Stormwater Management

Acceptable Solution No. 2 – Soakage Pit

TIMARU DISTRICT COUNCIL
Te Kaunihera ā-Rohe o Te Tihi o Maru

Water Services
Safe and Reliable
For Our Community

Use of water infiltration for Stormwater Management for residential development with total additional hardstand areas greater than 30m2 and up to or equal to 250m2

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Purpose of this document

Acceptable Solutions provide options for development to meet the requirements for stormwater management in Timaru District. It is a simplified process for selection of stormwater management devices and provides solutions to meet the stormwater quantity and quality desires of the district.

How to use this document

Timaru District Council will accept the use of acceptable solutions as evidence of meeting the stormwater management requirements without additional submission of calculation and engineering approval. The use of acceptable solutions is not mandatory. You can choose another solution and provide hydraulic and/or engineering calculations from a qualified person to demonstrate compliance of your proposed solution with the Stormwater Management requirements.

Acceptable Solution No. 2 – Soakpit for Stormwater Management

Soakage pits provide a stormwater discharge function through a ground infiltration process. The excavated pit is filled with rocks, and the void spaces provide stormwater storage until the stormwater runoff infiltrates into the ground. To choose the soakpit surface area (m2) from the table 1 below, you will need to;

1. Identify the location of your development (Timaru, Geraldine, Temuka or Pleasant Point),
2. Know the total hardstand area of your development,
3. Insert the pre- and post-development areas into the Acceptable Solution 2 calculator, the total areas must add up.
4. Refer to the bottom cells of the calculator or simply use the table below, depending on your location, for soakpit sizing.

Council will accept the use of Acceptable Solution No.2 as evidence of compliance where:

- On-site management and disposal of stormwater is required in **residential development**,
- The total roof area is less than 250m^2 and
- The requirements do not refer to other specific outcomes.

Retention volume for rainwater storage and personal use is a feature of the acceptable solution.

You could choose your rainwater tank based on the total roof area of your development and location from the table below.

Table 1: Soakage Pit sizing chart		Geraldine		Temuka and Pleasant Point	
Additional Hardstand Area (m^2)	Min infiltration rate (mm/hr)	Soakpit Surface Area Asp (m2)	Soakpit min depth (m)	Soakpit Surface Area Asp (m2)	Soakpit min depth (m)
30 – 70	50	2	2	2	2
71 – 110	50	3.5	2	3	2
111 – 140	50	4.5	2	3.5	2
141 – 170	50	5.5	2	4.5	2
171 – 210	50	6.5	2	5.5	2
211 – 250	50	8	2	6.5	2

The use of this acceptable solution is not mandatory. The applicant can provide hydraulic and/or engineering calculations to comply with TDC's and the Building Code stormwater management requirements.

For instance, if you can provide a greater infiltration rate (mm/hr) and groundwater level below existing ground based on testing the ground conditions on site, the soakpit surface area (m2) may become smaller.

Requirements and limitations

1. This acceptable solution is only applicable to meet the requirement of stormwater quantity neutrality for residential development with total hardstand areas greater than 30m2 and up to or equal to 250m2.

2. A leaf diverter, or similar litter diversion trap or filter, must be installed on the downpipes or prior to the inflow to your soakage device.

3. You must install an overflow pipe to be connected to an acceptable outfall or public system, including kerb and channel when available.

4. Soakage pits should be constructed in medium textured soils with high permeability. They are unsuitable for use in areas of high groundwater levels and/or impermeable soils. Therefore, for Timaru further assessment on ground conditions must be carried out due to the lack of well drained soils.

5. The rate at which water dissipates into the ground depends on the infiltration capability of the soil. The rate of infiltration is measured by a field test, such as a percolation test, cased borelog infiltration testing, double ring infiltrometer testing, etc.

6. The lowest measured infiltration rate must be equal to or greater than 50mm/hr. Therefore, soils must have a minimum infiltration rate of 17 mm/hr after including a factor of safety of 3.

7. The installation of the soakpit must be in accordance with a TDC Standard Urban Soakpit and engineers' advice if needed. [Refer to Figures 2 for Acceptable Solution 2 - Soakpit Details]

8. Soakpits are not considered to provide stormwater treatment. A stable system that does not scour and increase sediment load to the soakage device is required to improve the long-term performance of the device and minimise operation and maintenance constraints.

9. This spread sheet only consists of a minimum infiltration rate of 50mm/hr and a soakpit depth of 2m, assuming groundwater is at 3m below surface level. These requirements ensure a draw down time less than 48hr and minimum depth.

10. Any variation from the details in Table 1 will mean your stormwater management is non-compliant with this Acceptable Solution and engineering compliance may be required.

Figure 1: Example Construction Detail of an Urban Private Soakpit

