

Proposed Temporary Open Storage of Construction Machinery & Construction Materials for a Period of 3 Years
at
Lots 1703 (Part) & 1704 (Part) in D.D. 129, Lau Fau Shan, Yuen Long, N.T.

Annex 1 Drainage Assessment

A. Site particulars

- 1.1.1 The site possesses an area of about 880m². The surface of the site has been hard paved.
- 1.1.2 The application site will be occupied by an open storage of construction machinery such as electric generators and construction materials such as tiles and sanitary wares.

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 880m². It has a gradient sloping from southwest to northeast from about +26.5mPD to +25.2mPD.
- 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, 525mm 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 southeast of the site is found higher than the application site. The land to the north and west of the site is found lower than the application site. (**Figure 4**)
- 1.1.6 As such, an external catchment is identified has been identified in **Figure 5**.

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

- 1.1.7 There is an existing 600mm surface channel surrounding the adjoining site to the immediate north of the application site. The ultimate discharge point is Deep Bay via the public drain connecting to the said 600mm surface channel.

1.2 **Runoff Estimation & Proposed Drainage Facilities**

A. Proposed drainage facilities

- 1.2.1 Subject to the calculations below, it is determined that 525mm surface 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 600mm surface channel to the immediate north of the site. (**Figure 4**) The existing 600mm surface channel is capable to convey additional stormwater generated by the application site and its external catchment because the application site and its external catchment falls coincide with the external catchment of the adjoining site with planning permissions (No. A/YL-LFS/521 & 563) as shown in the discharge path plan.
- 1.2.3 All the proposed drainage facilities will be provided and maintained at the applicant's own expense. Also, sand trap and surface 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 surface channel at site boundary is detailed hereunder:
 - (a) Soil excavation at site periphery, although at minimal scale, is inevitably for the provision of surface channel. 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) In view of that soil excavation may be continued for several working days, surface U-channel will be dug in short sections and all soil excavated will be cleared before the excavation of another short section.
 - (c) 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.
 - (d) 100mm openings will be provided at the toe of hoarding so as to allow unobstructed flow of surface runoff from adjacent area.

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 11,000m²; (**Figure 4**)
- ii. The catchment is predominant unpaved, it is assumed that the value of run-off co-efficient (k) is taken as 0.8.

$$\text{Difference in Land Datum} = 38.6\text{m} - 25.2\text{m} = 13.4\text{m}$$

$$L = 152\text{m}$$

$$\therefore \text{Average fall} = 13.4\text{m in } 152\text{m} \text{ or } 1\text{m in } 11.34\text{m}$$

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

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

$$t_c = 0.14465 [152 / (8.82^{0.2} \times 11,000^{0.1})]$$

$$t_c = 5.61 \text{ minutes}$$

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 265 mm/hr

$$\text{By Rational Method, } Q = 0.8 \times 265 \times 11,000 / 3,600$$

$$\therefore Q = 647.78 \text{ l/s} = 38,866.67 \text{ l/min}$$

In accordance with the Chart or the Rapid Design of Channels in “Geotechnical Manual for Slopes”, for an approximate gradient of about 1:50 & 1:55 along the site periphery of the site, 525mm surface U-channel is considered adequate to dissipate all the stormwater accrued by the application site and the adjacent land.