

Proposed Temporary Shop and Services (Real Estate Agency) for a Period of 3 Years
at
Lot 1600 RP in D.D. 119, Yuen Long, N.T.

Annex 1 Drainage Assessment

A. Site particulars

- 1.1.1 The application site is abutting Kiu Hing Road. **(Figure 1)** It possesses an area of approximately 90m².
- 1.1.2 The application site had been hard paved.
- 1.1.3 The application site is surrounded by a good number of village houses to the east. A shop and service is found to the south of the application site selling construction materials.

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

- 1.1.4 The subject site has been hard paved and occupied an area of approximately 90m². It has a very gentle gradient sloping from northeast to southwest from about +10.4mPD to +10.2mPD.
- 1.1.5 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, 225mm surface U-channel will be capable to drain the surface runoff accrued at the subject site.

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

- 1.1.6 It is noted that the level to the north, south and east of the site is slightly lower than the application site. The land to the west of the application site is about the same level as the application site.
- 1.1.7 As such, no external catchment has been identified.

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

- 1.1.8 According to recent site inspection, a public drain is found to the west of the application site. **(Figure 3)**

1.2 Runoff Estimation & Proposed Drainage Facilities

A. Proposed drainage facilities

- 1.2.1 Subject to the above calculations, it is determined that 225mm 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 3**).
- 1.2.2 The intercepted stormwater will then be discharged to the existing public drain to the west of the application site. (**Figure 3**)
- 1.2.3 The calculations in **Annex 1.3** shows that the proposed 225mm surface channel has adequate capacity to cater for the surface runoff generated at the subject site and the external catchment. A sand trap is proposed at the terminal catchpit.
- 1.2.4 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, surface U-channel will be cleaned at regular interval to avoid the accumulation of rubbish/debris which would affect the dissipation of storm water.
- 1.2.5 Prior to the commencement of drainage works, the applicant will seek the consent of the District Lands Office/Yuen Long and the registered land owner for any drainage works outside the application site or outside the jurisdiction of the applicant.
- 1.2.6 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.
- 1.2.7 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) Soil excavation at site periphery, although at minimal scale, is inevitably for the provision of surface U-channel and landscaping. In the reason that the accumulation of excavated soil at the site periphery would obstruct the free flow of the surface runoff from the surroundings, the soil will be cleared at the soonest possible after the completion of the excavation process.
 - (b) 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.
 - (c) No site hoarding will be provided at the application site.

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 90m²; & **(Figure 3)**
- ii. The application site is totally hard paved and therefore the value of run-off co-efficient (k) is taken as 1.

$$\text{Difference in Land Datum} = 10.4\text{m} - 10.2\text{m} = 0.2\text{m}$$

$$L = 14\text{m}$$

$$\therefore \text{Average fall} = 0.2\text{m in } 14\text{m or } 1\text{m in } 70$$

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

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

$$t_c = 0.14465 [14 / (0.86^{0.2} \times 90^{0.1})]$$

$$t_c = 1.2 \text{ minutes}$$

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 345mm/hr

$$\text{By Rational Method, } Q = 1 \times 345 \times 90 / 3,600$$

$$\therefore Q = 8.625 \text{ l/s} = 517.5 \text{ l/min}$$

In accordance with the Chart or the Rapid Design of Channels in “Geotechnical Manual for Slopes”, 225mm surface U-channel in 1:90 and 1:100 gradient is considered adequate to dissipate all the stormwater accrued by the application site. The intercepted stormwater will then be discharged to the existing public drain via the proposed 225mm surface U-channel outside the application site connecting to the existing manhole to the south of the application site.