

SUBMISSION TO PRODUCTIVITY COMMISSION DRAFT REPORT ON AUSTRALIA'S URBAN WATER SECTOR

Background

Most of Sydney's water is treated to potable or drinking quality, yet only 2 per cent of it is actually used as drinking water. Even after taking into account all the other uses for treated water, such as food preparation and cooking, less than 20 per cent of it needs to be of drinking quality.

Additionally treating the water and piping it into the City from remote dams uses a significant amount of energy.

Providing locally sourced non potable or non-drinkable/recycled water for local use will reduce the demand on potable drinking water supplies, particularly in times of drought, and will help address some of the adverse affects of climate change.

Non potable water can be provided from local or decentralised sources at much less cost to the environment than from centralised sources such as large water treatment plants.

Sustainable Sydney 2030

In developing *Sustainable Sydney 2030* as its vision for the future, the City of Sydney spent over a year consulting with its local community and a consensus emerged on the way to make Sydney a greener, more global and connected city.

Some 97 per cent of people wanted the City to take urgent action to tackle climate change, and as a result, the City made sustainability the overarching theme of *Sustainable Sydney 2030*. Environmental targets will be achieved primarily through its Green Infrastructure Plan - an integrated approach to the delivery of sustainable energy, water and waste services.

Development and implementation of the Green Infrastructure Plan is happening on two levels, with the establishment of a firm policy framework, and with the City of Sydney installing local non potable/recycled water projects in its own operations.. This "show by doing" principle has been adopted in Woking and London, demonstrating that if the public sector leads, others will follow.

At the first level, contracts are already under way for the Decentralised Energy, Trigenation, Renewable Energy, Alternative Waste Treatment and Decentralised Water Master Plans. The Automated Waste Master Plan will also follow later this year. These will complete the city-wide Green Infrastructure Plan which will be embedded into the City's master plan and operations.

This will be followed by the actual delivery of the Green Infrastructure Plan. An integrated approach has been taken for the implementation of city-wide green infrastructure. This enables, for example, trigeneration, non potable/recycled water and automated waste to use the same networks and stations, with renewable gases and non-drinkable water recovered and used in the City's green infrastructure.

The Green Infrastructure Plan is expected to provide efficiency gains in delivering energy, water and waste management services to homes and businesses in the City of Sydney as well as contributing towards a reduction in greenhouse gas emissions.

The efficiency gains are expected to come from co-location of the infrastructure, and from the use of trigeneration systems for:

- Producing waste heat that can be used for water treatment;
- Utilising recycled water to dissipate the heat it generates;
- Utilising renewable gas (generated from advanced waste treatment) as a fuel source.

The Decentralised Water Master Plan is one of the key components of the Green Infrastructure Plan, and is due to be completed by December 2011. This Master Plan aims to facilitate the supply of a city-wide network for non potable/recycled water to meet demand across the City, in both existing and new developments. The non potable/recycled water network will use water from alternative local water sources such as stormwater, rainwater, greywater, blackwater, sewage, groundwater and even water recovered from air conditioning cooling towers, which are treated and recycled for suitable uses.

The Decentralised Water Master Plan includes a *Water Use Efficiency Plan* aimed at water conservation, and a *Water Sensitive Urban Design Plan* which seeks to improve the quality of stormwater, enhance the urban environment and improve microclimate of a locality.

The Decentralised Water Master Plan will also form the basis of a business case for the city-wide non potable/recycled water network. This business case will need to be robust enough to procure a Water Services Company (WASCO) to design, finance, build, operate and maintain the network. In recognising the importance of delivering a commercially viable city-wide non potable/recycled water supply to existing and new developments, the City is also committed to the possibility of establishing it in partnership with a public/private joint venture with a WASCO .

This submission is motivated by the City's commitment to facilitate the delivery of an integrated energy, water and waste services green infrastructure that includes a city-wide non potable/recycled water network, and to remove any institutional, regulatory or vested interest barriers to such a network for the City's local government area.

Growing Market for Decentralised Non Potable/Recycled Water

The Draft report fails to acknowledge that the market for decentralised non potable/recycled water supply is on the rise as more and more existing, infill and greenfield developments are constructing site-scale and precinct-scale non potable/recycled water supply networks to obtain water from recycling 'waste waters' such as sewage, blackwater, greywater, rainwater or stormwater.

These non potable/recycled water schemes are being developed and implemented by local councils as well as by private developers.

The primary driver for local Councils is in the maintenance of parks and gardens, playing fields and other services. There are more than 100 non potable/recycled water schemes across the Sydney metropolitan region. Most of the projects have been developed by local Councils

(http://www.waterforlife.nsw.gov.au/recycling/water_recycling_projects).

The City of Sydney has completed more than 30 non potable/recycled water projects supplying non-drinking water to its community buildings, parks, gardens and playing fields (Attachment 1).

The City recently received Federal government funding of \$7.6 million for two large non potable/recycled water schemes which will produce 750 megalitres a year. Uses for this water include:

- Toilet flushing, water cooling systems, and laundering uses in the new Green Square town centre development - which includes residential, commercial and public spaces (Green Square Water Recycling Scheme).
- Existing industries within the Sydney Park local area (Sydney Park Water Reuse Stage 2).

The drivers for developers to invest in decentralised water systems include:

- Quicker land release to market;
- Reduced costs for headworks and lead-in infrastructure;
- Providing alternative water sources to achieve BASIX;
- Providing differentiation by using green technology;
- Obtaining a six-star credit rating from Green Buildings Council of Australia; and
- Attracting anchor tenants to their development.

Examples of non potable/recycled water schemes being built across greater Sydney include:

- Pitt Town, Hawkesbury – 1,000 lots;
- Central Park, Sydney – 2,000 apartments and 100,000m² commercial/retail space;
- Discovery Point, Sydney – 1,800 apartments;
- Barangaroo, Sydney – 800 apartments, 500,000m² commercial/retail space;
- Green Square, Sydney – 2,000 apartments, commercial/retail space; and
- Bingara Gorge – 1,500 lots.

Benefits of Non Potable/Recycled Water Supply

Draft Recommendation 3.1 of the report states

“The primary objective of the sector is to provide water, wastewater and stormwater services in an economically efficient manner so as to maximise net benefits to the community.”

Economic efficiency should be defined broadly to include environmental, health

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and other costs and benefits that might not be priced in markets.

City of Sydney's response

This recommendation fails to:

- Recognise non potable/recycled water supply as an explicit service objective of local authorities or urban water utilities servicing large urban centres;
- Acknowledge that the objective of any urban water service is not limited to delivering water utilities in an economically efficient manner but that it should also provide social and environmental benefits and wider economic benefits to the community through mitigating and adapting to climate change;
- Recognise that it is not possible to bundle non-market values such as security of supply, environmental, health and social benefits into an economic efficiency measure;
- Recognise the rapid expansion of the market for decentralised non potable/recycled water.

Australian cities, including Sydney, have recently experienced a nine-year drought. During this drought, cities suffered significant loss of amenity as dam levels decreased and water restrictions were introduced.

Water restrictions were necessary to maintain dam levels because the Australian urban water sector is restricted to providing a drinking water service that typically sources water from surface water reservoirs that are climate-dependent. The drought led to the development of desalination systems to augment the drinking water supply despite desalination being both cost and carbon intensive.

Less than 20 per cent of the water we consume is used for drinking and cooking. More than 80 percent of the water goes to uses that do not need drinking quality water. These include toilet flushing, laundering, irrigation and watering of gardens and parks, and air cooling systems.

The urban water sector owns and operates water supply systems which are designed for sourcing and treating water from surface reservoirs, then pumping this water over long distances through water transmission and distribution networks. This drinking water supply system is ageing, and in many areas has already reached its capacity to cope with urban and population growth as well as climate change. Any augmentation of the current supply system must consider non potable/recycled water as an option.

The Draft report fails to recognise non-potable/recycled water supply as an explicit service to be considered in the future service objectives of local authorities. This is because the most cost-effective means of supplying non potable/recycled water is through local decentralised systems which conflict with centralised systems owned and managed by most urban water utilities servicing large urban centres.

As well as meeting the increasing water demands of a growing population, non potable/recycled water also helps in:

- Building resilience and improving supply security, therefore better equipping cities to cope with prolonged droughts;
- Providing local water storage facilities that can double as flood mitigation devices to counter the adverse impacts of climate change and frequent flooding;
- Providing cooler microclimates and green amenities, as local green spaces can be maintained during droughts to combat the heat island effect;
- Reducing the levels of pollution entering waterways as stormwater runoff.

Decentralised non potable/recycled water supply systems also offer flexibility as they can be designed to:

- Use a diverse range of local water sources such as blackwater, greywater, sewage, groundwater, stormwater, rainwater;
- Service a range of scales – site scale, precinct scale and city-wide scale.

Under Draft Recommendation 3.1, the present definition of an urban water sector's service objective excludes a non potable/recycled water supply by limiting it to (drinking) water, wastewater and stormwater services.

Recommendation

In consideration of the benefits offered by non potable water, the Urban Water Report should;

1. Explicitly recognise supply of non potable and recycled water as one of the service objectives of the urban water sector; and
2. Make recommendations for urban water utilities to consider non potable/recycled water supply as a legitimate option when developing future water service strategies.

Institutional Barriers and Regulatory Disincentives to Non Potable/Recycled Water Service Provision

Chapter 7 - Information Request by Productivity Commission

“The Commission is seeking further information on how developer charges are levied in each jurisdiction, for both greenfield and urban infill developments. Do these currently provide adequate signals on the costs of servicing new developments? To what extent should developer charges be set periodically on an

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‘across utility’ basis, or be specific to the development in question? Would more development specific charges, especially in high cost areas, encourage greater innovation? Would it be better for developers to build the required infrastructure according to standards set by the utility? If so, what issues would need to be addressed to operationalise this? What are the main impediments to introducing more efficient developer charges?”

City of Sydney Response:

Green Square is a major growth centre within the City’s local government area with a population of 30,000 expected in the next 20 years. It has been designed to be a model for sustainable infrastructure, and recycled water is one of the key elements of this. As it is a brown field site, there is an opportunity to install a recycled water scheme that will harvest stormwater, which in turn would provide benefits such as improving stormwater quality, providing flood control and reducing demand on the existing drinking water network.

The scheme is cost-effective, and the City has obtained Federal funding for half the cost of capital, and will fund the rest itself.

Developers are also committed to providing dual reticulation (piping both drinking water and recycled water) in the new development.

Sydney Water has proposed to build and run a sewer mining scheme in the area if the developers help cover the capital cost of the scheme. Sewer mining is a process which taps into the wastewater system and extracts sewage, which is then treated and used as non potable recycled water. This process has a higher capital and operating cost relative to other recycling options.

Additionally, as existing regulations do not require developers to pay any developer charges for connecting to the drinking water network, there is no incentive for developers to connect to a recycled water scheme proposed by Sydney Water.

This example highlights a number of issues that undermine the delivery of a truly integrated water service in a growth centre:

1. Lack of a level playing field for non potable/recycled water schemes compared to potable water schemes due to regulatory disincentives for developers to connect to recycled water;
2. Lack of acknowledgement of the benefits and cost savings that decentralised non potable/recycled water schemes provide to the existing capacity-constrained centralised water supply network;
3. Water utilities refuse to add non-potable/recycled water services to their services as it conflicts with their core business of selling potable water.
4. Large urban water utilities have an unfair advantage in making a business case for using desalination to deliver water to growth centres because of the existing centralised networks designed for drinking quality water. This undermines the development of new non potable/recycled water systems, even when they provide clear benefits to existing infrastructure, community and the environment.

Recommendation

In recognition of current institutional and regulatory barriers to facilitating non potable recycled water supply, the Urban Water Report should:

1. Explore mechanisms, such as credits which could be introduced to account for the cost savings provided by decentralised non potable/recycled water schemes through reducing the strain on the existing water infrastructure while servicing urban growth; and
2. Explore policy options that would eliminate the conflicts of interest and unfair advantages which prevent more sustainable recycled (non potable) water schemes from competing with potable water schemes

Making a Case for Fully Competitive Decentralised Water Market

Chapter 12 - Information Request

“Are any or all of these options feasible and cost effective for delivery of urban water supply, wastewater and stormwater services in Australia’s large urban cities? If so, where? If not, why not? How could these options be improved?”

The Commission has analysed five structural reform options. This assumes that the options are mutually exclusive. Based on this assumption, the Commission considers that Option 5 for a fully competitive decentralised water market is unlikely to have the benefits that justify the costs.

However, in NSW and in the Sydney metropolitan region in particular, introduction of the *Water Industry Competition Act in 2006* and its subsequent implementation in 2008 has opened the doors to fully competitive decentralised water systems alongside a vertically integrated water utility (Sydney Water) servicing the drinking water market.

The private sector has responded to this opportunity and has been successfully implementing site and precinct-scale decentralised water infrastructure providing non-potable/recycled water to growth centres. Typically, there is a demand for non potable water supply in those areas where the water and wastewater infrastructure (serviced by Sydney Water) is constrained in its capacity and yet upgrading the infrastructure in these areas is not financially viable for the Sydney Water Corporation.

The market response to the non potable/recycled water services sector by the private sector is partly driven by the limitations of Sydney Water in servicing the growth and in some cases, also driven by developers of commercial buildings wanting a 6-star credit rating from Green Buildings Council of Australia (which requires the building to be fitted with a recycled water source).

Sydney Water Corporation has acknowledged (Submission 21, Nov 2010) that providing recycled water brings benefits by removing constraints on the supply of bulk water and avoiding costs associated with system upgrades. For example, Sydney Water states on page 9:

“There is further scope to increase desalination and recycling to serve growth in coastal areas. As these are areas of high population density, providing

these areas with desalinated or recycled water reduces the call on dam water, thereby effectively removing any constraint on the supply of bulk water to inland areas.”

There are benefits in having a fully competitive decentralised water market, particularly for a large city like Sydney which has ever increasing demands for water, and which is currently being serviced by a water utility that has reached its limit within economies-of-scale. These benefits are not only to the occupants of the growth centre but also to the large water utility (within whose jurisdiction the decentralised water market operates) that has reached its limit of economic efficiency, as any further increase in its capacity will result in a diseconomy of scale.

Recommendation

In consideration of the benefits offered by non potable water and in recognition of the increasing growth of the competitive decentralised water market, the Urban Water Report should:

1. Acknowledge the benefits offered by a fully competitive decentralised water market (Reform option 5), especially when it plays a complementary role to a vertically integrated utility that is reaching or has reached its economy of scale limit; and
2. Acknowledge that together the two markets (vertically integrated market and fully competitive decentralised water market) have the potential to provide more benefits than each of the options can provide on their own.

Conclusion

In response to issues such as urban growth, climate change and ageing infrastructure, the City of Sydney is developing a Green Infrastructure Plan which aims to integrate decentralised management of energy, water and waste. Co-location and synergies between the three infrastructure elements will provide cost-savings, while also reducing greenhouse gas emissions and improving the environment.

Based on its discussions with Sydney Water about future water servicing strategies for Green Square and the Sydney CBD, the City of Sydney has identified barriers to facilitating decentralised non potable water supply.

The City of Sydney recommends that the Commission recognises non potable recycled water as a legitimate option in water servicing of urban growth centres and explores policy mechanisms that will allow decentralised non potable water systems to compete on a more even basis with centralised potable water systems.

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ATTACHMENT 1

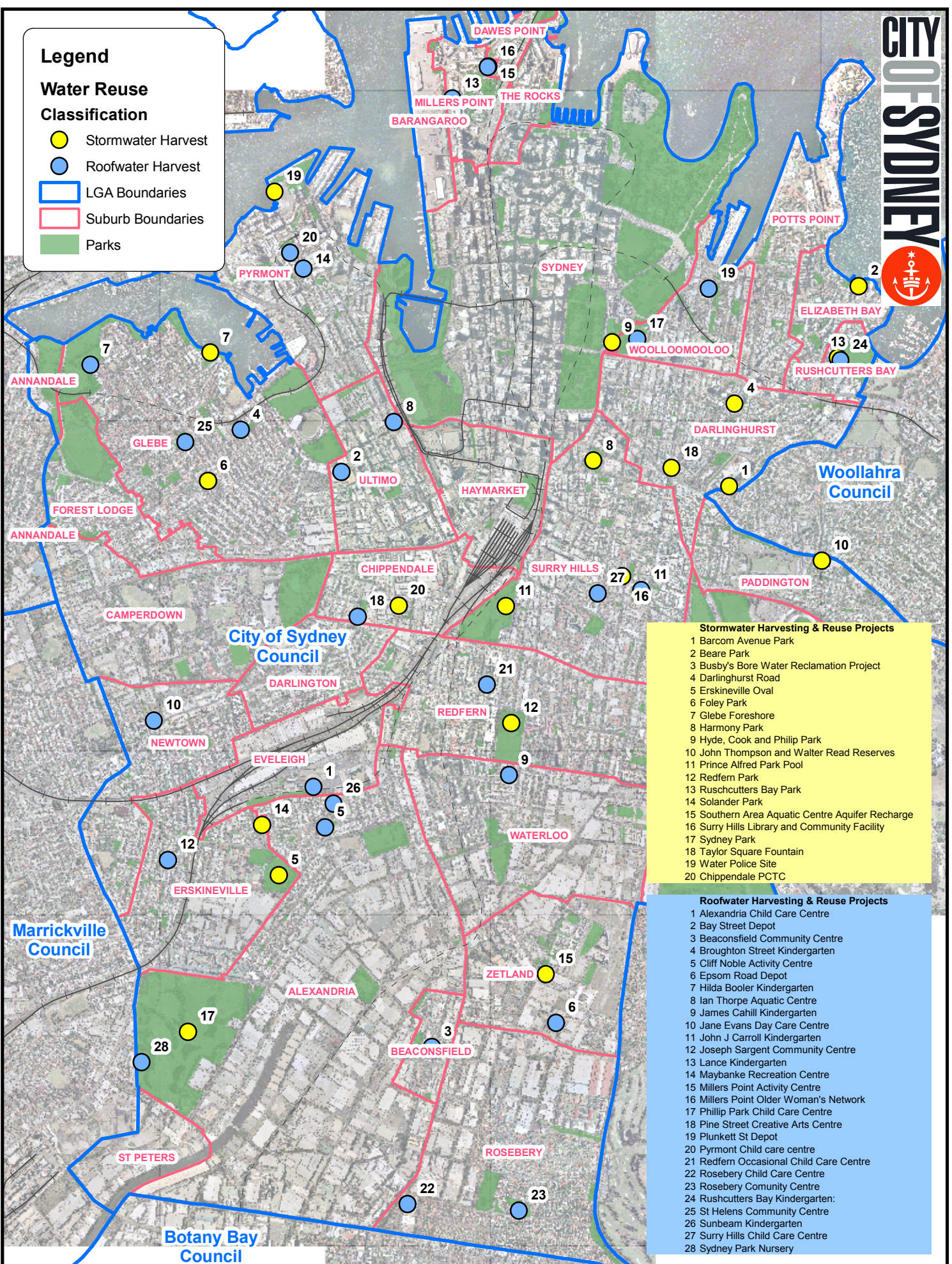
Map of Water Recycling Projects by City of Sydney

Legend

Water Reuse

Classification

- Stormwater Harvest
- Roofwater Harvest
- LGA Boundaries
- Suburb Boundaries
- Parks



Stormwater Harvesting & Reuse Projects

- 1 Barcom Avenue Park
- 2 Beare Park
- 3 Busby's Bore Water Reclamation Project
- 4 Darlinghurst Road
- 5 Erskineville Oval
- 6 Foley Park
- 7 Glebe Foreshore
- 8 Harmony Park
- 9 Hyde, Cook and Philip Park
- 10 John Thompson and Walter Read Reserves
- 11 Prince Alfred Park Pool
- 12 Redfern Park
- 13 Rushcutters Bay Park
- 14 Solander Park
- 15 Southern Area Aquatic Centre Aquifer Recharge
- 16 Surry Hills Library and Community Facility
- 17 Sydney Park
- 18 Taylor Square Fountain
- 19 Water Police Site
- 20 Chippendale PCTC

Roofwater Harvesting & Reuse Projects

- 1 Alexandria Child Care Centre
- 2 Bay Street Depot
- 3 Beaconsfield Community Centre
- 4 Broughton Street Kindergarten
- 5 Cliff Noble Activity Centre
- 6 Epsom Road Depot
- 7 Hilda Booler Kindergarten
- 8 Ian Thorpe Aquatic Centre
- 9 James Cahill Kindergarten
- 10 Jane Evans Day Care Centre
- 11 John J Carroll Kindergarten
- 12 Joseph Sargent Community Centre
- 13 Lance Kindergarten
- 14 Maybank Recreation Centre
- 15 Millers Point Activity Centre
- 16 Millers Point Older Woman's Network
- 17 Phillip Park Child Care Centre
- 18 Pine Street Creative Arts Centre
- 19 Plunkett St Depot
- 20 Pyrmont Child care centre
- 21 Redfern Occasional Child Care Centre
- 22 Rosebery Child Care Centre
- 23 Rosebery Community Centre
- 24 Rushcutters Bay Kindergarten
- 25 St Helens Community Centre
- 26 Sunbeam Kindergarten
- 27 Surry Hills Child Care Centre
- 28 Sydney Park Nursery

