Managing Stormwater Runoff

The use of approved solutions for hydraulic neutrality

Version 6

Our water, our future.

Document history

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Approval	3 Waters Decision Making Committee (19/06/2025)

V1	June 2019	Approved Solution #1
V2	June 2020	Amended layout and minor text changes
V3	August 2020	Approved Solution #2
V4	June 2022	Approved Solution #3
V5	March 2024	Approved Solution #4 and amended layout
V6	February 2026	Combined solution text, shifted solution details to Appendix, Approved Solution #5, Approved Solution #6, Approved Solution #7, impervious area calculation

Executive Summary

Purpose of this document

This document has been written for anyone thinking about developing their land by explaining some of the concepts behind managing stormwater runoff. This document explains the impact the development may have on stormwater runoff and consequently flooding, why Wellington Water care, and what we are doing about it. This document focusses on smaller residential developments, 10 properties or less, or backyard add-ons by providing an approved solution to manage the change in stormwater runoff. Specifically, this document explains:

- Why managing stormwater runoff is important
- Hydraulic neutrality – what it means and what we are trying to achieve
- What residential developers need to consider to manage stormwater runoff (from a flooding perspective)

Appended to this document are approved solutions to assist in managing the effects of stormwater runoff in residential developments. The approved solutions provide simple solutions where developers need to achieve hydraulic neutrality.

> Wellington Water will accept the use of approved solutions as evidence of compliance with hydraulic neutrality where hydraulic neutrality is required for residential development and where the requirement does not refer to specific methods or specific outcomes. Approved solutions in this document contain design specifications and are not endorsements of specific products. The use of approved solutions is not mandatory. If another solution or variation is proposed, you may need to provide hydraulic and/or engineering calculations from a suitably qualified person that demonstrate compliance with the required hydraulic neutrality. As a minimum, this document will be reviewed every five years.
>
> Wellington Water reserves the right to revoke or revise approved solutions at any time.

The objective is for all of us to think more widely about the impact our development has on the environment and in particular how we are altering the natural drainage characteristics of our catchment. We need to act appropriately to ensure these changes do not impact negatively on our neighbours and downstream users by increasing their flood risk. Ultimately, we need to think about smarter, more adaptable solutions to manage the risk of flooding that reduces the need for costly infrastructure upgrades, while providing greater resilience within a changing climate. We believe the best solutions will come from multiple approaches, managing runoff at the source and throughout its journey as it drains to the sea.

Flooding in Porirua, 5 May 2016.

Why we need to consider stormwater runoff

Development contributes to the increased impervious area of catchments. Through the building of houses, driveways, roads and decks, we change the natural hydrological cycle. Rainfall that used to directly infiltrate through the soils or slowly drain overland now runs off the land much faster across sealed surfaces and through the piped stormwater network. In hydrological terms both the volume of water and the peak flow have increased as a direct result of development.

Water quality may also be adversely affected by developments, and water sensitive design should be considered. Specifically, this document explains flooding aspects of development. Other literature should be consulted for best practice approaches for water sensitive design.

Why do we care?

Most catchments have people and properties that are at risk of flooding. This has economic, environmental and social impacts.

What does this mean?

The stormwater network includes the primary network: stormwater sumps (these are the grates you see in roads which convey runoff to the piped stormwater network); stormwater pipes; and open channels. This network is effective at managing runoff from low to medium intensity rainfall events. However, the primary network does not have the capacity to transfer runoff from heavy rainfall events. It is usually impractical to put all this floodwater under the ground.

During heavy rainfall events we rely on overland flowpaths. We refer to these as the secondary network. The secondary network includes natural drainage paths based on the topography of the land and built paths like many of our roads. The drainage paths convey runoff so that flood waters do not enter buildings. If the primary or secondary networks block, for whatever reason, we can get flooding. This may be minor 'nuisance' flooding or major flooding that impacts our livelihoods.

Ponding areas are also part of the stormwater network. These areas may be natural or the result of changed topography which form basins or bunds. It is important to manage these ponding areas as they often provide storage during flooding and attenuation (the slow release of runoff back into the network).

Wellington Water uses a number of approaches to manage flood risk. This includes:

> developing hydraulic models to identify high risk areas and overland flowpaths

> installation of stormwater pipes where it makes sense to do so

> creating flood storage in low-risk areas.

Increasing the size of the piped stormwater network may be an option in high value areas, such as hospitals or the central business district. In other areas the costs associated with upgrading the stormwater network will often outweigh the benefits. A more cost-effective alternative is attenuating runoff at the source. This means storing rainfall close to where it lands, and slowly releasing it back into the stormwater network after the flood peak has passed.

In addition, the effects of climate change may lead to reduced effectiveness of our primary networks. The smart way to combat reduced effectiveness and unpredictability is to combine several approaches (big and small) to create an adaptable, resilient solution.

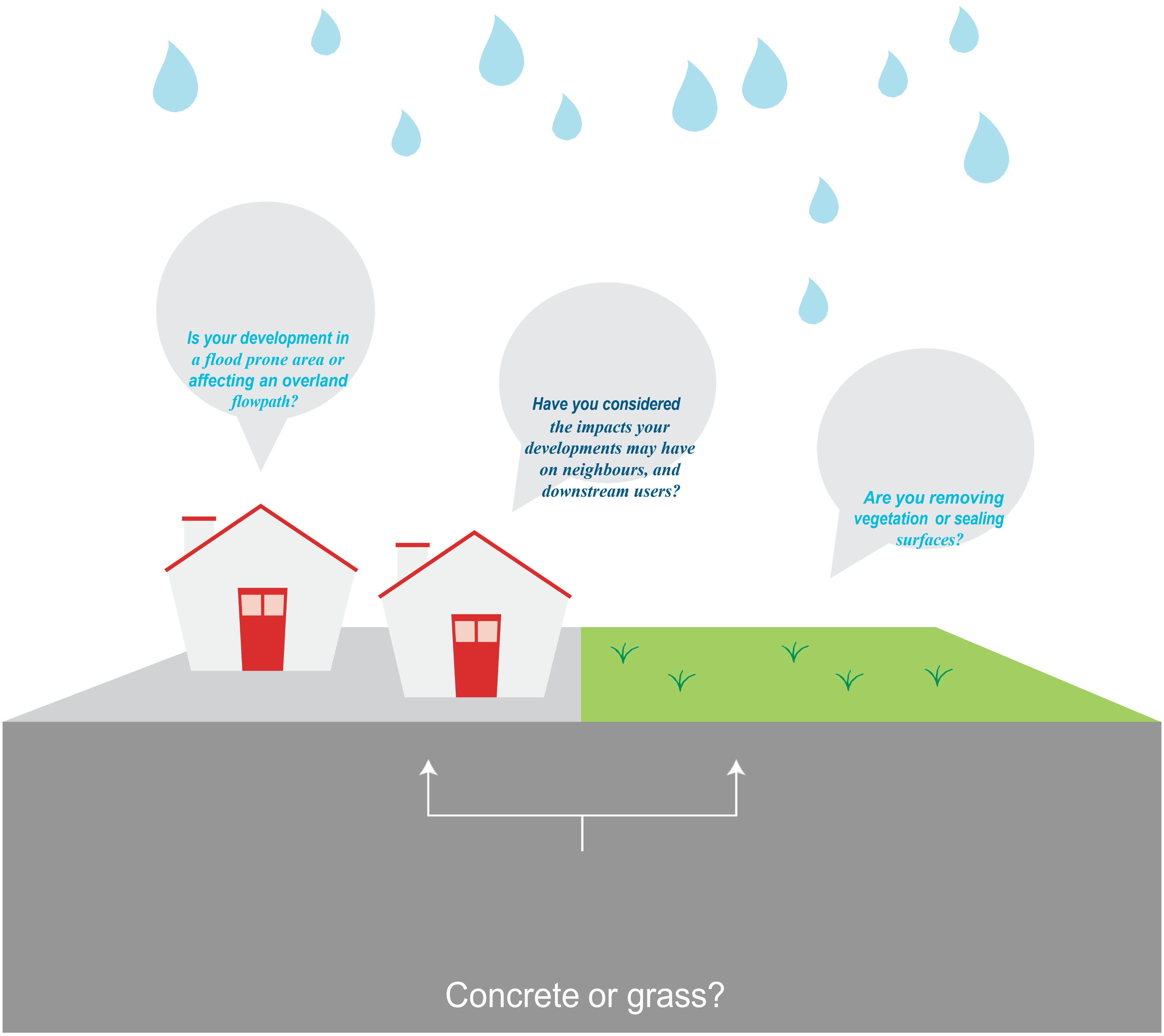
We need to think about smarter, more adaptable solutions when growing our cities.


Development may impact the natural hydrological cycle in four ways
1 Changes to Primary Flow
2 Changes to Overland Flow
3 Loss of Natural Ponding Areas
4 Increased Impervious Areas

Your Residential Development

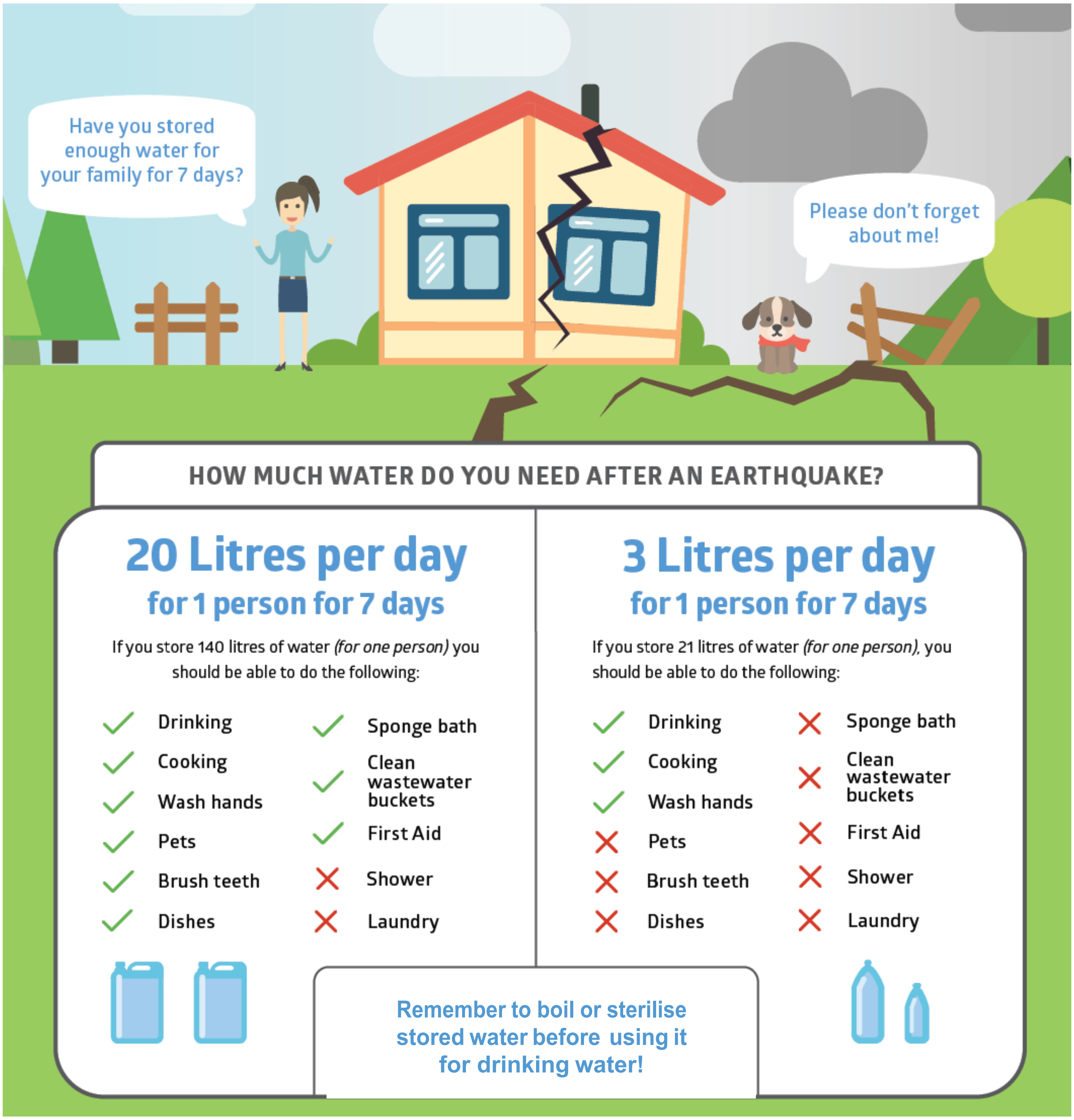
Considerations when designing a new residential development

It is important to understand where, what, and how your development could affect the immediate area and wider region. Under the Resource Management Act, you have an obligation to 'avoid, remedy, or mitigate any adverse effects of activities on the environment'. Therefore, you have a requirement to ensure your development does not cause flooding to others. If you are required to lodge a Resource Consent application, you will need to outline the adverse effects your development may cause and what you are doing to manage it. Some district plans also have a specific requirement to achieve hydraulic neutrality for the development to be considered a permitted activity.



Emergency water supply

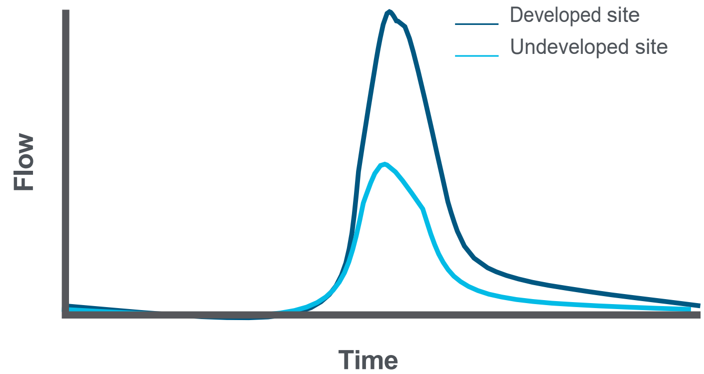
Many of the approved solutions include a requirement for a portion of the storage attenuation to be reserved to provide you with an emergency water supply following a major earthquake. We are all encouraged to store 20 litres of water per person per day for seven days. That is 140 litres for one person or 560 litres for a family of four. Following this seven-day period community stations will be established to provide a centralised source of drinking water as it may take more than 100 days before the water supply network is repaired. The water held in storage is not treated so remember to boil or sterilise it before using it for drinking water.



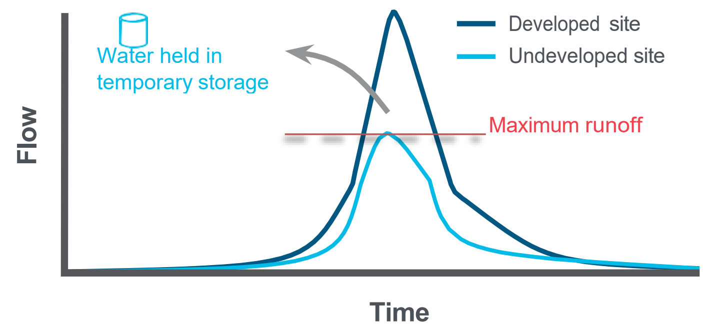
What is Hydraulic neutrality?

To manage the additional runoff directly attributed to your development, you need to ensure the maximum peak flow off your land is no greater than what it was pre-development. This is our definition of hydraulic neutrality. The figure (below) helps to explain this.

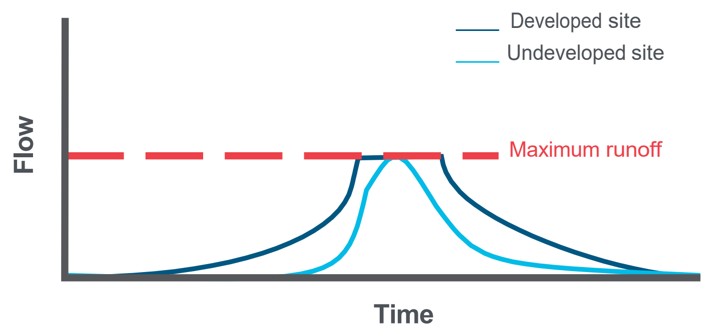
1. Increased sealed surfaces as a result of development mean that water is unable to infiltrate into soil or drain slowly overland. This results in a higher peak flow and greater volume of runoff.



2. The increased difference in peak flow can be captured and held in temporary storage devices to be used in other applications or slowly released back into the stormwater network.



3. This method can bring peak flow rates during significant rainfall events to a level much closer to that of undeveloped sites. Our goal is for new development to meet this definition of hydraulic neutrality.

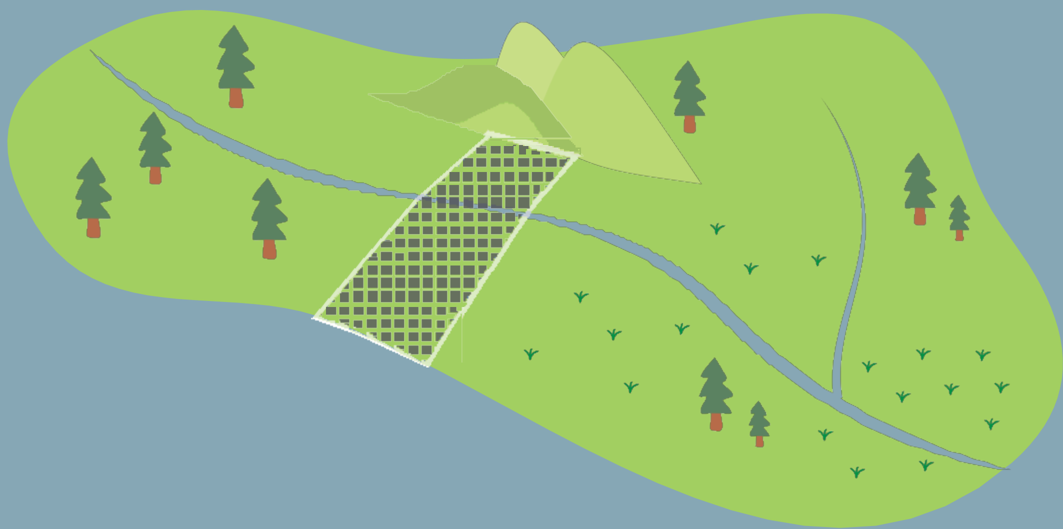


We define hydraulic neutrality as capturing post-development peak runoff so that it does not exceed the pre-development peak flow rate.

If a property is hydraulically neutral then the peak flow rate from the site will be the same, or less than, what it was prior to development. A hydraulically neutral development will not cause additional stress to the stormwater network and will not increase flooding. Your storage attenuation solution should be effective for both small and large flood events, including floods occurring once in 10-years (10% annual exceedance probability (AEP)) through to once in 100-years incorporating climate change predictions (1% AEP with climate change).

How to achieve hydraulic neutrality

A. Hydrological Modelling



B. Approved Solutions

B. Approved Solutions

The approved solutions require the diversion and attenuation of roof runoff into rainwater tanks. The required size of the rainwater tank is based on your house roof area (see Tables A-1 and A-2 in Appendix A).

Rainwater tanks will help store, slow and reduce peak runoff from a development, acting to control runoff at the source and to reduce the flood peak.

1. Purpose of Rainwater tanks

The purpose of rainwater tanks is to temporarily store runoff from your roof, slowly releasing this water back into the stormwater network over a longer duration. Water will flow out from the tank via an orifice and outlet pipe and an overflow pipe should the tank reach its capacity. During a storm the peak runoff from your house will be reduced.

2. General Site Limitations

The following site limitations apply to the use of approved solutions:

1. **Solutions are only applicable where sealed or concreted surfaces are limited to 30% of the roof area**, or substituted with pervious surfaces. Decking over bare ground is equivalent to 60% impervious, while pervious paving is equivalent to 25% impervious following the calculation in Section 10.
2. Approved solutions are acceptable for developments of 1- 10 resident buildings. They may be considered as part of a wider solution to managing stormwater runoff in developments greater than 10 buildings, though full hydrological analyses of the development will be necessary. This is to ensure that stormwater detention devices are appropriately sized for the specific conditions of the local area.

3. General Installation Limitations

The following installation limitations apply to the use of approved solutions:

1. Runoff from no less than 80% of all new roof areas must be diverted to, and attenuated by, your rainwater tank.
2. You must have a leaf litter/debris diverter (or equivalent product) between your roof gutter and downpipe(s), or on the downpipe to your tank.
3. Tanks with restricted maintenance access (for example AS2 and AS3) must have a silt trap installed at the inlet to the tanks. This will reduce sediment build up within the tanks and allow for easy maintenance.
4. Rainwater tanks must be installed in accordance with the manufacturer's specifications.
5. **Approved solutions have had the volumes and dimensions checked by modelling/calculation. Wellington Water provides no approval or endorsement of other aspects of the tanks, and you should take your own steps to ensure any tanks are suitable for the intended purpose.**
6. The drainage works associated with your development are likely to require a consent. Your tank and connections will need to be shown on as-built drawings provided to your council.

4. Tank Inlets, Outlets and Access

1. Orifice installations must allow easy checking/cleaning. The minimum orifice size is 20mm unless installed as part of an accepted self-cleaning orifice system.
2. Overflow pipes must not be connected directly to the main stormwater system unless they include an accepted self-cleaning outlet design. Regular overflows should discharge to a visible overflow point connected to an acceptable outfall or public system. This is to provide a visible indicator if the primary outlet is blocked.
3. **The outlet of the tanks must be free of backwater effects during a flood event and therefore must be at an elevation above the 100 year flood level at the point of connection to the public stormwater network. Please consult Wellington Water for details of the elevation of the stormwater network outside your property.**
4. You may choose to have multiple downpipes entering the tank conveying discharge directly from the roof, or alternatively the downpipes may be brought together in a junction underground with a single pipe (larger if required) conveying runoff to the tank.
5. It is important to ensure any tank access hatch is always secured and protected against unintended entry. Please consult your tank manufacturer for specific details on how to increase safety for your specific site circumstances. Where hatches are readily accessible, there may be a requirement for an additional layer of protection such as safety grills under covers.

5. Emergency Water Supply

Rainwater tanks provide an opportunity to store emergency water, with the added benefit of being replenished during rainfall:

1. We are all encouraged to store 20 litres of water per person per day for seven days. That is 140 litres for one person or 560 litres for a family of four.
2. Above-ground rainwater tanks include an allowance for emergency storage within the approved solution. This may be a nominal allowance and has been selected to work with the available tank sizes. You may decide to install additional or larger tanks to increase your emergency water supply.
3. Below-ground tanks do not include any allowance for emergency storage within the approved solution. Additional tanks can be added for this purpose. Please consult the manufacturer on the best way to achieve this for your set up. It is important that any tanks for emergency water supply are installed additional to the number of tanks required in Table A-2 in Appendix A.

6. Wind and Seismic Restraint

It is important to ensure above-ground tanks are appropriately restrained to withstand very high winds and seismic activity:

1. Please consult your tank manufacturer for specific details regarding how to safely site and secure your tank. This may include a requirement to have a flat and level concrete foundation and restraining brackets or posts.
2. Where tanks are located underground, or underneath structures such as decks, wind and seismic restraints are not required.

7. Traffic Loading and Flotation

In-ground and underground tanks should be installed to the manufacturer's specifications including consideration of:

1. Influence zone of adjacent structures
2. Flotation prevention systems
3. Structural failure under changing internal water level and groundwater
4. Traffic loading and driveway requirements

8. Minimum number of Downpipes

The roof gutter system must successfully capture the 1%AEP event for the approved solutions to function as intended:

1. Table 1 specifies the minimum number of downpipes based on the house roof area.
2. Table 1 assumes equal loading between downpipes and more complex situations may require a site-specific design.

Table 1. Standard downpipe requirements

House Roof Area, m^2	Min. number of downpipes[1]
≤100	2
101 -150	3
151 - 200	4
201 - 250	5
251 - 300	5
301 - 350	6

Notes:
1. Based on circular 80/90mm downpipes servicing equal roof areas.

9. Overflow Systems

The roof drainage system needs to be designed with sufficient overflows to ensure the building does not flood internally if subjected to an over-design rain event and if the rainwater tank is full:

1. For larger roof areas, the standard tank-overflow will not be sufficient and should be supported with roof level overflows such as rain-head overflows, back gap systems or internal gutter sump overflows.

10. Sealed Surfaces Calculation

The use of approved solutions is limited to sites where sealed areas are less than 30% of the roof area. Therefore, approved solutions can be used where:

$$(A + B + C) \leq 0.3 \times Roof\,Area$$

Where:

$$A\,(m^2) = Total\ sealed, paved\ and\ concrete\ area$$

$$B(m^2) = (Total\ decking\ area^{1a}) \times 0.6$$

$$C(m^2) = (Total\ pervious\ paving\ area^{1b}) \times 0.25$$

[1a] Decking must be over unsealed surfaces

[1b] Pervious paving design should comply with the Water Sensitive Design for Stormwater: Treatment Device Design Guideline

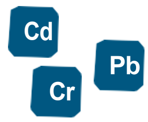
Tanks Setup

If you decide to install rainwater tanks as your stormwater management solution, the following considerations are standard tank setup requirements. It is recommended you follow the instructions of your tank manufacturer in regard to your rainwater tank site setup and connections to your gutter system and downpipes. As a minimum you should:

Have a flat and level site, free from rocks, stones or anything else that may damage the tank base. You'll also want the site to be well compacted.

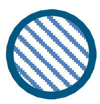
Ensure above-ground tanks are secured as per the seismic requirements of the manufacturer so that they won't topple over in an earthquake or under high winds.

Ensure the overflow capacity equals or exceeds the inflow capacity (from your downpipes).



Where emergency or re-use water is provided, avoid any lead, chromium or cadmium products in any of your roof materials, soldering, flashings paint or any other part of your roof. Uncoated metal roofs can also pose a problem. Your roof should be painted with product suitable for drinking water supply.

It is strongly recommended that you have a first flush diverter to divert the initial flow of contaminant-laden water from your roof away from your tank.



Consider a screen over your inlet/ outlet pipe to keep insects, birds, and other organic matter out of your tank.

Put a bend in the top downpipe to minimise light, and consequently reducing the likelihood of algae growth.

Install a leaf litter / debris diverter (or equivalent product) between your roof gutter and downpipe(s) or on your downpipe, to divert debris away from your tank.

Some tanks must be installed by an approved installer -check manufacturer requirements.

Tank Maintenance

Your rainwater tank system will require some maintenance to prevent blockages and to keep the tank operating efficiently and the water clean. Please see your tank manufacturer for their specific maintenance instructions. For optimal performance and clean usable water it's likely that you'll be required to:

Clean your roof of animal droppings, pollen, ash and other organic matter. It is recommended you inspect your roof six-monthly, though depending on your location this may need to be done more frequently.

Remove leaf litter and debris from your gutters regularly. It is recommended you inspect your gutters every six months, though if you have a lot of trees around your property you will need to do this more frequently. You may want to consider trimming back any overhanging vegetation.

Wash out leaf litter/ debris diverters and first flush diverters every few months. This should take only 10 minutes.

Inspect and maintain any mesh screens, orifice outlets, filters and sediment traps annually. Likewise inspect and repair any seals, pipes and valves annually.

Clean your tank by draining it and remove any sediment and debris from the rainwater tank floor every 2-3 years. Tank cleaning companies can assist you with this task .

The tank design and its function as an attenuation device will be recorded on the Council Property file. Altering the tank from its intended use may result in a fine or restoration of its intended function.

Rainwater tanks typically have a warranty period of 10-50 years if installed correctly

!

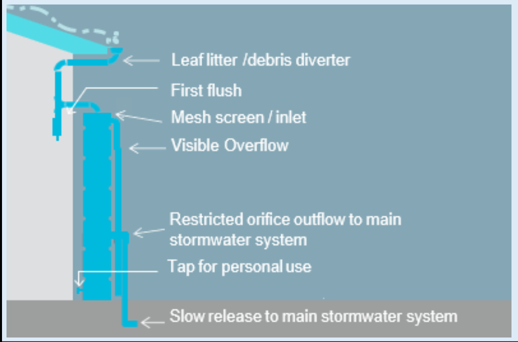
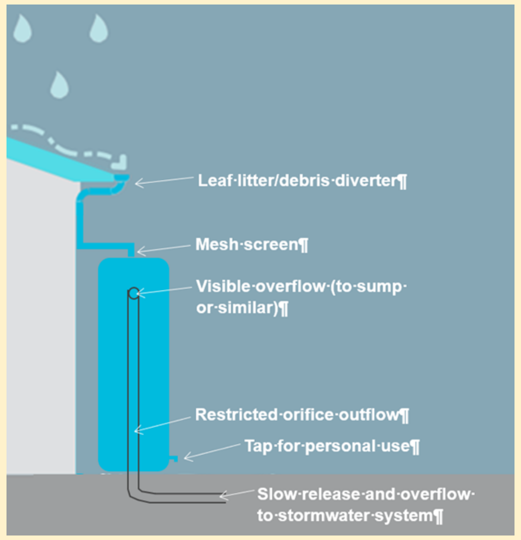
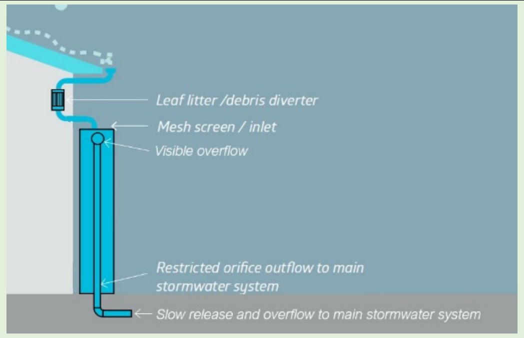
If you see water flowing out the visible overflow during or after a storm, it is likely the orifice is blocked. Clean the blockage by having the tank emptied by a tank cleaning company.

Appendix A

Approved Solutions for Hydraulic Neutrality : Table A-1 Above Ground Tanks

Wellington Water

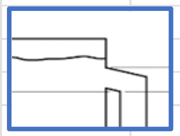
Version 1

	Sketch	Row ID	Roof Area	Tank Volume	No. Of Tanks	Orifice Size	Orifice Height[1]	Emerg Storage[2]	Overflow Size[3]	Overflow Type[6]	Overflow Height[4]	Accepted Tank Dimensions[5]	Example
APPROVED SOLUTION 1 (AS1)		31	≤ 30 m²	1000 L	1	20 mm	450 mm	241L	90 mm	Horizontal	1740 mm	1850mm(H) x 260mm(W) x 2400mm(L)	Thintanks, above ground plastic tank with emergency storage
		32	> 30 m² to ≤ 60 m²	2000 L	1	20 mm	450 mm	451L	90 mm	Horizontal	1860 mm	1970mm(H) x 470mm(W) x 2400mm(L)	
		33	> 60 m² to ≤ 100 m²	3000 L	1	20 mm	450 mm	612L	90 mm	Horizontal	2060 mm	2170mm(H) x 560mm(W) x 2950mm(L)	
		34	> 100 m² to ≤ 150 m²	4000 L	1	20 mm	320 mm	631L	90 mm	Horizontal	1860 mm	1970mm(H) x 750mm(W) x 2920mm(L)	
		35	> 150 m² to ≤ 200 m²	5000 L	1	20 mm	320 mm	714L	90 mm	Horizontal	2060 mm	2170mm(H) x 880mm(W) x 2950mm(L)	
APPROVED SOLUTION 6 (AS6)		36	≤ 30 m²	1000 L	1	20 mm	250 mm	240L	90 mm	Horizontal	910 mm	1020mm(H) x 600mm(W) x 1800mm(L)	TanksaLot, above ground corrugated metal tank with emergency storage
		37	> 30 m² to ≤ 60 m²	2000 L	1	20 mm	500 mm	489L	90 mm	Horizontal	1910 mm	2020mm(H) x 600mm(W) x 1800mm(L)	
		38	> 60 m² to ≤ 100 m²	2400 L	1	20 mm	220 mm	252L	90 mm	Horizontal	1910 mm	2020mm(H) x 600mm(W) x 2100mm(L)	
		39	> 100 m² to ≤ 150 m²	4000 L	1	20 mm	250 mm	478L	90 mm	Horizontal	1910 mm	2020mm(H) x 800mm(W) x 2700mm(L)	
		40	> 150 m² to ≤ 200 m²	5000 L	1	21 mm	300 mm	717L	90 mm	Horizontal	1910 mm	2020mm(H) x 1000mm(W) x 2700mm(L)	
		41	> 200 m² to ≤ 250 m²	6300 L	1	23 mm	300 mm	900L	90 mm	Horizontal	1910 mm	2020mm(H) x 1050mm(W) x 3200mm(L)	
		42	> 250 m² to ≤ 300 m²	7000 L	1	25 mm	195 mm	632L	90 mm	Horizontal	1910 mm	2020mm(H) x 1150mm(W) x 3300mm(L)	
		43	> 300 m² to ≤ 350 m²	8500 L	1	27 mm	220 mm	869L	90 mm	Horizontal	1910 mm	2020mm(H) x 1150mm(W) x 3800mm(L)	
APPROVED SOLUTION 7 (AS7)		52	≤ 30 m²	1000 L	1	20 mm	450 mm	250L	100 mm	Horizontal	1675 mm	1800mm(H) x 410mm(W) x 1800mm(L)	Fence Tank, Watersmart, above ground plastic tank with emergency storage
		53	> 30 m² to ≤ 60 m²	2000 L	1	20 mm	400 mm	442L	100mm	Horizontal	1675 mm	1800mm(H) x 410mm(W) x 3600mm(L)	
		54	> 60 m² to ≤ 100 m²	3000 L	1	20 mm	330 mm	544L	100 mm	Horizontal	1675 mm	1800mm(H) x 410mm(W) x 5400mm(L)	
		55	> 100 m² to ≤ 150 m²	4000 L	1	20 mm	250 mm	542L	100 mm	Horizontal	1675 mm	1800mm(H) x 410mm(W) x 7200mm(L)	
		56	> 150 m² to ≤ 200 m²	5000 L	1	21 mm	200 mm	532L	100 mm	Horizontal	1675 mm	1800mm(H) x 410mm(W) x 9000mm(L)	
		57	> 200 m² to ≤ 300 m²	7000 L	1	26 mm	180 mm	657L	100 mm	Horizontal	1675 mm	1800mm(H) x 410mm(W) x 12600mm(L)	

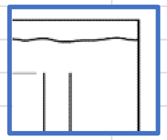
Notes

1 External base of tank to centreline of orifice. If listed as 'base' then install in manufacturer's outlet position.
2 Storage below orifice level if installed according to approved solution. Provided for information only.
3 Additional overflows should be provided as part of the roof drainage system to prevent building flooding if tank is full.
4 External base of tank to invert (if horizontal/siphon) or lip of overflow (if vertical).
5 H=height, W=width, L=length, D=diameter
6 Overflow types as shown :

Horizontal >



Vertical >

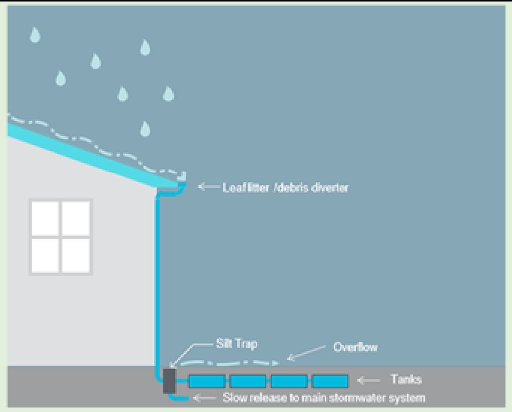


Siphon >

Approved Solutions for Hydraulic Neutrality : Table A-2 Below Ground and In-Ground Tanks

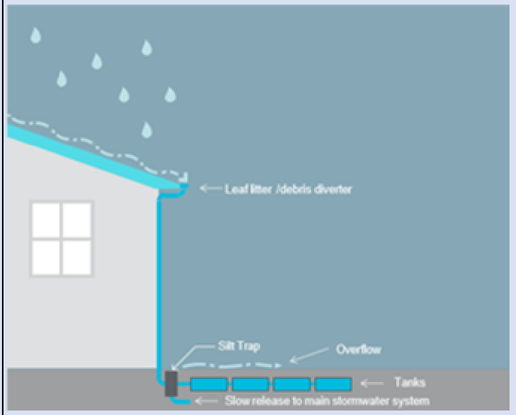
Version 1.1

APPROVED SOLUTION 2 (AS2)



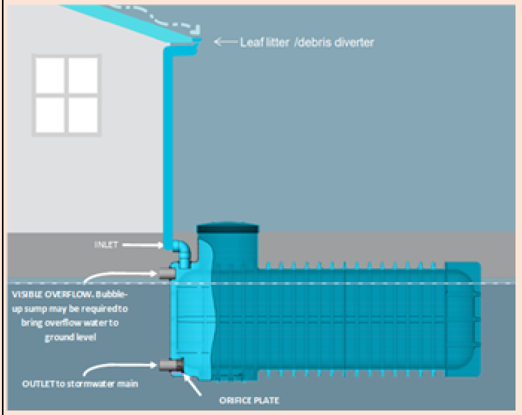
Row ID	Roof Area	Tank Volume	No. Of Tanks	Orifice Size	Orifice Height[1]	Emerg Storage[2]	Overflow Size[3]	Overflow Type[6]	Overflow Height[4]	Accepted Tank Dimensions[5]	Example
4	≤ 30 m^2	350 L	3	20 mm	base	0L	100 mm	Vertical	270 mm	300mm(H) x 1100mm(W) x 1100mm(L)	Stormwater Solutions, Aquacomb, 350L modular in-ground
5	> 30 m^2 to ≤ 60 m^2	350 L	5	25 mm	base	0L	100 mm	Vertical	270 mm		
6	> 60 m^2 to ≤ 100 m^2	350 L	7	35 mm	base	0L	100 mm	Vertical	270 mm		
7	> 100 m^2 to ≤ 150 m^2	350 L	12	41 mm	base	0L	100 mm	Vertical	270 mm		
8	> 150 m^2 to ≤ 200 m^2	350 L	15	48 mm	base	0L	100 mm	Vertical	270 mm		
9	> 200 m^2 to ≤ 250 m^2	350 L	18	54 mm	base	0L	100 mm	Vertical	270 mm		
10	> 250 m^2 to ≤ 300 m^2	350 L	21	60 mm	base	0L	100 mm	Vertical	270 mm		
11	> 300 m^2 to ≤ 350 m^2	350 L	25	64 mm	base	0L	100 mm	Vertical	270 mm		

APPROVED SOLUTION 3 (AS3)



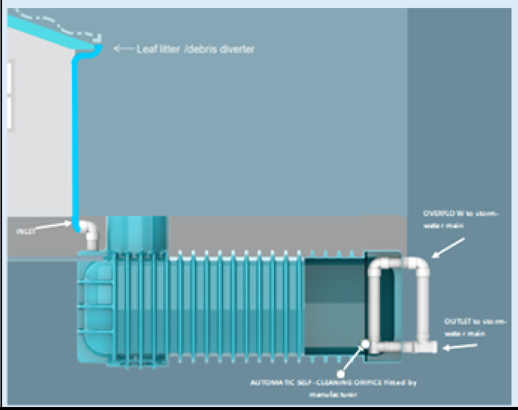
Row ID	Roof Area	Tank Volume	No. Of Tanks	Orifice Size	Orifice Height[1]	Emerg Storage[2]	Overflow Size[3]	Overflow Type[6]	Overflow Height[4]	Accepted Tank Dimensions[5]	Example
12	≤ 30 m^2	250 L	4	20 mm	base	0L	100 mm	Vertical	220 mm	225mm(H) x 1100mm(W) x 1100mm(L)	Stormwater Solutions, Aquacomb, 250L modular in-ground
13	> 30 m^2 to ≤ 60 m^2	250 L	7	28 mm	base	0L	100 mm	Vertical	220 mm		
14	> 60 m^2 to ≤ 100 m^2	250 L	11	38 mm	base	0L	100 mm	Vertical	220 mm		
15	> 100 m^2 to ≤ 150 m^2	250 L	17	44 mm	base	0L	100 mm	Vertical	220 mm		
16	> 150 m^2 to ≤ 200 m^2	250 L	21	54 mm	base	0L	100 mm	Vertical	220 mm		
17	> 200 m^2 to ≤ 250 m^2	250 L	29	58 mm	base	0L	100 mm	Vertical	220 mm		
18	> 250 m^2 to ≤ 300 m^2	250 L	34	68 mm	base	0L	100 mm	Vertical	220 mm		
19	> 300 m^2 to ≤ 350 m^2	250 L	40	73 mm	base	0L	100 mm	Vertical	220 mm		

APPROVED SOLUTION 4(AS4)



Row ID	Roof Area	Tank Volume	No. Of Tanks	Orifice Size	Orifice Height[1]	Emerg Storage[2]	Overflow Size[3]	Overflow Type[6]	Overflow Height[4]	Accepted Tank Dimensions[5]	Example
20	≤ 30 m^2	1000 L	1	20 mm	base	0L	100 mm	Horizontal	790 mm	900mm (D) x 1240mm (L)	Promax, underground tank
21	> 30 m^2 to ≤ 60 m^2	2000 L	1	20 mm	base	0L	100 mm	Horizontal	890 mm	1000mm(H) x 1250mm(W) x 2070mm(L)	
22	> 60 m^2 to ≤ 100 m^2	3000 L	1	20 mm	base	0L	100 mm	Horizontal	890 mm	1000mm(H) x 1250mm(W) x 3115mm(L)	
23	> 100 m^2 to ≤ 150 m^2	4000 L	1	20 mm	base	0L	100 mm	Horizontal	890 mm	1000mm(H) x 1250mm(W) x 4115mm(L)	
24	> 150 m^2 to ≤ 200 m^2	5000 L	1	23 mm	base	0L	100 mm	Horizontal	890 mm	1000mm(H) x 1250mm(W) x 5115mm(L)	
25	> 200 m^2 to ≤ 250 m^2	7000 L	1	24 mm	base	0L	100 mm	Horizontal	890 mm	1000mm(H) x 1250mm(W) x 7160mm(L)	
26	> 250 m^2 to ≤ 300 m^2	8000 L	1	28 mm	base	0L	100 mm	Horizontal	890 mm	1000mm(H) x 1250mm(W) x 8160mm(L)	
27	> 300 m^2 to ≤ 350 m^2	9000 L	1	30 mm	base	0L	100 mm	Horizontal	890 mm	1000mm(H) x 1250mm(W) x 9160mm(L)	

APPROVED SOLUTION 5(AS5)

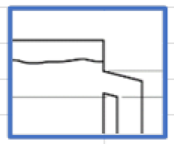


Row ID	Roof Area	Tank Volume	No. Of Tanks	Orifice Size	Orifice Height[1]	Emerg Storage[2]	Overflow Size[3]	Overflow Type[6]	Overflow Height[4]	Accepted Tank Dimensions[5]	Example
44	≤ 30 m^2	1000 L	1	12 mm	base	0L	100 mm	Siphon	790 mm	900mm (D) x 1240mm (L)	Promax, underground tank with self-cleaning orifice
45	> 30 m^2 to ≤ 60 m^2	2000 L	1	15 mm	base	0L	100 mm	Siphon	890 mm	1000mm(H) x 1250mm(W) x 2070mm(L)	
46	> 60 m^2 to ≤ 100 m^2	3000 L	1	18 mm	base	0L	100 mm	Siphon	890 mm	1000mm(H) x 1250mm(W) x 3115mm(L)	
47	> 100 m^2 to ≤ 150 m^2	4000 L	1	20 mm	base	0L	100 mm	Siphon	890 mm	1000mm(H) x 1250mm(W) x 4115mm(L)	
48	> 150 m^2 to ≤ 200 m^2	5000 L	1	23 mm	base	0L	100 mm	Siphon	890 mm	1000mm(H) x 1250mm(W) x 5115mm(L)	
49	> 200 m^2 to ≤ 250 m^2	7000 L	1	24 mm	base	0L	100 mm	Siphon	890 mm	1000mm(H) x 1250mm(W) x 7160mm(L)	
50	> 250 m^2 to ≤ 300 m^2	8000 L	1	28 mm	base	0L	100 mm	Siphon	890 mm	1000mm(H) x 1250mm(W) x 8160mm(L)	
51	> 300 m^2 to ≤ 350 m^2	9000 L	1	30 mm	base	0L	100 mm	Siphon	890 mm	1000mm(H) x 1250mm(W) x 9160mm(L)	

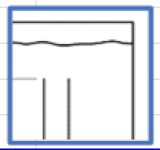
Notes

1 External base of Tank to centreline of orifce. If listed as 'base' then install in manufacturer's outlet position.
2 Storage below orifice level if installed according to approved solution. Provided for information only.
3 Additional overflows should be provided as part of the roof drainage system to prevent building flooding if tank is full.
4 External base of Tank to invert (if horizontal/siphon) or lip of overflow (if vertical).
5 H=height, W=width, L=length, D=diameter
6 Overflow types as shown

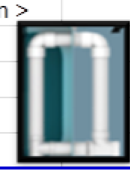
Horizontal >



Vertical >



Siphon >



Wellington Water

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