Proposed Temporary Place of Recreation, Sports or Culture (Hobby Farm) for a Period of 3 Years

at

Lots 280 (Part), 281 (Part), 283 (Part), 286 (Part) in D.D. 129 and Adjoining Government Land, Lau Fau Shan, N.T.

Annex 1 Drainage Assessment

1. Existing Situation

A. Site particulars

1.1 The subject site possesses an area of about 2,802m^2.

1.2 The site is situated at a large piece of vacant land except that some temporary structures were found to the north and south. The land to the west and east is a knoll.

1.3 The proposed development is a hobby farm which conforms to the planning intention of the 'Green Belt' zone and it is a column 2 use. No site formation will be carried out. The application site is covered by soil which allows infiltration of stormwater.

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

1.4 The application site is sloping from south to north from about +25.0mPD to +18.7mPD.

1.5 In order to follow the topography of the subject site, the proposed surface U-channel will be constructed following the gradient of the site. As demonstrated in the calculation in succeeding paragraphs, 375mm surface U-channel will be capable to drain surface runoff accrued at the subject site and the said passing through the site from adjacent area.

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

1.6 The level of the application is higher than the land to the north. (**Figure 3**) However, the land to the south and east of the application site commands a higher level. Under such circumstance, an external catchment is taken into account for the estimation of the size of the proposed surface channel at the application site.

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

1.7 According to recent site inspection, there is an existing water course to the north of the application site (**Figure 3**).

2.1 Runoff Estimation for Drainage Channel at the Catchment 1

2.1.1 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 12,600m^2; (**Figure 3**)
ii. The catchment is unpaved, it is assumed that the value of run-off co-efficient (k) is taken as 0.5.

$$\text{Difference in Land Datum} = 61.5\text{m} - 18.7\text{m} = 42.8\text{m}$$

$$L = 192\text{m}$$

$$\therefore \text{ Average fall} = 42.8\text{m in } 192\text{m} \quad \text{or} \quad 1\text{m in } 4.49\text{m}$$

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

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

$$t_c = 0.14465 \left[192/ (22.29^{0.2} \times 12{,}600^{0.1}) \right]$$

$$t_c = 5.81 \text{ minutes}$$

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

$$\textbf{\textit{By Rational Method}}, Q_1 = 0.5 \times 265 \times 12{,}600 / 3{,}600$$

$$\therefore Q_1 = 463.75 \text{ l/s} = 27{,}825 \text{ l/min}$$

2.1.2 In accordance with the Chart or the Rapid Design of Channels in "Geotechnical Manual for Slopes", for an approximate gradient of 1:8 and 1:15, the proposed 375mm surface channel is considered adequate to dissipate all the stormwater accrued by the application site and adjacent external catchment.

3. Proposed Drainage Facilities

3.1 The proposed development is a hobby farm which conforms to the planning intention of the 'Green Belt' zone. No site formation will be carried out. The application site is covered by soil which allows infiltration of stormwater. The proposed development would neither change nor divert the flow of stomrwater.

3.2 Subject to the above calculations, it is determined that 375mm surface U-channel along the inner site periphery is adequate to intercept storm water passing through and generate at the subject site (**Figure 3**).

3.3 The intercepted stormwater will be discharged to the existing water course to the north of the subject site. (**Figure 3**)

3.4 All the proposed drainage facilities will be provided and maintained at the applicant's own expense.

3.5 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.

3.6 All proposed works at the site periphery would not obstruct the flow of surface runoff from the adjacent areas, the provision 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 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) 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) Neither leveling work nor site formation works will be carried at the subject site. As such, the proposed development would neither alter nor obstruct the flow of surface runoff from adjacent areas.

(d) Adequate space at the toe of the site hoarding, say, 10cm, will be provided for the unobstructed flow of stormwater.