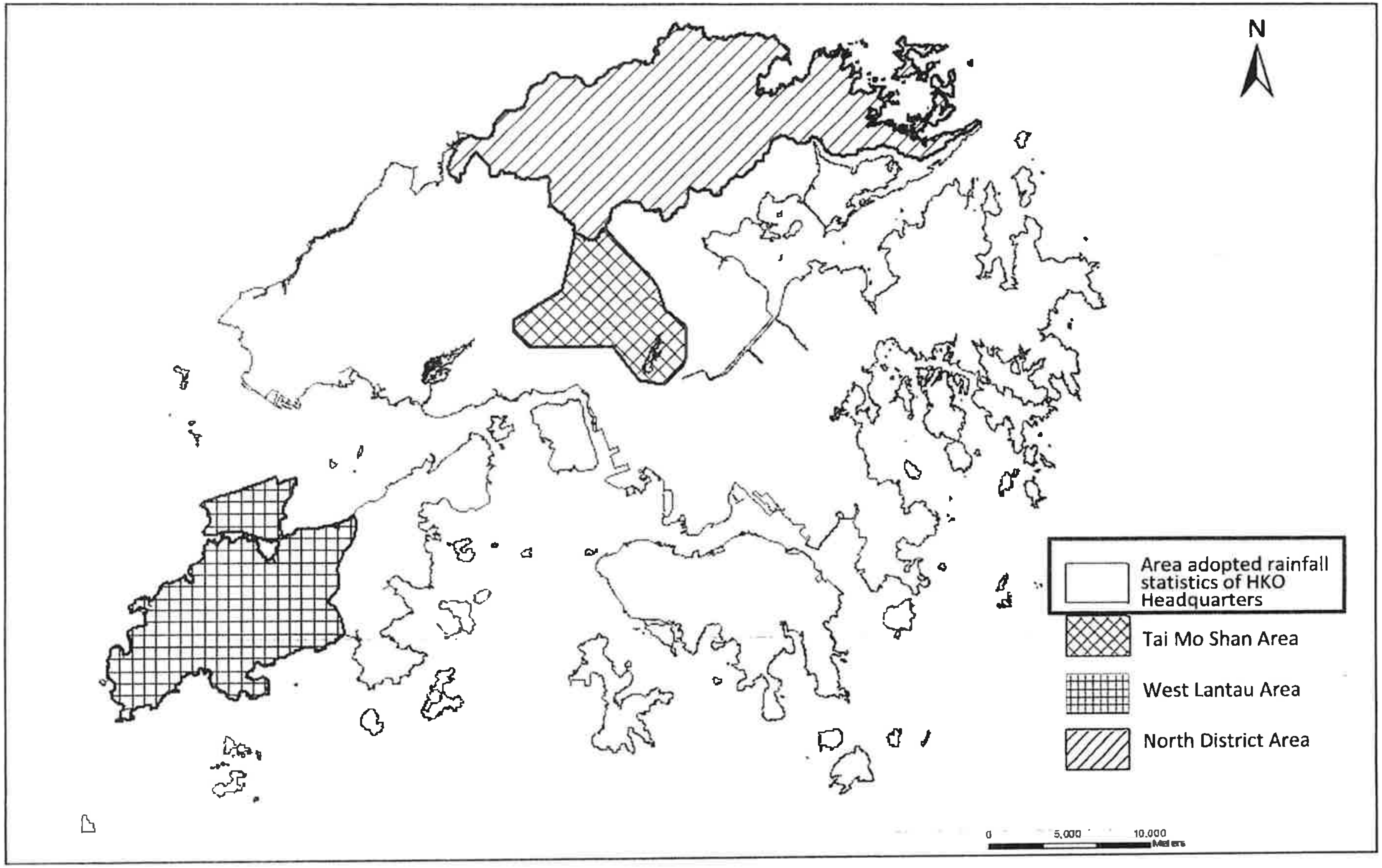


Figure 3 Delineation of Rainfall Zones

Table 2a – Intensity-Duration-Frequency (IDF) Relationship of HKO Headquarters for durations not exceeding 240 minutes

Duration (min)	Parameters			Extreme Intensity x (mm/h) for various Return Periods T(year)								
	ξ (mm/h)	α	κ	2	5	10	20	50	100	200	500	1000
240**	26.00	9.30	-0.009	29.4	40.0	47.1	54.0	62.9	69.7	76.4	85.4	92.2
120++	43.79	14.56	0.081	49.1	64.4	73.7	82.2	92.5	99.7	107	115	121
60++	64.42	19.34	0.092	71.4	91.5	104	115	128	137	145	156	163
30++	84.48	20.28	0.141	91.7	112	124	134	145	153	160	168	174
15++	106.47	21.34	0.157	114	135	147	157	169	176	183	191	197
10	*122.53	*24.90	*0.198	131	155	168	179	190	198	204	212	216
5	*145.27	*28.54	*0.235	155	181	195	206	218	226	232	239	243
2	*175.33	*34.18	*0.285	187	217	232	244	256	263	269	275	279
1	*198.07	*39.17	*0.322	212	245	261	273	285	292	298	303	307
0.50	*220.81	*44.90	*0.360	236	273	290	303	315	322	327	332	335
0.25+++	244.85	52.05	0.404	263	303	322	335	347	354	359	363	366

Notes:

1. For interpolation/extrapolation, $x = \xi + \left(\frac{\alpha}{\kappa}\right)\left\{1 - \left[-log\left(\frac{T-1}{T}\right)\right]^{\kappa}\right\}$
2. ++ based on continuous rainfall recorded at HKO Headquarters (1947 – 2014)
3. +++ based on Jardi rate-of-rainfall records at King's Park (1952 – 2014)
4. * interpolated data
5. ** based on hourly rainfall records at HKO Headquarters (1884 – 1939; 1947 – 2014)

(k) Table 28 Rainfall Increase due to Climate Change

Replace the table with the following:

Table 28 – Rainfall Increase due to Climate Change

	Rainfall Increase
Mid 21st Century	11.1%
End of 21st Century	16.0%

Notes:
1. The rainfall increase is relative to the average of 1995-2014.
2. Mean projection values are adopted in the table.
3. Mid 21st century refers to years 2041 – 2060; end of 21st century refers to years 2081 – 2100.

(l) Table 29 Mean Sea Level Rise due to Climate Change

Add the following table:

Table 29 – Mean Sea Level Rise due to Climate Change

	Mean Sea Level Rise
Mid 21st Century	0.20 m
End of 21st Century	0.47 m

Notes:
1. The mean sea level rise is relative to the average of 1995-2014.
2. Median projection values are adopted in the table.
3. Mid 21st century refers to period around 2050; end of 21st century refers to period around 2090.

(m) Table 30 Storm Surge Increase due to Climate Change

Add the following table:

Table 30 –Storm Surge Increase due to Climate Change

Table 30a Storm Surge Increase in Mid 21st Century

Return Period (Years)	North Point/ Quarry Bay (m)	Tai Po Kau (m)	Tsim Bei Tsui (m)	Tai O (m)
2	0.04	0.05	0.05	0.03
5	0.05	0.07	0.06	0.05
10	0.06	0.08	0.08	0.05
20	0.07	0.10	0.09	0.06
50	0.08	0.13	0.11	0.08
100	0.09	0.15	0.12	0.09
200	0.10	0.17	0.13	0.10

Notes: Mid 21st century refers to period around 2050.

Table 30b Storm Surge Increase in End of 21st Century

Return Period (Years)	North Point/ Quarry Bay (m)	Tai Po Kau (m)	Tsim Bei Tsui (m)	Tai O (m)
2	0.06	0.09	0.09	0.06
5	0.09	0.14	0.12	0.09
10	0.10	0.17	0.15	0.10
20	0.12	0.20	0.17	0.12
50	0.14	0.25	0.20	0.14
100	0.16	0.29	0.23	0.16
200	0.18	0.34	0.26	0.18

Notes: End of 21st century refers to period around 2090.

(n) Table 31 Design Allowance

Add the following table:

Table 31 Design Allowance in End of 21st Century

Rainfall Increase	Extreme Sea Level Rise (Sum of Mean Sea Level Rise and Storm Surge Increase)				
	Return Period (Years)	North Point/ Quarry Bay (m)	Tai Po Kau (m)	Tsim Bei Tsui (m)	Tai O (m)
12.1%	2	0.20	0.22	0.20	0.19
	5	0.21	0.24	0.22	0.20
	10	0.22	0.25	0.23	0.21
	20	0.22	0.27	0.23	0.22
	50	0.24	0.29	0.25	0.22
	100	0.24	0.31	0.26	0.23
	200	0.25	0.34	0.27	0.24

Note:

1. End of 21st century refers to period around 2090.
2. Design allowance was derived from the projection difference (median values) between very high greenhouse gas emissions scenario [SSP5-8.5] and intermediate greenhouse gas emissions scenario [SSP2-4.5]. For design allowance in mid 21st century, designers can make reference to the table as shown in Appendix 2.

(o) Appendices 1 and 2

Add Appendices 1 and 2 in the following pages:

Table 30b Storm Surge Increase in End of 21st Century

Return Period (Years)	North Point/ Quarry Bay (m)	Tai Po Kau (m)	Tsim Bei Tsui (m)	Tai O (m)
2	0.06	0.09	0.09	0.06
5	0.09	0.14	0.12	0.09
10	0.10	0.17	0.15	0.10
20	0.12	0.20	0.17	0.12
50	0.14	0.25	0.20	0.14
100	0.16	0.29	0.23	0.16
200	0.18	0.34	0.26	0.18

Notes: End of 21st century refers to period around 2090.

(n) Table 31 Design Allowance

Add the following table:

Table 31 Design Allowance in End of 21st Century

Rainfall Increase	Extreme Sea Level Rise (Sum of Mean Sea Level Rise and Storm Surge Increase)				
	Return Period (Years)	North Point/ Quarry Bay (m)	Tai Po Kau (m)	Tsim Bei Tsui (m)	Tai O (m)
12.1%	2	0.20	0.22	0.20	0.19
	5	0.21	0.24	0.22	0.20
	10	0.22	0.25	0.23	0.21
	20	0.22	0.27	0.23	0.22
	50	0.24	0.29	0.25	0.22
	100	0.24	0.31	0.26	0.23
	200	0.25	0.34	0.27	0.24

Note:

1. End of 21st century refers to period around 2090.
2. Design allowance was derived from the projection difference (median values) between very high greenhouse gas emissions scenario [SSP5-8.5] and intermediate greenhouse gas emissions scenario [SSP2-4.5]. For design allowance in mid 21st century, designers can make reference to the table as shown in Appendix 2.

(o) Appendices 1 and 2

Add Appendices 1 and 2 in the following pages:

(b) *Δ values.* Common Δ values are given in the following table:

Material	*Δ*
dense sand, gravel	1.65
concrete	1.2 to 1.4
asphalt concrete	1.3 to 1.4
granite	1.5 to 2.1

(c) *K_β values.* K_β adjusts for reduced shear stress on the bank and reduced stabilizing forces due to side slope. This factor is not applicable to the bed, for which a factor of 1 can be assumed.

$$K_\beta = \sqrt{1 - \frac{\sin^2 \beta}{\sin^2 \phi} \frac{1}{0.8}}$$

where β = side slope of river bank in degrees
ϕ = angle of repose in degrees

(d) *$K\gamma$ values.* Lane suggested the following table for $K\gamma$ to account for river sinuosity:

Degree of Sinuosity	*$K\gamma$*
straight canal	1.00
slightly sinuous river	0.90
moderately sinuous river	0.75
very sinuous river	0.60

The sizing of armouring stones for wave resistance in the estuarine reach of drainage channels can be carried out in accordance with guidelines in CED (1996).

9.3 VELOCITY DESIGN IN CHANNELS AND PIPES

Deposition of sediment in stormwater channels and pipes is inevitable and suitable allowance should be made in the design. For the permissible degradation between desilting cycles, the following guideline is proposed to take into account the effects to flow capacity due to materials deposited on the bed:

(a) 5% reduction in flow area if the gradient is greater than 1 in 25.
(b) 10% reduction in flow area in other cases.

(C) Reference

b) Hydraulic Research Paper 8th Edition Table A16

A16

(p.5 of 6)

k_s = 0·150 mm
S = 0·01000 to 0·03000

ie hydraulic gradient =
1 in 100 to 1 in 33·3

Water (or sewage) at 15°C;
full bore conditions.

velocities in ms^{-1}
discharges in litres/sec

Gradient	150	200	225	250	275	300	350	375	400	450	500	525	600	630
0·01000	1·173	1·411	1·521	1·626	1·726	1·824	2·009	2·097	2·183	2·349	2·508	2·584	2·806	2·892
1/ 100	20·728	44·321	60·461	79·798	102·55	128·91	193·26	231·63	274·36	373·61	492·36	559·44	793·39	901·35
0·01050	1·203	1·447	1·559	1·667	1·770	1·870	2·060	2·150	2·238	2·408	2·571	2·649	2·877	2·964
1/ 95	21·259	45·450	61·999	81·825	105·15	132·18	198·15	237·48	281·29	383·03	504·76	573·53	813·34	924·01
0·01100	1·232	1·482	1·597	1·707	1·813	1·915	2·109	2·202	2·292	2·466	2·632	2·713	2·946	3·035
1/ 91	21·777	46·554	63·501	83·805	107·69	135·37	202·93	243·20	288·06	392·24	516·87	587·28	832·82	946·13
0·01150	1·261	1·516	1·634	1·747	1·855	1·959	2·158	2·253	2·345	2·523	2·693	2·775	3·013	3·105
1/ 87	22·284	47·633	64·970	85·741	110·17	138·49	207·59	248·79	294·67	401·23	528·71	600·73	851·87	967·75
0·01200	1·289	1·550	1·670	1·785	1·896	2·002	2·205	2·302	2·396	2·578	2·752	2·836	3·079	3·172
1/ 83	22·781	48·688	66·408	87·635	112·60	141·54	212·16	254·26	301·14	410·03	540·30	613·89	870·50	988·92
0·01250	1·317	1·583	1·706	1·823	1·936	2·045	2·252	2·351	2·447	2·632	2·810	2·895	3·143	3·239
1/ 80	23·267	49·722	67·816	89·491	114·98	144·53	216·63	259·61	307·48	418·65	551·65	626·78	888·76	1009·6
0·01300	1·344	1·615	1·740	1·860	1·975	2·086	2·297	2·398	2·496	2·685	2·866	2·954	3·207	3·304
1/ 77	23·743	50·736	69·196	91·309	117·32	147·46	221·02	264·86	313·70	427·11	562·77	639·41	906·65	1030·0
0·01350	1·370	1·647	1·774	1·896	2·014	2·127	2·342	2·445	2·545	2·738	2·922	3·011	3·269	3·368
1/ 74	24·211	51·731	70·550	93·094	119·61	150·33	225·32	270·02	319·79	435·40	573·68	651·80	924·20	1049·9
0·01400	1·396	1·678	1·808	1·932	2·052	2·167	2·386	2·491	2·592	2·789	2·976	3·067	3·330	3·431
1/ 71	24·670	52·707	71·880	94·846	121·86	153·16	229·54	275·07	325·78	443·53	584·40	663·97	941·43	1069·5
0·01450	1·422	1·708	1·841	1·967	2·089	2·206	2·429	2·536	2·639	2·839	3·030	3·122	3·389	3·492
1/ 69	25·121	53·667	73·186	96·567	124·07	155·93	233·69	280·04	331·66	451·53	594·92	675·92	958·36	1088·7
0·01500	1·447	1·738	1·873	2·002	2·125	2·245	2·471	2·580	2·685	2·888	3·083	3·177	3·448	3·553
1/ 67	25·564	54·609	74·470	98·258	126·24	158·65	237·77	284·92	337·44	459·39	605·27	687·67	974·99	1107·6
0·01600	1·496	1·797	1·936	2·069	2·197	2·320	2·554	2·666	2·775	2·985	3·185	3·283	3·563	3·671
1/ 63	26·429	56·450	76·975	101·56	130·47	163·97	245·73	294·45	348·71	474·72	625·45	710·59	1007·5	1144·4
0·01700	1·543	1·854	1·997	2·134	2·266	2·393	2·634	2·750	2·862	3·078	3·285	3·385	3·674	3·786
1/ 59	27·268	58·234	79·404	104·76	134·58	169·13	253·44	303·69	359·64	489·59	645·02	732·81	1038·9	1180·2
0·01800	1·589	1·909	2·056	2·197	2·333	2·464	2·712	2·831	2·946	3·169	3·382	3·485	3·783	3·897
1/ 56	28·082	59·966	81·762	107·87	138·57	174·14	260·93	312·66	370·26	504·02	664·02	754·39	1069·5	1214·9
0·01900	1·634	1·962	2·114	2·259	2·398	2·532	2·788	2·910	3·029	3·257	3·476	3·582	3·888	4·005
1/ 53	28·875	61·651	84·057	110·89	142·45	179·01	268·21	321·38	380·58	518·06	682·49	775·37	1099·2	1248·6
0·02000	1·678	2·015	2·170	2·319	2·462	2·600	2·862	2·987	3·109	3·343	3·568	3·676	3·990	4·111
1/ 50	29·647	63·293	86·291	113·83	146·22	183·75	275·31	329·88	390·64	531·74	700·49	795·81	1128·2	1281·5
0·02100	1·720	2·066	2·225	2·378	2·524	2·665	2·933	3·062	3·187	3·427	3·657	3·768	4·090	4·214
1/ 47·6	30·400	64·894	88·471	116·71	149·91	188·38	282·23	338·17	400·45	545·08	718·05	815·75	1156·4	1313·5
0·02200	1·762	2·115	2·279	2·435	2·584	2·729	3·004	3·135	3·263	3·509	3·744	3·858	4·187	4·314
1/ 45·5	31·135	66·458	90·600	119·51	153·51	192·89	288·99	346·26	410·03	558·10	735·19	835·22	1184·0	1344·9
0·02300	1·803	2·164	2·331	2·491	2·644	2·791	3·072	3·207	3·337	3·589	3·830	3·946	4·283	4·412
1/ 43·5	31·854	67·986	92·681	122·25	157·03	197·31	295·60	354·17	419·39	570·83	751·95	854·25	1210·9	1375·5
0·02400	1·842	2·212	2·382	2·545	2·702	2·853	3·140	3·277	3·410	3·668	3·913	4·032	4·376	4·508
1/ 41·7	32·557	69·482	94·716	124·94	160·47	201·63	302·07	361·91	428·56	583·29	768·35	872·88	1237·3	1405·4
0·02500	1·881	2·258	2·432	2·599	2·758	2·912	3·205	3·345	3·482	3·744	3·995	4·116	4·467	4·603
1/ 40·0	33·247	70·947	96·712	127·56	163·84	205·87	308·40	369·50	437·53	595·50	784·42	891·12	1263·1	1434·7
0·02600	1·920	2·304	2·482	2·651	2·814	2·971	3·270	3·413	3·552	3·819	4·075	4·199	4·557	4·695
1/ 38·5	33·922	72·384	98·668	130·14	167·15	210·02	314·61	376·93	446·33	607·46	800·16	909·00	1288·4	1463·5
0·02700	1·957	2·349	2·530	2·703	2·869	3·029	3·333	3·479	3·620	3·893	4·154	4·280	4·645	4·785
1/ 37·0	34·585	73·793	100·59	132·67	170·39	214·09	320·70	384·22	454·96	619·19	815·60	926·54	1313·3	1491·7
0·02800	1·994	2·393	2·577	2·753	2·922	3·085	3·395	3·544	3·688	3·966	4·231	4·360	4·731	4·874
1/ 35·7	35·235	75·176	102·47	135·15	173·57	218·08	326·67	391·36	463·43	630·71	830·77	943·75	1337·7	1519·4
0·02900	2·030	2·436	2·624	2·803	2·975	3·141	3·456	3·607	3·754	4·037	4·307	4·438	4·816	4·961
1/ 34·5	35·875	76·535	104·32	137·59	176·70	222·01	332·55	398·41	471·75	642·03	845·66	960·67	1361·6	1546·6
0·03000	2·066	2·479	2·669	2·852	3·027	3·195	3·516	3·670	3·819	4·107	4·381	4·515	4·899	5·047
1/ 33·3	36·503	77·871	106·14	139·98	179·77	225·87	338·32	405·32	479·93	653·15	860·30	977·29	1385·1	1573·3
	0·83	0·85	0·85	0·86	0·86	0·87	0·88	0·88	0·89	0·89	0·90	0·90	0·91	0·91

$V_{r(0\cdot5)medial}$ for half-full circular pipes.

k_s = 0·150 mm S = 0·01000 to 0·03000