MARY RIVER

CATCHMENT
COORDINATING COMMITTEE

WATER FOR THE FUTURE

A DISCUSSION PAPER PRODUCED
BY THE
FUTURE WATER OPTIONS SUB-COMMITTEE
OF THE
MARY RIVER CATCHMENT COORDINATING COMMITTEE

MAY 2024

Water for the Future
3rd Edition

This 3rd edition of Water for the Future is dedicated to Jim Buchanan in recognition of his vision for sustainable water use in the Mary River catchment - May 2024

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The MRCCC acknowledges First Nations people of the Mary River catchment: the Jinibara people from the headwaters in the Conondale and Blackall Ranges, the Kabi Kabi or Gubbi Gubbi people from the lands where the river begins its sinuous, serpentine course to the sea, the Wakka Wakka people in the northwest of the catchment and the Badtjala or Butchulla people in the tidal reaches, Great Sandy Strait and on K'gari. We acknowledge the traditional names of this river that we've known so recently as the Mary; Numabulla, Moonaboola, Moocooboola, Mooroobоocoola.
The MRCCC's efforts "healing the country", (this catchment), have spanned over a quarter of a century. We are humbled by our First Nations peoples' long connection and custodianship and look forward to working together into the future.

Water for the Future 3rd Edition
Discussion Paper
Introduction

The purpose of this document is to generate discussion on long term, sustainable water supply strategies. Water is a finite resource, and unless major changes are implemented in the way water is managed, competition between urban water users and irrigators will intensify in the Mary Basin.

The Mary Basin incorporates the whole of the Mary River catchment from Maleny to Hervey Bay, the Sunshine Coast catchments (Mooloolah, Maroochy and Noosa), the Burrum River catchment, and the Cooloola Coast (Rainbow Beach and Tin Can Bay).

The current population of the Wide Bay Burnett region is ~310,728 whilst south east Queensland has a population of ~3.8 million. These figures are projected to increase significantly by 2046 with some of the towns in these regions amongst the fastest growth-rate localities in Queensland. This growth is already placing significant pressures on natural resources and the provision of community services.

In the early 2000's, much of Australia, including south east Queensland, was midway through the millennium drought (1997-2009), cited by some as the worst drought in Australia's history.

In 2006, the Mary Basin Water Resource Plan was about to be announced by the Queensland Government. Despite years of extensive community consultation, the final WRP included a strategic reserve of 150,000 ML/a of unallocated water which was subsequently identified as available for the construction of the now defunct Traveston Crossing dam. At the same time, construction of the Northern Pipeline Interconnector commenced and the SEQ Water Grid was established. In July 2006, Toowoomba Council's referendum on the controversial issue of using recycled water was defeated.

At the time, water usage in SEQ was extremely high. To partially address this, an excellent education campaign resulted in residents reducing per capita water consumption from 300 litres to 120 litres per day by being waterwise around the home, gardens and businesses.

The Water for the Future discussion paper was produced by the Future Water Options subcommittee of the MRCCC including Jenifer Simpson and Jim Buchanan in 2005. At that time, rainwater tanks, water recycling and desalination plants were not widely embraced as sustainable options for reticulated urban water supply. Today, these technologies are broadly accepted in Australia and have been incorporated into the SEQ water grid.

A revision of the "Water for the Future" discussion paper is timely due to a range of factors including:

1. The release of the 2024 Mary Basin Water Plan and sustainable water management for the Mary Basin;
2. A suite of climate independent water supply sources is now operational in SEQ, with little public awareness;
3. Per capita water consumption in SEQ has dropped dramatically since 2006;
4. Planned population growth of SEQ over the next 20-30 years will significantly impact on water availability; and the Wide Bay Burnett region is campaigning for greater population growth in the recent regional plan;
5. New water infrastructure is planned with or without close linkages to renewable energy sources eg. Borumba Pumped Hydropower, Lake Macdonald spillway upgrade, Fraser Coast water grid, Forest Wind, Woolooga Solar Farm etc.
6. The Buchanan Plan (pages 18-21) has stimulated interest in comprehensive sustainable water planning in the Mary Basin

The MRCCC is dedicated to achieving a sustainable and productive future for the Mary River catchment. In achieving this vision, our members hope to ensure that we will not be judged by what we take from the catchment, but by how we leave the catchment so that it's capacity to support our future generations is enhanced.

Contents

New research shows treated wastewater can be more dependable and less toxic than common tap water sources including rivers and groundwater.

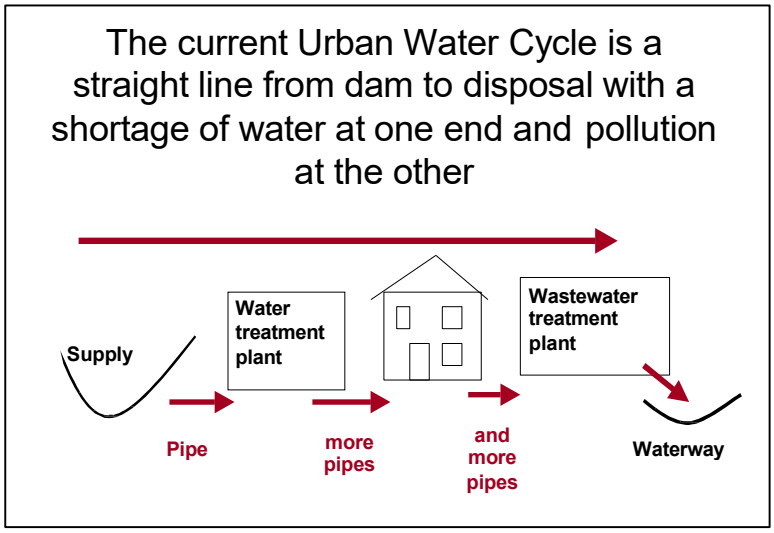
Recycled wastewater is not only as safe to drink as conventional potable water, it may even be less toxic than many sources of water we already drink daily, Stanford University engineers have discovered. (August 2022)

Map of the Mary Basin

Dams are letting us down
We are polluting our rivers and wasting our resources

Water supply sources

- dams and weirs provide most of the water supplied for urban use in the Mary Basin;
- their catchments are unprotected;
- groundwater is not a major contributor;
- little is known about groundwater.



Water Treatment Plant

- water is treated so that it is safe to drink;
- amount of treatment required (and cost) depends on raw water quality;
- risk should be identified and managed;
- technology is available to treat water of any quality to virtually pure.

Water at work

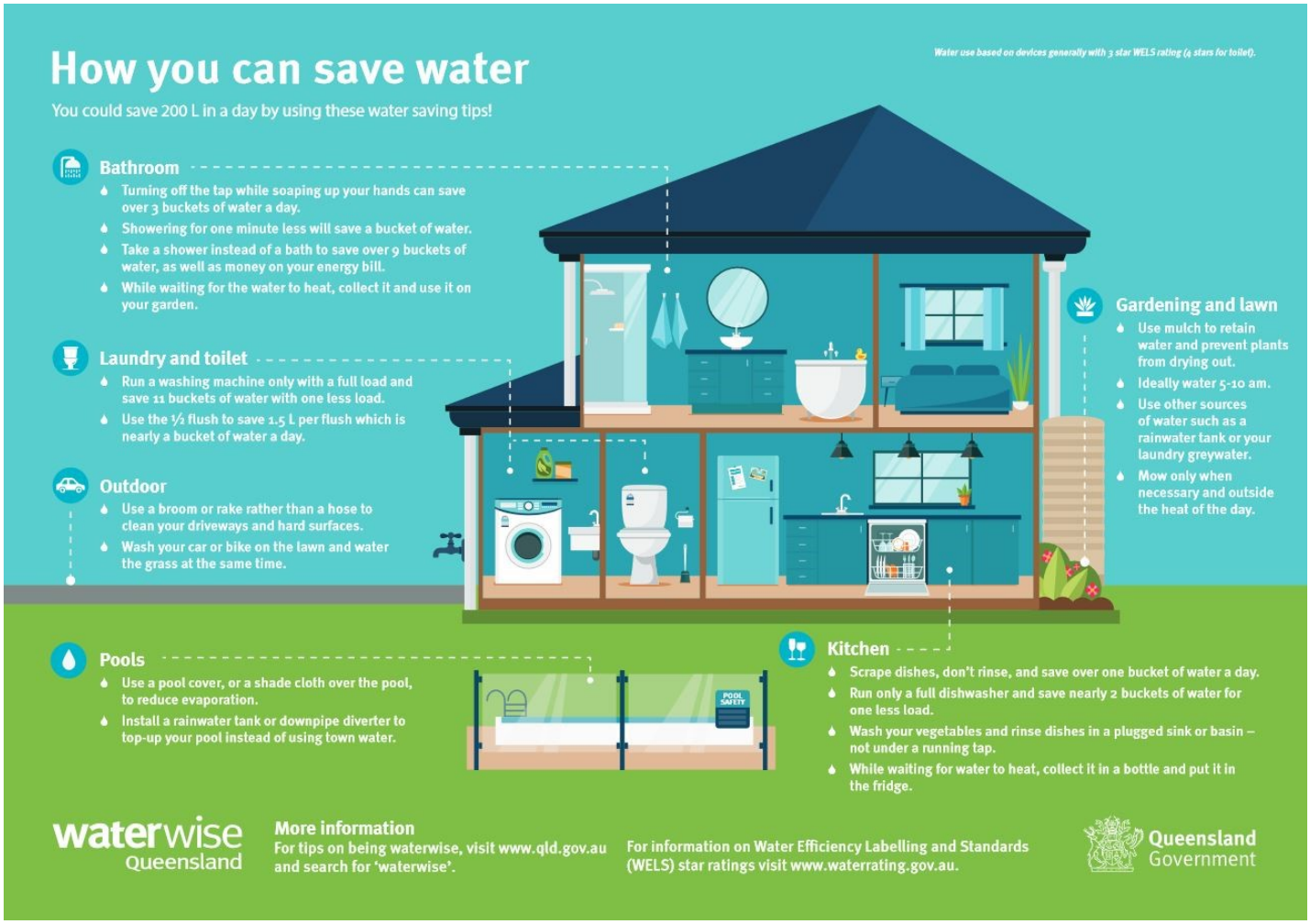
- drinking water is used in industry, institutions and in our homes where half is used inside the house and half outside;
- only 1% of the drinking quality water we are supplied with is consumed.

Demand management, reducing water consumption

- demand management is a cost effective way of making existing water supplies go further;
- more efficient appliances are needed - changes to community behaviour are difficult to maintain;
- it can provide “breathing space” but will not be sufficient to provide for projected populations in the longer term.

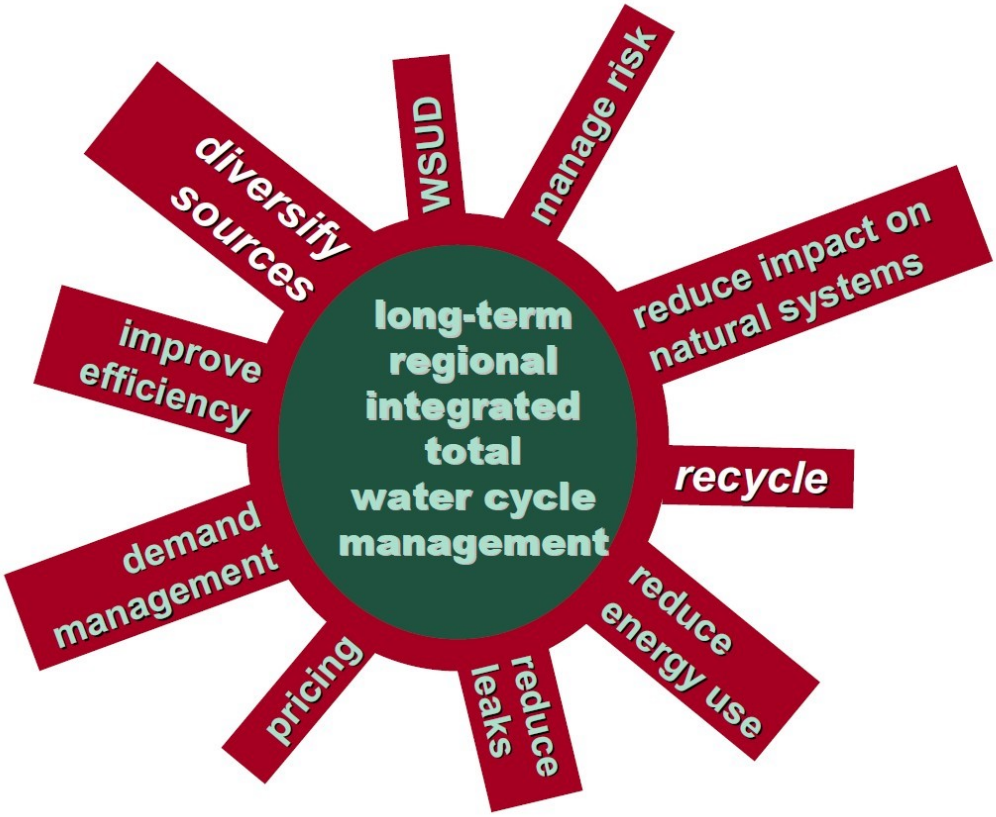
Demand management includes:

- WaterWise programs and education;
- unaccounted-for water and leakage reduction;
- using water meters and paying for the amount used;
- restrictions;
- water-efficient appliances;
- pressure management.



Sustainable urban water management involves:

- Quality, fit for purpose – safeguarding public health;
- The security of a diversity of sources;
- Water use efficiency;
- Reducing the impact of waste discharge;
- Reducing energy use.



Climate dependent Water supply options

- dams
- rainwater tanks

Dams

- dams have been a traditional strategy to cope with our unpredictable and uncertain climate – but they are letting us down;
- are a barrier to the flow of water, sediments, oxygen and energy;
- inundate good agricultural land;
- have social and cultural impacts;
- change a river's hydrology;
- the best dam sites have already been developed;
- new sites are in lower rainfall areas and further from where the water is needed;
- yield of dams is less than previously thought due to environmental flow requirements and lower rainfall;
- building a dam doesn't make it rain;
- an advantage of dams is that they are a "short term" political fix;
- some dams provide a source of power, flood mitigation and recreational opportunities.

Rainwater tanks

- If rainwater is the only source of quality water, the bigger the rainwater tank, the better – limited only by the size of the roof catchment and rainfall;
- If a trickle-top-up system is used, models are available to work out the optimum size.

Advantages of rainwater tanks

- tanks in coastal urban towns are generally in a higher rainfall area than more inland dams;
- they fill from small and medium rain events as opposed to dams that require larger events before run-off into the dam is significant especially after a dry spell.

Optimum use of rainwater tanks

- they must be used constantly and regularly – not just on the garden;
- studies on the Gold Coast show 25 – 30% of household demand can be provided by a 10,000 litre tank with a trickle top-up system.

Rainwater tank size

Choice of tank size is determined by a number of factors:

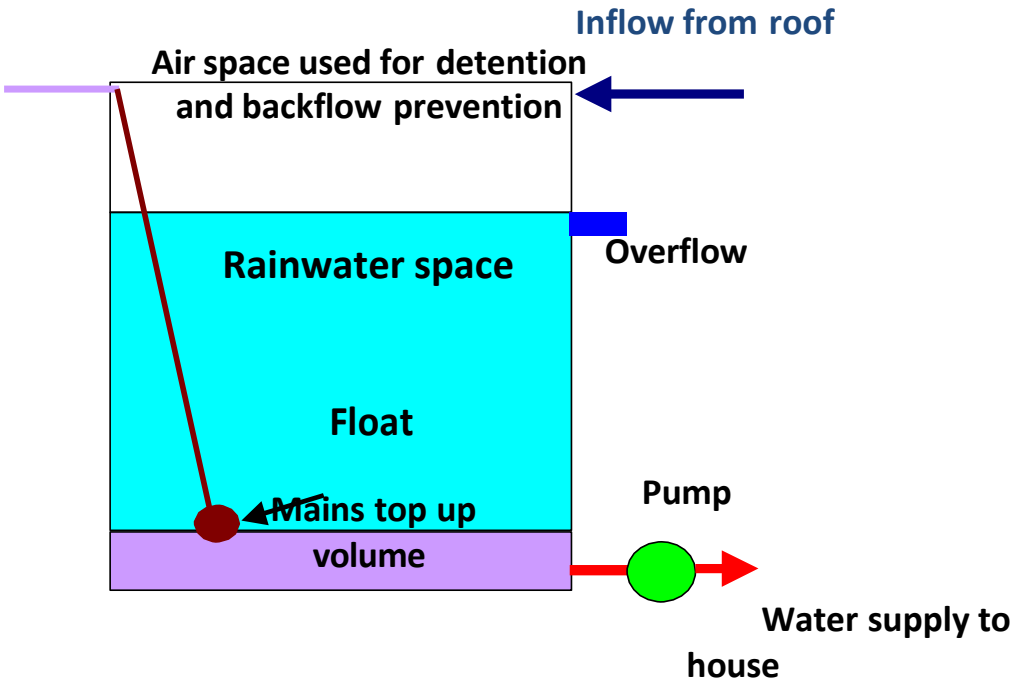
- the volume of water required each day;
- the rainfall;
- the size of the roof;
- the security of supply required – if there is a prolonged drought the amount of water stored in the tank may not be sufficient to avoid buying water.

There is a point at which additional increases in tank capacity will have only a marginal effect on yield but significantly increase cost.

This table shows the tank sizes required to provide 99% security of supply								
Volume l/day required	**Roof area m^2**	**100**	**150**	**200**	**300**	**400**	**500**	**600**
	Annual Rainfall (mm)	**Minimum tank size (litres)**						
100	**200**						4000	
	300				2000	1700		
	600	1900	1200	1000	8000			
	1200	1000	8000	7000				
200	**300**							4700
	600			3600	2600	2200	2000	1800
	1200	3400	2400	1900	1600	1400		
400	**500**							5100
	600							4700
	1200				4700	3900	3400	3100

Rainwater tanks come in all shapes and sizes

Trickle top up from mains supply



The Trickle Top-up system (Diagram courtesy of Dr Peter Coombes)

The trickle 'top up' system

- the tank is topped up by a low flow from the mains when water levels in the tank are low;
- the tank tops up to a minimum level until rainfall fills the tank again;
- mains supply;
- the tank water is used for toilet flushing, the hot water service and outside uses;
- a second pipe provides water for drinking;
- the constant flow takes the daily peaks out of household demand enabling cost savings at the water treatment plant and the use of smaller pipes.

Disadvantages of rainwater tanks

- microbiological quality is not as high as reticulated water;
- potential to be a breeding place for mosquitoes;
- regular maintenance and cleaning required;
- profits of the water providers reduced.

To find out more about rainwater tanks, visit this website:
https://www.resources.qld.gov.au/__data/assets/pdf_file/0004/1407559/rainwater-tanks.pdf

Climate independent water supplies

- **Desalination**
- **Wastewater recycling**

Desalination

- Desalination is a secure water source that doesn't depend on rain;
- reverse osmosis membranes produce water that is virtually "pure";
- energy consumption of desalination plants has reduced significantly with the advent of renewable power supplies and energy recovery systems;
- The Gold Coast desalination plant recovers 97% of its energy – 3.6 Kw of energy/1000 litres and is an industry leader.

The Gold Coast Desalination Plant has a production capacity of 133ML of water per day, and can serve 665,000 residents

https://www.water-technology.net/projects/gold-coast-plant/

Western Australia's Binningup desalination plant provides around 30% of Perth's water supply, whilst the Kwinana plant now produces ~ 18%. The WA Water Corporation is committed to powering these two existing desalination plants and the proposed Alkimos Plant with wind powered renewable energy.

Wastewater management

- wastewater contains one tablespoonful of dirt in a 44 gallon drum of water;
- it is treated to separate the water (effluent) from the dirt (biosolids);
- the amount of treatment depends on how the effluent is to be managed;
- effluent is disposed of in a waterway or the ocean in accordance with an EPA license;
- EPA licenses are becoming more rigorous;
- pollutants of concern to the receiving environment are carbon containing chemicals and nutrients.

Why do we treat sewage?

The main reason that the sewerage system was developed was to protect human health to ensure that our sewage and water supply were kept apart. Originally wastewater was collected into sewers and discharged into the nearest waterway. This improved our health but it caused environmental problems. Our rivers were suffering because natural processes were too slow to keep up with the impact of our waste. Various methods were introduced to clean the sewage before disposing of it. The technology available to do this has become more efficient and effective over the years and new methods are still being found today.

A time for change

Traditionally we have tried to keep our drinking water supply and wastewater separate – as far apart as possible – both physically and mentally. As a consequence, we think about the urban water 'cycle' as a straight line from dam to disposal. There are problems at both ends of the pipeline – a shortage at one end and pollution and waste at the other.

The separation is an illusion. In most parts of the western world water has been recycled for many decades, when a town upstream discharges its effluent to become the water supply for the next town downstream.

Increasing population and climate change have put pressure on our water supplies and we are facing shortages. We need to change the way we think about urban water management. Acknowledge that recycling is already happening and do it more and better.

Recycled water

- all the water we use inside our homes (bathroom, laundry, toilet, kitchen) goes to a wastewater treatment plant and is referred to as sewage, and is available for recycling;
- water available for recycling increases with population;
- a recovery rate of 70 - 80% is technically feasible using nutrient reduction, ozonation and membrane technologies.
- it reduces waste and pollution caused by present disposal practices.

Benefits of recycling water to the urban supply

- an alternative *secure* supply that reduces our dependence on dams;
- not affected by climate change;
- demand and availability coincide - unlike the mismatch when recycled water is used to meet the seasonal needs of plants.

The Western Corridor Recycled Water Scheme, Brisbane

- the largest undertaking of its kind in Australia and ranked as the world's third largest recycled water scheme to date;
- Completed in 2008, the Western Corridor Recycled Water Scheme (WCRWS) has the capacity to contribute up to a total of 232 ML/day
- The principal aim of the scheme was to help ensure the security of South East Queensland's water supply by reducing the dependency on sources vulnerable to climate change and make purified recycled water
- available to power stations, industry and agriculture and for indirect potable reuse.
- The WCRWS is an important drought response measure and can be considered should the SEQ Water grid storage levels fall below 40%

Dual reticulation

- unacceptably high capital cost to lay the second pipe in areas already developed;
- higher infrastructure costs are met by developers;
- nutrient management facilities required when excess effluent is discharged to a waterway;
- Salinity is a potential problem;
- precautions needed to avoid cross-connection;
- re-use potential not maximised - 20% of demand supplied by recycled water is very optimistic;
- cost of recycled water is higher than current reticulated water;
- competes with greywater and stormwater recycling.

Desalination v recycling

- the amount of energy required to purify water depends on the concentration of pollutants in the water;
- wastewater contains a lower concentration of pollutants than seawater;
- the operating cost, energy use and greenhouse gas emission are three times more for desalination than for reclamation;
- desalination does not prevent pollution and waste at the 'other end' of the pipeline;
- further expense could be incurred if upgrades to wastewater management are needed.

August 2022 – Courier Mail

Brisbane's Lord Mayor Adrian Schrinner said he would "absolutely" drink recycled water and urged the state government to take action before it was too late for Queensland's water security.

Mr Schrinner said he wanted to have confidence that the state water authorities had planned for future droughts as well as a rapidly growing population.

"I don't mind whether the water I'm drinking comes from a dam, a desalination plant or a recycling scheme," he said.

"I just don't want to see Brisbane put at risk of running out of water ever again."

With dam levels dropping below 60 per cent every year for the past three summers, Mr Schrinner said he was "increasingly concerned" that the southeast corner didn't have enough existing water sources.

Examples of water recycling

- Upper Occoquan, Virginia
- Hanningfield, Essex
- NEWater, Singapore
- Windhöek, Namibia

Upper Occoquan

- the Occoquan Reservoir is a large water supply source in Northern Virginia;
- the Occoquan Watershed was largely rural until the 1960s, when the opening of a highway created a rural/suburban area convenient to people working in Washington, D.C.;
- the resulting development led rapidly to water quality problems in the reservoir;
- the main culprits were eleven secondary wastewater treatment plants that discharged into the reservoir;
- water quality dramatically improved in 1978 when the plants were replaced by a water reclamation plant;
- treatment processes include nutrient reduction, filtration, activated carbon and flocculation water has been successfully reclaimed for more than 20 years;
- it supplies 50% of the water for the Fairfax Water Authority, which serves a population of 1 million people.

Hanningfield

New pumping station – Courtesy of Essex and Suffolk Water

- Essex water supply area is one of the driest in England, currently importing over 50% of its water from outside its shire boundary;
- as no additional water is available, water is recycled;
- effluent is taken to the Hanningfield Water Treatment plant where it undergoes a range of processes;
- the plant treats effluent from Chelmsford STP, removing phosphates, nitrates, ammonia, oestrogen and pathogens;
- the plant was refurbished and upsized in recent years to improve asset resilience, water quality and environmental compliance;
- the recycled water is discharged to augment the flow of the Chelmer River upstream of the Essex and Suffolk Water intakes to Hanningfield Reservoir;
- water from Hanningfield Reservoir is given further treatment, including ozonation, before it is supplied to customers;
- the plant has a peak output of 220 ML p/day.

Hanningfield Reservoir

NEWater in Singapore

- Singapore is one of the few countries in the world to harvest urban stormwater on a large scale for potable consumption.
- In August 2002, water recycling was successfully introduced in Singapore to reduce dependence on supplies from Malaysia;
- NEWater is treated used-water that has undergone stringent purification processes using dual- membrane (microfiltration and reverse osmosis) and ultraviolet technologies;
- It is monitored and assessed by a team of experts who unanimously agreed that NEWater is a safe and reliable product, "ready to drink";
- NEWater is used by carbon chip manufacturers who require very pure water. NEWater is delivered to industrial customers via a dedicated pipe network;
- During dry periods, NEWater is added to reservoirs to blend with raw water. Water from the reservoir undergoes conventional treatment before it is supplied to the consumers as tap water;
- Much of the technology and expertise for the NEWater plants comes from Australia;
- The Visitors Centre is an important feature and responsible for the community's wide-spread and enthusiastic acceptance of recycled water.

Windhöek, Namibia

- Windhöek, the capital of Namibia, has a population of approx 461,000;
- it lies between the Kalahari and Namib deserts;
- it has an annual average rainfall of 360 mm and an annual evaporation of 3,400 mm;
- the only perennial rivers are 750 and 900 km away on the northern and southern borders of the country;
- local springs and dams on ephemeral rivers are insufficient for the town;
- Windhöek has been successfully recycling water directly to its reticulated supply for 50 + years;
- water quality in the local dam has been seriously compromised by informal settlements (squatters) in the catchment;

- it is sometimes not as good as the effluent from the wastewater treatment plant;
- the effluent is therefore discharged to the dam;
- a new reclamation plant, completed in 2002, treats the blended water;
- the plant was designed on the basis of a multi-barrier system;
- it includes ozonation, activated carbon filtration, dissolved air flotation and membrane ultra-filtration;
- various safeguards are in place to manage any variation in raw water quality;
- water quality monitoring is undertaken in a sophisticated water laboratory;
- as well as the final product, the incoming wastewater, treated effluent, water in the dam and the blended water are all frequently tested.

"In Windhoek, every drop of water counts"

Turning wastewater into a reusable resource

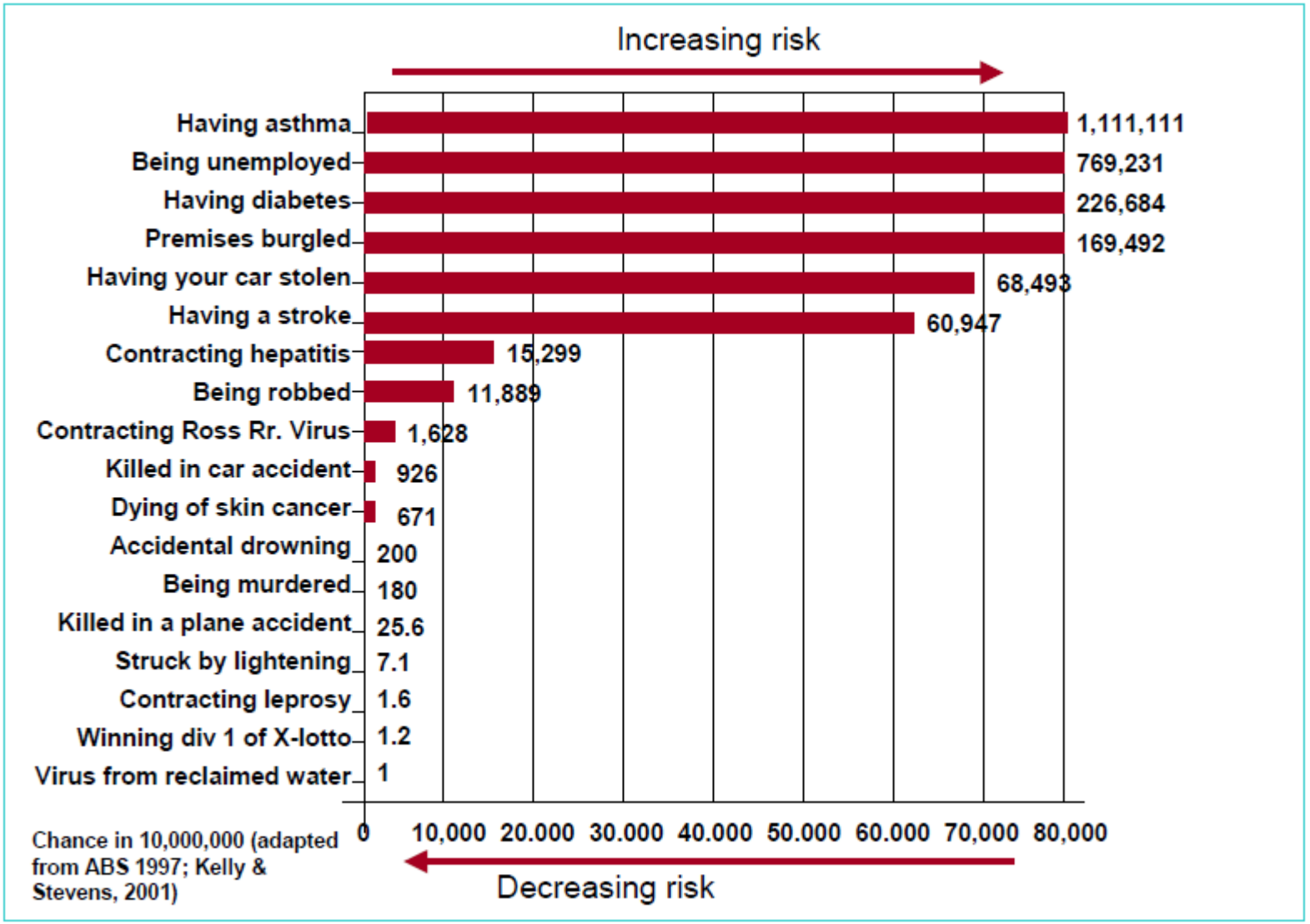
CSIRO is investigating a range of innovative solutions to treat wastewater. These include methods that can harness renewable energy to recycle wastewater on site in remote areas.

Designed as compact, modular and containerised systems, the units include unique membrane-based processes with a range of technologies customised to suit the needs of each situation.

Tamworth Water reuse trial

https://www.csiro.au/en/news/all/articles/2022/october/wastewater-treatment-benefits-in-regions

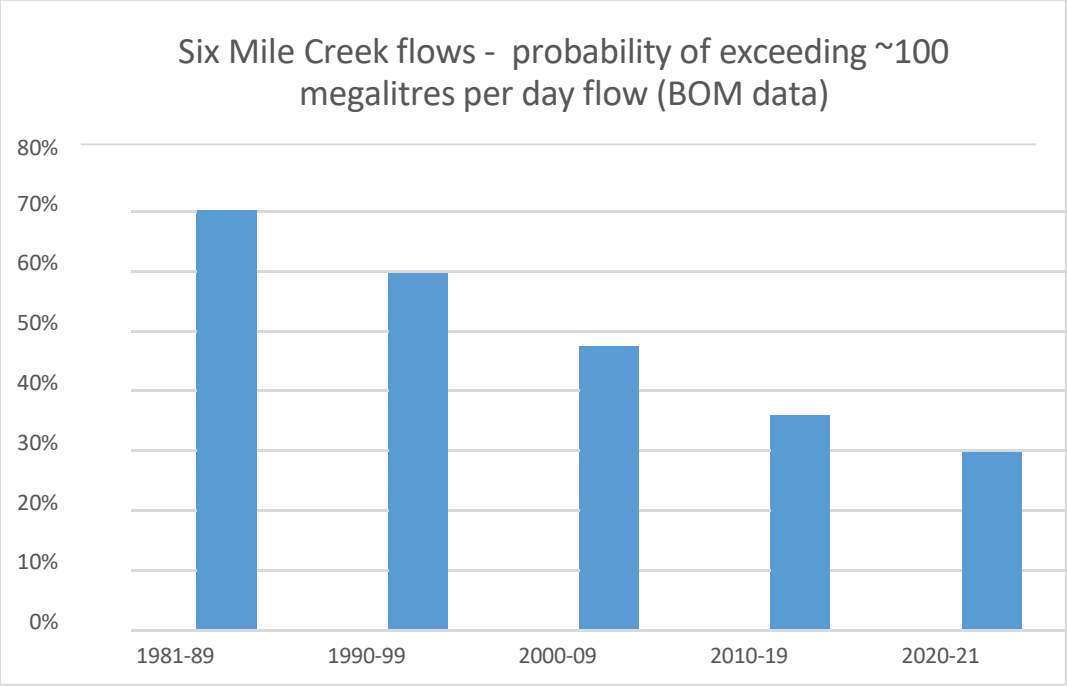
Comparative risks of contracting a virus from recycled water



The Buchanan Plan August 2022

The Buchanan Plan will provide sustainable water use for the Mary River catchment, the Sunshine Coast and south- east Queensland. The Mary River catchment has a long history of being investigated to supply climate dependent water for the growing population of the Sunshine Coast (the shelved Amamoor Dam to augment an enlarged Borumba Dam) and Brisbane via the failed Traveston Crossing Dam. In 2008, the Northern Pipeline Interconnector was constructed to deliver water from Baroon Pocket Dam and Borumba Dam to Brisbane.

Streamflow discharges and rainfall patterns are changing in the Mary River catchment. Over the past 40 years streamflow has been in decline, coupled with an increasingly drying landscape from higher rates of evaporation. Surface water flows from new or existing dams are becoming less reliable and are not a viable option to supply water security for town water supplies, irrigation or environmental flows. Climate independent water supply sources must be implemented.



Stream flow data available from the Bureau of Meteorology clearly shows stream discharge in the creeks of the Mary River catchment has consistently declined each decade since the 1970's, mainly due to higher rates of evaporation.

The 'Ministers Performance Assessment Report for the Mary Basin' (April 2019) states that ***ten of the last 18 years were below average, and two of those years are the lowest streamflow on record***. This is based on 109 years of streamflow data from the Mary River at Miva.

Streamflow to the Ramsar listed Great Sandy Strait is vitally important to sustain this unique estuarine ecosystem, as well as the commercial and recreational fishing industry and tourism associated with Hervey Bay.

In the past 5 years the Mary River has stopped flowing and dried up during Spring and Summer, when previously riverflow was very reliable. The endangered Mary River cod is reliant upon Spring streamflow and water temperature cues to trigger spawning. The cod's spawning time now coincides with low flows and increasing water temperatures, thus preventing spawning of this important species.

Streamflow from the upper Mary River catchment is essential to the aquatic ecosystems of the lower Mary River and the Great Sandy Strait. The upper Mary River annual rainfall ranges from 1800 to 1500mm which flows down to Gympie (annual rainfall 1100mm), Tiaro, Maryborough and Hervey Bay. The upper Mary River is the focus of existing dam infrastructure with Baroon Pocket Dam near Maleny (on Obi Obi Creek) originally constructed to supply the Sunshine Coast and now also supplying northern Brisbane. Lake Macdonald near Cooroy in the upper Six Mile Creek was constructed to supply town water to Noosa, which is now augmented by a pipeline from the Mary River (Borumba Dam allocation).

Today, Lake Macdonald is also connected to Brisbane via the Northern Pipeline Interconnector. Borumba Dam on Yabba Creek supplies irrigators downstream of Gympie as well as town water for Gympie and Noosa. This town water allocation can also be piped to Brisbane via the Northern Pipeline Interconnector. It is therefore evident that water in the upper Mary River is heavily regulated, as large water allocations are transferred out of the Mary River to supply ever-increasing populations (inter-basin water transfers). These increasing inter-basin water transfers jeopardise streamflows to the lower Mary River and Great Sandy Strait.

The solution

The Buchanan Plan involves an integrated mix of modern water supply solutions that crucially, are not climate dependent, unlike dams which rely solely on the climate. Inter-basin transfer of surface water is not a solution to a dwindling water resource. Presently, the whole Mary River system is heavily impacted by inter-basin transfers of surface water from the upper Mary River to supply the Sunshine Coast with drinking water. Water that flows in the Mary River should be kept in the Mary River to sustain the catchment community and the unique aquatic ecosystems that have evolved around these streamflows.

The upper Mary River needs to provide streamflow to downstream irrigators, the lower Mary River and the estuary ecosystems. To allow this to occur, Baroon Pocket (Obi Obi Creek), Lake Macdonald (Six Mile Creek) and Borumba Dam (Yabba Creek) are required to provide streamflows to the catchment community and the lower Mary River.

Inter-basin water transfers from these dams can be freed to supply essential flows downstream for ecosystems (Mary River cod) and the local communities.

One regulating body is also required to enable sensible and sustainable planning for water use in the Mary River catchment and SEQ. At present, some councils in the catchment manage their town water supplies, and there is a risk that holistic planning across councils may not occur owing to jurisdictional boundaries, instead of catchment boundaries. In SEQ, water supply and planning is coordinated by authorities not linked to councils.

A key aspect of the Buchanan Plan is that each town in SEQ constructs a water recycling plant to ensure long-term, climate independent, safe, high quality water supplies for their residents. This economic stimulus project would future proof towns with a reliable water source which can produce water of the highest quality, and continue to do so irrespective of drought conditions, when dams fail. Towns should also be encouraged to install and retro-fit rainwater tanks. Town plans should be allowed to incorporate rainwater tanks in new housing developments.

Waterwise education programs have proven to be exceptionally beneficial to reducing household water use. In the 1980's households in the Mary River catchment were using upwards of 800L per person per day. Today, an average household uses 200L per person per day. Changing people's behavior through Waterwise education is a very cost-effective mechanism to build resilience of existing water supplies, and can reduce the need for the construction of expensive water supply infrastructure.

Cooloola Coast – the heart of a sustainable water plan

A "green" desalination plant can be constructed at the military base near Tin Can Bay, fed by an ocean feedstock pipeline constructed along an existing powerline easement from Rainbow Beach via Cooloola Cove to the Camp Kerr military base. Power to supply the desalination plant can be sourced from the Forest Wind farm planned for construction in the nearby Toolara and Tuan State Forests.

The wind farm energy can also be supplemented from excess solar energy available during the day. A recycled water plant located at Cooloola Cove will supply local town water supplies for Cooloola Cove and Tin Can Bay.

This would significantly reduce effluent inflows into the Great Sandy Strait and reduce the need for pumping water from Teewah Creek (in upper Noosa River), supplying essential riverflows to the Noosa River estuary.

A sustainable way to grow Gympie

A pipeline linking the 'green' desalination plant at Camp Kerr to Gympie along the Tin Can Bay Road is required. This would allow growth in Gympie based on climate independent water sources. The current water allocations from Borumba Dam for Gympie Council could be used for irrigation and environmental flow purposes to the lower Mary River. A water recycling plant to supplement Gympie town water supplies is also required to build further resilience into the council water supplies. The Tin Can Bay pipeline could also supply a reliable water source to ensure that industries situated along the pipeline eg Laminex at Toolara, can continue to function during drought conditions when ordinarily these industries are at risk of shutting down due to inadequate water supply.

This Tin Can Bay pipeline to Gympie could be linked to the Lake Macdonald pipeline via the Bruce Highway. The Forest Wind-powered desalinated water can be transferred to northern Brisbane via the Northern Pipeline Interconnector at Lake Macdonald.

It is recommended that these pipelines have the ability to access the water by constructing connections every 10 kilometres for emergency purposes eg. fire fighting etc. In times of drought, key sections of the river and some tributaries run dry. Where the pipeline is located close to these key hot-spots, water could be allowed to flow into the river or tributaries as an environmental flow to ensure the river can survive these times of high stress.

Noosa – a closed loop sustainable water supply

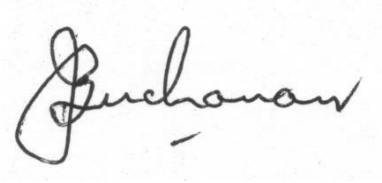
Noosa can become self-reliant for town water supplies using Lake Macdonald and tertiary grade treated water from the Unitywater treatment plant on upper Burgess Creek near Sunrise Beach. Presently, the Unitywater Sewage Treatment Plant at Noosa discharges drinking standard water into upper Burgess Creek which flows into the Pacific Ocean. This water is a high standard and can be used for drinking purposes, and should be utilized by the Noosa community. This high quality drinking water could be pumped back to Lake Macdonald or connected into the water reticulation system. Lake Macdonald's role would be to supplement town water supplies during high tourist periods. By reducing the need for Lake Macdonald to supply town water, this would allow improved streamflows down Six Mile Creek for the Mary River cod, and aquatic life in the lower Mary River and estuary. The Noosa Council water allocation from Borumba Dam could also be utilized for environmental flow purposes to the lower Mary River.

Baroon Pocket Dam – a new irrigation and environmental flow system for the upper Mary River

By producing Forest Wind-powered desalinated water linking the Northern Pipeline Interconnector to Gympie allows Sunshine Coast to de-couple its reliance on Baroon Pocket Dam. Sunshine Coast has existing water supplies with Coolabine, Poona and Wappa Dams, as well as Ewen Maddock Dam. The new Aura development can be supplied from stormwater collected on-site given this is a new greenfield development.

Baroon Pocket dam can then be re-directed to solely supply water to the upper Mary River via Obi Obi Creek for irrigation and environmental flow purposes. Currently, the Moy Pocket and Carters Ridge districts on the Mary River are regularly going dry in Spring and Summer. Stopping urban water supplies being transferred to the Sunshine Coast from Baroon Pocket dam allows greater water security for downstream users and the environment of the Mary River.

To provide written comments or written submissions to the Buchanan Plan please write:
C/- Mary River Catchment Coordinating Committee, PO Box 1027, Gympie Q 4570 admin@mrccc.org.au



Author's note

Although the author and those who contributed have no practical knowledge of desalination plants, this technology has been used around the world for decades and there has been a huge increase in efficiencies over the years. Worldwide acceptance should therefore be investigated.

The author believes that the state government should commence discussions with the federal government re substituting proposed new dams for desalination plants. The sustainability of existing dams would be greater if green water is added to the existing supply as well as fully engaging in recycling waste water to potable level (as is already done in the Brisbane River). The need for greatly increased dam capacity would not be necessary if these two propositions were followed. This applies all over Australia and the world.

The "theft" of Mary Basin water to satisfy the needs of south east Queensland has to stop, and alternative technologies implemented to supply re-usable green water.

Public no drips when it comes to recycled water.

It's long been said that the general public are way ahead of water planners when it comes to accepting purified recycled water and a story in the Courier Mail in 2023 seems to bear that out.

"Queenslanders are more open to drinking recycled water today than they were during the height of the millennium drought, the boss of Seqwater has declared," says the article, citing polling commissioned by Seqwater indicating almost 70% of Queenslanders were "comfortable" drinking recycled water.

Our planners seem stuck on the results from the mid-2000s where one poll showed around 90 percent opposition, but public acceptance has made a quantum leap since then

It's heartening that public support now considerably outweighs opposition showing that many have looked into it more fully and have understood the benefits.

In 2020, 68 per cent of people said they were comfortable, up from 59 per cent in 2017.

It's no surprise that the public is more accepting. When you consider that purified recycled water is part of the intake for cities like Los Angeles, Singapore and London, PLUS they've worked out that Purified Recycled Water (PRW) is a different product from what you see in trucks labelled "Recycled Water: Do Not Drink".

Maintenance work conducted in the Luggage Point Advanced Water Treatment Plant's reverse osmosis room. Image courtesy of Seqwater

Both the current Queensland Water Minister Glenn Butcher, and Brisbane's Lord Mayor Adrian Schrinner have announced their support for PRW.

We shouldn't be debating recycling vs desalination. Seqwater's Western Corridor Recycled Water Scheme is already built, and has been so for 15 years, but is virtually in mothballs despite it being a climate–independent way to produce top quality potable water.

The $2.5bn Western Corridor Recycled Water Project was completed in December 2008. It consists of three separate treatment works, Bundamba, Gibson Island and Luggage Point, is the largest undertaking of its kind in Australia and was ranked as the world's third-biggest recycled water scheme at the time.

It forms a key element in the $9bn South East Queensland Water Grid – the largest urban drought initiative in Australia – the project has a supply capacity of just over 230 megalitres a day. In April 2008, the new Bundamba treatment plant won the Global Water Intelligence water project of the year award.

Why is the government looking at building an expensive desalination plant on the Sunshine Coast when the Western Corridor plant is already built and pipes from it connected to Wivenhoe Dam.

All that needs to change is the operating rules. Currently purified recycled water from the plant is only pumped to Wivenhoe in fairly dire drought conditions, when the combined dam levels fall to 40%. This should happen sooner, say when levels drop to 70%.

As the ongoing impacts of climate change and extended droughts continue to impact on Queenslanders, having a water source that doesn't depend on rainfall, coming from a plant that's already built simply makes sense.

No longer can we hide behind the excuse that the public isn't ready for recycled water - purified recycled water.

MARY RIVER

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