

GoldCoast Waterfuture

Opportunities for storage

Increasing the capacity to store recycled water has the potential to increase the flexibility of the Recycled Water Strategy and increase the use of recycled water.

This factsheet provides a summary of the storage options being considered by the Recycled Water Strategy Advisory Committee. It also provides information on the factors that will influence this assessment.

Storage of recycled water

The use of recycled water is dependent upon having an available use or demand for this water at the time of production. When there is insufficient demand the excess recycled water is released to the ocean or rivers.

Storing recycled water means that instead of all the excess recycled water being released; some of it can be stored in an open or enclosed holding facility for later use.

The benefits of storing recycled water

The demand for recycled water is generally linked to variations in weather conditions, particularly since one of the major uses for recycled water is outdoor irrigation. The demand is usually higher in the warmer summer months and lower in the cooler winter months and during wet weather. However, the production of recycled water is generally constant throughout the year.

Having the flexibility to store recycled water in low demand times means a greater supply is available in high demand times. It also reduces the amount of excess recycled water released into the ocean and waterways.

Different types of storage being considered

There are several opportunities for storage. These opportunities are categorised into two major groups, open and enclosed, which are described on the chart overleaf.

- **Open storage opportunities** such as a small lake or large disused quarry allow the recycled water to be exposed to the environment. This can reduce the quality of the recycled water while in storage and resources must be used to help maintain water quality.

Council has already converted a disused quarry site at Stapylton into a 360ML recycled water storage facility. Recycled water from this storage is currently supplied to cane farms and a palm grower for irrigation.

- **Closed storage opportunities** such as a covered purpose-built reservoir or confined natural aquifer to provide a controlled environment with little or no exposure to the environment.

Council is currently investigating a possible confined aquifer in the Woongoolba/Norwell region in the northern

part of the Gold Coast. Technical investigations will confirm if the aquifer can be used as a possible future storage option for recycled water.

Evaluating the different options

Each option will be reviewed by the Advisory Committee taking into consideration:

- **technical factors** - including design, construction and operational factors;
- **environmental factors** - including greenhouse gas emissions from infrastructure and potential impacts on ecosystems;
- **social and economic factors** – affecting the community such as employment benefits and the overall cost of construction and operation.

Key issues common to all options include:

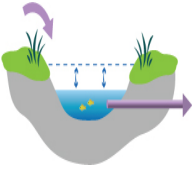
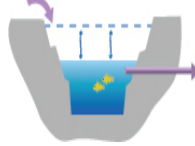


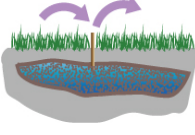
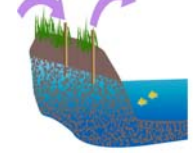

- the importance of being able to consistently maintain the required high quality of water while it is in storage;
- prevention of any adverse environmental impacts by appropriately designing and managing the system;
- the need to undertake a cost/benefit review of each option.

The review will also consider the overall contribution the option could make to the Recycled Water Strategy in terms of the amount of storage it would provide and the related reduction in the amount of recycled water released to the ocean and rivers.

As this research often involves new technology and untested scenarios, the review will also take into consideration the degree of confidence the Advisory Committee has in the information provided on each option.



Stapylton recycled water storage facility

Symbol	Recycled Water Storage Opportunity	Class Required	Estimated Storage Potential
Open Storage Options			
	<p>Open surface storage – small</p> <p>Storage within a small lake or pond, such as a golf course irrigation lagoon; for irrigation use in urban and open space areas.</p> <ul style="list-style-type: none"> Multiple factors to be considered including the need to maintain consistent water quality to protect ecosystem and users. 	Class B or better, depending upon site and use.	20ML Minor impact on release volume and infrastructure
	<p>Open surface storage – medium</p> <p>Storage within a medium-sized facility such as an open disused quarry.</p> <ul style="list-style-type: none"> Multiple factors to be considered include the need to maintain consistent water quality to protect ecosystem and users; suitability of facility for the required use and the potential of a remote location. 	Normally highest class of intended use.	1,000ML Moderate impact on release volume and infrastructure
	<p>Open surface catchment storage</p> <p>Storage in a large open surface storage within a catchment such as a dam.</p> <ul style="list-style-type: none"> The suitability of this type of storage needs to be investigated. New storage sites would be required if no existing sites are identified. Potential for higher levels of greenhouse gas emissions due to possible long delivery pipelines 	Normally Class A+ or above.	10,000ML Major impact on release volume and infrastructure
Enclosed Storage Options			
	<p>Covered reservoir storage</p> <p>Storage in an enclosed purpose-built reservoir.</p> <ul style="list-style-type: none"> Suitable locations for construction and landscape impacts would require assessment. 	Class A/A+ or above	100ML Minor impact on release volume and infrastructure
	<p>Confined aquifer storage</p> <p>Storage within a natural underground zone that is confined by an impermeable layer of rock or other material above and below, and is made of a porous material such as soil or sand. Stored water would be extracted at the injection point.</p> <ul style="list-style-type: none"> Specific environmental considerations apply to this option. 	Class A+ or above	1,000ML Moderate impact on release volume and infrastructure
	<p>Unconfined aquifer storage</p> <p>Storage within a porous underground zone that is confined by a natural impermeable layer or rock underneath but is not confined above the porous zone. On the Gold Coast it is typically linked to the ocean via the sand dunes.</p> <ul style="list-style-type: none"> Specific environmental considerations apply to this option. 	Class A or above	400ML Moderate impact on release volume and infrastructure
	<p>Distributed storage</p> <p>Storage within an enclosed small tank located at individual houses, and bigger tanks for multi-dwelling sites in areas provided with dual reticulation.</p> <ul style="list-style-type: none"> Operational and cost factors would require assessment. 	Class A+ or above	150ML Minor to moderate impact on release volume and infrastructure

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