

Stormwater Retention/Detention

Last Updated September 2017



Introduction

Council's Development Plan states that, on land north of Seacombe Road, all new buildings and building extensions of 40 square metres or more in floor area, should incorporate sufficient on-site stormwater detention/retention to limit the rate of stormwater runoff.

Additionally, Building Rules introduced on 1 July 2006 require new dwellings (and some extensions or alterations) in South Australia to have an additional water supply to supplement the mains water. These provisions aim to reduce the demand on the State's mains water supply.

This brochure details the requirements for both different regulations as they relate to residential development, and how they can be satisfied through different tank configurations.

Stormwater detention/retention

Why are detention/retention tanks required?

The policies in Council's Development Plan are based on detailed engineering studies into the capacity of the Council's existing drainage systems. In the areas north of Seacombe Road, increasing residential densities and expanding industrial and commercial buildings are placing increased pressure on the existing underground drainage infrastructure, to the point where measures need to be considered immediately to prevent serious problems from arising in the near future.

Increasing the capacity of existing drainage infrastructure throughout the Council area to cater for the increase in stormwater flows is not feasible due to space and cost constraints.

Current best practice and the most cost effective method of controlling increased stormwater runoff is through either on site detention or retention of stormwater, both on a large and small scale.

Council will therefore require a stormwater detention tank or tanks to be provided in many developments to cater for extra stormwater runoff generated from increased roof area and other hard surfaces. Without this, the increase in roofed areas and other hard surfaces will result in flows exceeding the capacity of the existing underground drainage system that was designed and constructed in the 1960's.

The requirement to install stormwater detention/retention systems has been applied from 1 January 2000.

What is a Detention Tank?

A stormwater detention tank **detains** or slows the release of stormwater from your property through the provision of on-site storage. It is important to note that a detention tank only slows down the rate of flow from your property compared to a traditional rainwater tank (which is a 'retention' tank) that also stores stormwater for domestic use.

A stormwater detention tank will be empty except during periods of rainfall and for a short time after rainfall ceases.

Where are stormwater retention/detention systems required?

An on-site detention/retention system is required in all residential zones* north of Seacombe Road where the roof area of all buildings expressed as a percentage of the allotment/site area exceeds 30% and the development proposed is one of the following:

- A new dwelling
- An addition to a dwelling greater than 40m²
- Land division where existing buildings are to remain

** Requirements for on-site detention/retention systems in Commercial/Industrial Zones are available from the City of Marion's Infrastructure Department*

Where appropriate, larger subdivisions should also provide for on-site stormwater detention or retention in a reserve. If this achieves the necessary level of detention from the overall site, Council may not require additional detention measures when the individual lots in the subdivision are developed.

Retention/Detention Tank Requirements

Council's Development Plan contains policies stating that in residential areas north of Seacombe Road, sufficient on-site stormwater retention/detention should be provided in new development in order to limit stormwater runoff from the subject land so that the flows determined using the following runoff coefficients are not exceeded:

Within residential zones:	Runoff Coefficient:
5 year ARI* flood event	0.25
100 years ARI* flood event	0.45
Within non-residential zones:	Runoff Coefficient:
5 year ARI* flood event	0.65
100 year ARI* flood event	0.85

**ARI refers to "Average Return Interval"*

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Traditionally, the coefficients have been satisfied through the provision of on-site stormwater detention. However, Council's latest Stormwater Management Plans recommend plumbed-in retention tanks instead of detention tanks because retention achieves both peak flow reduction in addition to volume reduction by enabling water conservation through reuse. These plumbed-in retention tanks also provide the additional water supply required under the Building Rules.

To assist developers, tables have been developed outlining the minimum retention/detention tank capacity/size to satisfy the relevant coefficients ([Page 5](#) of this brochure). Either option 1 (detention tanks) or option 2 (retention tanks) can be followed to satisfy the coefficients.

The size of tanks required depends upon the size of the building(s) proposed (site coverage) and the allotment area/site area of that dwelling. Where more than one building is proposed per allotment, tank capacity should be individually determined for each site and its building/s.

Alternative designs (based on accepted engineering parameters and complying with the nominated flow rates in the Development Plan) can also be submitted for the consideration of Council as part of your development application.

Note: The detention tanks referred to in the Table are standard 2 or 3 module rainwater tanks that are modified to include a 90mm inlet with a leaf guard, a 90mm outlet with an inspection opening and an outlet restriction orifice (available from Council). Detention tanks must also incorporate a permanent orifice (to ensure an appropriate rate of flow from the tank) of diameter 15mm (or 20mm if the allotment is greater than 751m² in area).

Can I use a detention tank to collect rainwater to use?

If you wish to use your detention tank to collect rainwater, you should choose to instead install a retention tank as outlined as Option 2 on [Page 5](#) of this brochure.

If you choose to follow Option 1 and provide a detention tank, the detention tank cannot be used to collect rainwater for use. A stormwater detention tank will only work effectively if it is empty when a rainfall event occurs. If a rainwater tank to store rainwater for later use is desired, a separate tank would be required.

How do I maintain a stormwater detention tank?

Maintenance is simply a matter of opening the inspection cover and checking to ensure the orifice plate has not

become blocked. Periodic checks and cleaning of the leaf guard would also be required.

The largest rainfall events are more likely to occur during the summer months - therefore, it is important that the tank is maintained all year round.

When the detention tank drains, a small amount of water will remain either in the bottom of the tank or in the pipework joining adjacent tanks. If left untreated, this water may attract mosquitoes. In order to prevent the mosquitoes breeding, the tank must either be drained on a regular basis or the water must be treated.

Please contact the Council's Environmental Health Officers for further information regarding prevention of mosquito breeding.

Additional Water Supply

Why are rainwater tanks required?

Separate to the policies in Council's Development Plan, the Building Code of Australia require new dwellings and certain dwelling additions to be provided with an additional water supply to supplement mains water.

Installing specially plumbed, minimum-sized rainwater tanks is the most common way of meeting the additional water supply requirement. Other means of providing the required additional water supply could include developments using a dual reticulated (fixed pipe) water supply system – such as Mawson Lakes – or approved bore water.

Under the rules, the additional water supply has to be plumbed to either a toilet, a water heater or to all cold water outlets in the laundry of a new home.

The same rules apply to new extensions or alterations where the area of the extension or alteration is greater than 50m² and includes a toilet, water heater or laundry cold water outlet.

What is a Retention Tank?

A retention tank **retains** water for reuse. Under the requirements, retention or "rainwater" tanks must be plumbed to a toilet or laundry for reuse.

Plumbed rainwater tanks

If rainwater tanks are to be used to provide the additional water supply required by the Building Code of Australia, new homes will need to be designed to ensure that rainwater from not less than 50m² of the roof is:

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- Collected by gutters and downpipes
- Stored in a rainwater tank; and
- Plumbed to a toilet or a water heater or all laundry cold water outlets.

If the roof catchment area of the building is less than 50m² all the water run-off from the roof must be collected, stored and plumbed.

What size rainwater tank should be installed?

The rainwater tank must have a storage capacity not less than 1 kilolitre (1000 litres).

Where a number of dwellings contribute to a communal rainwater storage tank, each dwelling must contribute rainwater from 50m² of its roof catchment area to the rainwater tank and water from the tank must be plumbed back to each individual dwelling. In these situations, the minimum rainwater tank size required is determined by multiplying the number of dwellings that contribute to the rainwater tank by one kilolitre for each dwelling.

Additionally, an overflow device must be fitted, and a mosquito proof, non-degradable screen must be attached to protect the water quality.

The requirement for a minimum one kilolitre plumbed rainwater tank is additional to the on-site detention water storage tank requirements, but can form part of a retention tank system, as per Option 2 on [Page 5](#) of this brochure.

Plumbing requirements

The plumbing aspects of the policy are regulated by the South Australian Water Corporation (SA Water) in accordance with the Waterworks Act 1932 and Waterworks Regulations 1996. SA Water require all plumbing work to comply with AS/NZS 3500:2003, the National Plumbing and Drainage Code and any SA Variations published by SA Water. The technical requirements for rainwater tanks are contained in Section 14 of AS/NZS 3500:2003 Part 1 and the SA Water Variations

A licensed plumber must:

- Install the piping system delivering the rainwater to the water closet, water heater or cold water laundry outlets and
- Complete a Certificate of Compliance certifying that the installation has been installed in accordance with AS/NZS 3500 and the SA Variations. The Certificate of Compliance must be provided to SA Water and

the home owner within 7 days of completion of the work.

When must the rainwater tank be installed?

Regulation 83A of the Development Regulations 2008 states that all new Class 1a buildings (i.e. dwellings and dwelling additions) are required to have all connections made for the supply of water from all sources prior to the occupation of the dwelling. That is, all sources of water identified in the development approval (mains, rainwater tank, third pipe scheme) must be connected before the dwelling is occupied.

Combined Retention and Detention Tanks

Where both detention and retention tanks are required, combination tanks are permitted. A combination tank is a tank constructed to store at least 1000 litres of water while also containing the required stormwater detention volume as specified under Option 1 on [Page 5](#) of this brochure. Such a tank would have to be connected to the dwelling as per the retention requirements and must also have the slow release orifice installed partway up to meet the detention requirements. You will need to consult a licensed plumber or tank manufacturer to assist in specifying the tank system.

Alternatively, a retention system can be provided in accordance with Option 2 on [Page 5](#) of this brochure to substitute for both detention and rainwater tanks.

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Other Information

Development applications

All development applications lodged with local councils for new houses and relevant extensions/alterations for houses need to include details of how they will meet the water saving requirements. If rainwater tanks are to be used, details of the size, location, whether the tank is to be on a stand or at ground level, area of roof catchment to the tank and plumbing details for the installation of the tank must be included on the plans.

Installation of new rainwater tanks to existing houses

Under Schedule 3 of the Development Regulations 2008, a new rainwater tank to an existing dwelling (and any supporting structure) does not require Development Approval if it meets the following requirements:

- is part of a roof-drainage system; and
- has a total floor area not exceeding 10 square metres; and
- is located wholly above ground; and
- has no part higher than 4 metres above the natural surface of the ground.

Irrespective of whether a tank requires Development Approval or not, the overflow from rainwater tanks should always be directed to the street. If the tank is to be supported by a stand, care should be taken to ensure that there is adequate support for the stand as a 1000 litre tank will weigh over 1 tonne when full. It is recommended that a licensed builder be consulted to provide advice on adequate support for the stand.

Regulated trees

Any work that may substantially damage or affect a significant tree or trees, whether on your property or an adjoining property, requires approval from the Council. For clarification on what a significant tree is and what are considered to be tree damaging activities, please refer to separate Information Brochure "[Regulated and Significant Trees](#)".

Note that, a tree damaging activity may occur as a result of work associated with installation of a stormwater system (for example, digging of trenches for pipework may affect root systems). In these cases, a Development Application for tree damaging activities must be lodged with and approved by the Council before construction commences.

Want to Know More?

The above information is advisory only. It is intended to provide a guide and a general understanding of the key points associated with the particular topic. It is not a substitute for reading the relevant legislation or the Development Plan.

It is recommended that if you are intending to undertake development, you seek professional advice or contact the Council for any specific enquiries or for further assistance concerning the use and development of land.

Contact Details - City of Marion Development and Regulatory Services Division

245 Sturt Road
Sturt SA 5047

PO Box 21
Oaklands Park SA 5046

Telephone: (08) 8375 6685
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Option 1: Minimum Tank Requirements for On-Site Detention/Retention					
Allotment/ Site Area ²	Roof area ³ as percentage of allotment (or site) area:				
	<30%	30-35%	35-45%	45-55%	>55%
	Required minimum percentage of main roof area ⁴ directed to tank				
	N/A	60%	70%	80%	80%
350m ² or less	Nil	1 x 2-module tank ¹ , or equiv. volume (660L)	1 x 2-module tank, or equiv. volume (660L)	1 x 3-module tank, or equiv. volume (1000L)	2800L
351-450m ²	Nil	1 x 2-module tank, or equiv. volume (660L)	1 x 3-module tank, or equiv. volume (1000L)	1 x 2-module tank + 1 x 3-module tank, or equiv. volume (1660L)	4400L
451-550m ²	Nil	1 x 3-module tank, or equiv. volume (1000L)	2 x 2-module tanks, or equiv. volume (1320 L)	2200L	5800L
551-650m ²	Nil	2 x 2-module tanks, or equiv. volume (1320L)	1 x 2-module tank + 1 x 3-module tank, or equiv. volume (1660 litres)	2900L	7400L
651-750m ²	Nil	1 x 2-module tank + 1 x 3-module tank, or equiv. volume (1660L)	2 x 3-module tanks, or equiv. volume (2000L)	3700L	9200L
751-850m ²	Nil	2 x 2-module tanks, or equiv. volume (1320L)	2 x 3-module tanks, or equiv. volume (2000L)	3400L	9500L
851-950m ²	Nil	1 x 2-module tank + 1 x 3-module tank, or equiv. volume (1660L)	2200L	4100L	10500L
951-1050m ²	Nil	2 x 3-module tanks, or equiv. volume	2700L	4700L	12130L
PLUS	1000L retention (rainwater) tank Rainwater from not less than 50m ² of the roof must be collected by gutters and downpipes, stored in the tank, and plumbed to a toilet, water heater, or all laundry cold water outlets				

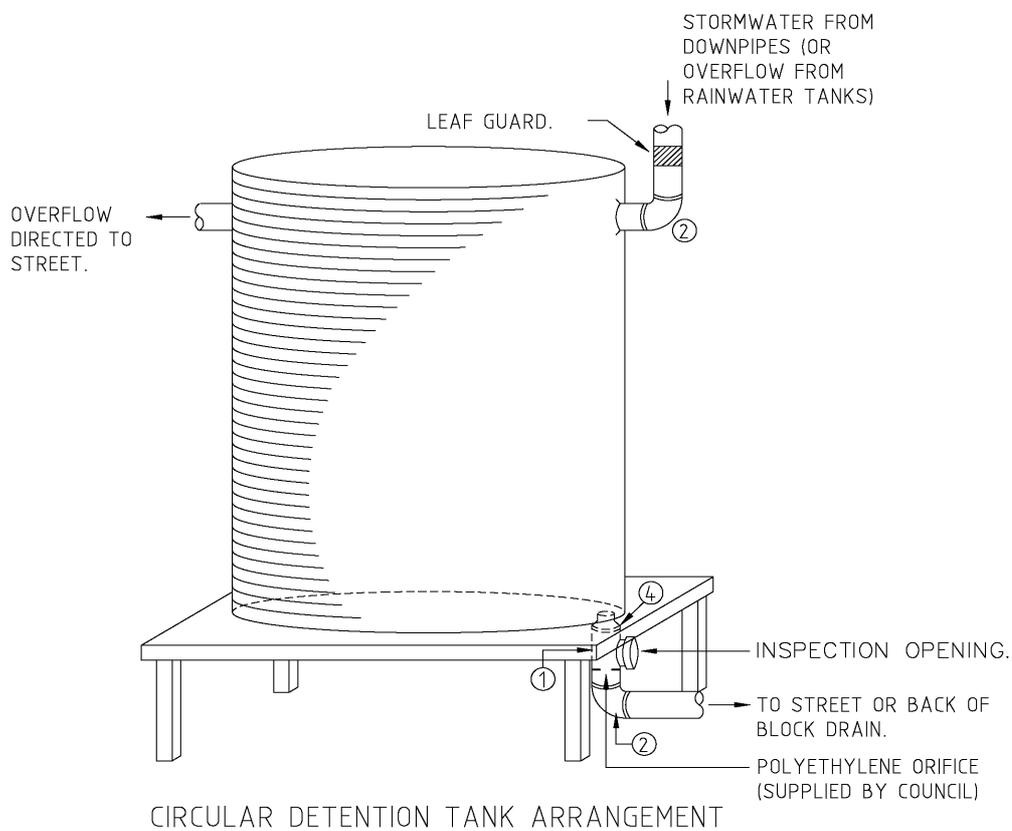
OR

Option 2: Minimum Tank Requirements for On-Site Retention (recommended)		
Roof Area ³	Tank Capacity	Design Requirements
150m ² or less	3000L	Fully plumbed into toilet and laundry ⁵ At least 80% of the main roof area connected to tank
Greater than 150 ²	5000L	Fully plumbed into toilet and laundry ⁵ At least 80% of the main roof area connected to tank

1. A 2-module tank refers to a 660 litre rectangular tank and a 3-module tank refers to a 1000 litre rectangular tank
2. Allotment and site area to be rounded to the nearest whole square metre
3. 'Roof area' refers to the roof area of all buildings on the allotment, including any net addition to the roof area as a result of the proposed development
4. 'Main roof area' excludes any roof not contiguous with the main roof of the dwelling
5. Larger rainwater retention tanks that are also plumbed into a water heater are encouraged

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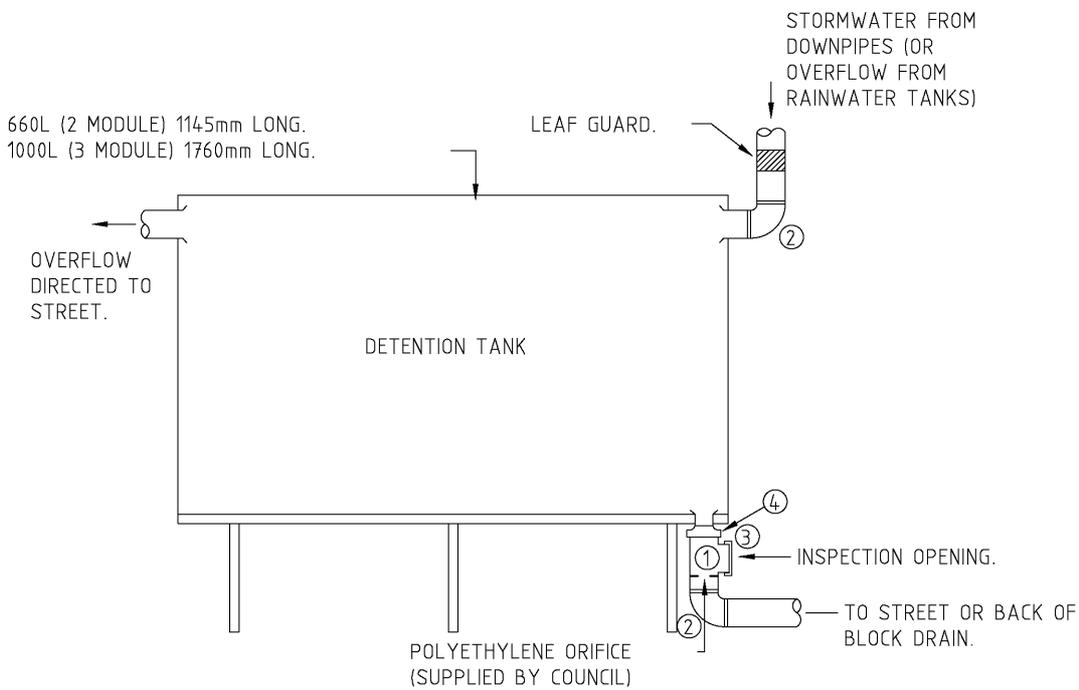


FITTINGS

- ① 90mm TEE PIECE
- ② 90mm 45° BEND
- ③ 90mm PUSH ON CAP
- ④ 75/90mm EXPANSION

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SINGLE DETENTION TANK ARRANGEMENT

FITTINGS

- ① 90mm TEE PIECE
- ② 90mm 45° BEND
- ③ 90mm PUSH ON CAP
- ④ 75/90mm EXPANSION

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