

CONSULTANTS FACT SHEET:

Guideline For Recycled Water and Rainwater in medium to high density developments

INTRODUCTION

This fact sheet is for planners and consultants who are designing and approving water services in areas with BOTH a mandated recycled water connection AND a rainwater system.

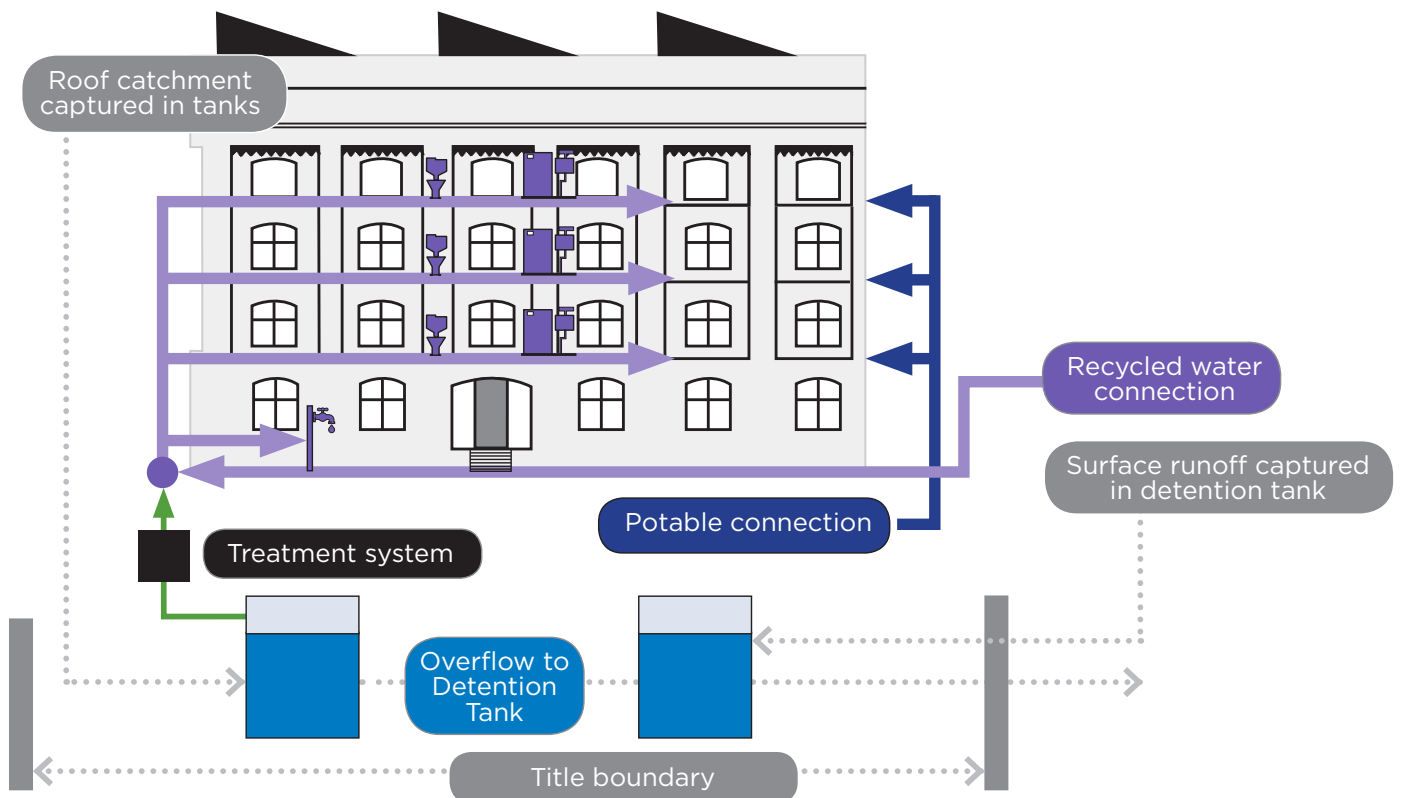
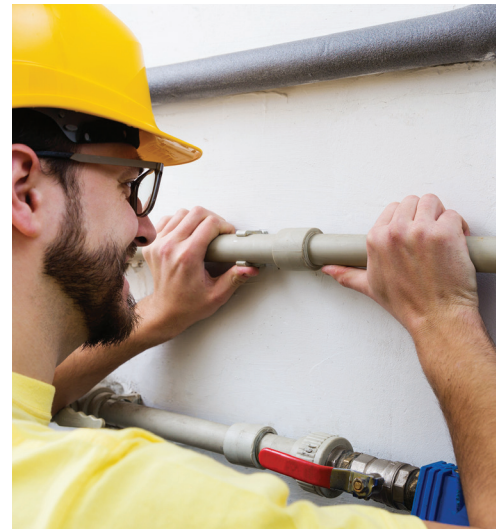
The purpose of these fact sheets is to help practitioners clearly work through the requirements, the design, the construction and the ongoing maintenance of systems.

More detail is available in the “Guideline for Recycled Water and Rainwater in Medium to High Density Developments”, and in the “Fact sheets for Plumbers”, and the “Fact sheet overview.”

THE OBJECTIVES

Alternative water systems are important in reducing stress on the central water system, reducing downstream pollution, and reducing the volume of runoff that contributes to local and regional flooding in urban environments.

A conceptual diagram is shown below of how these systems are designed.



LEGEND

Treatment System	Detention Tank	Property Boundaries	Recycled Water Connection	Mains Water	Recycled Water	Rain Water

REQUIREMENTS

Each agency and region has different requirements. The figure below captures these requirements. In instances where the various requirements conflict with each other, the requirement with the higher standard should be adopted.



Current requirements for rainwater, stormwater, recycled water services in medium / high density developments

	PRECINCT (e.g. Fishermans Bend)	COUNCILS	CORPORATIONS (e.g. YVW, SEW, CWW)
Process	1st reference	2nd reference	3rd reference
Water types	Rainwater, stormwater, recycled water and greywater	Rainwater and stormwater	Potable, recycled water and sewage
Planning requirements	New buildings must install a third pipe to supply non potable uses within the development, and rainwater	Comply with Sustainability Management Plan to outline strategy for WSUD, onsite detention, and WELS appliances	Connection point and meter must be installed - irrespective of availability
End uses	Third pipe - toilet flushing, fire services and irrigation. Rainwater suitable (pending risk and treatment review) for cooling and hot-water	Rainwater tank - toilet, laundry, irrigation, car washing, vegetable garden	Recycled water - toilet, irrigation, car wash, outdoor, fountains, laundry (YVW only), fire fighting (CWW only)
Storage	Rainwater tanks with a capacity of 0.5 cubic me per 10 sqm of roof area	Onsite detention - with max 72 hour to drain. Rainwater tanks - minimum size set through BESS / STORM / MUSIC calculations	No onsite storage of recycled water except for recycled water break tanks
Metering	Recycled water - individually metered with "Recycled water" - check meters may be required - consult water corporation	Stormwater not metered	Potable and Recycled Water - metered at property boundary
Treatment	Rainwater treatment specified - usually includes particulate filtering and UV. Stormwater treatment to satisfy BPEM targets (TN, TP, TSS)	Rainwater treatment specified - usually includes particulate filtering and UV. Stormwater treatment to satisfy BPEM targets (TN, TP, TSS) filter	No recycled water treatment (treatment at utility level, not local or lot level)
Maintenance & reporting	Annual maintenance	Annual maintenance No reporting required	Annual maintenance No reporting required
Inspections	Inspections are required throughout the construction & commissioning stages. Typically this includes:	Main to meter and meter installation, Meter to structure Rough-In, and Commissioning	Additional ongoing risk based inspections may be required for staged developments.

All parties should contact their relevant water authority to confirm requirements;
All developments must comply with:

- Building Code
- Plumbing Code of Australia (PCA) (including regulations re cross connections)
- DHHS Rainwater use in urban communities. Guidelines for non-drinking applications in multi-residential, commercial and community facilities
- Please consult with relevant water authority for appropriate treatment methods



SOURCES, USES, AND TREATMENT

This guideline recommends, for the developments within the scope, the following approach in determining how various water sources can be applied for different end uses.

Refer to the guideline document for relevant guidelines for rainwater, recycled water and stormwater. Note that on-site treatment for recycled water is not necessary, as treatment is managed at a centralised treatment plant, upstream of the development.

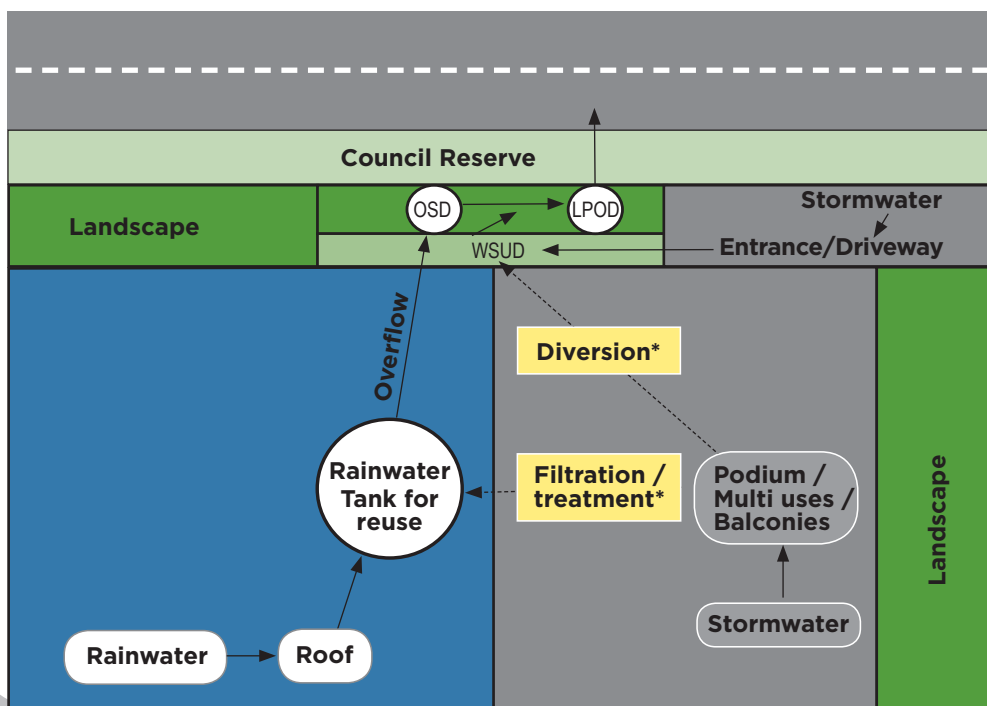
See relevant guidelines for rainwater, recycled water, and stormwater.

Table 1. Matrix of water sources and appropriate end uses

End uses ^	Combined rainwater and recycled water infrastructure	Rainwater only (with appropriate treatment)	Stormwater only (with appropriate treatment) *	Recycled water only
Toilets	Y	Y	Y	Y
Laundry	Y	Y	Y	Y
Landscaping	Y	Y	Y	Y
Cooling towers	N	Y	Y	N
Fire fighting	N	Y	N	N
Hot water - showers	N	Y	N	N
Hot water - taps	N	Y	N	N
Drinking water taps	N	N	N	N

*Stormwater is classified as rainwater collected from trafficable areas (including terraces, podiums, driveways, paths and other impervious surfaces at ground level). Please consult with relevant water corporation for appropriate treatment methods. *All end-uses should be approved by relevant water corporation. ^All end-uses should be approved by relevant water corporation, VBA and DHHS.

A site plan should clearly describe how the rainwater and stormwater system is designed and compliant with council requirements. An example of this is shown below.



* Podium / multi use area runoff to be confirmed by water authority / Council on case by case basis

* Onsite detention - with max 72 hour to drain. Rainwater tanks - minimum size set through BESS / STORM / MUSIC calculations

Treatment for rainwater should be undertaken according to the Guidelines for non-drinking applications in multi-residential, Commercial and Community Facilities (Department of Health and Human Services, 2015). For combined rainwater and recycled water infrastructures, also refer to the Guidelines for non-drinking applications.

Table 2. Risks and appropriate treatment for various water uses
(Source: Department of Health Victoria: <https://www2.health.vic.gov.au/public-health/water>)



End uses	Relative health risks of unfiltered rainwater	Suggested Treatment
Toilets	Low	Unlikely to be necessary ^
Laundry	Low	Unlikely to be necessary ^
Landscaping	Extremely Low	Unnecessary
Cooling towers	Extremely Low	Unnecessary
Fire fighting	Low	Unlikely to be necessary ^
Hot water – showers	Moderate	Filtration and disinfection (chlorine or UV)
Hot water – taps	Moderate	Filtration and disinfection (chlorine or UV)

* All treatment should be approved by relevant water corporation.

^ Treatment is generally considered unnecessary from a human health risk perspective, unless hazard identification and risk assessment indicates that significant risks require management. In some circumstances, it may be necessary to treat rainwater to remove chemical contaminants that may damage appliances or industrial systems.

MORE INFO

For more info please see the Guideline for Recycled Water and Rainwater in Medium to High Density Developments.

- Contact your local water authority, local council contact (planner, drainage coordinator, building inspector)
- Victorian Building Authority