Proposed Temporary Warehouses for Storage of Electronic Goods and Construction Materials for a Period of 3 Years
at
Lot 1291 in D.D. 119, Yuen Long, N.T.

Annex 1 Drainage Assessment

A. Site particulars

1.1.1 The application site is accessible via an existing vehicular track leading from Kung Um Road. (**Figure 2**) It possesses an area of approximately 2,580m^2.

1.1.2 The application site had been hard paved.

1.1.3 The application site is surrounded by a good number of open storage yards and warehouses.

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 2,580m^2. It has a gradient sloping from east to west from about +13.5mPD to +12.2mPD.

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, 375mm 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, east and west of the site is lower than or about the same 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 natural drain is found to the west of the application site as shown in the proposed drainage path plan in **Figure 4.**

1.2 Runoff Estimation & Proposed Drainage Facilities

A. Proposed drainage facilities

1.2.1 Subject to the above calculations, it is determined that 375mm 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 intercepted stormwater will then be discharged to the natural drain to the west of the application site via a proposed 375mm surface U-channal outside the application site. (**Figure 4**)

1.2.3 The calculations in **Annex 1.3** shows that the proposed 375mm 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 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) 100mm openings will be provided at the toe of hoarding so as to allow unobstructed flow of surface runoff to and 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 2,580m^2; & (**Figure 4**)
ii. The application site is totally hard paved and therefore the value of run-off co-efficient (k) is taken as 1.

Difference in Land Datum = 13.5m – 12.2m = 1.3m

L = 91m

∴ Average fall = 1.3m in 91m or 1m 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),

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

$$t_c = 0.14465 \left[91/ (1.43^{0.2} \times 2{,}580^{0.1}) \right]$$

$$t_c = 5.59 \text{ minutes}$$

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, $Q = 1 \times 270 \times 2{,}580 / 3{,}600$

$\therefore Q = 193.5$ l/s = 11,610 l/min

In accordance with the Chart or the Rapid Design of Channels in "Geotechnical Manual for Slopes", 375mm surface U-channel in 1:45 and 1:80 gradient is considered adequate to dissipate all the stormwater accrued by the application site and the adjacent land.

Annex 2 Estimated Traffic Generation

2.1 The application site is accessible via a vehicular access leading from Kung Um Road. Having mentioned that the site is intended for storage of electronic goods and constriction materials, traffic generated by the proposed development is extremely insignificant. No medium and heavy goods vehicle exceeding 5.5 tonnes and container trailer/tractor will access the application site. To address the concern of the heavy traffic along Kung Um Road, the proposed development will operate from 9:00a.m. to 5:00p.m on Mondays to Saturdays.

2.2 The estimated average traffic generation and traffic generation rate at peak hours are as follow:

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	0.38	0.38	0	0

Note 1: The opening hour of the proposed development is restricted to 9:00 a.m. to 5:00 p.m. from Mondays to Saturdays. No operation will be held on Sundays and public holidays.

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

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.

2.3 In association with the intended purpose, adequate space for manoeuvring of vehicle would be provided and so queueing up of traffic would not be the result especially that the traffic generated is insignificant. The negligible increase in traffic would not aggravate the traffic condition of Kung Um Road and nearby road networks.