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Drainage and Dewatering

City of Perth Drainage Connection Guidelines

Disposal of storm-water generated on properties shall be as follows:-

1. Stormwater to be retained on site;
2. Where (1) above is not possible, an approved on-site detention system must be provided prior to connection to the City's drainage system;
 - 2.1 if exceptional circumstances exist where stormwater cannot be detained on-site then direct disposal to the City's drainage system may be approved;
 - 2.2 if an adjoining street drainage system does not exist, or where the existing system is not capable of handling the flow from the property, an application may be made by the owner of the property for an extension or up-grading of the City's stormwater system;
 - 2.3 water to be discharged to the City's drains must be adequately treated on site to comply with the requirements of the 'Manual for Stormwater Management Manual for Western Australia' as published by the Department of Water 2004-2007;
 - 2.4 the cost of connecting on-site drainage to the City's drainage system shall be the responsibility of the owner of the property being connected, including the cost of any necessary extensions or up-grading to the City's drainage system.

On-site Detention Systems

On-site detention systems are used to counteract the effects of development within a catchment by reducing the peak discharge resulting from storms. This is done by storing the stormwater on-site and slowly releasing it to the street drainage system.

On-site detention systems are installed in conjunction with property development and building works. The construction and maintenance of these systems is the responsibility of the property owner.

Design Criteria

There is an accepted criteria for the design of on-site detention systems to reduce the peak run-off rate from the developed site. The system is normally designed to cater for a high intensity, short duration, once in 50 year storm. Storage is used to reduce the outflow rate to that which would have been produced by a longer, but lower intensity once in 20 year storm on the original undeveloped property. However, this premise is not based on inner city areas and it is considered that adequate provision should be made to cater for a once in 100 year storm.

In designing on-site detention systems, consulting engineers may use the limiting criteria given or may undertake a detailed analysis of the relevant catchment system. The criteria for storage is meant as a guide only and would be the minimum that the City would accept in approving detention systems. In the case of high rise buildings it would be advisable to make allowance in designing the storage tanks, for the equivalent extra property area created by the facade.

It should be noted that provision may be made for an overflow from the detention system to the road drainage system to provide some relief from a larger storm than these criteria allow or from temporary problems in storage systems.

Therefore the allowable site discharge should be set at 0.12 cubic metres/second per hectare or 120 litres/second per hectare.

For a 100 year return frequency storm on the developed property: -

The minimum storage required for these conditions is **184.28 m³/ha**. Several catchments were analysed and gave similar results.

It is therefore considered that the minimum volume of storage required should be set at 185 cubic metres/hectare.

Soakwells

Design Criteria (Note: This should be used as a guide only to the minimum number of soakwells and the city takes no responsibility for drainage based on these guidelines).

The design method is based on the basic concept that sumps function by providing temporary storage. While inflow (stormwater runoff) arrives at a high rate, outflow (soakage) occurs at a slower rate.

The design method consists of developing very simple inflow and outflow hydrographs, integrating these and determining the difference between them to give the required storage volume.

Shallow Water Table (maximum height of water table less than 1 metre below bottom of soakwell
1000 sqm runoff requires 31.99 sqm soakage area in Perth Sand

7 soakwells (1.8 diameter and 1.8 depth)

Deep Water Table (maximum height of water table more than 1 metre below bottom of soakwell)

1000 sqm runoff requires 22.85sqm soakage area in Perth Sand.


5 soakwells (1.8 diameter and 1.8 depth)

Excessive storm conditions can cause flooding therefore an overflow pipe may be required.

Soakwell calculation is based on slotted side soakwells and assuming that soakage area is the base area plus 25% of the side walls area. (It is assumed soakwells has an open base)


Additional soakwells may be required in the case of high rise developments. Also please note that optimal soakage will only occur if the soakwells are regularly maintained.


Note: City encourages the recycling of the storm water. Where possible, re charging the groundwater system is encouraged.



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View City of Perth Drainage information

 [Drainage Application Form \(72.11 KB\)](#)

 [Dewatering Application Form \(60.05 KB\)](#)