

**Proposed Temporary Warehouse for Storage of Metal and Timber and Associated Filling of Land for a Period of 3 Years
at
Lots 2113 (Part), 2114 (Part), 2115 (Part), 2116 (Part) & 2119 (Part) in
D.D. 118, Yuen Long, New Territories**

Annex 1 Drainage Proposal

1.1 Existing Situation

A. Site particulars

- 1.1.1 The application site occupies an area of about 1,007m².
- 1.1.2 The site is serviced by a vehicular access leading from Tai Shu Ha Road East. The area adjacent to the proposed development is mainly rural in nature.

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

- 1.1.3 It has a gradient sloping from southeast to northwest from about +22.6mPD to +20.2mPD. (**Figure 4**)

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

- 1.1.4 The land to the north and south is found lower in level than the application site. The land to the east of the application site is a river. The land to the west is higher than the application site but there are a good number of structures to the west of the application site which blocks the surface runoff from the land to the further west of the application site. As such, an external catchment is identified in **Figure 4**.

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

- 1.1.5 As shown in **Figure 4**, a river is found to the immediate east of the application site. The stormwater intercepted by the proposed surface channel at the application site will be dissipated to the said river.

1.2 Runoff Estimation

1.2.1 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 catchment is approximately 3,600m²; (**Figure 4**)
- ii. The application site and adjacent land are zoned for 'Agriculture' and almost all of them are unpaved. It is assumed that the value of run-off co-efficient (k) is taken as 0.7.

$$\text{Difference in Land Datum} = 26.4\text{m} - 20.2\text{m} = 6.2\text{m}$$

$$L = 121\text{m}$$

$$\therefore \text{Average fall} = 6.2\text{m in } 121\text{m} \text{ or } 1\text{m in } 19.52\text{m}$$

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

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

$$t_c = 0.14465 [121 / 5.12^{0.2} \times 3,600^{0.1}]$$

$$t_c = 5.56 \text{ minutes}$$

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 270 mm/hr

By Rational Method,

$$Q_1 = 0.7 \times 270 \times 3,600 / 3,600$$

$$\therefore Q_1 = 189 \text{ l/s} = 11,340 \text{ l/min} = 0.19\text{m}^3/\text{s}$$

In accordance with the Chart or the Rapid Design of Channels in "Geotechnical Manual for Slopes", for an approximate gradient of about 1:30 in order to follow the gradient of the application site, 375mm surface U-channel along the site periphery is considered adequate to dissipate all the stormwater accrued by the application site and adjacent land.

1.3 Proposed Drainage Facilities

- 1.3.1 Subject to the calculations in 1.2 above, it is determined that proposed 375mm concrete surface U-channel along the site periphery is adequate to intercept storm water passing through and generated at the application site (**Figure 4**).
- 1.3.2 The collected stormwater will then be discharged directly to the river to the immediate east of the application site as shown in **Figure 4**.
- 1.3.3 All the proposed drainage facilities will be provided and maintained at the applicant's own expense. Also, sand trap and surface U-channel will be cleaned at regular interval to avoid the accumulation of rubbish/debris which would affect the dissipation of storm water.
- 1.3.4 The provision of the proposed surface 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.
- 1.3.5 Prior to the commencement of the drainage works, the applicant will seek consent from District Lands Office/North and relevant land owners for the provision of drainage facilities outside the application site.
- 1.3.6 The proposed development would not affect the existing ditches, drains and obstruct the flow of the flow of surface runoff.
- 1.3.7 The provision of surface channel at site boundary is detailed hereunder:
- (a) Soil excavation at site periphery, is inevitably for the provision of surface channel. The accumulation of excavated soil at the site periphery would obstruct the free flow of the surface runoff from the surroundings. Hence, 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 channel will be dug in short sections and all soil excavated will be cleared before the excavation of another short section.
 - (c) 100mm gap will be provided at the toe of site hoarding to allow unobstructed flow of surface runoff.