

## 【 Appendix 】

### Justifications

#### Applied Use

1. The applied use is Proposed Temporary Animal Boarding Establishment with Ancillary Facilities and Associated Filling of Land for a period of 5 years.

#### Location

2. The application site is on Lots 475 in D.D. 113 Kam Tin, Yuen Long, New Territories. It is accessible by vehicles from Kam Ho Road via a local track (Plans 1 and 2 and 3).

#### Site Area

3. The site area is about 617m<sup>2</sup>, No Government Land is involved.

#### Planning Context

4. The application site falls within an area zoned "Agriculture" ("AGR") on the Approved Kam Tin South Outline Zoning Plan (OZP) No. S/YL-KTS/15.( Plan 4)
5. The planning intention of the "AGR" zone is primarily to retain and safeguard good quality agriculture land /farm/fish ponds for agricultural purposes. It is also intended to retain fallow arable land with good potential for rehabilitation for cultivation and other agricultural purposes.
6. The applied use is a Column 2 use within the "AGR" zone under the OZP which may be permitted with or without conditions by the Town Planning Board ( the Board).
7. Provided that all structures of the proposed development are temporary in nature, approval of the current application on a temporary basis for a period of 5 years would not frustrate the long-term planning intention of the "AGR" zone.

#### Development Parameters

8. The following table explains for details of the structures on site (Plan 5) :

Block.	Structure /Use	Floor Area (about) (m2)	Covered Area (about) (m2)	Height (M)	No. of Storeys	
A	G/F	Animal boarding establishment	25.5	25.5	2.6	1
B	G/F	Animal boarding establishment	25.5	25.5	2.6	1
C	G/F	Animal boarding establishment	25.5	25.5	2.6	1
D	G/F	Animal boarding establishment	25.5	25.5	5.2	2
	1/F	Ancillary office	25.5			

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E	G/F	Animal boarding establishment	25.5	25.5	5.2	2
	1/F	Ancillary office	25.5			
F	G/F	Storeroom	14.4	14.4	2.6	1
G	G/F	Storeroom	14.4	14.4	2.6	1
H	G/F	Cleaning room	14.4	14.4	2.6	1
			221.70	170.7	2.6 - 5.2	1 - 2

9. Operation hours of the office are from 9 a.m. to 7 p.m. daily (including Sundays and public holidays), Animal boarding service opens 24 hours daily (including Sundays and public holidays).
10. About 20 nos. of dogs will be staying in the proposed development.
11. The animal boarding establishment is fully air-conditioned and enclosed with soundproofing materials. Dog washing and dog functions will be carried out within enclosed areas. Animal odours and noises would thus be minimal.
12. No quarantine station or quarantine lairage for animals will be provided on site, i.e. not a designated project (DP) under the Environmental Impact Assessment Ordinance.

**Similar Applications Approved within the Same "AGR" Zone**

13. The application site is located in Ma On Kong / Ho Pui Village where 19 similar applications approved by the Board can be found within the same "AGR" zone:

Application No.	Applied Use	Date of Approval
A/YL-KTS/633	Proposed Temporary Animal Boarding Establishment For A Period Of 3 Years	21-03-2014
A/YL-KTS/784	Proposed Temporary Animal Boarding Establishment For A Period Of 3 Years	26-01-2018
A/YL-KTS/789	Proposed Temporary Animal Boarding Establishment For A Period Of 3 Years	20-07-2018
A/YL-KTS/709	Proposed Temporary Animal Boarding Establishment For A Period Of 3 Years	31-01-2019
A/YL-KTS/807	Proposed Temporary Animal Boarding Establishment For A Period Of 3 Years	21-06-2019
A/YL-KTS/791	Proposed Temporary Animal Boarding Establishment For A Period Of 5 Years	29-07-2019
A/YL-KTS/790	Proposed Temporary Animal Boarding Establishment For A Period Of 3 Years	30-07-2019
A/YL-KTS/638	Proposed Temporary Animal Boarding Establishment For A Period Of 5 Years	01-08-2019
A/YL-KTS/867	Proposed Temporary Animal Boarding Establishment For A Period Of 5 Years	18-12-2020
A/YL-KTS/868	Proposed Temporary Animal Boarding Establishment For A Period Of 3 Years	08-01-2021

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A/YL-KTS/869	Proposed Temporary Animal Boarding Establishment For A Period Of 5 Years	22-01-2021
A/YL-KTS/877	Proposed Temporary Animal Boarding Establishment For A Period Of 5 Years	12-03-2021
A/YL-KTS/882	Proposed Temporary Animal Boarding Establishment For A Period Of 3 Years	16-04-2021
A/YL-KTS/919	Proposed Temporary Animal Boarding Establishment For A Period Of 5 Years	01-06-2022
A/YL-KTS/906	Proposed Temporary Animal Boarding Establishment For A Period Of 3 Years	27-07-2022
A/YL-KTS/891	Proposed Temporary Animal Boarding Establishment For A Period Of 3 Years	26-08-2022
A/YL-KTS/935	Proposed Temporary Animal Boarding Establishment For A Period Of 5 Years	09-09-2022
A/YL-KTS/940	Proposed Temporary Animal Boarding Establishment For A Period Of 5 Years	03-03-2023
A/YL-KTS/953	Proposed Temporary Animal Boarding Establishment For A Period Of 3 Years	28-07-2023

14. Similar Applications for "Proposed Temporary Animal Boarding Establishment with / without Ancillary Facilities" uses within the same "AGR" zone in the vicinity of Ma On Kong / Ho Pui Village have been approved for the past couple of years. Given that the planning context of the adjacent areas has not been significantly altered, it is considered that the planning circumstances of the current application are similar to the similar approved applications.

**No Adverse Impact to the Surroundings**

15. The proposed development only involves single-storey structures except the office. It is compatible with the surrounding land uses which are rural in character predominated by active/fallow farmland, hobby farm, open storage yards and vehicle parkings.
16. No public announcement system and whistle blowing will be allowed at the application site. No dog training sessions will be carried out during sensitive hours (i.e. 7 p.m. to 9 a.m.). All dogs will be staying in the kennels from 7:00 p.m. to 9:00 a.m. to avoid any noise nuisance to nearby sensitive receivers.
17. All kennels will be enclosed with soundproofing materials, equipped with mechanical ventilation and air conditioning and kept in sanitary conditions; No environmental nuisance is expected to be arisen from the proposed development.
18. The animal boarding establishment is at least 210 meters away from residential buildings. (Plan 6)
19. 1 no. of parking spaces for private cars and 1 no. of Light Goods Vehicle (LGV) parking space are proposed on site for daily operation of the proposed development.

## Traffic

20. The trip attraction and generation rates are expected as follows:

	Weekday		Weekend	
	Trip Attractions	Trip Generations	Trip Attractions	Trip Generations
09:00 – 11:00	0	0	0	0
10:00 – 11:00	1	0	1	0
11:00 – 12:00	1	0	2	1
12:00 – 13:00	0	1	0	2
13:00 – 14:00	0	1	1	0
14:00 – 15:00	1	0	2	1
15:00 – 16:00	1	1	2	2
16:00 – 17:00	1	1	1	2
17:00 – 18:00	0	1	0	1
18:00 – 19:00	0	0	0	0
Total Trips	<u>5</u>	<u>5</u>	<u>9</u>	<u>9</u>

21. In view of such low trip attraction and generation rates, the proposed development would not cause adverse traffic impact to the adjacent area and road network.
22. The access road from Kam Ho Road to The kennel is very flat, with a width ranging from 4 meters to 7 meters, and there are multiple vehicle shelters, so traffic is very smooth.
23. There are green minibuses from Yuen Long city center to the vicinity of the application place, and then it can be reached by walking in 6 minutes. (Plan 7)
24. Sufficient space is allowed for car manoeuvring within, entering and leaving the application site.
25. The operation of the proposed development involves taking care of pets. The delivery of pets to customers requires prior preparation e.g. cleaning and other services. Prior preparation of lodging place is also required for the receipt of pets. As these services would take some times to prepare, customers are required to give prior notification before they come so that proper services can be provided. In this case, walk-in customers are not frequently expected as no ad-hoc services can be provided.
26. Parking spaces will be reserved for customers who have given prior notification. Visitors without appointment will not be accepted, and will be asked to leave and make appointment before coming.

## Transport

27. Smooth manoeuvring of vehicles to and from Kam Ho Road along the local access and within the site is demonstrated in the attached plan under the heading of "Swept Path Analysis" (Plan 8)

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28. The applicant client understands that the local access between Kam Ho Road and the Application Site is not managed by the Transport Department and that the applicant will take care of the local access to and from Kam Ho Road to the Application Site on their own.

**Environmental**

29. The applicant wishes to confirm that a septic tank and a soakaway system will be used to handle the animal waste on-site. The septic tank and soakaway system will be provided and the tank soakaway system will be designed and constructed according to the requirements of EPD's ProPECC PN 1/23, including requirements for minimum clearance distance, percolation test and certification by Authorized Person.
30. The applicant undertakes to follow the measures as set out in the 'Code of Practice on Handling the Environmental Aspects of Temporary Uses and Open Storage Sites' issued by the Environmental Protection Department in order to minimise any possible environmental nuisances, and to comply with all environmental protection/pollution control ordinances.
31. This application site will only be used for animal foster care and will not be used for training. Therefore, whistles and any amplifying equipment will not be used for broadcasting to avoid adverse effects on the nearby environment.
32. The venue will also be equipped with a 24-hour ventilation system and air coolers such as exhaust fans.

**Drainage**

33. The applicant will submit a drainage proposal, with provision of peripheral u-channels and catchpits to mitigate adverse drainage impact generated by the development after planning approval has been granted from the Board. The applicant will implement the proposed drainage facilities at the application site once the drainage proposal is accepted by the Drainage Services Department.
34. The applicant submits a drainage proposal to demonstrate that the proposed filling will not adversely affect the proposed/existing drainage system. The plan shows a cross-section of the existing and proposed ground levels at the above site relative to adjacent areas, as well as the extent of land filling.
35. The gradients of the proposed U-shaped channel/pipe line is shown on the drainage plan. (plan 9a, 9b, 9c)
36. The ground to the west and north of the application site. Since the overland flow from adjacent lands may be probably intercepted, external catchments are taken into account in the calculations. (Document 1a, 1b, 1c)
37. The proposed 300mm U-shaped channel is located outside the application site and may

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- intercept the overland flow from adjacent lands. Hydraulic calculations have been used to prove that the proposed drainage facilities are sufficient to collect, convey and discharge the surface runoff accrued on the application site and from adjacent land. (Document 1a, 1b, 1c)
38. The applicant are responsible for handling and resolving any conflict/disagreement arisen for discharging the runoff from the application site(s) to the proposed discharge points). We ensure that this drainage system and the existing downstream drains/channels/ streams have adequate capacity to convey the additional runoff from the application site(s). We will perform regular maintenance to ensure that the drainage system does not get blocked.
- 39.. Sand pits or similar facilities are provided before the collected runoff is discharged to a public drainage facility, please refer to proposed catchpit 10 and it is sand trap. (plan 9a, 9b,9c)
40. The applicant will erect or lay walls or hoardings along the site boundaries. The applicant will provide sufficient openings (with an approximate 150mm - 200mm gap from the ground) to intercept existing surface runoff through the site.
41. The applicant ensures that the development should neither obstruct overland flow nor adversely affect existing natural streams, village drains, ditches and adjacent areas.
42. The catchment area has been shown with the proposed drainage plans. (plan 9a, 9b,9c)
43. The applicant has provided the attached documents of the hydraulic assessment for reference, and substantiates any assumptions made in determining rainfall intensity. (Document 1a, 1b,1c)
44. The invert levels of U-channels at catchpit, and the gradients of the U-channel between the catchpits are showed and the proposed drainge plan. (plan 9a, 9b, 9c)
45. The applicant ensures that to resolve any conflicts/disagreements with the relevant land owners) and seek approval from the Lands Department for laying new drains/channels and/or upgrading existing drains on private lots or government land other than the application site /channel.
46. The existing channel, to which the applicant proposes to discharge the stormwater from the subject site, which is maintained by our office, the connection details between the discharge pipe and the existing pipe are showed on the proposal drainage plan. (plan 9a, 9b, 9c)
47. The cross-sections of the existing and proposed ground levels of the caption with respect to the adjacent area are showed on the cross section plans. (plan 10a, 10b,10c)

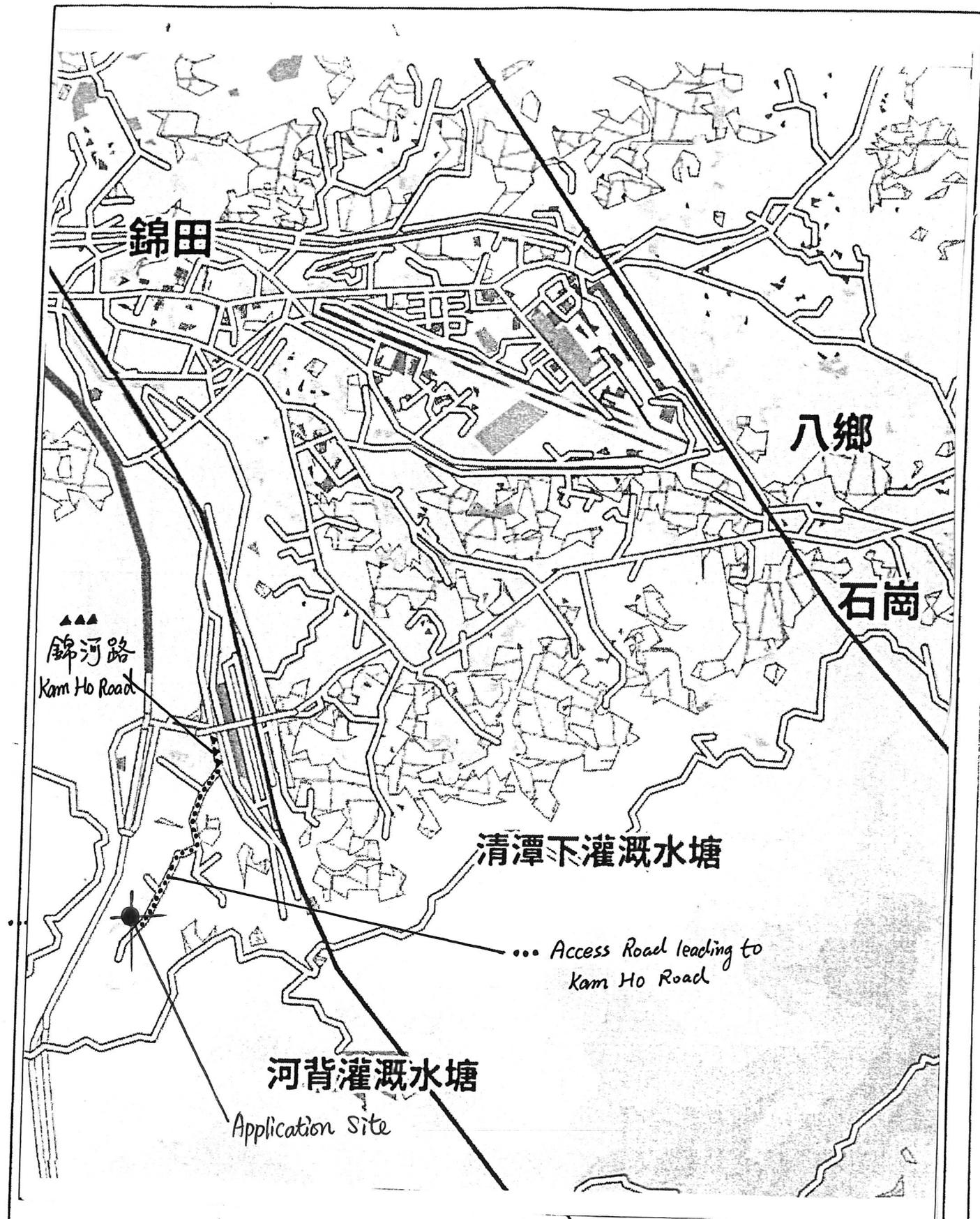
### Filling of Land

48. The applicant would like to explain that the leveling work in the application area has been completed, so the above-mentioned works will not be carried out on the application site. As for filling and leveling materials, the filling is to level the application site, and soil suitable for farming has been used. Level the foundation and then use concrete as the leveled surface layer. If sand or soil is used as the leveling material, it does not provide the benefits of using concrete. Leveling with concrete can provide a clean environment for users to clean, and prevent users from taking away soil when they leave, thus preventing soil erosion. In addition, the leveled area can be used to stabilize and consolidate the relevant structures to facilitate design and construction channels. In view of this, the scope and size of the flattening have been reduced to the minimum required for operation. The applicant will break up the paving materials and transport them away after the application period. This will not have any long-term impact on the site. The applicant will also ensure that the soil is suitable for farming to prevent any impact on the soil at the application site and nearby. The filling height and terrain shape have been carried out according to the old conditions without changing the terrain shape. The thickness has been increased from approximately mPD +21.9 to approximately mPD +22.1 without exceeding the applied thickness. (plan 11)

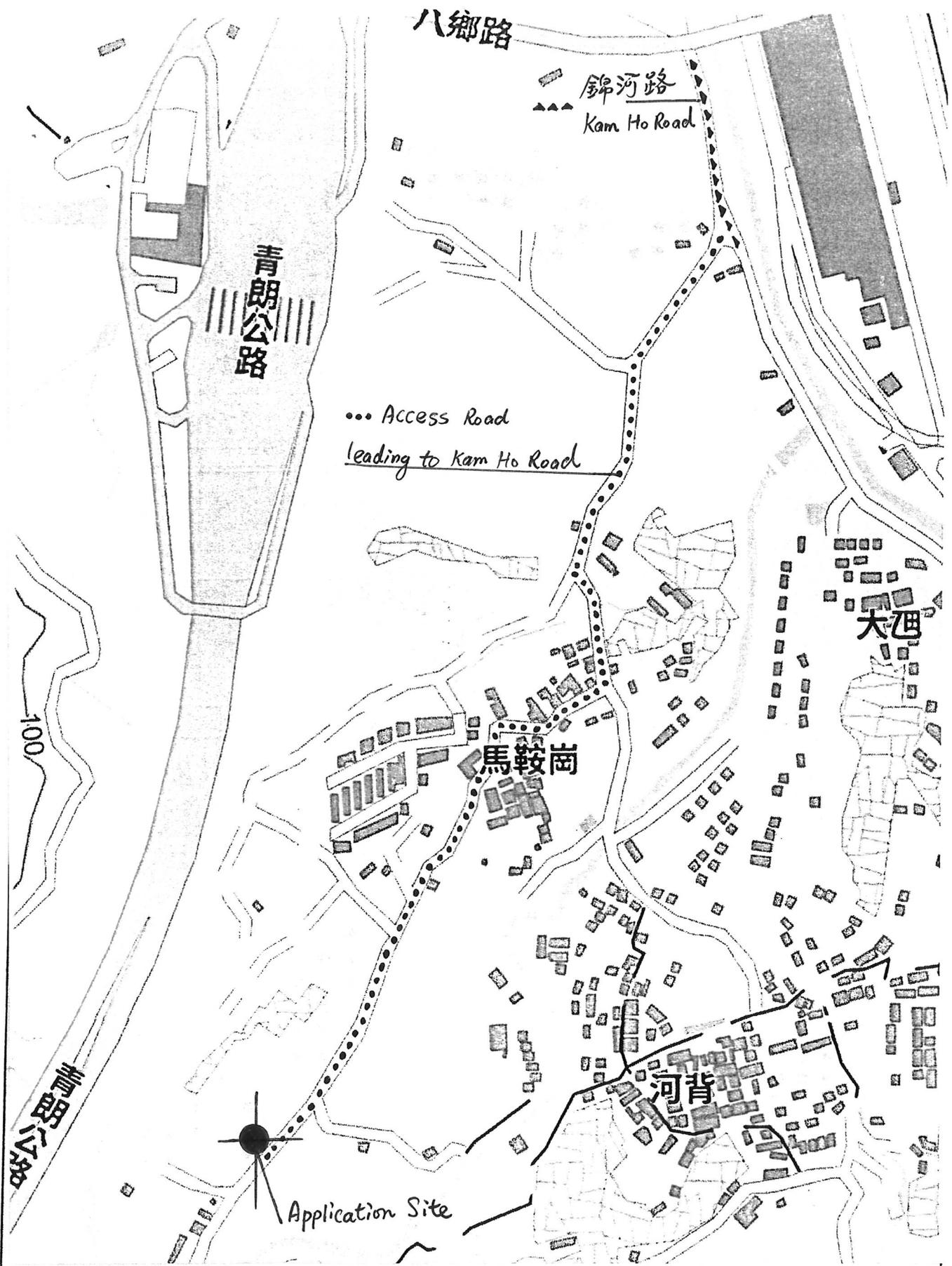
### Planning gain

49. The proposed use caters for the huge demand for animal boarding services in the area.

END



Not in Scale	Location Plan	Polyland Surveyors Limited
December 2023	Lot 475 in D.D. 113 Kam Tin, Yuen Long, New Territories.	Plan 1

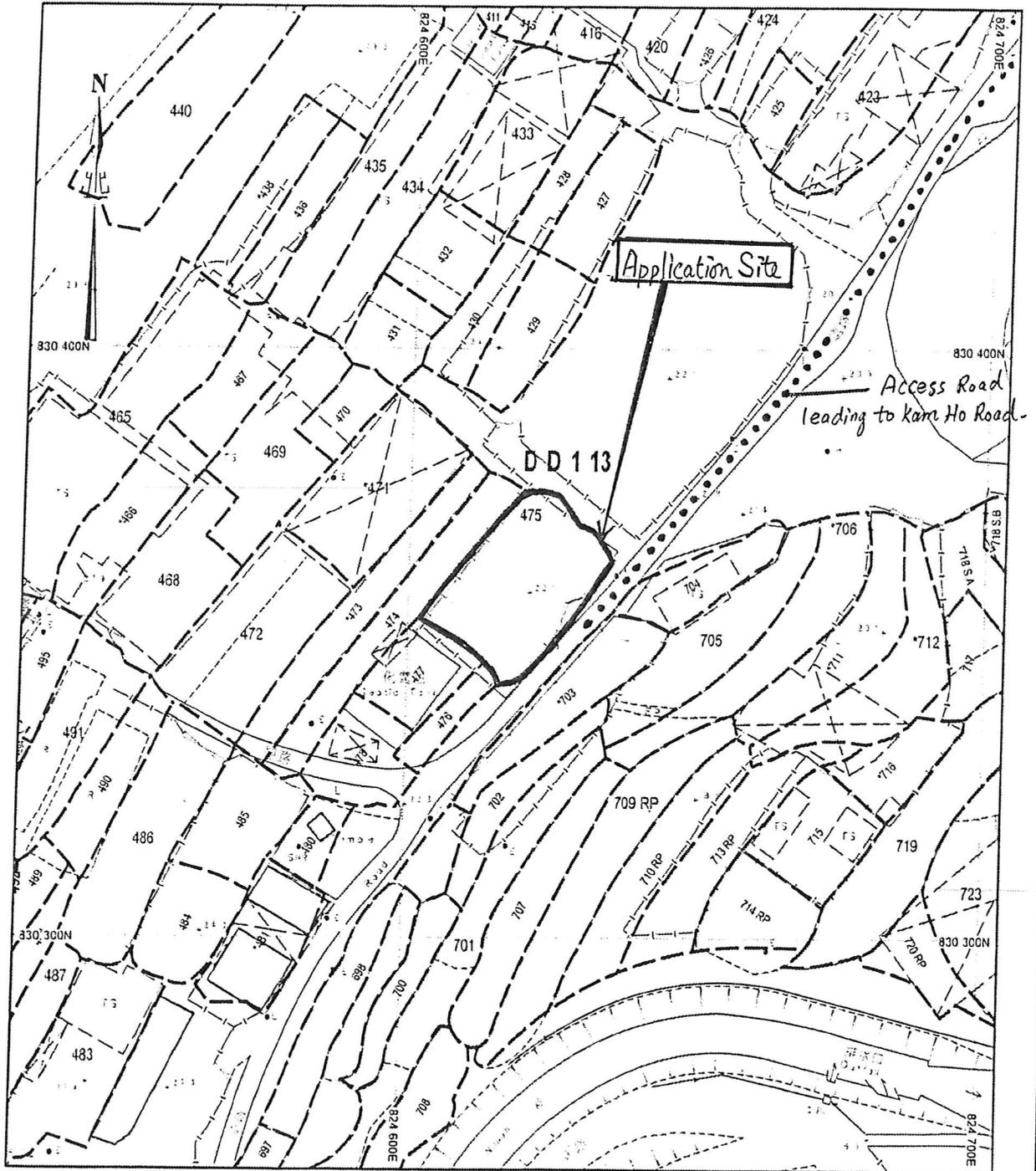


Not in Scale	Location Plan	Polyland Surveyors Limited
December 2023	Lot 475 in D.D. 113 Kam Tin, Yuen Long, New Territories.	Plan 2

N



# 地段索引圖 LOT INDEX PLAN



Scale 1:1000

Lot Index Plan

Polyland Surveyors Limited

December 2023

Lot 475 in D.D. 113  
Kam Tin, Yuen Long, New Territories.

Plan 3

N



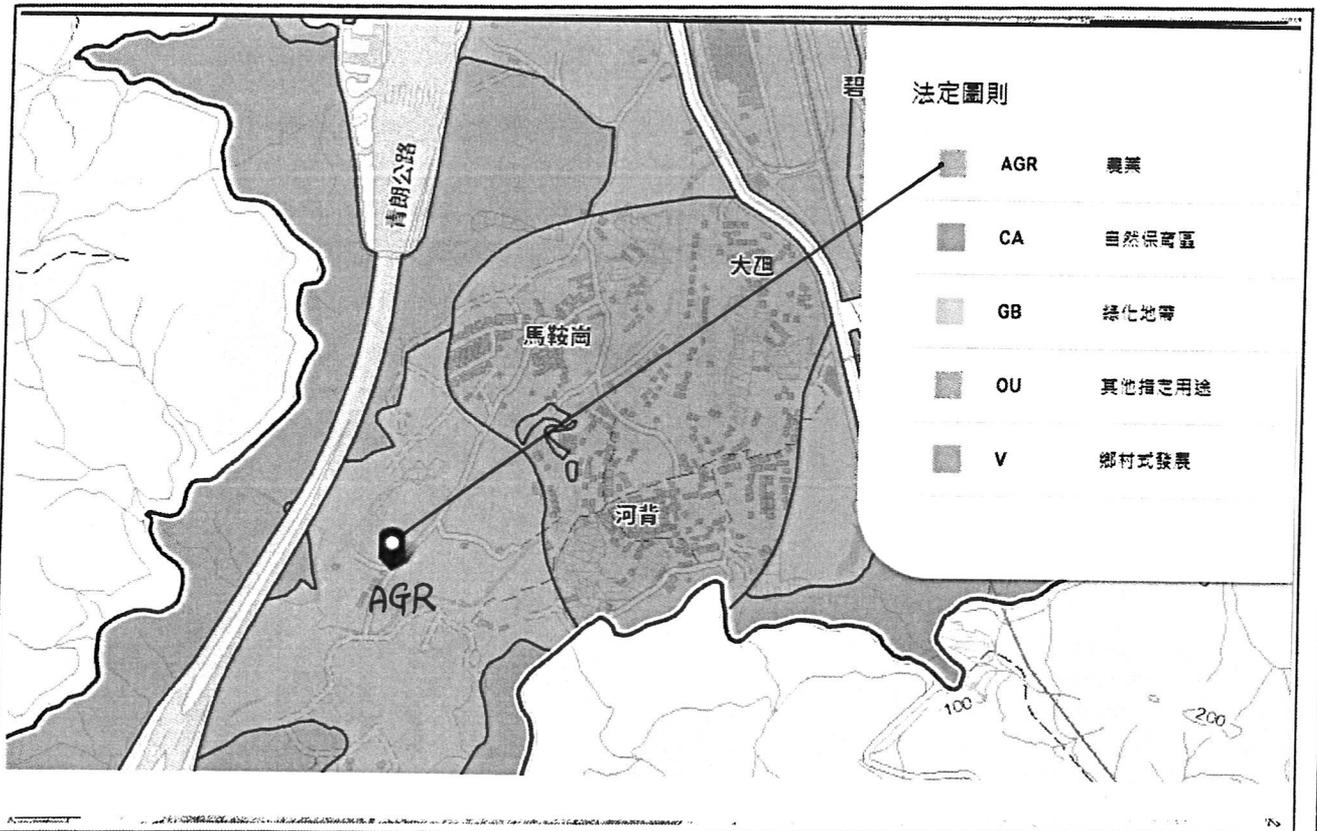
# 分區計劃大綱圖 Outline Zoning Plan

地段編號：丈量約份第113約地段475

物業編號：C2622064

城市規劃：地段被劃分為「農業 AGR」用途

分區計劃大綱核准圖編號：S/YL-KTS/15



Not in Scale

(OZP) S/YL-KTS/15

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Limited

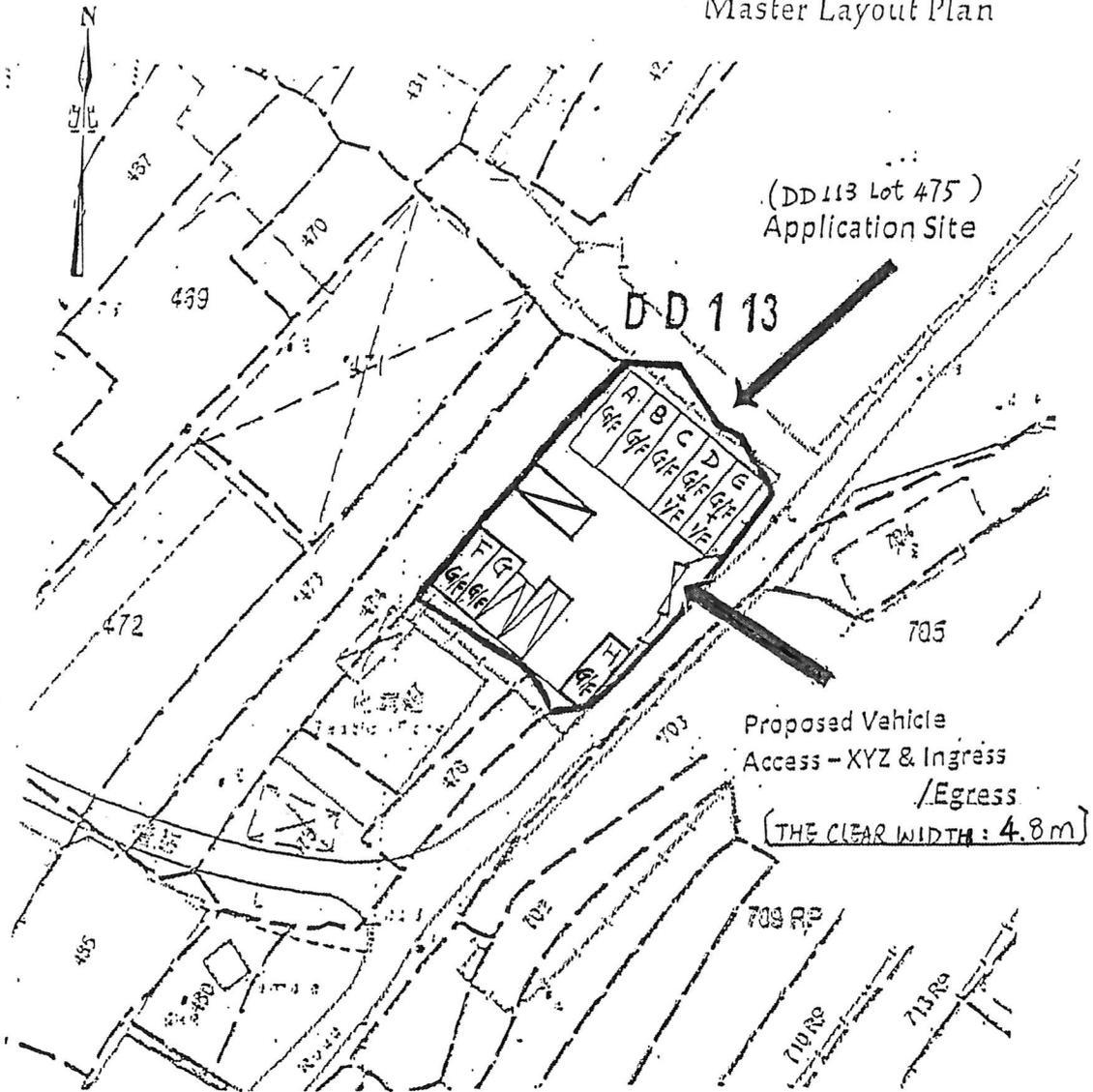
December 2023

Lot 475 in D.D. 113  
Kam Tin, Yuen Long, New Territories.

Plan 4

N

Master Layout Plan



Legend

• A, B, C, D, E (G/F - Proposed Animal Boarding Establishment) - Containers of Size each about

8.5 m (L) x 3.0 m (W) x 2.6 m (H)  $(25.5m^2/each)$

• F, G (Proposed Store Rooms) & H (Cleaning Room) - Containers of Size each about

6 m (L) x 2.4 m (W) x 2.6 m (H)  $(14.4m^2/each)$

• A, B, C - Single Storey

• D, E (I/F - Proposed Office of about  $25.5m^2/each$ ) - 2 Storeys

• PC - Private Car Parking Space (5.0 m (L) x 2.5 m (W))

• LGV - Light Goods Vehicle Parking Space (7 m (L) x 3.5 m (W))

• LUL - Loading & Unloading Area (Light Goods Vehicle)

	G/F	I/F
A	25.5	
B	25.5	
C	25.5	
D	25.5	+ 25.5
E	25.5	+ 25.5
F	14.4	
G	14.4	
H	14.4	
GFA	221.70m <sup>2</sup> (0.32)	
SC	170.70m <sup>2</sup> (27.6%)	

Not in Scale

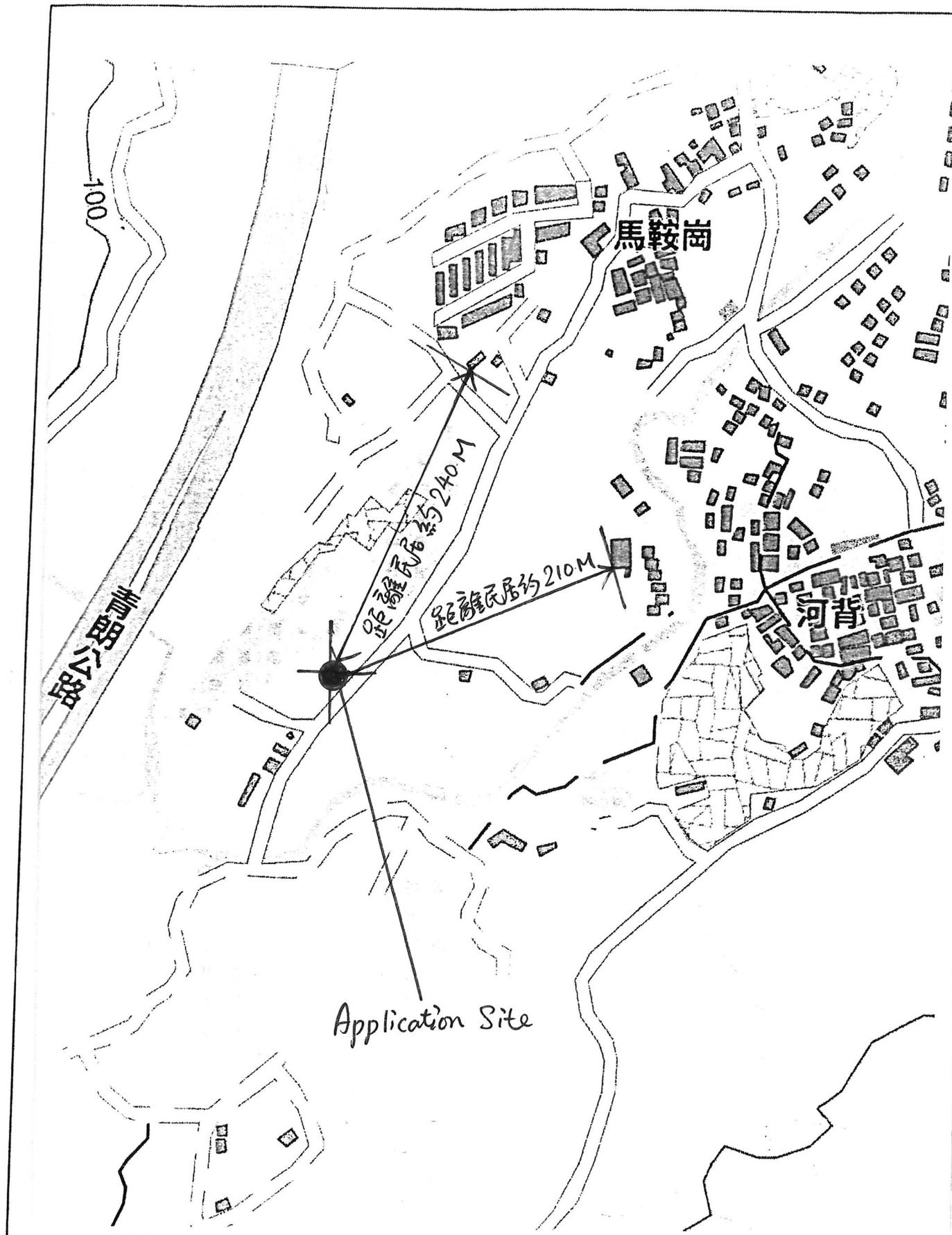
Master Layout Plan

Polyland Surveyors  
Limited

December 2023

Lot 475 in D.D. 113  
Kam Tin, Yuen Long, New Territories.

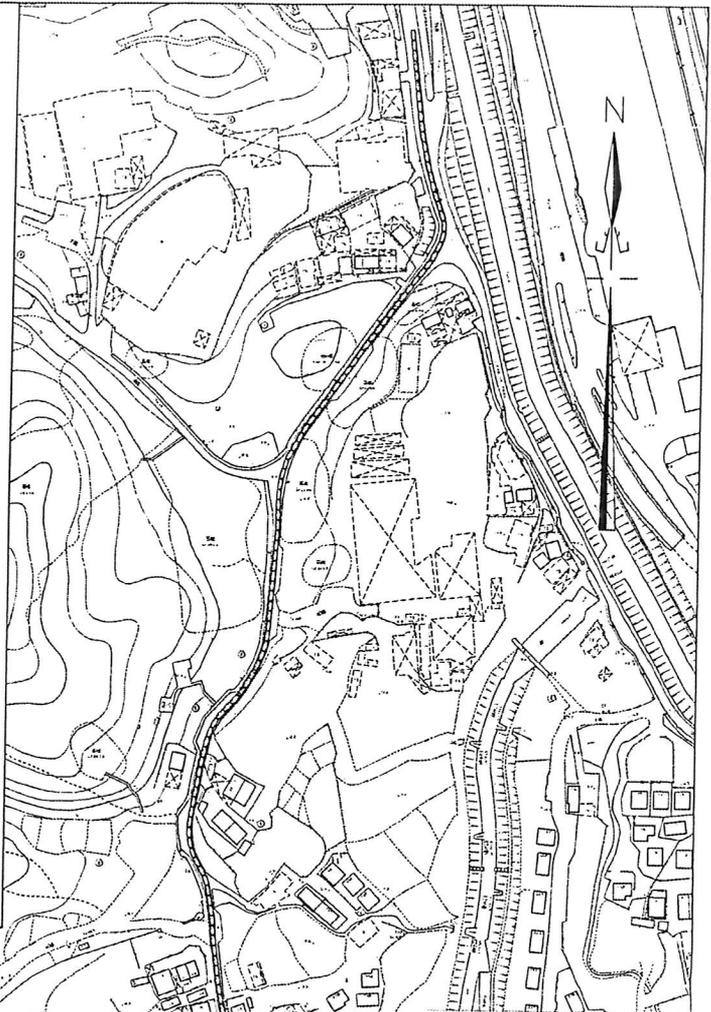
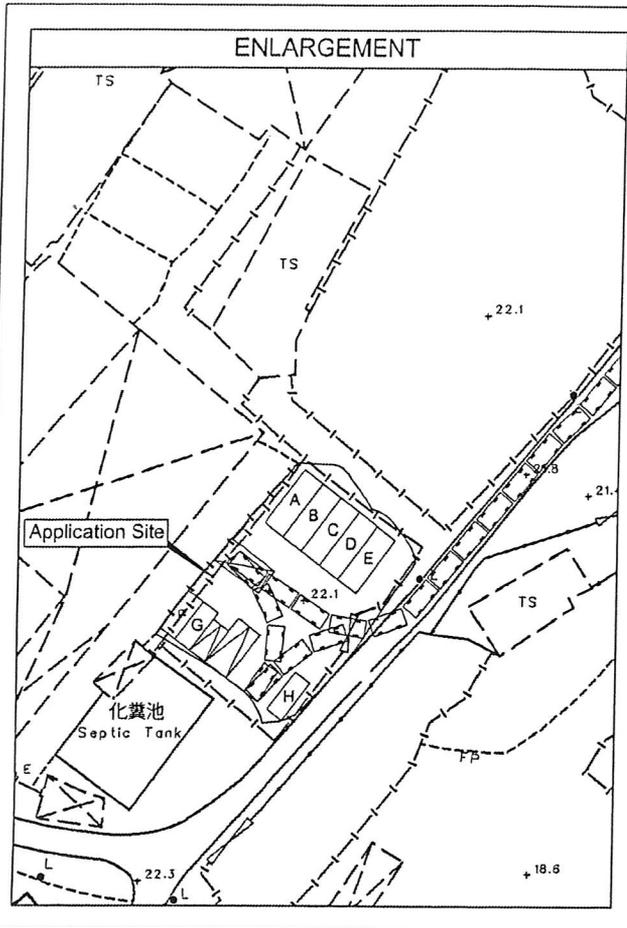
Plan 5



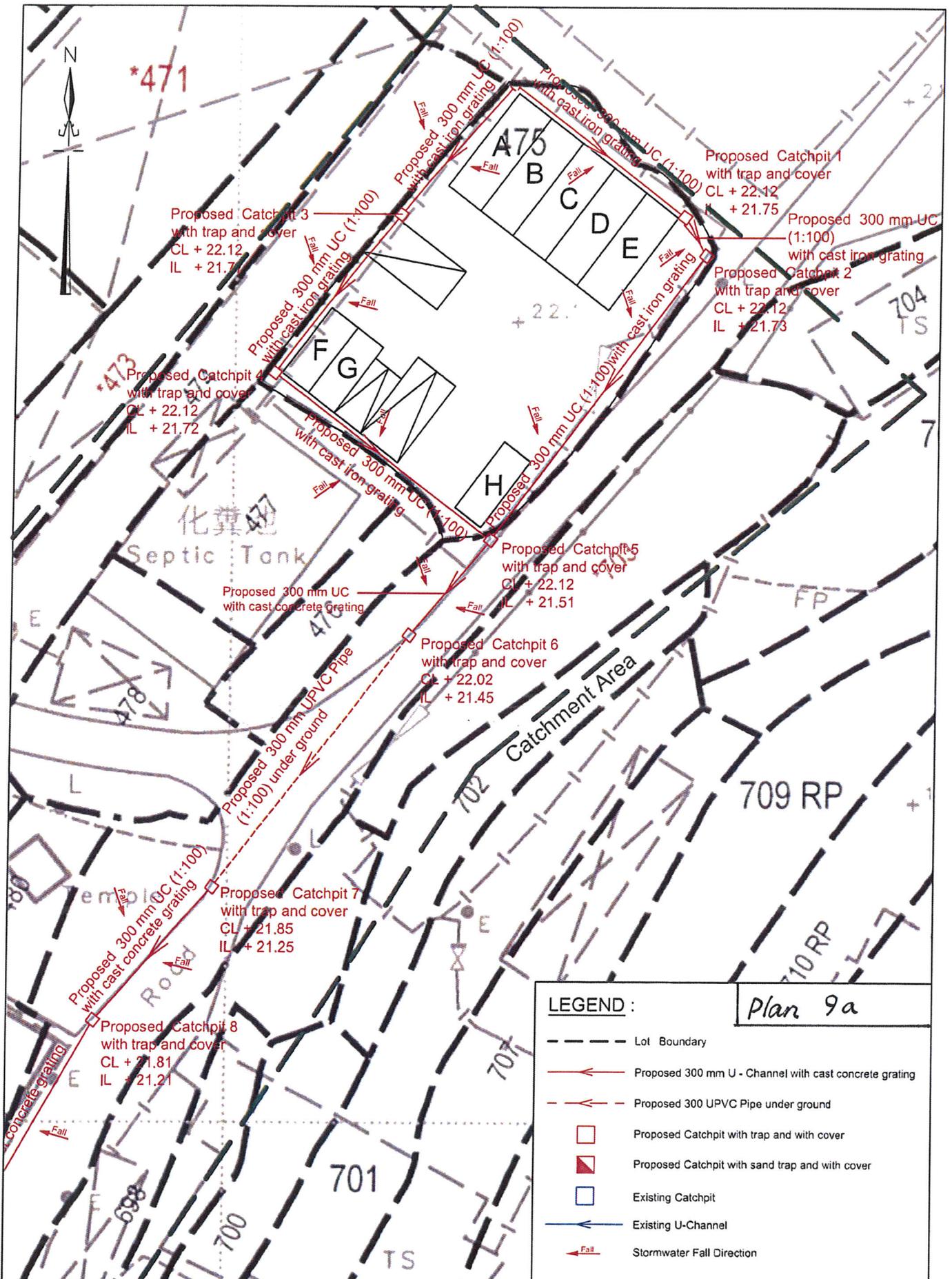
Not in Scale	Distance from application location to residence	Polyland Surveyors Limited
December 2023	Lot 475 in D.D. 113 Kam Tin, Yuen Long, New Territories.	Plan 6



Not in Scale	Green-mini bus route 71	Polyland Surveyors Limited
December 2023	Lot 475 in D.D. 113 Kam Tin, Yuen Long, New Territories.	Plan 7



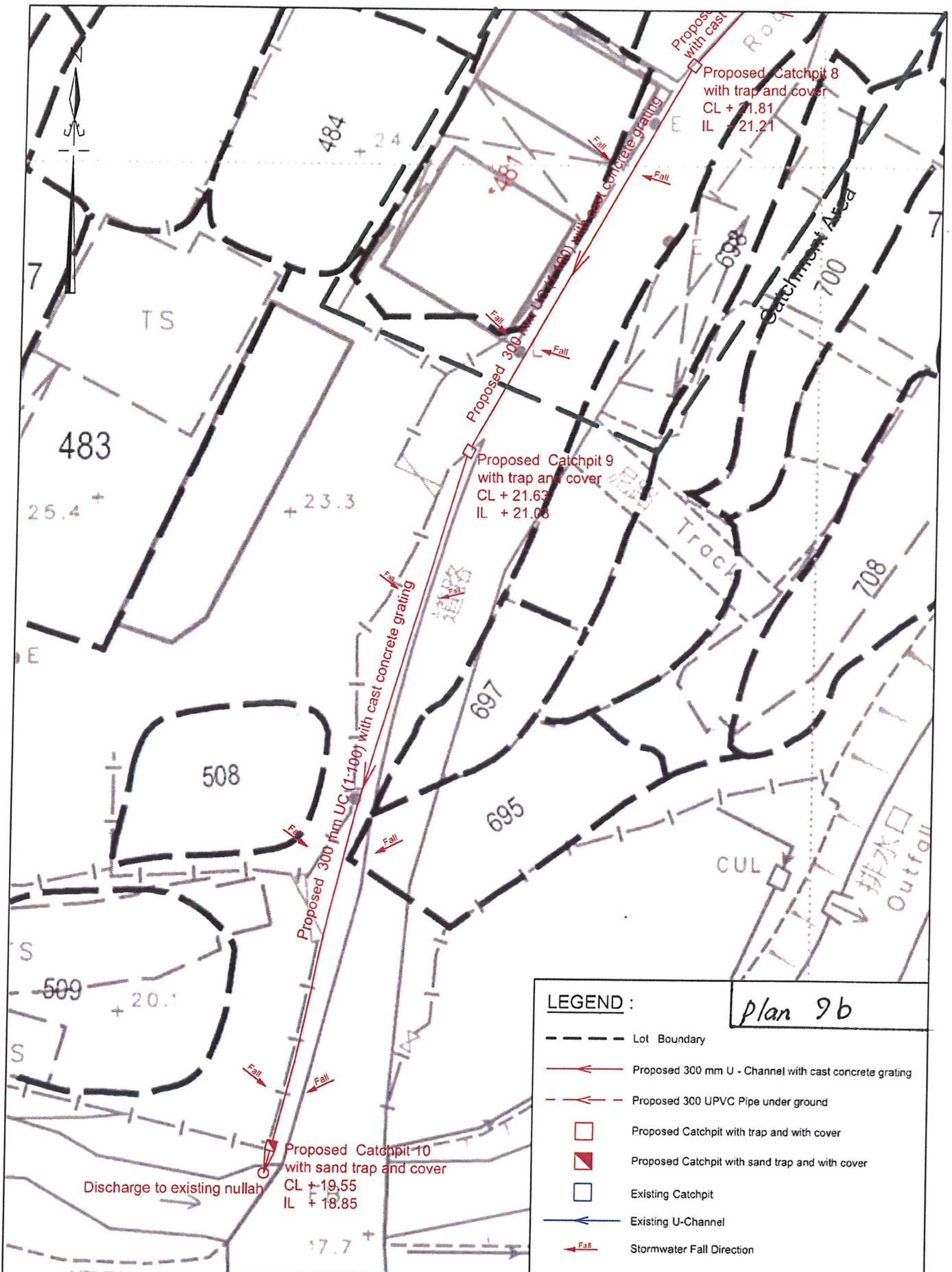
<h3>Plan 8</h3>	
CONSULTANT POLYLAND SURVEYORS LIMITED	
ADDRESS SHOP G21, G/F, ON LAI BUILDING, 3 TSING TO PATH, TSENG CHOI STREET, CASTLE PEAK ROAD, TUEN MUN, NT.	
PROJECT PROPOSED TEMPORARY ANIMAL BOARDING ESTABLISHMENT WITH ANCILLARY FACILITIES FOR A PERIOD OF 5 YEARS SITE LOCATION	
LOT NO. 475 IN D.D. 113, KAM TING, YUEN LONG, NEW TERRORIES	
DRAWN BY BC	DATE 5 MARCH 2024
CHECKED BY EC	DATE 5 MARCH 2024
DWG TITLE SWEEP PATH ANALYSIS	
DWG NO. SWPA - D1	
LEGEND	 VEHICLE



Plan 9a

LEGEND :	
	Lot Boundary
	Proposed 300 mm U - Channel with cast concrete grating
	Proposed 300 UPVC Pipe under ground
	Proposed Catchpit with trap and with cover
	Proposed Catchpit with sand trap and with cover
	Existing Catchpit
	Existing U-Channel
	Stormwater Fall Direction

<b>CHUO WANG SURVEY SERVICES COMPANY</b> 1/F, Flat A, Wo Tai Building, No. 2-24, Wo Tai Street, Luen Wo Hui, Fanling, N.T. Telephone : 28831600 Mobile : 66862836 Fax : 28831380 E-mail : chuowang.ssc@gmail.com / h.y.pang@hotmail.com	Project Title	D.D. 113 LOT 475	Scale	-	Figure No.	DP-01c
	Figure Title	PROPOSED STORMWATER DRAINAGE PLAN		Date	05-07-2024	Revision

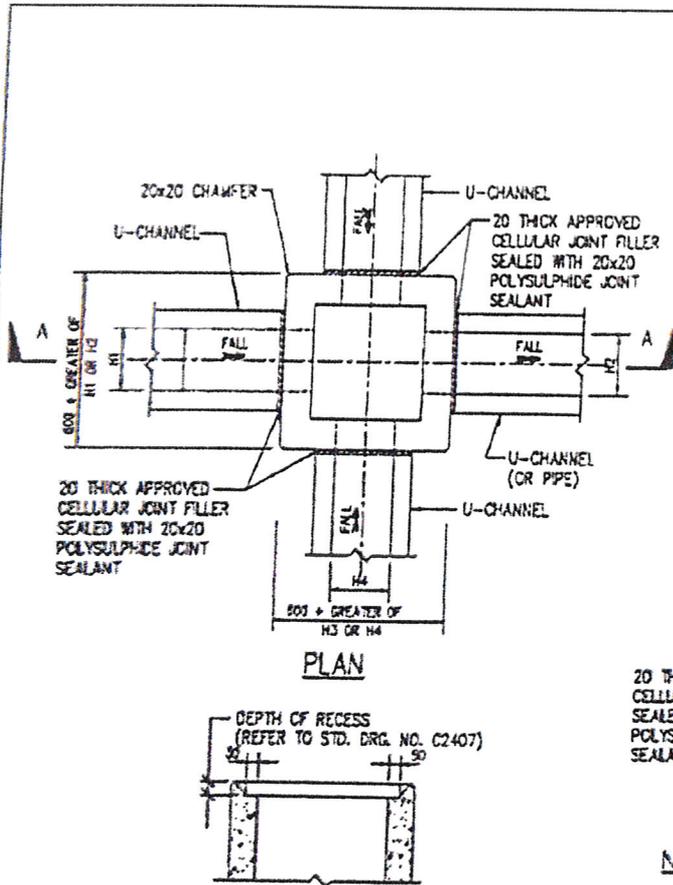


**LEGEND :**

- Lot Boundary
- Proposed 300 mm U - Channel with cast concrete grating
- Proposed 300 UPVC Pipe under ground
- Proposed Catchpit with trap and with cover
- Proposed Catchpit with sand trap and with cover
- Existing Catchpit
- Existing U-Channel
- Stormwater Fall Direction

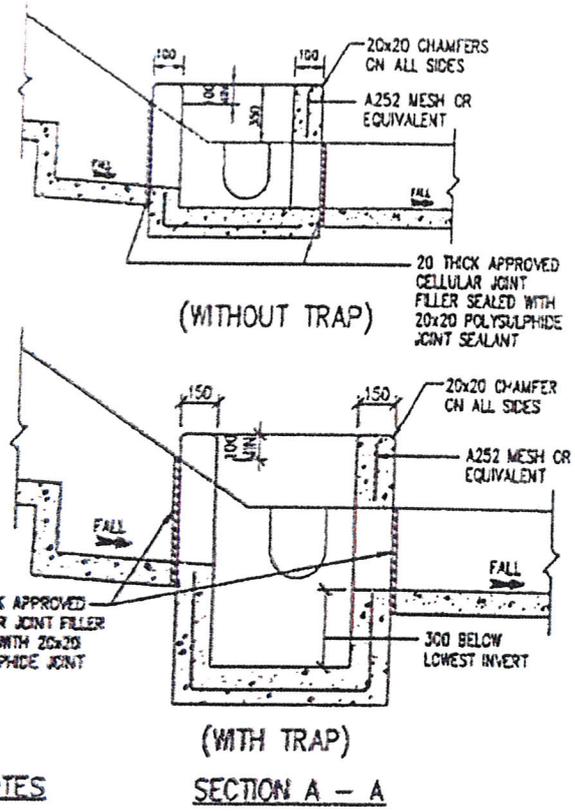
*plan 9b*

<b>CHUO WANG SURVEY SERVICES COMPANY</b> 1/F, Flat A, Wo Tai Building, No.2-24, Wo Tai Street, Luen Wo Hui, Faning, N.T. Telephone : 28931800 Mob (to : 69982836 Fax : 28931380 E-mail - chuowang.ssc@gmail.com / h.y.pang@hotmail.com	Project Title	D.D. 113 LOT 475	Scale	-	Figure No.	DP-02c
	Figure Title	PROPOSED STORMWATER DRAINAGE PLAN		Date	05-05-2024	Revision



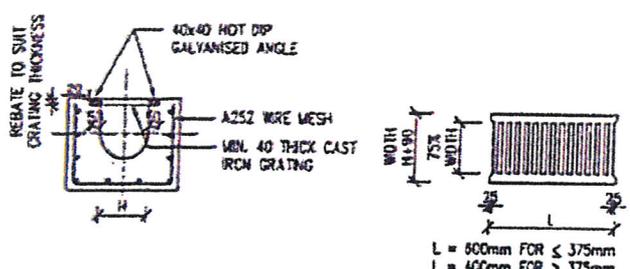
**ALTERNATIVE TOP SECTION FOR PRECAST CONCRETE COVER**

**STANDARD CATCHPIT DETAILS (ACCORDING TO CEDD'S DRAWING NO. C2405I & 2406I)**

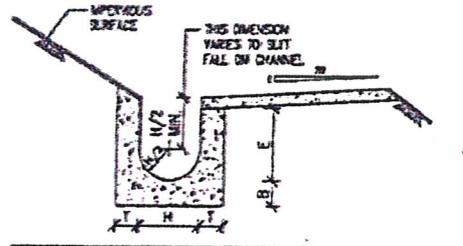


**NOTES SECTION A - A**

- (1) ALL DIMENSIONS ARE IN MILLIMETRES.
- (2) SIZE - DEPTH :  $D < 750$   
 WIDTH :  $W > 3B$   
 LENGTH :  $L = 4.8D^{0.67} H^{0.5} F^{-0.5} > 4B$
- (3) GRADED STONE FILTER SHALL BE CRUSHER RUN GRANITE AGGREGATE.
- (4) THE SANDTRAP SHALL BE REGULARLY DESILTED TO AVOID BLOCKAGE.



**TYPICAL SECTION CAST IRON GRATING**  
**U-CHANNEL WITH CAST IRON GRATING (UP TO H OF 525)**  
 (ACCORDING TO CEDD'S DRAWING NO. C2412E)



NOMINAL SIZE (H)	T	B	REINFORCEMENT
225-300	30	100	A252 MESH PLACED CENTRALLY AND T=100 WHEN D<650
375-600	100	150	
675-900	100	150	A252 MESH PLACED CENTRALLY

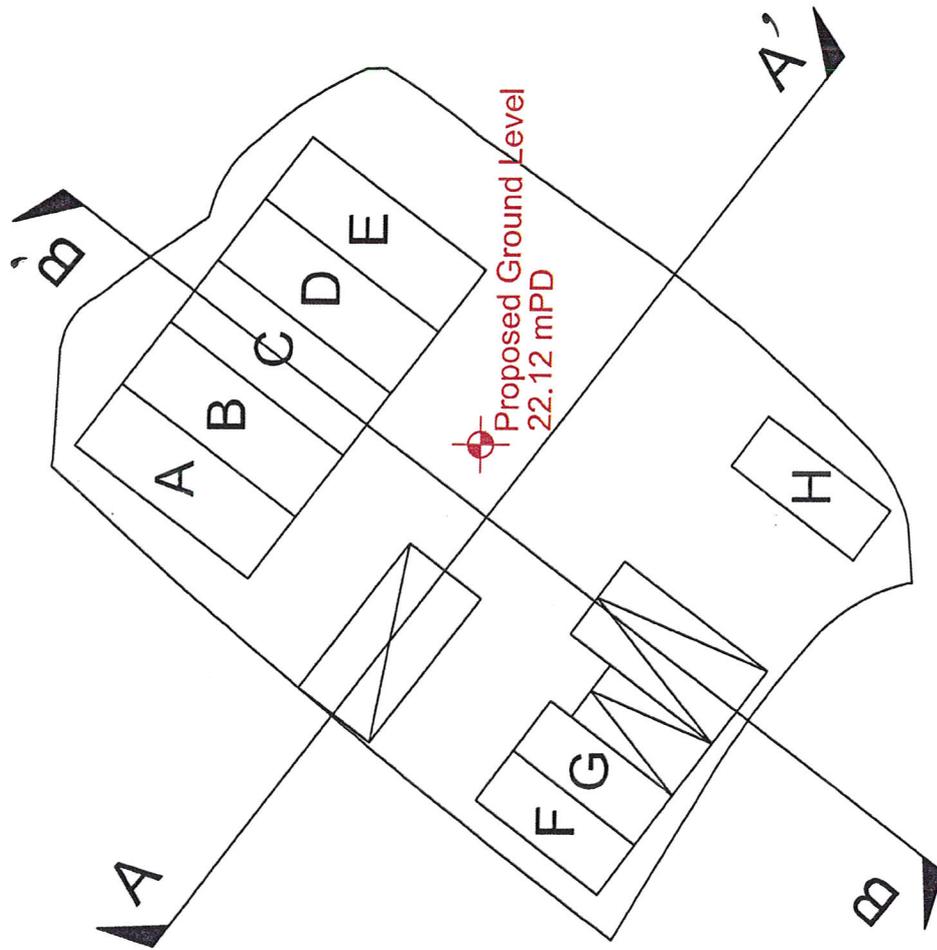
**TYPICAL U-CHANNEL DETAILS (ACCORDING TO CEDD'S DRAWING NO. C2410G) N.T.S.**

**NOTES FOR U-CHANNEL**

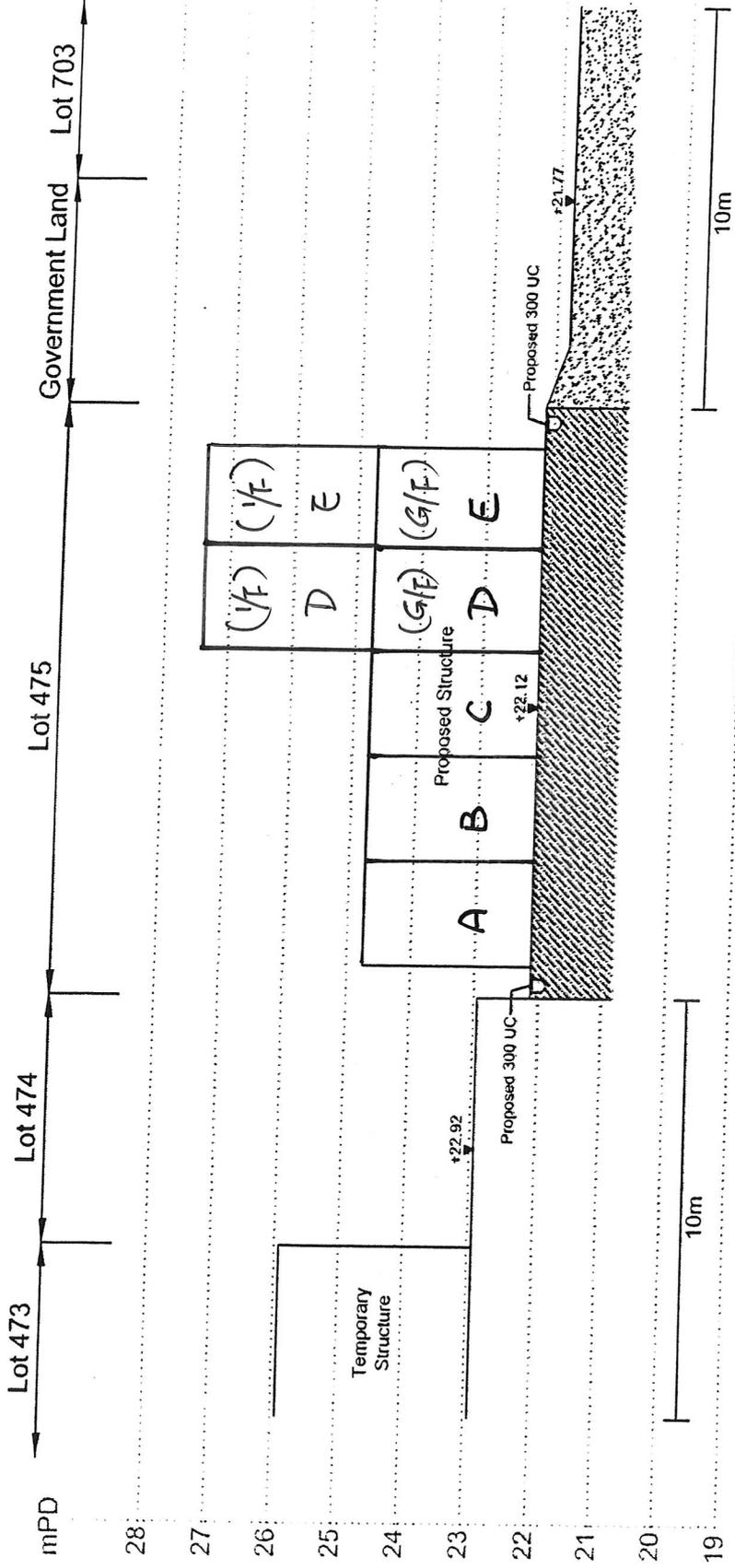
- 1. THE COVER OF PROPOSED U-CHANNEL SHALL BE FLUSH WITH THE PATH SURFACE AND ANY HOLE IN SUCH COVER SHALL NOT EXCEED 20mm IN ONE DIMENSION.
- 2. CAST IRON GRATINGS TO BE USED SHALL BE COMPLIANCE WITH BS 437:2008.

*Plan 9C*

CHUO WANG SURVEY SERVICES COMPANY 11/F, Flat A, Wo Tai Building No 2-24, Wo Tai Street, Luen Wo Hui, Tsim Sha Tsui, K.T. Telephone: 25831900 Mobile: 99952938 Fax: 29331380 E-mail: chuoawang.ssr@gmail.com / h.y.pang@hotmail.com	Project Title	D.D.113 LOT 475	Scale	--	Figure No.	DP-03
	Figure Title	CATCHPIT AND U-CHANNEL DETAILS		Date	05-05-2024	Revision



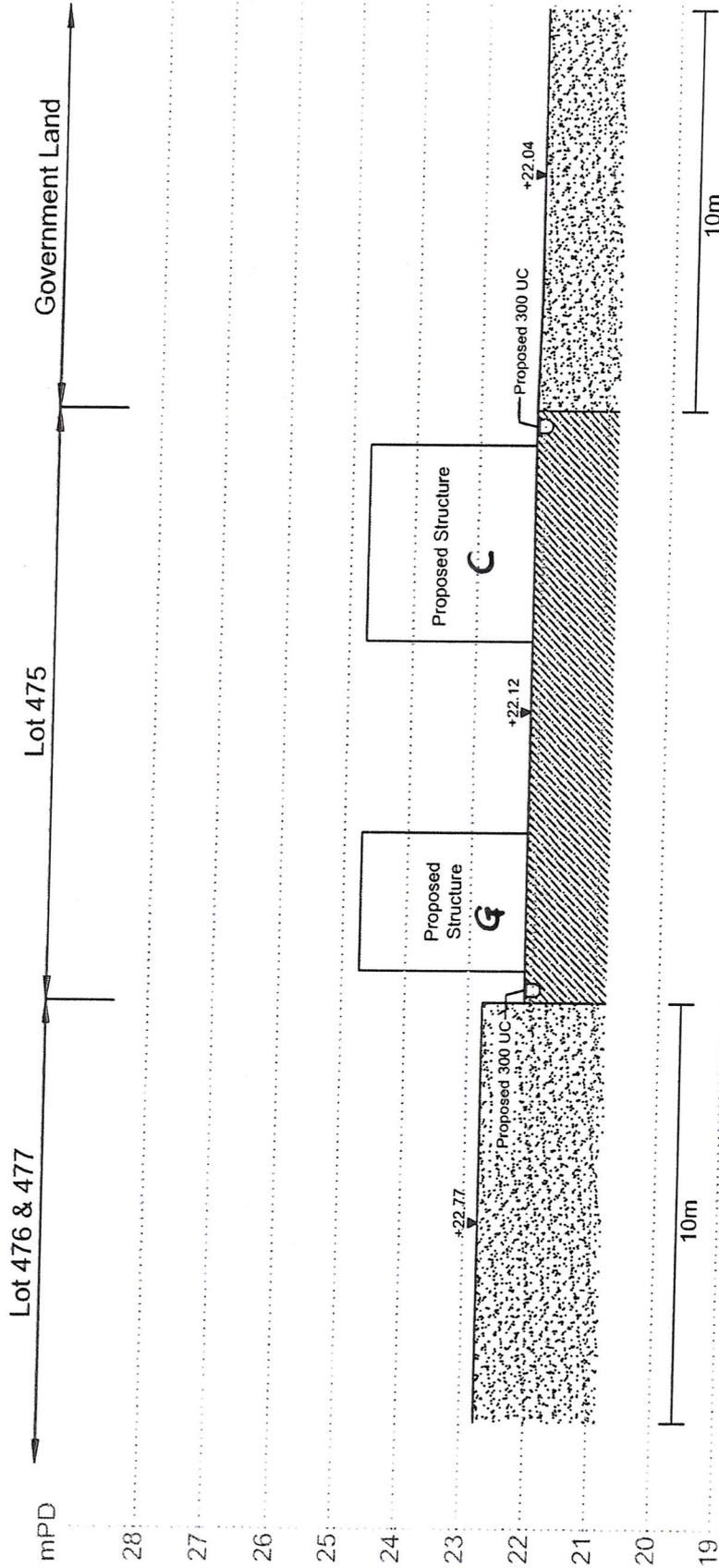
<p>卓 弘 測 量 服 務 公 司          CHUO WANG SURVEY SERVICES COMPANY          1/F, Block A, Wo Tai Building, No.2-24, Wo Tai Street,          Luen Wo Hui, Fanling, N.T.          Telephone : 26831600 Mobile : 66862836 Fax : 26831380          E-mail - chuowang.ssc@gmail.com / h.y.pang@hotmail.com</p>	<p>Project Title          D.D.113 LOT 475</p> <p>Figure Title          CROSS SECTION</p>	<p>Scale          --</p> <p>Date          17-07-2024</p>	<p>Plan 10a</p> <p>Figure No.          CS1a</p> <p>Revision          --</p>
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\* Proposed Ground Level = 22.12 mPD

A — < SECTION A-A' > — A'

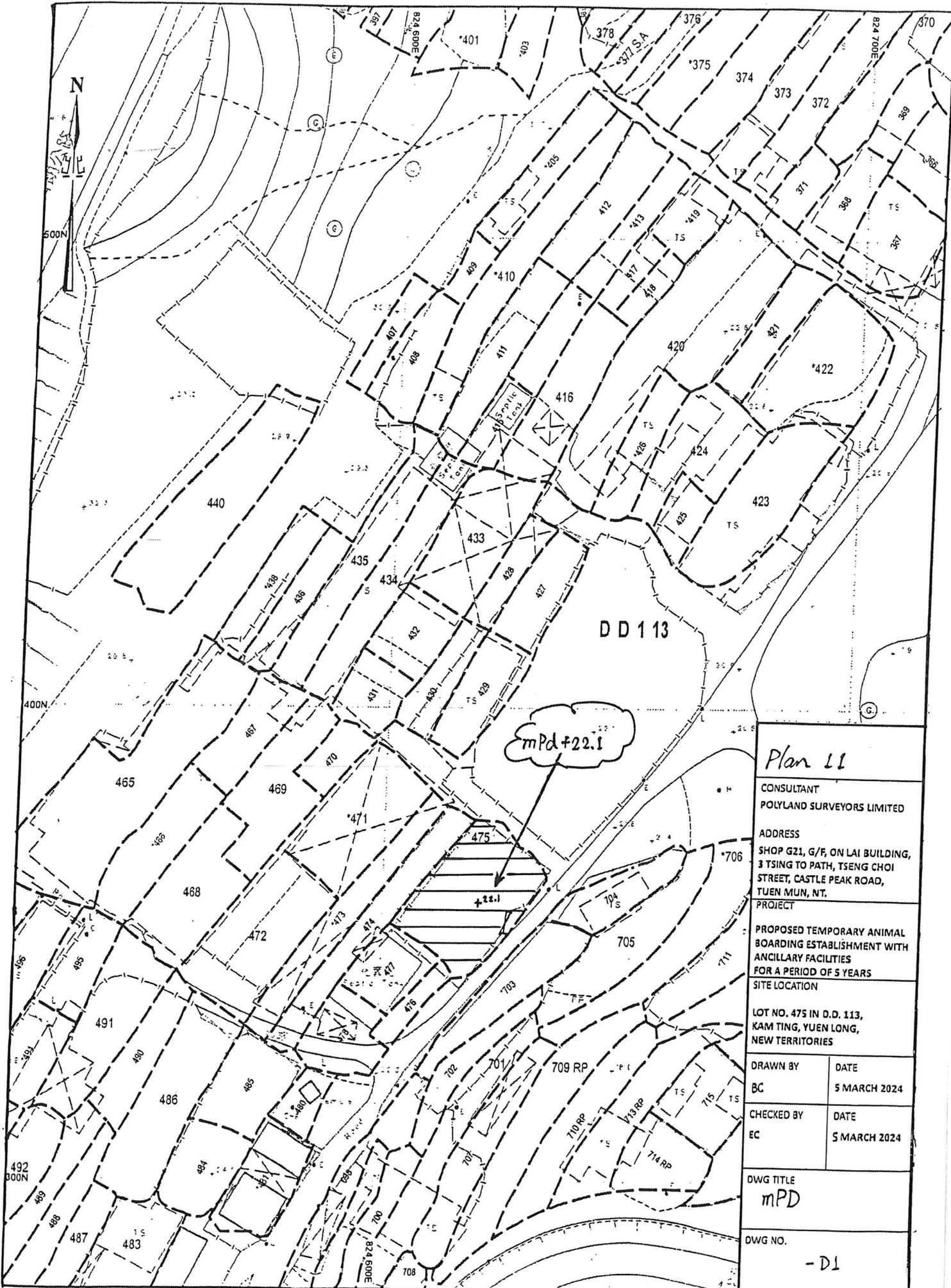
卓 弘 測 量 服 務 公 司 CHUO WANG SURVEY SERVICES COMPANY 1/F, Block A, Wo Tai Building, No.2-24, Wo Tai Street, Luen Wo Hui, Fanning, N.T. Telephone : 26831600 Mobile : 66862836 Fax : 26831380 E-mail - chuowang.ssc@gmail.com / h.y.pang@hotmail.com		Project Title D.D.113 LOT 475	Figure Title SECTION A-A'
Plan Job Figure No. CS2a	--	17-07-2024	Revision A



\* Proposed Ground Level = 22.12 mPD

B < SECTION B-B' > B'

卓 弘 測 量 服 務 公 司 CHUO WANG SURVEY SERVICES COMPANY 1/F, Block A, Wo Tai Building, No.2-24, Wo Tai Street, Luen Wo Hui, Fanling, N.T. Telephone : 26831600 Mobile : 66862836 Fax : 26831380 E-mail - chuowang.ssc@gmail.com / h.y.pang@hotmail.com		Project Title D.D.113 LOT 475		Figure No. CS3a	Plan 10c
Figure Title SECTION B-B'		17-07-2024		Revision B	



*Plan 11*

CONSULTANT  
POLYLAND SURVEYORS LIMITED

ADDRESS  
SHOP G21, G/F, ON LAI BUILDING,  
3 TSIING TO PATH, TSENG CHOI  
STREET, CASTLE PEAK ROAD,  
TUEN MUN, NT.

PROJECT  
PROPOSED TEMPORARY ANIMAL  
BOARDING ESTABLISHMENT WITH  
ANCILLARY FACILITIES  
FOR A PERIOD OF 5 YEARS  
SITE LOCATION

LOT NO. 475 IN D.D. 113,  
KAM TING, YUEN LONG,  
NEW TERRITORIES

DRAWN BY	DATE
BC	5 MARCH 2024

CHECKED BY	DATE
EC	5 MARCH 2024

DWG TITLE  
*mPd*

DWG NO.  
- D1

# Hydraulic Assessment of the Stormwater Drainage for Lot 475 in D.D. 113

Document 1a

Locations	Sub-attachment reference	Attachment area				Channel character				Hydraulic parameter		Type of attachment area	50 yr mm/hr	Peak Runoff (m³/s)	Full bore Capacity (m³/s)	Full bore Velocity (m/s)			
		impermeable		permeable		channel shape	channel size			flow area (m²)	equiv. D (mm)								
		dis. attachment (m²)	accumulative area (m²)		accumulative area (m²)		width (mm)	height (mm)	length (m)										
Lot 475	- 1	517	517	0	0	517	517	cc	300	300	-	101000	0.08	0.42	u	343.74	0.016	0.138	1.713
Lot 474	- 2	381	381	0	0	381	381	cc	300	300	-	101000	0.08	0.42	u	343.74	0.010	0.138	1.713
Lot 477	- 3	219	219	0	0	219	219	cc	300	300	-	101000	0.08	0.42	u	343.74	0.006	0.138	1.713
Lot 475	- 4	101	101	0	0	101	101	cc	300	300	-	101000	0.08	0.42	u	343.74	0.003	0.138	1.713
Lot 489	- 5	113	113	0	0	113	113	cc	300	300	-	101000	0.08	0.42	u	343.74	0.003	0.138	1.713
Lot 705	- 6	323	323	0	0	323	323	cc	300	300	-	101000	0.08	0.42	u	343.74	0.009	0.138	1.713
Lot 498	- 7	378	378	0	0	378	378	cc	300	300	-	101000	0.08	0.42	u	343.74	0.010	0.138	1.713
Lot 451	- 8	312	312	0	0	312	312	cc	300	300	-	101000	0.08	0.42	u	343.74	0.008	0.138	1.713

I = Rainfall intensity (50 year storm frequency may be specified)  
 Peak Runoff = 0.278\*I/1000/60/60\*accumulative area  
 Cross area for 300 u channel = 0.150\*0.3+0.150^2\*pi/2  
 Equivalent Diameter = 4\*Hydraulic Radius  
 Hydraulic Radius = cross area of u channel / wetted perimeter of u channel

Roughness coefficient (ks) at 3.3mm

The roughness of a pipe is normally specified in either mm or inches and common values range from 0.0015 mm for PVC pipes through to 3.0 mm for rough concrete pipes

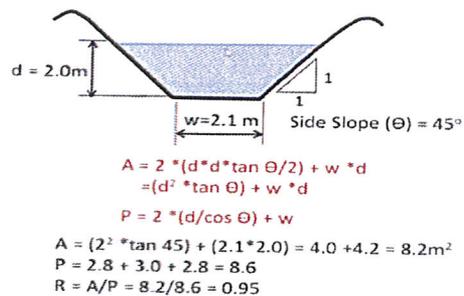
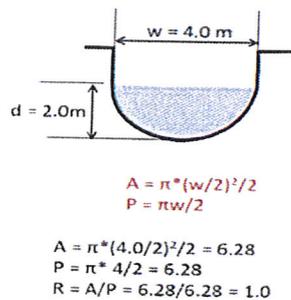
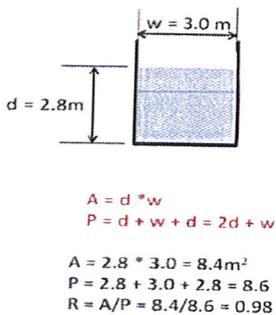
Full bore Capacity = Full bore Velocity \* cross area

Full Bore Velocity - The Full Bore Velocity is calculated using either the Manning Formula or the Colebrook-White Formula and is based on full bore conditions.

## HYDRAULIC RADIUS (R)

$$v = \frac{R^{2/3} S^{1/2}}{n} \quad (\text{Mannings Equation})$$

$$\text{Hydraulic Radius (R)} = \frac{\text{Cross sectional area of flow (A)}}{\text{Wetted Perimeter (P)}}$$



The Manning Formula is used for Velocity calculations within the software.

$$V = \frac{1}{n} R^{2/3} S^{1/2}$$

where:

V = Velocity

n = Manning's roughness coefficient (see Pipe Roughness)

R = Hydraulic Radius

S = Hydraulic gradient

The equation is in meter-per-second units but the n values are the same as those specified in the foot-per-second format of the equation (e.g. smooth concrete pipe n = 0.012 approximately). The formula is sometimes known as Strickler's formula and 1/n as the Strickler's coefficient.

A concrete pipe with a smooth interior would have a Manning's n of approximately 0.012

Manning's n may be derived from 1/Strickler coefficient.

Hydraulic Assessment of the Storm Drain Pipes for Lots 475 to 481, 113, Kam Tin, Yuen Long

Document I.b.

Locations	Sub-catchment reference	catchment area				channel character				Type of catchment area	Hydraulic parameter K=3.3mm	Peak Runoff (mm/d)	Full bore Capacity (m <sup>3</sup> /s)	Full bore Velocity (m/s)
		impermeable	permeable	total	channel shape	width (mm)	height (mm)	length (m)	channel slope					
Lot 475	1	617	0	617	uc	300	300	-	0.01000	0.08	0.42	343.74	0.138	1.713
Lot 474	2	381	0	381	uc	300	300	-	0.01000	0.08	0.42	343.74	0.138	1.713
Lot 477	3	219	0	219	uc	300	300	-	0.01000	0.08	0.42	343.74	0.138	1.713
Lot 476	4	101	0	101	uc	300	300	-	0.01000	0.08	0.42	343.74	0.138	1.713
Lot 480	5	113	0	113	uc	300	300	-	0.01000	0.08	0.42	343.74	0.138	1.713
Lot 703	6	328	0	328	uc	300	300	-	0.01000	0.08	0.42	343.74	0.138	1.713
Lot 698	7	378	0	378	uc	300	300	-	0.01000	0.08	0.42	343.74	0.138	1.713
Lot 481	8	312	0	312	uc	300	300	-	0.01000	0.08	0.42	343.74	0.138	1.713

I = Rainfall intensity (50 year storm frequency may be specified)

Peak Runoff =  $0.278 \times I / (1000/60) \times$  accumulative area

Cross area for 300u channel =  $0.150 \times 0.3 = 0.150 \times 2 \times \pi \times D^2$

Equivalent Diameter =  $4 \times$  Hydraulic Radius

Hydraulic Radius = cross area of a channel / wetted perimeter of a channel

Roughness coefficient (ks) at 3.3mm

The roughness of a pipe is normally specified in either mm or inches and common values range from 0.0015 mm for PVC pipes through to 3.0 mm for rough concrete pipes

Full bore Capacity = Full bore Velocity  $\times$  cross area

Full bore Velocity - The Full bore Velocity is calculated using either the Manning Formula or the Colebrook-White Formula and is based on full bore conditions.

Job Title: Storm Drain Pipes for Lots 475 in D.D.113, Kam Tim, Yuen Long  
 Calculation: Design Assumptions - Storm water Drainage

Flow Estimation

Design Flow = CiA

Runoff Coefficient of Existing C of grassland (steep heavy soil) = 0.278

	For proposed system
Design Return Periods	50 yrs
a	1167.6
b	16.76
c	0.561

Inlet Time = Brandsby William's Equation

$$t_o = \frac{0.14465L}{H^{0.2} A^{0.1}}$$

urban	2.0 min
natural	5.0 min

Hydraulic Assessment

Full-bore Capacity =

Colebrook-White Equation of SDM for circular pipes

$$\bar{V} = -\sqrt{32gRS_f} \log \left[ \frac{k_s}{14.8R} + \frac{1.255\nu}{R\sqrt{32gRS_f}} \right]$$

Roughness coefficient (Ks) = Proposed 3.3 mm

Manning's Equation for SDM for channels & box culverts

$$\bar{V} = \frac{R^{1/6}}{n} \sqrt{RS_f}$$

Roughness coefficient (n) for concrete lined channel = 0.016