7076864 Drainage Impact Assessment for S16 Planning Application for Proposed Temporary Cold Storage for Poultry and Distribution Centre for a Period of 3 Years and Filling of Land for Site Formation Works at Various Lots in D.D. 89 and Adjoining Government Land, Man Kam To Road, Sha Ling, New Territories

Hydraulic Checking of the watercourse

Figure 1.1 Identification of Surrounding Catchment and surrounding environment

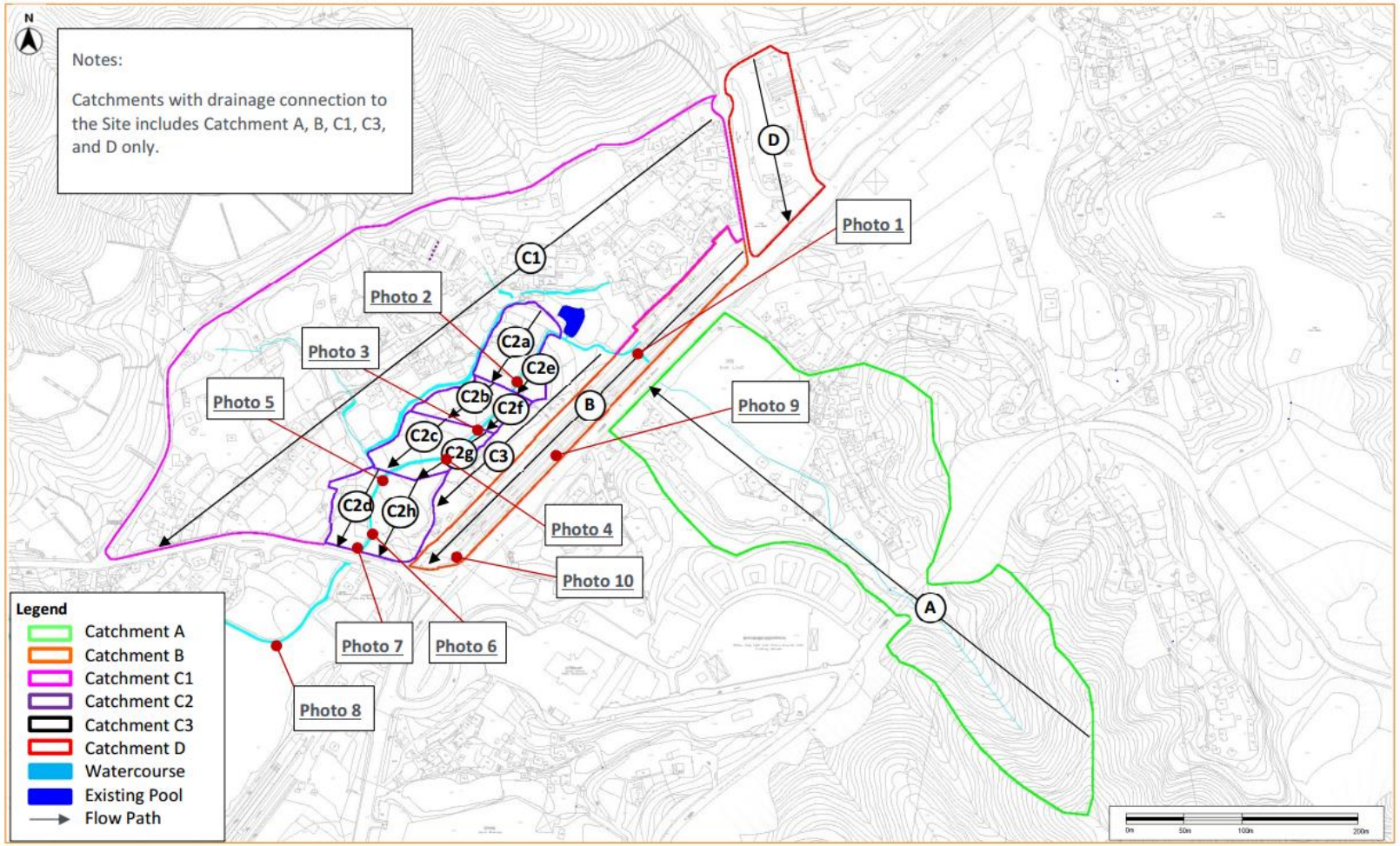


Photo 1 	Photo 2 
Photo 3 	Photo 4 

Photo 5

Photo 6

Photo 7

Photo 8

Photo 9

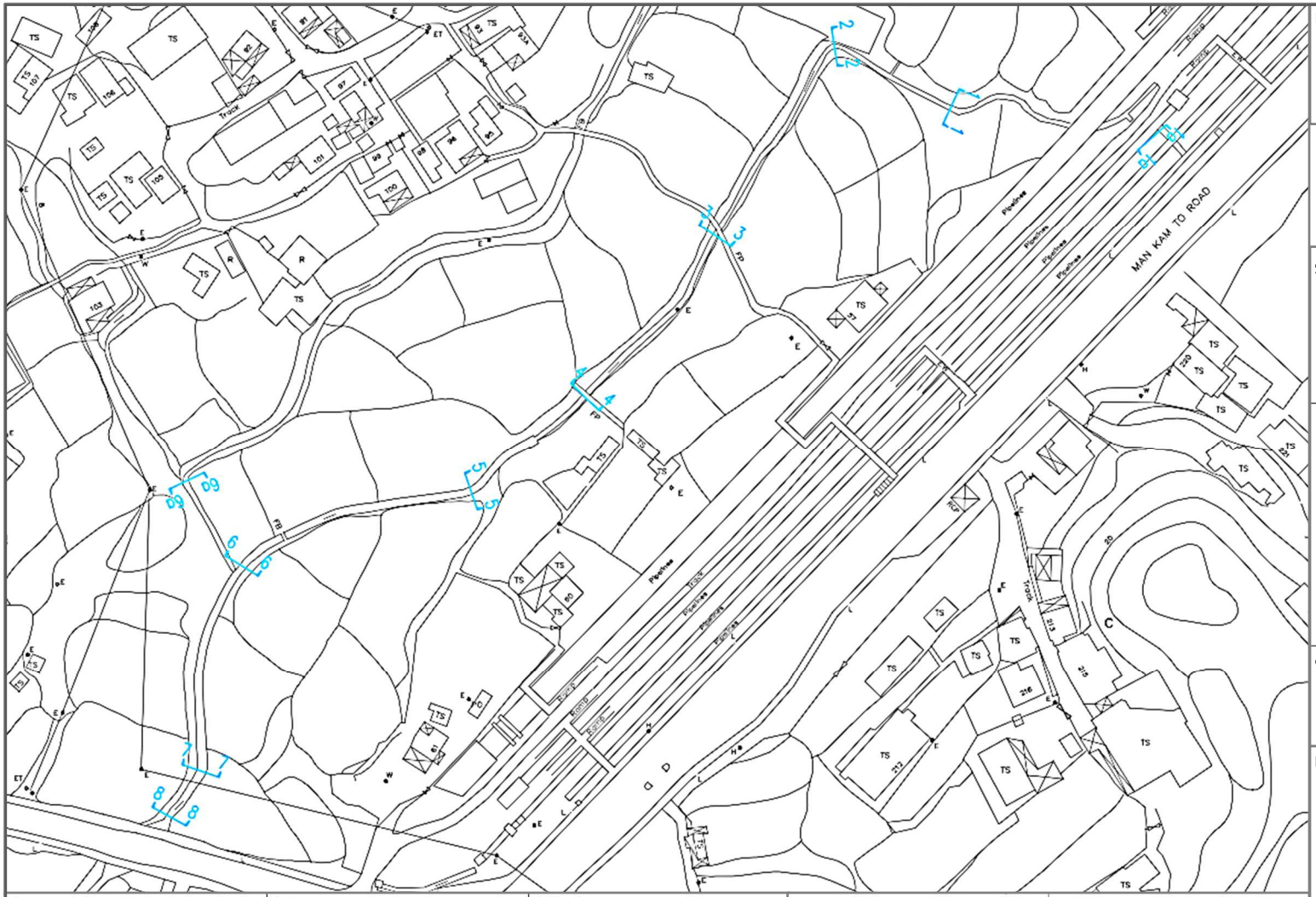
Photo 10

Calculation of Runoff for Return Period of 50 Years

Catchment ID	Catchment Area (A), km^2	Average slope (H), m/100m	Flow path length (L), m	Inlet time (t_0), min	Duration (t_d), min	Storm Constants			Runoff intensity (i) mm/hr	Runoff coefficient (C)	C x A	Peak runoff (Q_p), m^3/s
						a	b	c				
Before the Proposed Development												
Catchment A	0.0635	16.29	526.2	14.42	20.26	1167.6	16.76	0.561	153.95	0.63	0.0401	1.717
Catchment B	0.0113	1.28	164.20	8.89	10.71	1167.6	16.76	0.561	182.00	0.95	0.0108	0.545
Catchment C1	0.0844	3.94	365.80	12.94	17.00	1167.6	16.76	0.561	162.12	0.41	0.0347	1.563
Catchment C2	0.0161	0.69	237.30	14.05	16.69	1167.6	16.76	0.561	162.98	0.26	0.0041	0.187
Catchment C2a	*0.0030*											*0.035*
Catchment C2b	*0.0023*											*0.027*
Catchment C2c	*0.0024*											*0.027*
Catchment C2d	*0.0024*											*0.028*
Catchment C2e	*0.0008*											*0.009*
Catchment C2f	*0.0006*											*0.007*
Catchment C2g	*0.0012*											*0.015*
Catchment C2h	*0.0034*											*0.040*
Catchment C3	0.0066	1.17	85.72	4.99	5.94	1167.6	16.76	0.561	202.56	0.32	0.0021	0.119
Catchment D	0.0092	4.98	84.30	3.55	4.49	1167.6	16.76	0.561	210.22	0.95	0.0088	0.511
											Total (General Scenario)	**4.642**
After the Proposed Development												
Catchment A	0.0635	16.29	526.2	14.42	20.26	1167.6	16.76	0.561	153.95	0.63	0.0401	1.717
Catchment B	0.0113	1.28	164.20	8.89	10.71	1167.6	16.76	0.561	182.00	0.95	0.0108	0.545
Catchment C1	0.0844	3.94	365.80	12.94	17.00	1167.6	16.76	0.561	162.12	0.41	0.0347	1.563
Catchment C2a	0.0030	0.20	83.0	7.43	7.90	1167.6	16.76	0.561	193.39	0.77	0.0023	0.125
Catchment C2b	0.0023	0.20	56.0	5.16	5.47	1167.6	16.76	0.561	204.97	0.77	0.0018	0.101
Catchment C2c	0.0024	0.20	60.0	5.51	5.84	1167.6	16.76	0.561	203.05	0.77	0.0018	0.102
Catchment C2d	0.0024	0.20	76.1	6.98	7.40	1167.6	16.76	0.561	195.61	0.77	0.0018	0.100
Catchment C2e	0.0008	0.20	58.0	5.96	6.28	1167.6	16.76	0.561	200.89	0.77	0.0006	0.033
Catchment C2f	0.0006	0.20	45.3	4.80	5.05	1167.6	16.76	0.561	207.14	0.77	0.0004	0.025
Catchment C2g	0.0012	0.20	89.0	8.71	9.20	1167.6	16.76	0.561	187.86	0.77	0.0010	0.050
Catchment C2h	0.0034	0.20	68.3	6.04	6.42	1167.6	16.76	0.561	200.21	0.77	0.0026	0.147
Catchment C3	0.0066	1.17	85.72	4.99	5.94	1167.6	16.76	0.561	202.56	0.32	0.0021	0.119
Catchment D	0.0092	4.98	84.30	3.55	4.49	1167.6	16.76	0.561	210.22	0.95	0.0088	0.511
											Total (General Scenario)	**5.138**

Note:

1) Runoff is calculated in accordance with DSD's "*Stormwater Drainage Manual (with Eurocodes incorporated) - Planning, Design and Managemen*t" (SDM), fifth edition, January 2018 and DSD publication Stormwater Drainage Manual CORRIGENDUM No. 1/2022.
2) Time of concentraction td= to+tf; where tf time of flow in urban drainag esystem = length of drain/ velocity. Velocity assumed 1.5m/s for natural flow and 3m/s assumed for flow in urban area.
3) The gradient of Catchement C2 after development is assumed to be 1:500.



Notes

1. Hong Kong Geodetic Datum 1980
2. All levels refer to Principal Datum Hong Kong
3. All units are in Metres
4. All spot level positions are indicated by the decimal point or a cross.

Sheet Index

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Approved

Helen Chan
ALS, MHKIS, MRICS, RPS(LS)

Date: March 23, 2022

Client

HONG KONG CHILLED MEAT IMPORTER LIMITED

Drawing Title

PROPOSED TEMPORARY COLD STORAGE FOR POULTRY & DISTRIBUTION CENTRE IN D.D.89 MAN KAM TO, SHEUNG SHUI

Drawing No.	Scale
HPL2503/S/01	1:200 (A2)

Helen Chan Professional Land Survey Ltd.
陳婉琪測量師行有限公司
2/F, No.36 Lung Sum Avenue, Sheung Shui, N.T., Hong Kong
Tel: 26395466 Fax: 26734966
e-mail: hcpls@netvigator.com

Existing Channel Preliminary Estimation under Return Period of 50 Years

From[1]	To[1]	Channel Type	Length, m	Base Width, m	Top Width T, m	Depth y, m	Upstream Invert Level (USIL) [2]	Downstream Invert Level (DSIL) [2]	Slope (s) (1 in x)	Cross Section Area, m2	% reduction	Wetted Perimeter	Hydaralius Radius, m	Manning Roughness Coefficient [3]	Mean Velocity, m/s	Capacity Flow, m^3/s	Catchment	Total Runoff, m3/s	Utilsation Rate	Remark
1a	1	Rectangular	61.5	0.90	0.90	0.96	8.07	6.94	54.42	0.86	10%	2.76	0.31	0.016	3.91	3.037	A	1.717	56.5%	ok
1	2	Trapezoidal	33.2	0.97	1.30	0.68	6.94	6.43	65.10	0.77	10%	2.37	0.33	0.016	3.67	2.547	A	1.717	67.4%	ok
2	3	Trapezoidal	53.1	0.64	1.33	0.74	6.43	5.97	115.43	0.73	10%	2.27	0.32	0.016	2.73	1.788	A & C2	1.726 [5]	96.5%	ok
3	4	Trapezoidal	50.3	0.88	1.25	0.74	5.97	5.56	122.68	0.79	10%	2.41	0.33	0.016	2.68	1.902	A & C2	1.761 [6]	92.6%	ok
4	5	Trapezoidal	38.1	0.86	1.27	0.75	5.56	4.77	48.20	0.80	10%	2.42	0.33	0.016	4.31	3.095	A & C2	1.794 [7]	58.0%	ok
5	6	Trapezoidal	61.1	1.22	1.77	1.04	4.77	4.47	203.77	1.55	10%	3.37	0.46	0.016	2.61	3.657	A & C2	1.836 [8]	50.2%	ok
6	7	Trapezoidal	48.5	1.39	2.00	1.14	4.47	4.05	115.59	1.92	10%	3.74	0.51	0.016	3.73	6.461	A, C1 & C2	2.946 [9]	45.6%	ok
7	8	Trapezoidal	13.0	1.15	1.67	1.10	4.05	3.86	68.44	1.54	10%	3.40	0.45	0.016	4.46	6.201	A, C1 & C2	2.946 [9]	47.5%	ok

[1] Please refer to the survey for the location of the channel.
[2] The invert levels were assumed to be the average level based on the survey.
[3] Manning n=0.016 has been adopted, assuming they is concreted-lined channels in fair condition
[4] The hydraulic checking is only calculated to our best estimation based on the available information.
[5] The runoff to this section is approximately proportionate to the runoff from area of C2, and it is best estimated using the proportion of area assigned for C2e within Catchment C2 and together with runoff from Catchment A.
[6] The runoff to this section is approximately proportionate to the runoff from area of C2, and it is best estimated using the proportion of area assigned for C2a & C2e within Catchment C2 and together with runoff from Catchment A.
[7] The runoff to this section is approximately proportionate to the runoff from area of C2, and it is best estimated using the proportion of area assigned for C2a, C2e C2b, C2f within Catchment C2 and together with runoff from Catchment A.
[8] The runoff to this section is approximately proportionate to the runoff from area of C2, and it is best estimated using the proportion of area assigned for C2a, C2e C2b, C2f, C2c, C2g within Catchment C2 and together with runoff from Catchment A.
[9] The runoff to this section is approximately proportionate to the runoff from area of C2, and it is best estimated using the proportion of area assigned for C2a, C2e C2b, C2f, C2c, C2g, C2d & C2h within Catchment C2 and together with 2/3 of the runoff from Catchment C1 and runoff from Catchment A.

Existing Channel Preliminary Estimation after the Proposed Development under Return Period of 50 Years

From[1]	To[1]	Channel Type	Length, m	Base Width, m	Top Width T, m	Depth y, m	Upstream Invert Level (USIL) [2]	Downstream Invert Level (DSIL) [2]	Slope (s) (1 in x)	Cross Section Area, m2	% reduction	Wetted Perimeter	Hydaralius Radius, m	Manning Roughness Coefficient [3]	Mean Velocity, m/s	Capacity Flow, m^3/s	Catchment	Total Runoff, m3/s	Utilsation Rate	Remark
1a	1	Rectangular	61.5	0.9	0.90	0.96	8.07	6.94	54.42	0.86	10%	2.76	0.31	0.016	3.91	3.037	A	1.717	56.5%	ok
1	2	Trapezoidal	33.2	1.0	1.30	0.68	6.94	6.43	65.10	0.77	10%	2.37	0.33	0.016	3.67	2.547	A	1.717	67.4%	ok
2	3	Trapezoidal	53.1	0.6	1.33	0.74	6.43	5.97	115.43	0.73	10%	2.27	0.32	0.016	2.73	1.788	A	1.717	96.0%	ok
3	4	Trapezoidal	50.3	0.9	1.25	0.74	5.97	5.56	122.68	0.79	10%	2.41	0.33	0.016	2.68	1.902	A	1.717	90.3%	ok
4	5	Trapezoidal	38.1	0.9	1.27	0.75	5.56	4.77	48.20	0.80	10%	2.42	0.33	0.016	4.31	3.095	A	1.717	55.5%	ok
5	6	Trapezoidal	61.1	1.2	1.77	1.04	4.77	4.47	203.77	1.55	10%	3.37	0.46	0.016	2.61	3.657	A	1.717	47.0%	ok
6	7	Trapezoidal	48.5	1.4	2.00	1.14	4.47	4.05	115.59	1.92	10%	3.74	0.51	0.016	3.73	6.461	A, C1	2.759 [5]	42.7%	ok
7	8	Trapezoidal	13.0	1.2	1.67	1.10	4.05	3.86	68.44	1.54	10%	3.40	0.45	0.016	4.46	6.201	A, C1 & C2	3.442 [6]	55.5%	ok

[1] Please refer to the survey for the location of the channel.
[2] The invert levels were assumed to be the average level based on the survey.
[3] Manning n=0.016 has been adopted, assuming they is concreted-lined channels in fair condition
[4] The hydraulic checking is only calculated to our best estimation based on the available information.
[5] The runoff to this section is best estimated including 2/3 of the runoff from Catchment C1 and runoff from Catchment A.
[6]The runoff to this section is best estimated including the runoff from Catchment C2, runoff from Catchment A and 2/3 of the runoff from Catchment C1.