

Technical Note to prepare a

## **DRAINAGE SUBMISSION**

Relating to applications for temporary change of land use  
such as temporary storage areas, car parks, workshops, small factories...etc.  
under S.16 of the Town Planning Ordinance



**DRAINAGE SERVICES DEPARTMENT**

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## 1. Background

Development in the New Territories has been rapid. The demand for changing land use to other temporary uses such as “open storage” or “car-park” has been high and ever increasing due to economic reasons. These changes in land use may cause flooding when the sites are filled or paved without suitable drainage systems, in flood prone area. As such, in processing a Section 16 application for such temporary change of land use, an applicant is often requested by Drainage Services Department (DSD) to make a submission to demonstrate that the proposed use of the site would not have adverse drainage impacts on the drainage issue to the area.

This Technical Note aims at helping an applicant to visualize his important role in the prevention of flooding caused by his development and to provide step-by-step guideline to help the applicants to prepare his drainage submission for change of temporary land use to meet the requirement of DSD.

## 2. Role of Drainage Services Department

DSD shall examine the technical aspects of the drainage submission submitted by the applicant. The purpose of DSD’s examination is to ensure that the submission will satisfy the basic requirements of a drainage submission and to offer technical comments where appropriate.

However, the applicant should take full liability whatsoever of the consequences arising from the implementation of his drainage submission. DSD shall have no liability, under all circumstances, to the applicant for any damage, injury, losses, claims, charges or fees arising from the works proposed in the drainage submission, including those amendments after taken into account of DSD’s comments.

The applicant shall also note that the acceptance of his drainage submission does not imply approval or otherwise for the project required under the Town Planning Ordinance or other legislations. He will still be required to obtain the necessary statutory approvals by means of separate permit/licence/approval applications.

## 3. Types of sites and types of drainage submissions required

Rain water may cause flooding if it is not properly collected, conveyed and discharged. Common construction activities such as earth filling, hard surface paving and building of houses, huts...etc. may increase the risk of flooding. To alleviate the risk of flooding caused by these activities, an applicant is required to submit a drainage submission to demonstrate how he will collect, convey and discharge rain water falling on or flowing to his site.

(a) Simple Sites

"For development sites, which are less than 1 ha in size and neither fall within flood prone areas such as lowlying areas and flooding blackspots nor involve pond filling and substantial earth filling, are regarded as simple sites. The drainage requirements are normally basic. The applicants are normally required to submit a drainage proposal only."

(b) Complicated Sites

For other large sites, or sites adjacent to or encompassing a major stream, channel or river etc, the drainage impact of the development may be significant. As such, the applicant has to refer to DSD Advice Note No. 1 and to submit a comprehensive drainage impact assessment (DIA) in accordance with DSD Advice Note No.1. The DIA should also include the proposed drainage facilities required to mitigate the adverse drainage impacts.

The above classification provides an indication only. The exact classification shall be determined based on the actual site condition and the site formation works involved in each individual application. Therefore, the applicants should as far as possible provide this kind of information in their application submissions.

4. Need to appoint engineers to prepare the drainage submission

In order to protect his own interest from any possible damages due to flooding caused by his proposed works, even if it is a simple site, the applicant should employ a qualified engineer (Registered Professional Engineer in the Civil Engineering discipline) to prepare for his drainage submission.

For a complicated site, the applicant should refer to DSD Advice Note No. 1 and should also employ a qualified engineer (Registered Professional Engineer in the Civil Engineering discipline) to complete the DIA as requested. The completed drainage submission should be signed and certified by the engineer before it is submitted to DSD for comment.

5. Main points to be considered in preparing a drainage submission

(a) Simple Sites

When preparing for a drainage submission, the following basic drainage aspects should be considered.

i. Existing stormwater drains, streamcourses, pipes etc

An applicant must find out whether there are any existing streams and stormwater drains within or in the vicinity of his site.

It is important that the applicant of the site does not disturb these streams and drains by obstructing them or making them smaller because this will cause flooding.

If the applicant does disturb the streams and drains, then the applicant must provide new channels and pipes of equivalent flow capacity as replacements respectively, without worsening the original drainage condition.

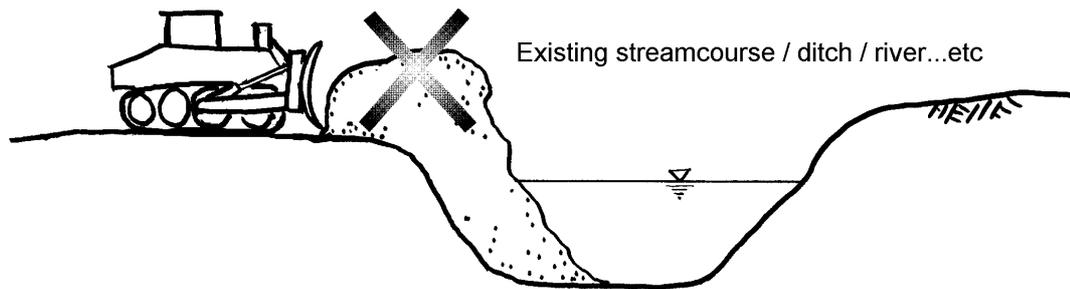


Fig. 1 :Blocking a stream will cause flooding

ii. Drainage network with proper discharge point

The applicant should show clearly how the rain water falling onto his site will be collected by a drainage system and conveyed to a proper discharge point(s). The discharge point can be an existing ditch, streamcourse, channel, river or underground stormwater pipe but the applicant should check and ensure that the flow from his site will not overload the existing drainage system.

A surface channel at the peripheral of the site should be constructed to intercept all such rain water falling onto the site.

iii. Earth Filling

Large scale earth filling and change of formation level may block the natural drainage path and increase the risk of flooding.

The applicant should avoid substantial land filling activities and change of formation level. In case that raising of formation level is unavoidable, the applicant must provide adequate additional intercepting drains to convey the surface rain water from the adjacent land.

iv Surface Paving

Impervious paving such as concrete or bitumen will increase the surface runoff. The applicant should use porous granular materials, such as graded rubbles, or similar recycled materials like broken and

graded used concrete, to form the surface paving. The surface paving could be formed by suitable compaction of the materials. However, the applicant should avoid using cementing and bituminous materials for bonding as far as possible since they would prohibit infiltration into the ground.

iv. Run-in/run-out

Care should be exercised in forming run-in/run-out if there is any existing open channel, stream or ditch running across the entrance of the site. The applicant must propose proper measures such as decking or replacement by a pipe of equivalent size and same capacity. The soffit level of run-in/run-out must have adequate clearance above the channel bank, e.g. at least 300mm free-board. When designing the run-in/run-out, the applicant should also consider whether the drain will be more likely to be blocked when it is decked or replaced and whether clearing of the drain will be hindered by the decking or other works.

v. Boundary fence/boundary wall

Solid boundary wall is not recommended because it will obstruct the existing flow path. In case where the use of solid boundary wall is unavoidable, the applicant should construct open channels of adequate sizes on both sides of the wall, and construct adequate openings at the foot of the wall to allow the passage of rain water.

(b) Complicated Sites

The above considerations for simple sites could not cover the considerations for complicated sites. The applicants of the complicated sites should refer to DSD Advice Notes No. 1 for different considerations required for drainage submissions.

6. Content of a drainage submission

(a) Simple Sites

A drainage submission should normally refer to a drainage proposal which includes a drainage plan showing the details of the existing drains and the proposed drains together adequate supporting design calculations. These details should include the type and the dimension of the drains.

i. Records of existing stormwater drains

The applicant should provide information on the existing stormwater drains, such as peripheral U-channel, ditch,

streamcourse, ...etc. within and around his site and state clearly whether he would remove, modify or retain these drains.

The applicant can make use of these existing stormwater drains as part of his proposed drainage networks and include them in his drainage submission as long as their working conditions are satisfactory. In this case, records such as photographs and plans showing these drains shall be provided.

ii. Proposed drainage works

The applicant should indicate clearly the proposed drainage works for his site. Common measures include improvement of nearby drainage networks, construction of channels, choice of porous surface paving...etc. should be shown. However, the applicant should note that different measures may be required according to the type of development and the characteristic of each individual site.

Typical construction details of U-channel, catchpit, sandtrap and outfall are shown in the Appendix to this note.

iii. Plans and Sketches

Sketches showing the general information of the site such as topography, fall direction, proposed paving and formation level, position of the buildings or structure, size and alignment of existing and proposed drains, and nearby available discharge points within the vicinity of the site, etc., should be submitted.

A plan showing the common drainage mitigation measures applicable to a typical development site is enclosed in the Appendix to this note. The applicant should however note that the details of each site should be designed to cope with its own characteristics.

iv. Calculations

The applicant should also submit calculations according to DSD Stormwater Drainage Manual to show that the size of the proposed drainage systems is adequate for the rain water from the site. For small site, the applicant can make reference to the table for choosing the size of surface channels. However, the applicant should note that the following table only apply to sites having a gradient greater than 1 in 200. For flatter sites, the applicant should provide larger channel with supporting calculations.

<b>Catchment area</b>	<b>size of U-channel at 1 in 200 gradient</b>
150m <sup>2</sup>	150mm
500m <sup>2</sup>	225mm

1,200m <sup>2</sup>	300mm
2,400m <sup>2</sup>	375mm
4,000m <sup>2</sup>	450mm

(b) Complicated Sites

As pointed out in Section 3(b), the drainage submission for complicated sites will be in the form of a DIA, in accordance with DSD Advice Note No. 1, which includes a drainage proposal to mitigate the adverse drainage impacts, instead of just a drainage proposal as for simple sites.

7. Forwarding drainage submissions and vetting time

When the drainage submission is ready, the applicant should forward it to Plan D and DSD at the same time. DSD will comment on the submission and return comments to the applicant via Plan D. The normal vetting time is four weeks from the date of receipt of the drainage submissions.

8. Arrangements for final inspection of drainage works upon completion

Upon the satisfactory drainage submission, the applicants should implement and complete the proposed drainage facilities as per their submissions as soon as possible. When they are completed on site, the applicant should serve a notice of completion of works (with photos showing the completed works) to Plan D and DSD at the same time. DSD will arrange a completion inspection, normally two weeks from the date of receipt of the notice, to check on site if they are in order. The applicant will be informed of the results of the inspections via Plan D. In view of the increasing public expectation on flood protection, the applicants should only operate the development site after the satisfactory completion of the final inspection.

9. Maintenance of completed drains

Regular maintenance such as routine desilting is essential for all drains, catchpits and streamcourses to avoid blockage and deterioration. Hence, the applicant should ensure and keep all drainage works proposed by him, after construction, under proper maintenance during occupancy of the site. In this connection, the applicant shall ensure during the design stage that those drains constructed under his drainage proposal are accessible and maintainable at all times.

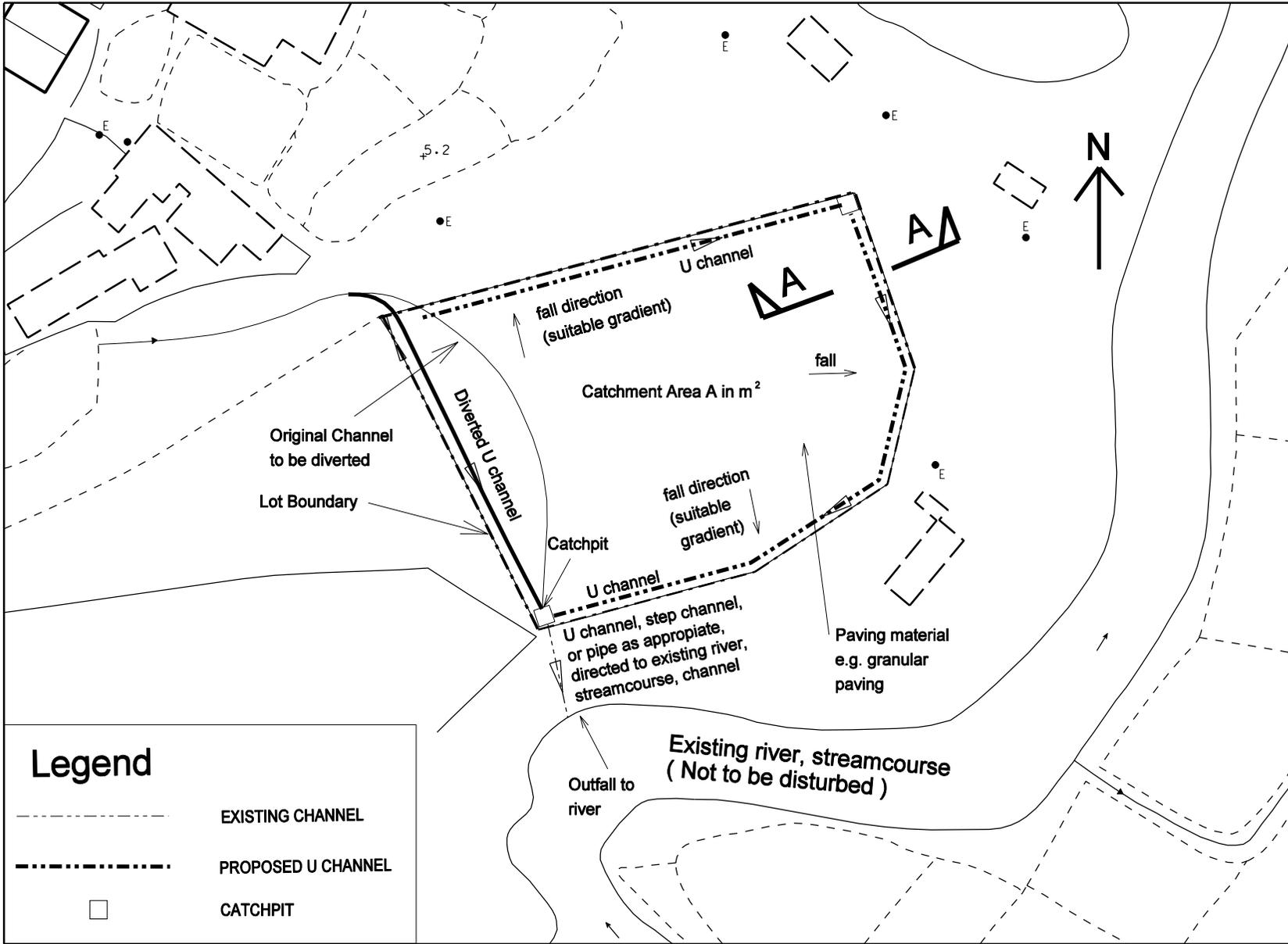
## 10. Further enquiry

For further enquiries, please contact the following divisions of the Drainage Services Department:

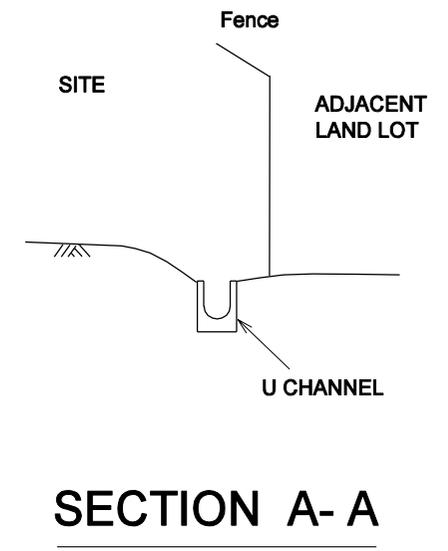
	Address	Telephone
Mainland North Division (North District, Yuen Long, Tuen Mun & Tai Po)	14/F., Kowloon Government Offices, 405 Nathan Road, Kowloon	23001441
Mainland South Division (Kowloon and other districts in New Territories)	15/F., Kowloon Government Offices, 405 Nathan Road, Kowloon	
Hong Kong and Islands Division	42/F., Revenue Tower, 5 Gloucester Road, Wanchai, Hong Kong	25947175

## 11. Reference

- i. Drainage Services Department: “Stormwater Drainage Manual – Planning, Design and Management”
- ii. Drainage Services Department : Advice Note No.1 : “Application of the Drainage Impact Assessment Process to Private Sector Projects”

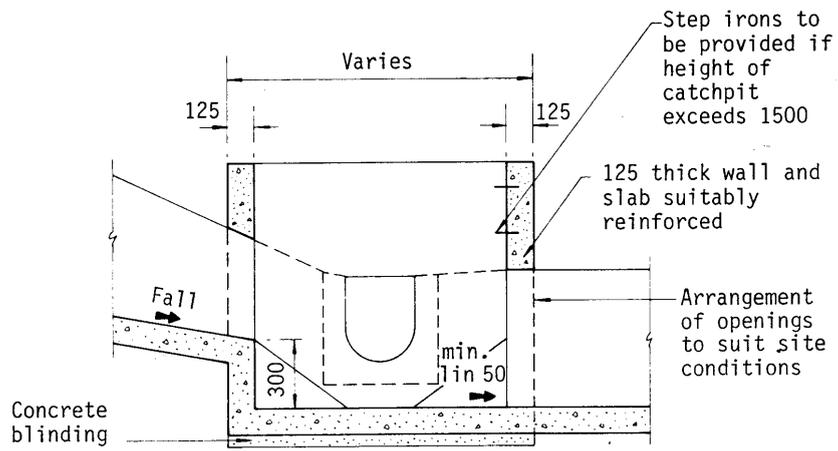


Legend	
	EXISTING CHANNEL
	PROPOSED U CHANNEL
	CATCHPIT

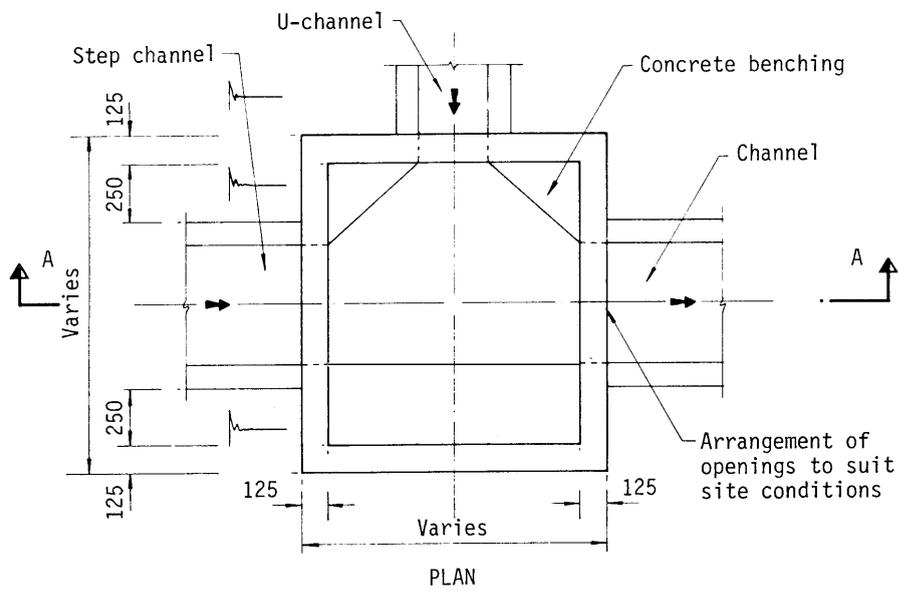


Remarks :  
 1) Size depth and gradient of U Channel, and scale of drawing should be indicated

**DRAINAGE LAYOUT PLAN FOR A TYPICAL SITE**

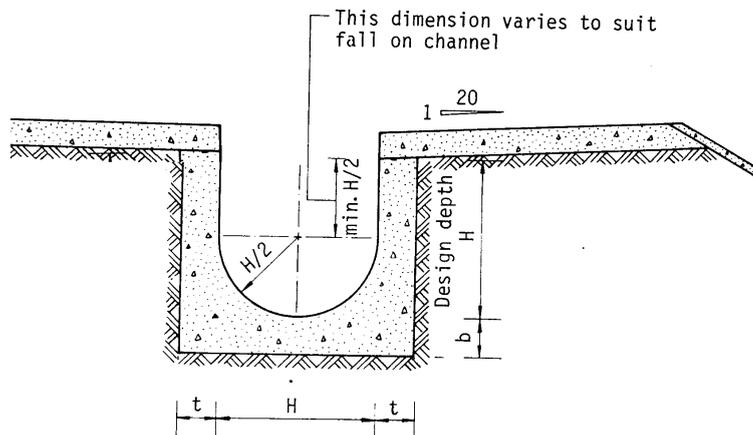


SECTION A-A



PLAN

TYPICAL DETAILS OF CATCHPIT



TYPICAL DETAILS OF U CHANNEL