

**Drainage Proposal**

**A. Existing Situation**

1. The Application Site (the Site) is located at Tai Lung, Fanling (**Plan 1**). It is a piece of fallow agricultural land and currently vacant. The Site is gently sloping down from south to north in general. The southern part of the will be filled with concrete to a maximum of about 0.2m for site formation of structures and to meet the operational need of the hobby farm, such as parking and vehicle manoeuvring.

**B. Level and Gradient of Site**

2. The existing ground levels of the southern end and northern end are about 22.6mPD and 20.6mPD respectively. The southern portion has a gradient of about 1:30, whilst further north in the farming area is relatively flat with gradients between 1:150 and 1:190.

**C. Catchment Areas**

3. The existing drainage facilities could effectively drain surface runoff from the proposed hobby farm. According to the direction of flow, the southern portion proposed to be hard-paved forms Catchment 1 (C1) and further north mainly including the farming area forms Catchment 2 (C2).
4. To the west of the Site is a piece of Government land on a gently sloping platform with a gradient of about 1:27. Taking into account the site topography, only the area below an existing footpath (colored green area on **Plan 3**) is included as an external catchment (C3) and considered in the calculation.

**D. Existing Drainage Facilities**

5. An existing stream to the east of the Site would intercept most of the surface runoff from the adjacent areas.
6. As demonstrated in Section E below, the existing field drains within the Site including a minimum 1,000mm wide open channel with connection to a drainage pipe discharging into an existing stream to the east of the Site (**Plan 3**), will be more than sufficient to drain surface runoff accrued at the Site and those from adjacent areas.

## **E. Calculation for Channels**

### Catchment 1 (C1)(Gradient about 1:30)

$$\begin{aligned}\text{Site Area} &= 1033 \text{ m}^2 \\ \text{(concrete-paved)} &= 0.001033 \text{ km}^2\end{aligned}$$

$$\begin{aligned}\text{Peak runoff in m}^3 &= 0.278 \times 0.95 \times 250\text{mm/hr} \times 0.001033 \text{ km}^2 \\ &= 0.0682 \text{ m}^3/\text{s} \\ &= 4092 \text{ liter/min}\end{aligned}$$

### Catchment 2 (C2)(Gradients between 1:150 and 1:190)

$$\begin{aligned}\text{Site Area} &= 2490 \text{ m}^2 \\ \text{(soil-paved)} &= 0.00249 \text{ km}^2\end{aligned}$$

$$\begin{aligned}\text{Peak runoff in m}^3 &= 0.278 \times 0.25 \times 250\text{mm/hr} \times 0.00249 \text{ km}^2 \\ &= 0.04326 \text{ m}^3/\text{s} \\ &= 2596 \text{ liter/min}\end{aligned}$$

### External Catchment Area – Catchment 3 (C3) (Government land to the west of the Site)

$$\begin{aligned}\text{Site Area} &= 600 \text{ m}^2 \\ \text{(concrete-paved)} &= 0.0006 \text{ km}^2\end{aligned}$$

$$\begin{aligned}\text{Peak runoff in m}^3 &= 0.278 \times 0.95 \times 250\text{mm/hr} \times 0.0006 \text{ km}^2 \\ &= 0.03962 \text{ m}^3/\text{s} \\ &= 2377 \text{ liter/min}\end{aligned}$$

$$\begin{aligned}\text{Total Peak Runoff for Site} &= 0.15108 \\ &= 9065 \text{ liter/min}\end{aligned}$$

According to Figure 8.7 – Chart for the Rapid Design of Channels,  
For gradients 1: 30 to 1:190, maximum 375UC will be sufficient.

## **F. Existing Drainage Facilities**

7. Based on the above calculations, it is considered that the existing drainage facilities for Catchment 1, Catchment 2 and the external catchment Catchment 3 would be adequate to intercept storm water passing through and generated at the Site (**Plan 3**).
8. All the existing drainage facilities will be maintained at the applicant's own cost.
9. Proposed improvement to the existing drainage facilities would be submitted to DSD upon approval of the application.