Proposed Temporary Shop & Services for a Period of 3 Years and Associated Filling of Land
at
Lot 213 (Part) in D.D. 111, Pat Heung, Yuen Long, N.T.

Annex 1 Drainage Assessment

A. Site particulars

1.1.1 The site possesses an area of about 210m^2. The surface of the site has been hard paved.

1.1.2 The application site will be occupied by a shop and services to serve the nearby community.

B. Level and gradient of the subject site & proposed surface channel

1.1.3 The subject site has been hard paved and occupied an area of approximately 210m^2. It has a gradient sloping from north to south from about +26.4mPD to +26.0mPD.

1.1.4 In order to follow the topography of the application site, the proposed surface channel will be constructed following the gradient of the site. As demonstrated in the calculation in **Annex 1.3** hereunder, 300mm surface U-channel will be capable to drain surface runoff accrued at the subject site and the same passing through the site from adjacent area.

C. Catchment area of the proposed drainage provision at the subject site

1.1.5 With regard to the location of the existing drain and the topography surrounding the application site, the land to the north, east, south and west is slightly lower or at the same level as the application site. The land to the north is a bit higher than the application site. As such, an external catchment has been identified in **Figure 4**.

D. Particulars of the existing drainage facilities to accept the surface runoff collected at the application site

1.1.6 There is an existing natural open drain to the east of the application site.

1.2 Runoff Estimation & Proposed Drainage Facilities

A. Proposed drainage facilities

1.2.1 Subject to the above calculations, it is determined that 300mm surface U-channel which is made of concrete along the site periphery is adequate to intercept storm water passing through and generated at the application site (**Figure 4**).

1.2.2 The collected surface runoff will be conveyed to existing open drain to the east of the site. (**Figure 4**)

1.2.3 All the proposed drainage facilities, including the section of surface channel proposed in between of the subject site to the open drain, will be provided and maintained at the applicant's own expense. Also, sand trap and U-channel will be cleaned at regular interval to avoid the accumulation of rubbish/debris which would affect the dissipation of storm water.

1.2.4 The provision of the proposed surface U-channel will follow the gradient of the application site. All the proposed drainage facilities will be constructed and maintained at the expense of the applicant.

1.2.5 All proposed works at the site periphery would not obstruct the flow of surface runoff from the adjacent areas, the provision of trees and surface U-channel at site boundary is detailed hereunder:

(a) No leveling work will be carried at the site periphery. The level of the site periphery will be maintained during and after the works. As such, the works at the site periphery would not either alter or obstructed the flow of surface runoff from adjacent areas.

(b) 100mm openings will be provided at the toe of hoarding so as to allow unobstructed flow of surface runoff from adjacent area.

1.2.6 The applicant is conscientious in preparing this drainage proposal. Also, he is willing to provide necessary drainage facilities to minimize the drainage impact accrued by the proposed development. The acceptance of this drainage proposal will give positive recognition to the applicant's efforts.

Annex 1.3 Drainage Calculation for the Proposed Provision of Drainage Facilities at Subject Site

1. Runoff Estimation

1.1 Rational method is adopted for estimating the designed run-off

$$Q = k \times i \times A/3{,}600$$

Assuming that:

i. The area of the entire catchment is approximately 840m^2; (**Figure 4**)
ii. The catchment is predominant paved, it is assumed that the value of run-off co-efficient (k) is taken as 1.

Difference in Land Datum = 27.1m – 26m = 1.1m

L = 41m

∴ Average fall = 1.1m in 41m or 1m in 37.27m

According to the Brandsby-Williams Equation adopted from the "Stormwater Drainage Manual – Planning, Design and Management" published by the Drainage Services Department (DSD),

$$\text{Time of Concentration } (t_c) = 0.14465 \left[L/(H^{0.2} \times A^{0.1}) \right]$$

$$t_c = 0.14465 \left[41/ (2.68^{0.2} \times 840^{0.1}) \right]$$

$$t_c = 2.48 \text{ minutes}$$

With reference to the Intensity-Duration-Frequency Curves provided in the abovementioned manual, the mean rainfall intensity (i) for 1 in 50 recurrent flooding period is found to be 320 mm/hr

By Rational Method, $Q = 1 \times 320 \times 840 / 3{,}600$

∴ $Q = 74.67$ l/s = 4,480 l/min

In accordance with the Chart or the Rapid Design of Channels in "Geotechnical Manual for Slopes", for an approximate gradient of about 1:50 & 1:95 along the site periphery of the site, 300mm surface U-channel is considered adequate to dissipate all the stormwater accrued by the application site.

Annex 2 Estimated Traffic Generation

2.1 The entrance of the application site is abutting a local vehicular track leading to Fan Kam Road. (**Figure 1**)

2.2 Only light good vehicle is required to deliver products to and from the application site. The application site is very limited in size so that no parking space is available within the application site. The application site is close to adjoining village houses so that almost all of the visitors will arrive the application site on foot.

2.3 A 7m diameter turntable will be provided at the loading/unloading space for safety concern. The proposed loading/unloading space will be opened only for prior booking.

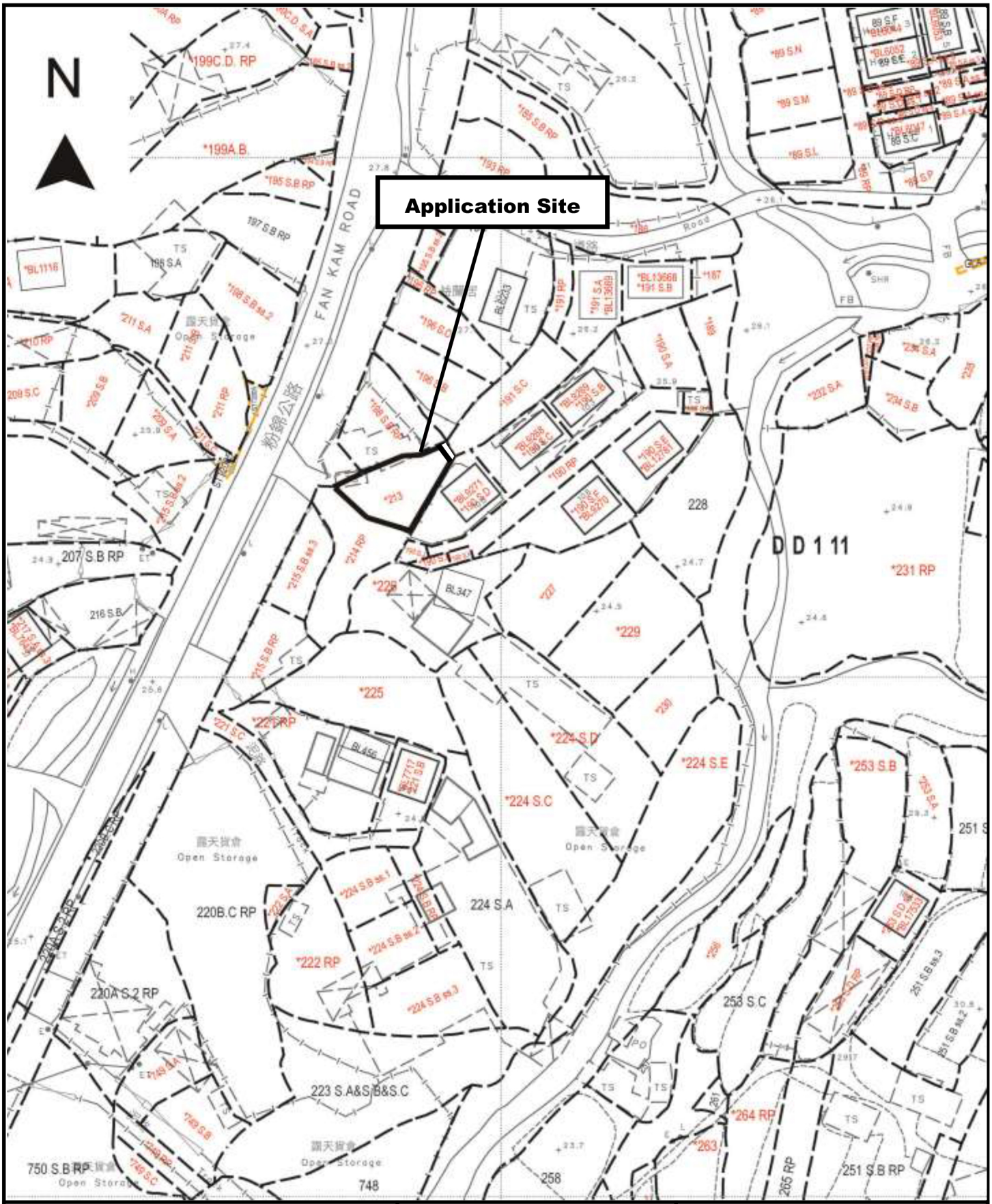
2.4 The average and peak trip rates generated from and attracted to the site are shown below.

Type of vehicle	Average Traffic Generation Rate (pcu/hr)	Average Traffic Attraction Rate (pcu/hr)	Traffic Generation Rate at Peak Hours (pcu/hr)	Traffic Attraction Rate at Peak Hours (pcu/hr)
Light goods vehicle	0.25	0.25	1.5	0

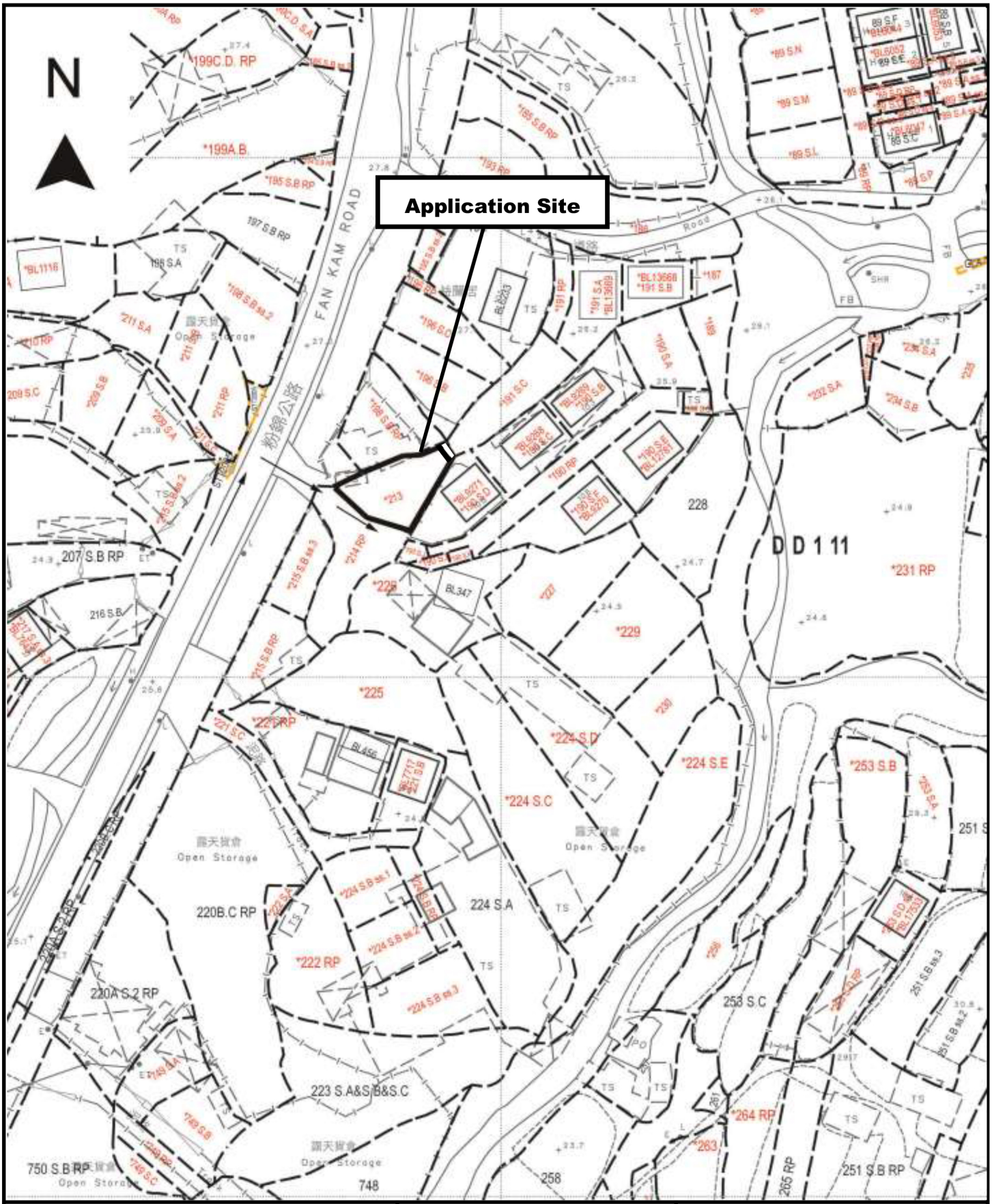
Note 1: The opening hour of the proposed development is restricted to 9:00 a.m. to 9:00 p.m. from Mondays to Sundays including public holidays.

Note 2: The pcu of light goods vehicle is taken as 1.5; and

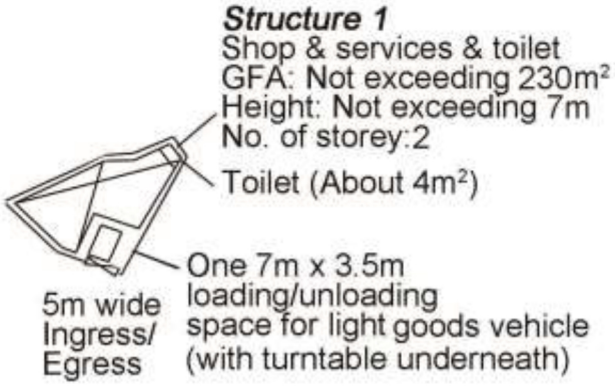
Note 3: Morning peak is defined as 7:00a.m. to 9:00a.m. whereas afternoon peak is defined as 5:00p.m. to 7:00p.m.



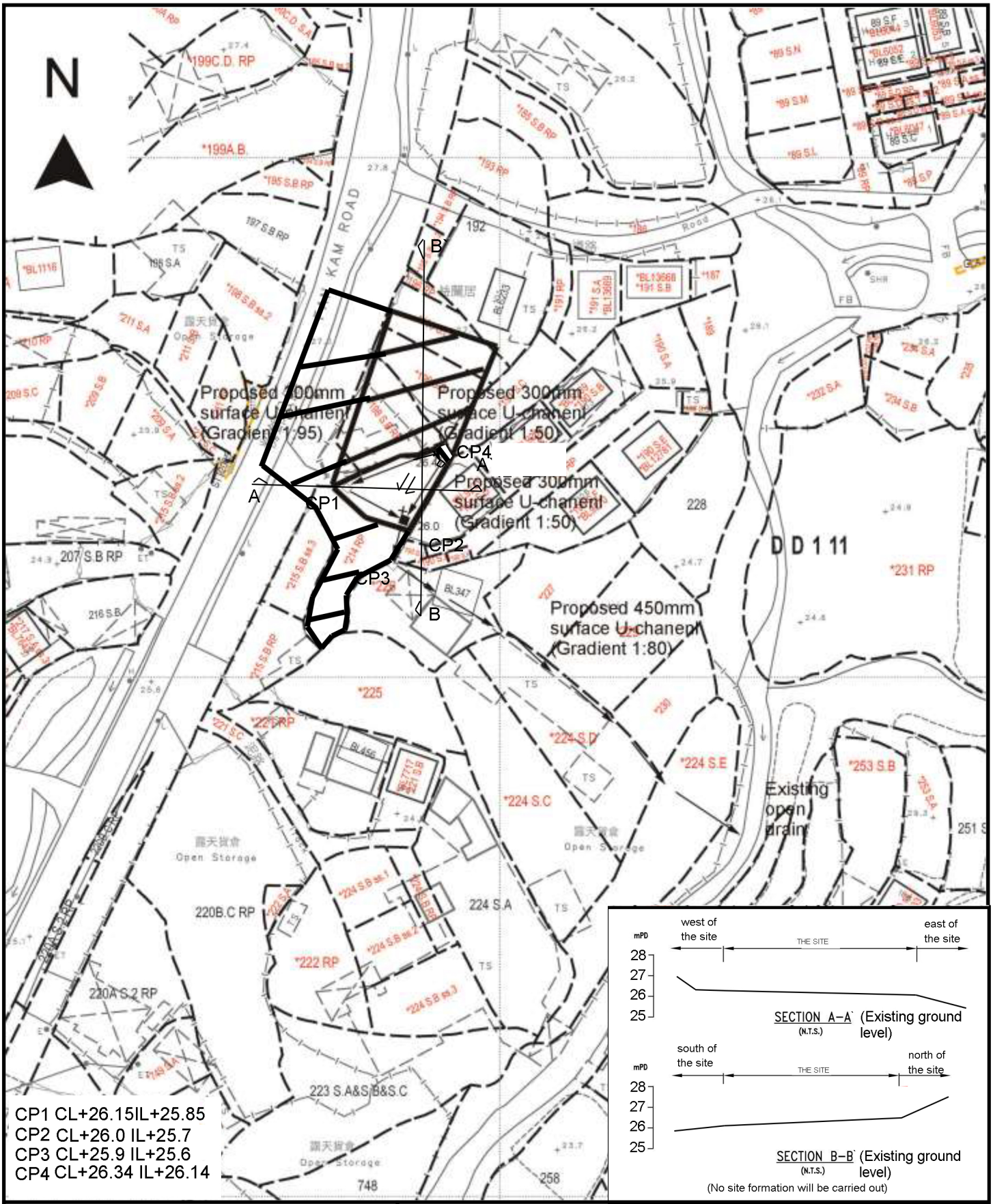
Project 項目名稱: Proposed Temporary Shop & Services for a Period of 3 Years & Associated Filling of Land at Lot 213 (Part) in D.D. 111, Pat Heung, Yuen Long, N.T.	Drawing Title 圖目: Application Site	Remarks 備註:
	Drawing No. 圖號: Figure 1	Scale 比例: 1:1000



Project 項目名稱: Proposed Temporary Shop & Services for a Period of 3 Years & Associated Filling of Land at Lot 213 (Part) in D.D. 111, Pat Heung, Yuen Long, N.T.	Drawing Title 圖目: Vehicular Access Leading to the Site	Remarks 備註: → Vehicular access leading to the application site from Fan Kam Road
	Drawing No. 圖號: Figure 2	Scale 比例: 1:1000



Project 項目名稱:	Drawing Title 圖目:	Remarks 備註:
Proposed Temporary Shop & Services for a Period of 3 Years & Associated Filling of Land at Lot 213 (Part) in D.D. 111, Pat Heung, Yuen Long, N.T.	Proposed Layout Plan	
	Drawing No. 圖號: Figure 3	Scale 比例: 1:1000



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Proposed Temporary Shop & Services for a Period of 3 Years & Associated Filling of Land at Lot 213 (Part) in D.D. 111, Pat Heung, Yuen Long, N.T.

Drawing Title 圖目:

Proposed Drainage Plan

Drawing No. 圖號:

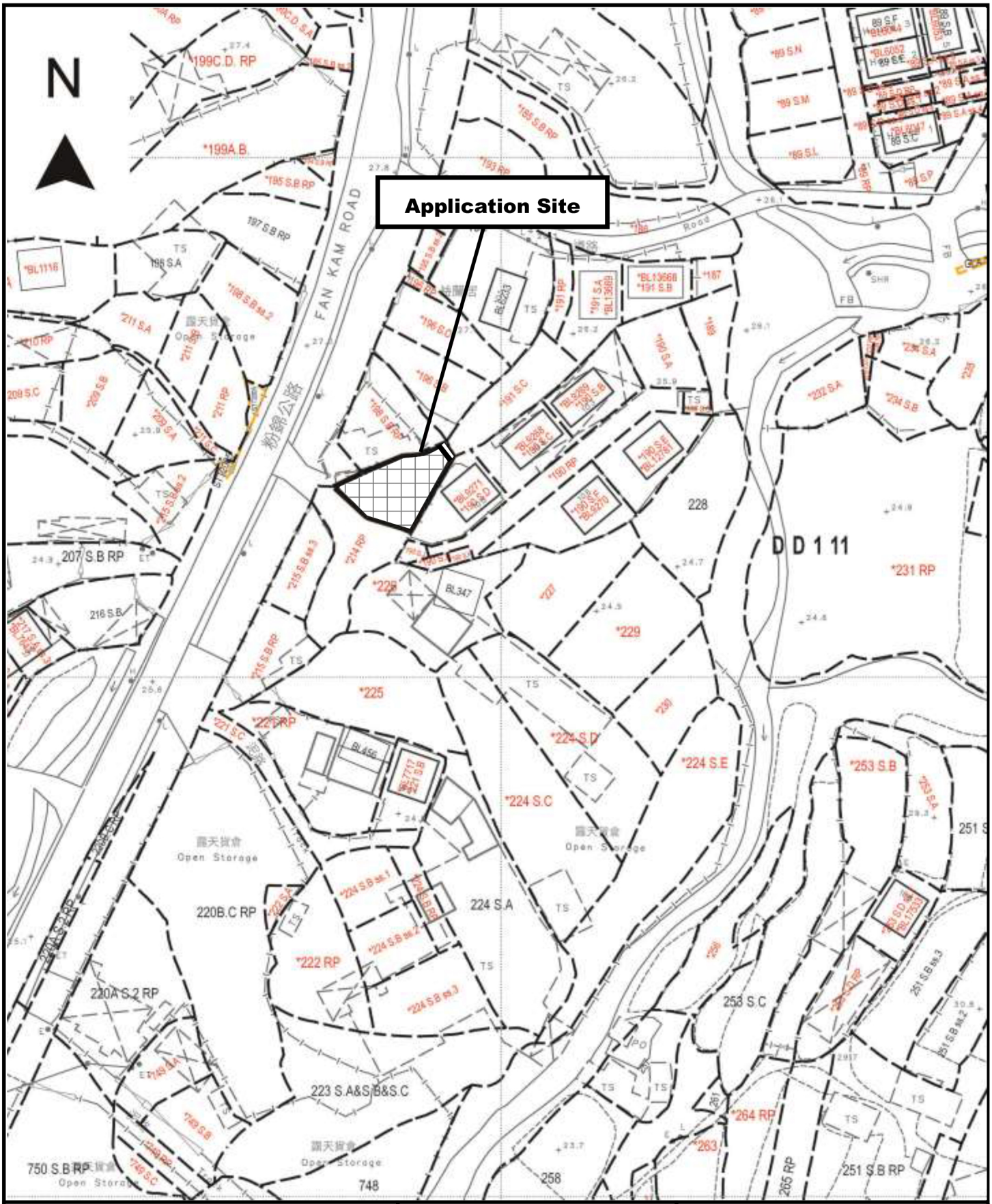
Figure 4

Remarks 備註:

- □ Proposed catchpit
- ■ Catchpit with sand trap
- +26.2 Level (mPD)
- ⇐ Flow of Surface Runoff
- External catchment

Scale 比例:

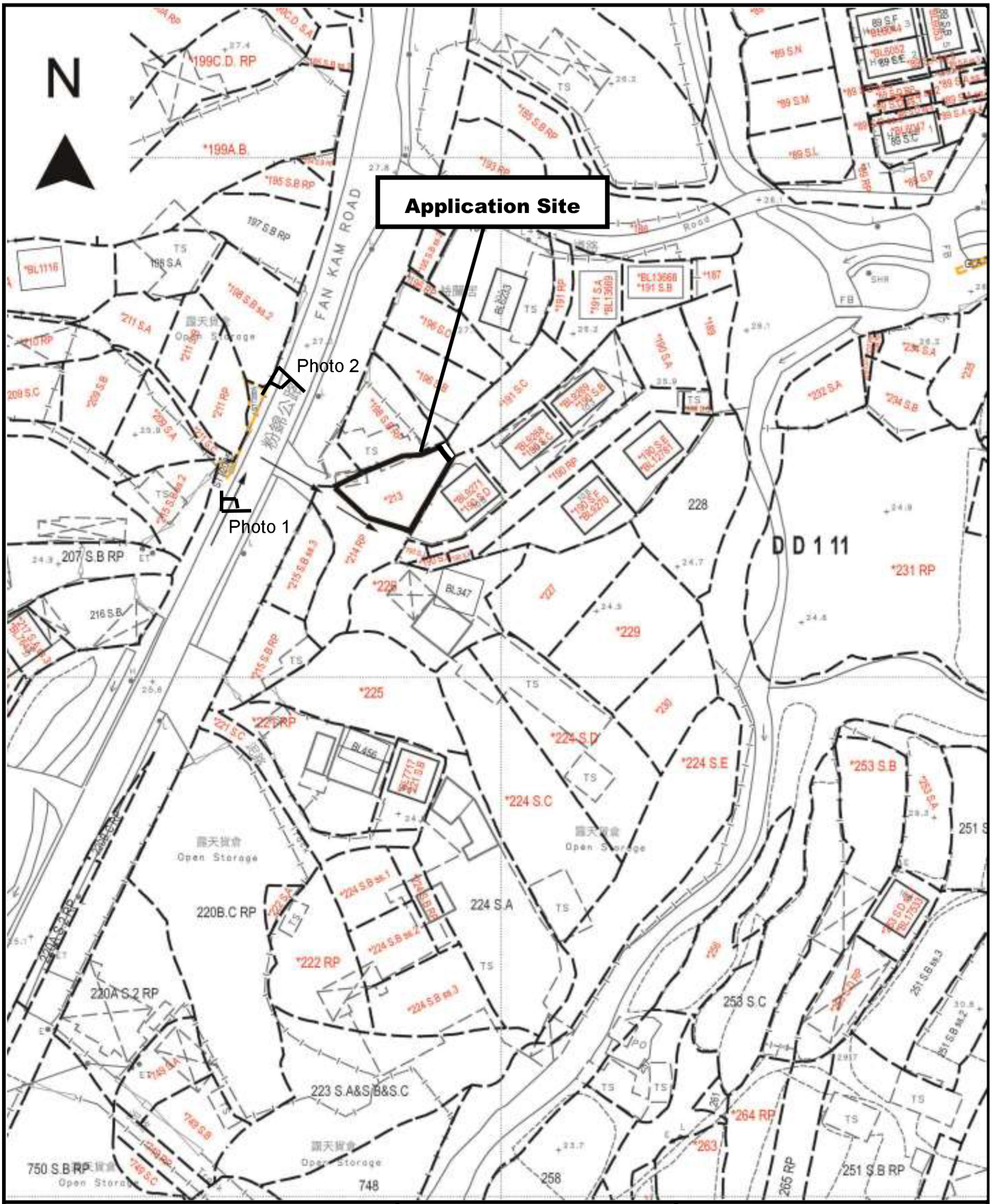
1:1000



Project 項目名稱: Proposed Temporary Shop & Services for a Period of 3 Years & Associated Filling of Land at Lot 213 (Part) in D.D. 111, Pat Heung, Yuen Long, N.T.	Drawing Title 圖目: Filling of Land Plan	Remarks 備註: Area of filled land by concrete of 0.2m
	Drawing No. 圖號: Figure 5	Scale 比例: 1:1000

Photo 1

Photo 2



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