

Snapshot of **Barwon Water**

*Prepared for 2018 Price Submission
community panel discussion*



Barwon Water proudly acknowledges the Traditional Owners of the land on which we work and live, and pays respect to their Elders past and present. Barwon Water recognises and values the continuing rich culture and the contribution of Aboriginal people and communities to the Victorian community.

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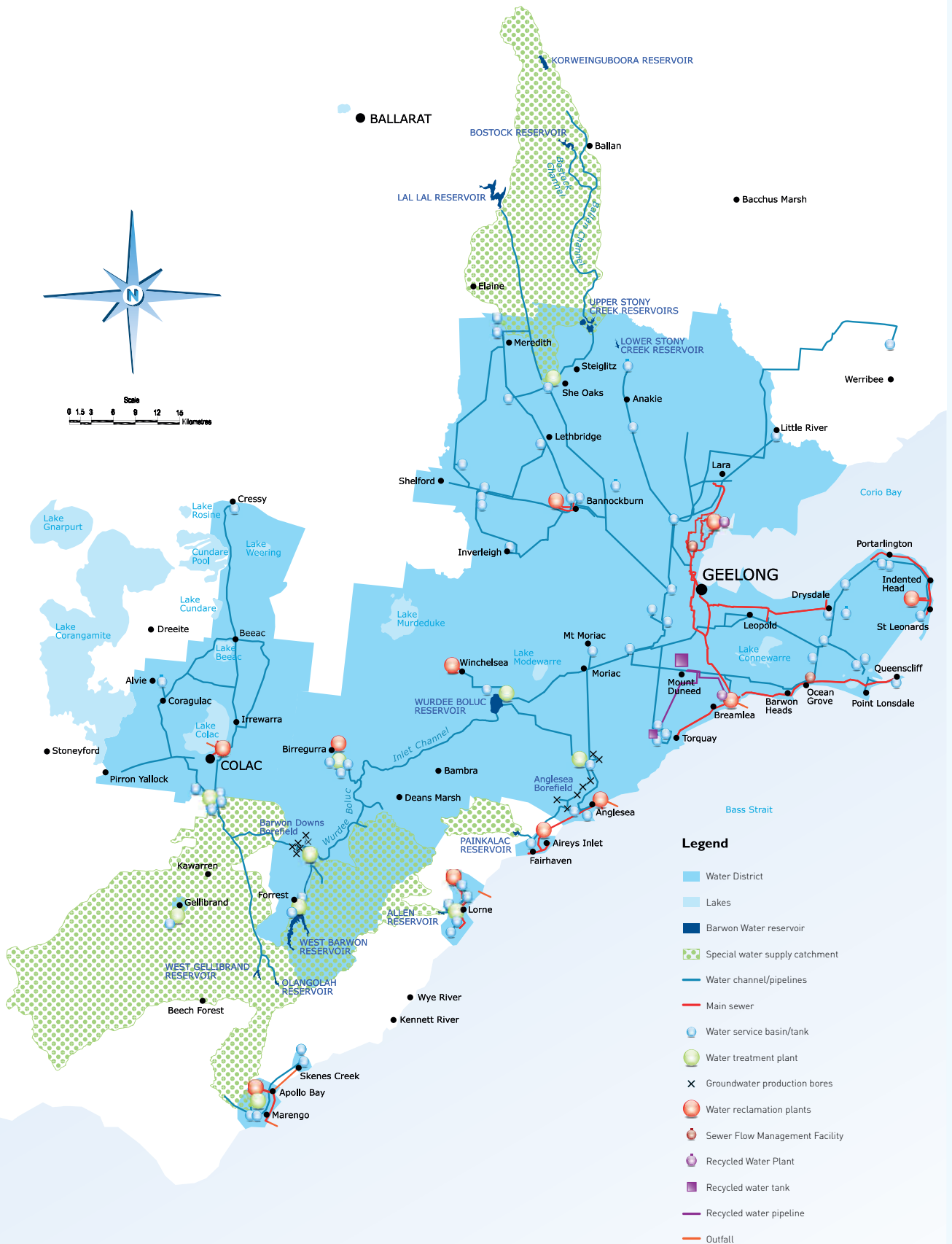
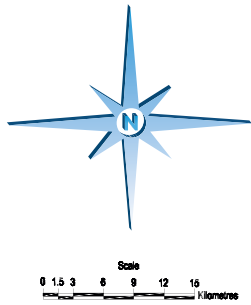
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Who is Barwon Water?

Barwon Water (Barwon Region Water Corporation) is Victoria's largest regional urban water corporation. We provide high quality water, recycled water and sewerage services to customers across our region.

While constituted in February 1994, the corporation's history dates back more than 100 years to the establishment of many water Boards and Trusts.

A major employer in the region, Barwon Water has more than 300 operational, engineering, strategic planning, financial and administrative staff.

Barwon Water is committed to delivering quality and affordable water and sewerage services that strengthen the economy, promote liveability and protect the environment.

Barwon Water embraces diversity and is committed to equal opportunity and fairness in the workplace.

Our region

Barwon Water's area of responsibility stretches from Little River and the Bellarine Peninsula in the east, to Colac in the west, and from Meredith and Cressy in the north, to Apollo Bay on Victoria's south-west coast.

Our service area covers 8,100 square kilometres and includes towns and suburbs within the City of Greater Geelong, Borough of Queenscliffe, Surf Coast Shire, and Colac Otway shires and parts of Golden Plains Shire¹.

Our customers

Barwon Water provides services to more than 298,000 permanent residents. Over the summer holiday period, the serviced population can reach up to 510,000 people.

Our customers are 92 per cent residential and 8 per cent commercial or industrial. We supplied 33,670 million litres of water to these customers in 2015-16. Around 30 per cent of metered water consumption is attributed to commercial or industrial customers.

There are 151,418 properties connected to our water system and 135,561 properties connected to our sewerage system.

Our assets

Barwon Water owns and operates around \$2.3 billion in assets, including:

- 12 major reservoirs
- 8 water treatment plants
- 2 water pre-treatment plants
- 11 water reclamation plants
- 2 Class A recycled water plants
- 2 groundwater fields
- 243 pumping stations (49 water, 194 sewerage)
- 19 local water storage basins
- 40 water tanks
- 6,633 kilometres of pipes.

¹ Those properties, homes and businesses connected to either reticulated water and/or sewerage systems.

Our organisation

Barwon Water is a statutory body under the *Water Act 1989* (Vic). We have a nine-member Board of Directors, which includes the Managing Director, and a seven-member Executive Leadership Team.

Barwon Water operates under a Statement of Obligations issued by the Minister for Water under the *Water Industry Act 1994* (Vic).

The Essential Services Commission, an independent government body, regulates Barwon Water's pricing and service standards.

West Gellibrand Reservoir.



Our Strategic Intent

Our Strategic Intent is Barwon Water's blueprint for the future. It outlines our commitment to customers and stakeholders and sets out strategic directions, objectives and actions for the organisation.



The navy outer ring represents Barwon Water's commitment to deliver on key Victorian Government water policies.

The light blue inner circle covers the key functional strategies underpinning core activity areas of the business.

The focus areas and functional strategies are closely linked and are designed to provide clear, high-level guidance and direction.

Sitting behind the Strategic Intent is an action plan. This is a comprehensive register of more than 120 key activities that will be delivered to meet business goals and objectives.

Barwon Water has established a vision, mission and set of values to support our commitment to customers, the community, stakeholders and employees:

Vision

Barwon Water aspires to be a community-minded, performance-driven and future-focused business.

Mission

To deliver quality and affordable water and sewerage services that strengthen the economy, promote liveability and protect the environment.

Values

- **Respect:** embracing honest sharing, diversity, trust and teamwork.
- **High performance:** a commitment and accountability to superior business results, and a workplace that embraces employee wellbeing and flexibility.
- **Innovation:** the courage to explore and inspire change to stretch our capabilities.
- **Relationships:** open and honest communication with each other, our customers and our community.
- **Leadership:** that listens, is supportive, consistent and provides direction.

Our Board

The Board determines the Strategic Intent. It also ensures Barwon Water is performing its functions and duties set in the Water Act 1989 (Vic) and meeting obligations under the Water Industry Act 1994 (Vic).

Our Board comprises a non-executive Chairman, seven non-executive Directors and the Managing Director. The Minister for Water appoints Board. The Board appoints the Managing Director.

The Board meets monthly, except January, and at other times as required. Executive Leadership Team members also attend. The Board comprises:

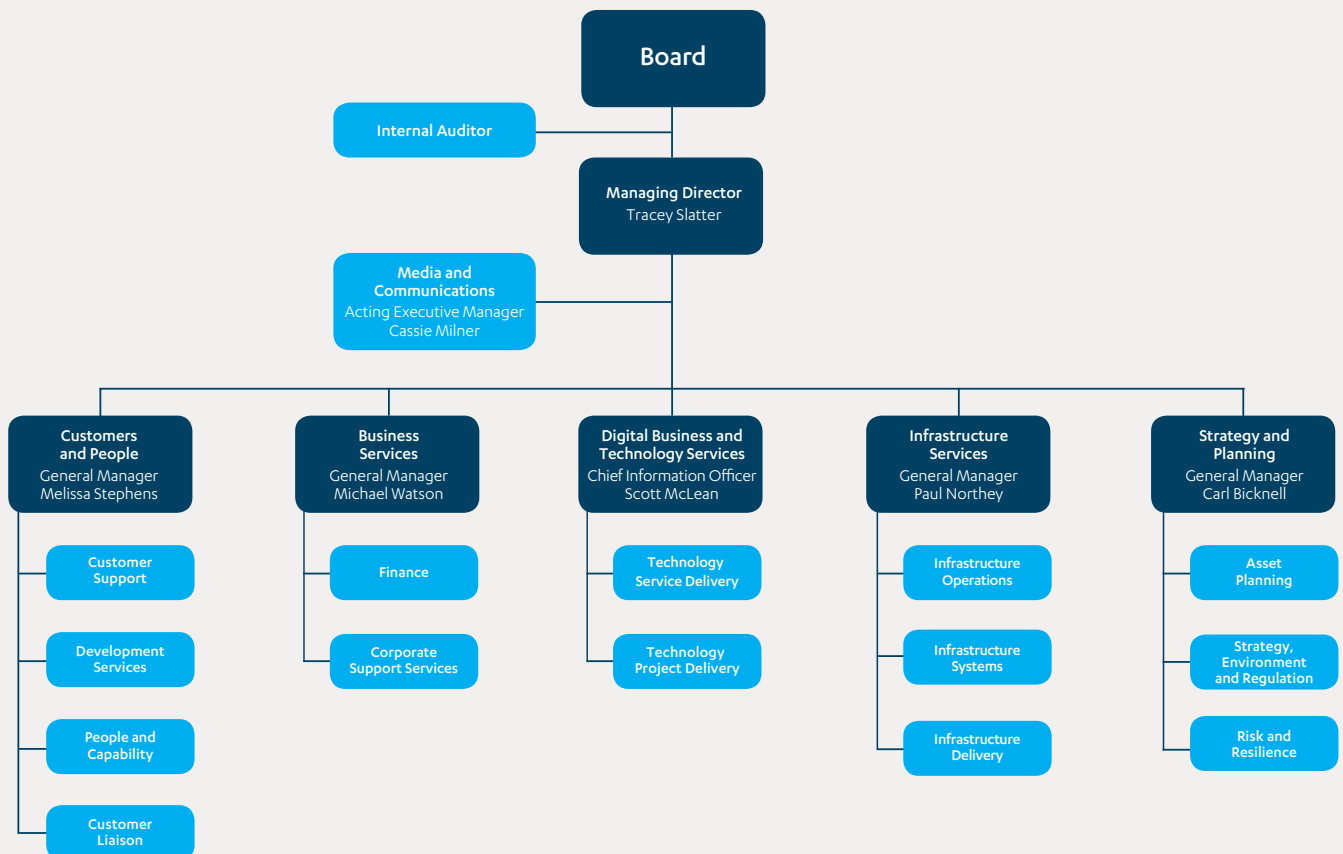
- Jo Plummer Chairman
- Tracey Slatter Managing Director
- Elaine Carbines Board Director
- John Gavens Board Director
- Jodi Heath Board Director
- Rebecca Leonard Board Director
- Christopher Lovell Board Director
- Jason Mifsud Board Director
- Bernard Walsh Board Director

Our Executive Leadership Team

The Executive Leadership Team comprises the Managing Director, four General Managers, the Chief Information Officer and one Executive Manager. The team includes:

- Tracey Slatter Managing Director
- Melissa Stephens General Manager Customers and People
- Michael Watson General Manager Business Services and Company Secretary
- Paul Northey General Manager Infrastructure Services
- Carl Bicknell General Manager Strategy and Planning
- Scott McLean Chief Information Officer
- Cassie Milner Acting Executive Manager Media and Communications

The Executive Leadership Team manages the day to day operations of Barwon Water. This includes customer services, operations and construction, finance, health and safety, communications, human resources, planning and environmental management.





Project manager of the Anglesea outfall pipeline replacement.

Our people

In 2015/2016, Barwon Water's employment statistics were 32% female and 68% male. In response to creating a more diverse and inclusive workplace, the corporation developed a Diversity, Inclusion and Gender Equity Strategy which focuses on targets, actions and initiatives across seven diversity pillars. These include gender equity, aboriginal values, creating advantage, life stages, accessibility, culturally and linguistically diverse and lesbian, gay, bi-sexual, transsexual, intersex and questioning.

Barwon Water is working towards a workplace where gender equality and opportunities for women and men are the same. Barwon Water has a target to achieve 40 per cent female, 40 per cent male and 20 per cent either male or female in management roles by 2018.

Core services

Barwon Water's core business is providing its customers with high quality water, sewage and recycled water services. Other services provided to support this core business include service to customers who contact us and environmental services provided through the sustainable operation of our business.

The water we provide

Barwon Water customers receive water from different sources. This depends on where they live and how much water is available from each source.

Greater Geelong's drinking water is sourced from the Upper Barwon and Moorabool rivers. Typically, 80 per cent of Geelong's water comes from the upper Barwon system which is supplied from catchments in the Otway Ranges, with the balance from the Moorabool system. Water can also be sourced from groundwater aquifers at Anglesea and Barwon Downs and a pipeline connection to Melbourne.

The greater Geelong system services customers in and around Geelong, Lara and Little River, the Bellarine Peninsula, parts of Golden Plains Shire as far north as Meredith, parts of Surf Coast Shire, including Torquay, Anglesea, Winchelsea and Aireys Inlet, and parts of Colac Otway Shire, including Birregurra and Forrest.

Colac's drinking water is sourced from the Upper Gellibrand catchment in the Otway Ranges. From mid-2017, an 11-kilometre pipeline will allow extra water to be sourced from the greater Geelong system in dry times. The Colac system services customers in Colac's urban and rural districts, extending as far north as Cressy.

Lorne's drinking water is solely supplied from the Allen Reservoir on the St George River, about three kilometres west of the township. Lorne's water distribution network is relatively complex due to the town's steep terrain.

Apollo Bay, Marengo and Skenes Creek's drinking water is solely supplied from the Barham River in the southern Otways. An upgrade to Marengo Basin, where the towns' water is stored, was completed in 2014 to support the tourist influx over summer.

Gellibrand's drinking water is drawn from Lardners Creek, which is a tributary of the Gellibrand River.

Water treatment

Drinking water is generally harvested from natural run-off into streams, rivers and reservoirs.

While among the most pristine in Australia, these catchments are predominantly open to the public and can be subject to a variety of land uses, including townships, rural living, forestry, agriculture, and recreation.

The condition of the catchment is the most important factor influencing the quality of drinking water. It determines how much treatment is needed before the water is safe to drink and the costs associated with treatment.

Catchment management and protection is the first defence in the multi-barrier approach used by Barwon Water to ensure safe drinking water.

Barwon Water treats and disinfects water sourced from its catchments to ensure it meets obligations of the *Safe Drinking Water Act 2003* and the *Safe Drinking Water Regulations 2015*.

The water treatment process

After water is harvested from streams, rivers and reservoirs, or extracted from groundwater sources, it is filtered and disinfected. These processes are key to ensuring safe drinking water.

Filtration is the process of physically removing contaminants from drinking water. There are four types of filtration methods:

1. Dissolved air flotation filtration
2. Direct filtration
3. Conventional clarification/filtration
4. Micro filtration.

Disinfection is the process of inactivating pathogens so they cannot cause disease. There are three types of disinfection:

1. Chlorination
2. Chloramination
3. Ultraviolet light (UVC).

The type of disinfection used depends on a number of factors, including the quality of water sourced from the catchment, the size of the distribution network and the potential rate of consumption.

After water is filtered and disinfected, it is distributed to customers by a network of tanks, basins, pumps and pipes. The complex distribution network means disinfection must be maintained from the point of filtration through to our customers' taps, to prevent the regrowth of bacteria within the system.

Types of disinfectants

Chlorine / Ammonia

Chlorine and ammonia are added to inactivate pathogens so they cannot cause disease.

Chlorination is the addition of chlorine. Chlorination is a widely used disinfection process. It is particularly effective against bacteriological organisms and is most suited in shorter distribution systems.

Chloramination is an alternative disinfection process that involves combining chlorine with ammonia. The ammonia stabilises the chlorine so disinfection can be sustained in longer distribution systems.

Fluoride

Fluoride is added to protect teeth against decay, as required by the State Government.

Its addition is carefully controlled and monitored as required under the *Health (Fluoridation) Act 1973* and the *Code of Practice for Fluoridation of Drinking Water Supplies*.

The National Health and Medical Research Council has determined the safe concentration of fluoride in drinking water based on health considerations. This is reflected in the Australian Drinking Water Guidelines that Barwon Water is obliged to meet.

Fluoride is a naturally occurring element in water, and the addition of this amount is not noticeable. It doesn't change the taste, smell or colour of water.

Greater Geelong's water has been fluoridated since June, 2009. Colac's water has been fluoridated since 2010. The water supplied to Lorne, Apollo Bay/Skenes Creek/Marengo and Gellibrand is not currently fluoridated.

Is my water safe to drink?

Barwon Water provides some of the world's cleanest and safest drinking water.

Water provided by Barwon Water is 100 per cent safe to drink and compliant with Australian Drinking Water Guidelines. It must meet our obligations under the *Safe Drinking Water Act 2003* and the *Safe Drinking Water Regulations 2015*.

Barwon Water monitors the quality of water at its source, such as rivers, creeks, reservoirs and aquifers. Water quality is also measured at treatment plants and points across the distribution network, such as storage basins, tanks, pipes and customers' taps. In total, Barwon Water has more than 30 water quality zones.

An independent laboratory conducts comprehensive monitoring. The laboratory is accredited by the National Association of Testing Authorities. A number of water quality parameters are tested, including:

- microorganisms (e.g. E.coli)
- disinfection by-products
- treatment by-products
- pesticides
- heavy metals.

Some customers may occasionally experience issues with water quality. Most issues are related to the aesthetic qualities of the water (such as taste and colour) and do not pose any health or safety threats.

Filtering water in the home

The water Barwon Water provides is completely safe to drink and compliant with Australian Drinking Water Guidelines.

In many cases, individual filter units do little to improve household water supply. It may be claimed that filters remove substances that are not even present in our water.

However, there are situations, such as certain industrial applications and medical treatments, where the use of purpose-built water filters may be suitable or necessary.

Changing tastes of water

A number of factors can impact the taste of drinking water supplied to customers. For example, seasonal and operational factors such as the weather, the storage level of reservoirs and where the water is sourced from (surface water, groundwater or supplies from Melbourne).

These factors can alter the taste of the water as each catchment or water source has a unique profile. Sometimes a change in taste, appearance or odour is noticeable at the customer's tap when changes occur to the source of the water.

Barwon Water's water quality and operations teams constantly monitor water quality and treatment processes and make adjustments where possible to reduce the effect of any seasonal or operational factors.

The sewage we take away

Sewage is wastewater from households, commercial businesses and industry.

Sewage is generated by every toilet flush, shower, load of washing – basically any water down the plughole. A typical four-person household produces between 400 and 500 litres of sewage each day.

Sewage from commercial businesses and industry is different to household sewage. It is generally known as trade waste. It is sometimes referred to as industrial wastewater, industrial sewage or industrial effluent.

Trade waste customers range from small businesses like cafés and restaurants, to complex large-scale manufacturing industries and more.

Sewage is 99.8 per cent water.

Sewage treatment

Sewage is collected and treated through pipes, pumping stations and treatment facilities known as the sewerage system.

Barwon Water's sewerage system comprises 11 water reclamation plants, more than 170 sewage pumping stations, and around 2,200 kilometres of sewage pipes.

We own and operate water reclamation plants in:

- Anglesea
- Aireys Inlet
- Apollo Bay
- Bannockburn
- Birregurra
- Colac
- Connewarre (Black Rock)
- Lorne
- North Shore (Northern Water Plant)
- Portarlington
- Winchelsea

The Black Rock Water Reclamation Plant is the largest sewage treatment and water recycling facility in the region. The Northern Water Plant, adjacent the Geelong Refinery in North Shore, is our newest facility.

Our water reclamation plants reclaim water from sewage to be recycled or discharged with no negative impact on the environment.

The facilities use a combination of mechanical and biological processes to filter and treat the sewage, producing recycled water and biosolids. These valuable by-products have a number of uses in industry, agriculture and the community.

Pre-treatment

Pre-treatment involves removing objects such as paper, gravel, plastics, bottles, nappies and most identifiable solids.

Biological breakdown

Naturally-occurring bacteria and other micro-organisms use sewage as a food source. This process reduces the amount of suspended solids and organic material by up to 98 per cent. Normal by-products are water and carbon dioxide.

Nutrient removal

Phosphorus and nitrogen are typically reduced by specialised microbes that break down nitrogen compounds into nitrogen gas and absorb phosphorus in their tissues.

Filtration

To further clarify the treated water, it may be filtered through a sand bed or pores in a membrane.

Disinfection

Disinfection destroys pathogens (disease-causing organisms) that may be present in the treated water. Our plants use chlorine or ultraviolet light.

Recycling or discharge

Treated, disinfected sewage is known as recycled water. Where possible, this recycled water is used for a range of purposes, including irrigation of sporting grounds, tree lots and farms.

Excess treated water is discharged to the ocean via a submerged pipeline at the Black Rock, Lorne, Anglesea and Apollo Bay treatment plants. Excess water from the Colac Water Reclamation Plant is discharged to Lake Colac.

Biosolids

Biosolids are a valuable by-product of the sewage treatment process.

Our plants use billions of microscopic organisms to digest and break down sewage to produce recycled water. Biosolids are made up of these excess microbes, plus indigestible solids such as sand.

Treated biosolids make excellent fertiliser as they are organic and nutrient-rich.

Septic tanks

Not everyone in Barwon Water's service region is connected to the sewerage system. Some customers have septic tanks to collect their sewage.

Barwon Water does not manage or regulate septic tanks (it is a local council function) but do treat septic waste. Contractors pump out septic tanks and deliver sewage to the reclamation plants for treatment.

The recycled water we produce

Recycled water is wastewater that has been treated and disinfected to a safe standard for beneficial reuse.

All of Barwon Water's water reclamation plants produce recycled water.

Recycled water is classified into different classes (A, B and C), depending on its treatment level and reuse opportunities.

The following table shows what each class of recycled water can be used for.

Recycled water production and use is regulated by the Environment Protection Authority. In addition, the Department of Health and Human Services must also endorse Class A recycled water use.

Recycled water uses

Class	Irrigation of non-food crops (e.g. turf, timber or flowers)	Irrigation of food crops (e.g. grapes and tomatoes)	Irrigation of sporting grounds (e.g. golf courses, football and cricket ovals)	Livestock watering (e.g. drinking, grazing and wash down)	Human contact (e.g. car washing, toilet flushing and garden watering)
C	✓	✓	✓	✗	✗
B	✓	✓	✓	✓	✗
A	✓	✓	✓	✓	✓

There are two key factors used to determine end uses for recycled water:

- microbiological quality (health standard)
- salinity.

Class C recycled water has a microbiological quality suitable for irrigation of non-food crops and turf. It generally has high salinity levels and therefore only suits salt-tolerant crops.

Class A recycled water has a microbiological quality suitable for non-drinking domestic use. Class A recycled water produced by Barwon Water is relatively low in salinity.

Class C recycled water can be blended with Class A recycled water to reduce its salinity and increase the range of crops it can irrigate.

Barwon Water currently recycles around 25 per cent of wastewater discharged into its sewerage systems. This equates nearly 20 per cent of Barwon Water's total water demand.

Around 1,400 megalitres of Class A recycled water is produced annually at the Northern Water Plant for reuse at the Viva Refinery in North Geelong. This equates to six per cent of the total amount of water supplied to customers each year.

Class A recycled water can be supplied from the Black Rock Recycled Water Plant to new residential developments in Armstrong Creek and Torquay North (via dual pipe) for garden watering, car washing and toilet flushing.

The amount of recycled water being used for garden watering, car washing and toilet flushing in these developments is lower than expected. This is due to smaller block sizes, larger houses, drought tolerant gardens and water efficient toilets. The current amount of water needed is about 200 megalitres, or one per cent of the total amount of water supplied to customers annually. By 2023, this is expected to increase to three per cent.

Close to 2,000 megalitres of Class C recycled water is used each year, predominantly by agricultural customers.

The level of service we provide

Service standards are performance measures and targets that drive the operation of Barwon Water's business. These standards are in place to ensure a high level of service to customers.

An example of a current service standard is unplanned water supply interruptions. An unplanned water supply interruption occurs when water supplied to a customer's property is disconnected without prior warning. Around 650 unplanned water supply interruptions occur each year, affecting less than 15 per cent of customers.

The performance measure and target for this standard are described in the table below.

Unplanned water supply interruption

Performance measure	Target
Interruptions restored within five hours	97 per cent of the time
Customers experiencing more than five interruptions in the year	No more than one customer

Barwon Water aims for 97 per cent of customers who experience an unplanned interruption to have their water supply restored within five hours. This means 635 of the 650 unplanned water supply interruptions are restored within five hours.

Barwon Water also aims for individual customers to experience no more than five unplanned water supply interruptions in a given year. However, this target is not met for an average of 25 customers each year.

Unforeseen circumstances are the most common reason targets are not met. Factors can include extreme dry/wet weather conditions or large and damaging tree root systems that make repairs difficult. An unusually high number of network faults in peak periods can result in overstretched resources.

A full list of service standards for the past two pricing periods (2008-2013 and 2013-2018) is provided in the table overleaf.

Failing to meet targets

Barwon Water aims to always meet the targets for the service standards it sets.

However, if targets for certain service standards are not met, affected customers will be compensated with a rebate that is applied as a credit to the customer's bill.

These are known as Guaranteed Service Levels. In 2016/17, they include:

- \$78 rebate if there are more than five unplanned water supply interruptions in any 12 month period. None of these rebates needed to be paid in 2015/16
- \$78 rebate if there are more than three unplanned sewerage service interruptions in any 12 month period. One of these rebates needed to be paid in 2015/16.

- \$600 rebate if there are more than two spills from the sewerage system onto a customer's property in any 12 month period. Three of these rebates needed to be paid in 2015/16.
- \$360 rebate if Barwon Water restricts a customer's water supply or takes legal action before making reasonable efforts to contact and provide information about services available for customers experiencing difficulties paying their bill. None of these rebates needed to be paid in 2015/16.

Appendix A shows a comparison of Guaranteed Service Level performance across Victoria, including the target for each service level for different water businesses and the payment for not meeting a service level.

		2008 Target	2013 Target
No	Water network reliability and efficiency		
1	Unplanned water supply interruptions (per 100km main)	30.0	25.0
2	Average minutes to respond to bursts and leaks – (priority 1)	35.0	26.7
3	Average minutes taken to attend bursts and leaks (priority 2)	68.0	43.4
4	Average minutes taken to attend bursts and leaks (priority 3)	360	226
5	Unplanned water supply interruptions restored within 5 hours (per cent)	96.5	96.5
6	Planned water supply interruptions restored within 5 hours (per cent)	80.0	85.0
7	Average unplanned customer minutes off water supply (minutes per customer)	20.0	20.0
8	Average planned customer minutes off water supply (minutes per customer)	46.2	42.0
9	Average unplanned frequency of water supply interruptions (per customer)	0.2	0.16
10	Average planned frequency of water supply interruptions (per Customer)	0.22	0.22
11	Average duration of unplanned water supply interruptions (minutes)	100	125
12	Average duration of planned water supply interruptions (minutes)	210	210
13	Customers experiencing more than 5 unplanned water supply interruptions in the year	150	1
14	Unaccounted for Water (per cent)	9.0%	9.0%
No	Sewerage network reliability and efficiency		
15	Sewer blockages per 100km of Sewer Main (per 100km main)	43.0	37.0
16	Average time to attend sewer spills and blockages (minutes from notification)	80.0	52.5
17	Average time to rectify a sewer blockage (minutes from notification)	250	178
18	Spills contained within 5 hours (per cent of Spills) (Priority 1)	100	100
19	Customers receiving more than 3 sewer blockages in the year (GSL)	3	1
No	Customer service		
20	Complaints to Energy Water Ombudsman Victoria (EWOV) (per 1000 customers)	0.50	0.65
21	Telephone calls answered within 30 seconds (accounts line) (% of calls)	95.0	90.0



West Barwon Reservoir.

No	Service standard	Measure	2008 Target	2013 Target	Rationale	Source of additional service level
22	Biosolid mass reused (tonne)	Tonnes reused	100% reuse	100% reused	Biosolids is managed in accordance with Environment Protection (Industrial Waste Resource) regulations 2009 and the Sludge Management Plan agreed with the EPA.	EPA
23	Compliance with EPA licence parameters (%)	Compliance	100%	100%	The business aims to always comply with the EPA licences.	EPA
24	Percent population receiving water meeting E.Coli standards	Compliance	100%	100 %	The business aims to always comply with the Department of Health and Human Services (DHHS) licences.	DHHS
25	Percent of population receiving drinking water meeting turbidity standards	Compliance	100%	100 %	The business aims to always comply with DHHS parameters.	DHHS
26	Percent of population receiving drinking water meeting disinfection by-products standards	Compliance	100%	100 %	The business aims to always comply with DHHS parameters.	DHHS

The security of our water supply

Barwon Water's water supply systems rely on rainfall runoff into rivers or reservoirs, known as surface water resources, to some extent. This means water supply security depends on how much it rains.

If rainfall is below average, there is less surface water available. Water restrictions or water carting may be necessary to balance customer water usage against available water supplies.

Some towns have access to alternative water sources such as groundwater and water from Melbourne if needed. For example, water was brought from Melbourne to Geelong for the first time in 2016 following the dry summer of 2015-16.

However, some towns rely solely on local surface water resources. If rainfall is below average, there is less surface water to draw upon. For example, Lorne customers were on Stage 3 restrictions for around a month and water was carted to the town from the Geelong system for around two weeks following the dry summer of 2015-16.

Uncertainties in our future climate

Despite the advances that have been made in climate science, the future of our climate remains uncertain.

Understanding the links between seasonal climate variability and longer term climate changes due to global warming is a particular challenge. Whilst some general trends are relatively clear, major uncertainties remain about how:

- much greenhouse gas will be emitted globally
- the global climate system will respond to these emissions
- changes to the global climate system will manifest at the regional and local level, such as the effect on rainfall and runoff in our catchments.

The advice of scientific experts from the CSIRO and Department of Environment, Land, Water and Planning (DELWP) is that there is no "most likely" scenario that can be specified for future climate in Victoria. That is why Barwon Water needs to plan for, and be prepared for, a range of plausible climate futures.

Commitment to water security

Barwon Water manages and monitors its water supply systems to maximise water security for customers.

Barwon Water's operational commitment to water security is defined as:



Barwon Water will not run out of water in a drought. We may need to be on water restrictions in a dry period, but we plan for this to occur less than 5 per cent of the time.

Barwon Water tests the ability of its water supply systems to satisfy this commitment over the long-term (50 years). These tests are done using computer models that show how the water supply system would perform under various scenarios. The aim of these tests is to determine whether customer demand could be met under a range of possible futures.

Different scenarios test the potential impact of climate variability and climate change. Population growth, which increases customer demand, is another factor considered.

Depending on the scenarios being considered, the results could show that water restrictions may be necessary for one month in every 20 months or three months in every five years. Either of these outcomes is within Barwon Water's commitment to ensure water restrictions occur less than five per cent of the time.

Barwon Water ensures its scenarios reflect the very latest climate and population data generated by the Victorian Government. However, there is no guarantee that the future will be exactly like any of these scenarios. That is why Barwon Water is committed to maintaining a range of diverse and resilient water sources, to be prepared for a range of climate futures.

Water security planning

The water security position of each water supply systems is continuously monitored to ensure action can be taken when needed.

Barwon Water is currently developing its Urban Water Strategy. This 50-year plan sets out long-term actions to ensure sufficient drinking water supplies across the service region.

The Urban Water Strategy aims to deliver secure water supplies to support resilient and liveable communities, under a range of climate scenarios.

Each year, an Annual Water Outlook is published to provide a high-level overview of each system's capacity to provide sufficient water security in the short-term.

The Annual Water Outlook helps determine if any long-term actions to secure water supplies need to be brought forward. If required, actions and their timing can be revised to respond to changing conditions.

Long-term plans are reviewed and updated every five years. This is to incorporate newer and better information about potential impacts of climate change, population growth and urban development. The Urban Water Strategy is due to be completed by the end of March, 2017. It is an update of the Water Supply Demand Strategy that was completed in 2012. The next version of the Urban Water Strategy will be completed in 2022.

Current water security

In the short-term, the Annual Water Outlook, published by Barwon Water in December 2016, indicates good rainfall over the region during the year means water restrictions will not be necessary in the Geelong system in the next 12 months. There is a very low likelihood of water restrictions in any other towns.

In the long-term, findings from the Urban Water Strategy indicate the biggest water supply system, which services Geelong and surrounding areas, is secure until at least 2035.

Action may be necessary sooner to ensure long-term water security for Lorne and Apollo Bay.

There is no need to take significant action before 2022, beyond those already underway, such as Colac water supply upgrade. This allows time to consider appropriate options for the future, in consultation with customers, before any action is necessary.

The table below explains water security for each water supply systems under different climate change and population growth scenarios.

Water supply system	Secure until (based on median growth and median climate change)	Secure until (based on high growth and high climate change)	Why?
Greater Geelong	2054	2035	Major water security upgrades over the past 10 years, including the Anglesea Borefield, Melbourne to Geelong Pipeline, Northern Water and Black Rock recycled water plants.
Colac	2054	2035	Connection to the greater Geelong water supply system in late 2017.
Lorne	2043	2027	Typically a high yielding catchment but a small reservoir that can be vulnerable to seasonal climate variability.
Apollo Bay	2032	2024	Typically a high yielding catchment but a small reservoir that can be vulnerable to seasonal climate variability.

Community services

Barwon Water's services extend beyond providing water to taps and taking away sewage.

We provide customers with advice, support and education services to help save water and pay bills.

In addition, we work with urban designers, energy agencies, developers, health services, transport providers and other sectors to ensure our communities are vibrant and liveable.

Helping vulnerable customers

Barwon Water offers several options for customers experiencing social or financial hardship. The following options are available to help customers pay their Barwon Water bill:

One-off payment extensions

Customers can request a one-off extension on the due date of their bill to assist with any short-term financial difficulties.

Payment plan

A payment plan can be arranged to allow customers to pay by regular instalments. We work with customers to create a plan based on how much water they use and what they can afford to pay.

Centrepay

Customers can arrange to have part of their fortnightly Centrelink payments deducted to go towards payment of your water bill.

Concessions

Customers with a Pensioner Concession Card, Gold Card or Health Care Card may be entitled to a reduction on their Barwon Water bill.

Utility relief grant scheme

Customers who have had an unexpected event/expense or loss of income can apply through Barwon Water for a grant to help paying their water bill.

Medical conditions and life support machines

Customers with severe medical conditions and/or life support machines that require high water use, such as dialysis machines, may be eligible for additional discounts.

Water leak allowances

Customers who experience a water leak of an undetectable nature (such as an underground pipe leak), which causes a higher than normal bill, may be eligible for a refund on their charges depending on the exact nature of the leak and how it was repaired.

Water and sewerage connection scheme

A grant is available to eligible customers who Barwon Water has requested to connect to new water or sewerage services under the Country Towns Water Supply and Sewerage Program. This grant may help homeowners with concession cards experiencing financial hardship to pay plumbing costs to connect their home to the system.

Relief from debt collection action

Customers who have engaged with our hardship officers and advised they need assistance with their bill will be exempt from debt collection activity. As long as a customer is meeting the terms of their assistance arrangement, they are exempt from legal action, having their water supply restricted and any debt collection costs.

Helping customers save water

Barwon Water helps customers save water and encourages water efficient behaviour by:

- promoting the Permanent Water Saving Plan, which sets out simple, common-sense rules that apply every day of the year to conserve water now and for the future
- providing basic water saving tips on our website
- enabling customers to exchange old showerheads for ones that are more water efficient
- responding to general customer enquiries regarding water efficiency
- providing client support and data loggers on water meters for large water using business customers.

Educating and supporting the community

Barwon Water plays an active role in the local community. Our comprehensive education program encourages water awareness and conservation.

Guided tours of facilities help school and community groups learn about the water cycle and the process of capturing and treating water and sewage.

We run a community nursery in partnership with Karingal and sponsor a range of local community groups, charities and causes.

Recognising Aboriginal values of water

Barwon Water works closely with Traditional Owners in its region to ensure cultural heritage matters are appropriately managed in the construction and maintenance of its infrastructure.

Barwon Water also recognises the cultural value that water has for Aboriginal people and is working to ensure these values are incorporated in water resource planning and management. Barwon Water has started conversations with Traditional Owners across its region about working together on strategic projects and facilitating increased Aboriginal participation in water resource management.

Creating liveable communities

Our region includes some of the fastest-growing urban areas in Australia.

Geelong is a vibrant and colourful centre for business, tourism and investment, and the gateway to the beautiful Surf Coast and Bellarine Peninsula, making the region a very desirable place to live.

Barwon Water takes a lead role in enhancing the liveability of cities and towns in our service region through collaboration and sharing of strategic objectives with government agencies and other stakeholders. This includes:

- leading and engaging regional partners and the community to deliver broad liveability outcomes, including healthy urban landscapes and places, healthy and valued waterways and effective wastewater management
- greening and cooling spaces in the region's cities and towns and prioritising the availability of water to key recreational facilities

Integrated water cycle management

Integrated water cycle management promotes collaborative planning and management of water, land and related services to maximise economic, social and ecological benefits to the community.

Integrated water cycle management supports 'green and blue infrastructure' such as parks, wetlands, streams and urban vegetation alongside water supply. It can deliver multiple benefits, including flood mitigation, urban cooling, clean air, healthy streams and increased biodiversity, as well as contributing to recreation and amenity.

Barwon Water facilitates the multi-agency Barwon Region Integrated Water Cycle Management Network. Established five years ago, the network has been exploring and resolving practical issues around applying integrated water cycle management in the Barwon region.

Stormwater

Stormwater is rainwater that falls on roads, rooftops and other surfaces. Stormwater does not include rain harvested in water supply catchments.

Stormwater is typically captured in gutters, downpipes, grates and drains. It travels through underground pipes to creeks or rivers and then flows out to the sea.



Education Officer planting trees with local primary school students.

The stormwater system is separate from water and sewerage systems. Unlike sewage, stormwater does not currently undergo any treatment process.

In our region, stormwater management is the responsibility of local councils, not Barwon Water.

However, as part of an integrated approach to water cycle management, we are working with local government and industry to explore opportunities and solutions for stormwater capture, treatment and reuse.

Providing recreational opportunities

Barwon Water is committed to recognising recreational values and delivering shared benefits through its water and waterway planning and management and its other operational activities.

Barwon Water supports a range of recreation activities at some reservoirs and land holdings including bush walking, birdwatching, bike riding sightseeing and picnicking.

Many Barwon Water reservoirs support healthy populations of fish. Fishing is permitted within designated sections of:

- West Barwon Reservoir
- Wurdee Boluc Reservoir
- Bostock Reservoir
- Upper Stony Creek Reservoir No. 1
- Bolwarra Weir.

Following the decision to no longer use the Painkalac Reservoir as a drinking water source, Barwon Water decided to open the reservoir for recreational uses including bush walking, bike riding, bird watching and recreational fishing. The reservoir will open for community use in 2017.

There are a number of recreational activities on Barwon Water land including the existing bike track within the Black Rock environmental precinct and the future mountain bike trail network at Forrest and shared use path along the Highton pipeline reserve.

Acting on climate change

Barwon Water will deliver climate change action by ensuring, through adaptation and mitigation, the corporation is climate change resilient for the future. Our work includes:

- developing capacity to generate, test and implement ideas to meet climate change challenges and ensure business resilience
- maintaining a diverse and resilient water source portfolio to ensure water security and meet community expectations
- targeting 100 per cent renewable energy by 2025 with a longer term objective of carbon neutrality.

Our renewable energy target

Barwon Water's commitment to renewable energy use is:



Targeting 100 per cent renewable energy by 2025 with a longer term objective of carbon neutrality.

The water sector is responsible for the largest proportion of carbon emissions generated by the Victorian Government, contributing almost 25 per cent of emissions in 2014-15.

The Victorian Government has set a new long-term direction for managing Victoria's water resources in Water for Victoria. This includes a long-term target of net-zero greenhouse gas emissions from Victoria by 2050. The plan requires:

- water corporations to pledge to government a pathway for net-zero emissions; this will be adopted in the Statement of Obligations by July 2017
- water corporations to adopt renewable energy use targets of at least 25 per cent by 2020 and 40 per cent by 2025.

Barwon Water's renewable energy targets align with government objectives and highlight the corporation's desire to demonstrate leadership among the water industry and the region.

Protecting waterway and catchment health

Barwon Water works with catchment management authorities, landowners and other stakeholders to protect the region's waterways and catchments. We support community values through enhanced engagement, partnerships and

shared planning initiatives. This includes:

- investing in on-ground work and environmental management of local priority waterways
- helping regional stakeholders manage catchment and waterway health
- protecting and enhancing water supply catchments for current and future generations.

Barwon Water works closely with the Victorian Environmental Water Holder to ensure releases from Barwon Water's share of drinking water in the Lal Lal Reservoir are timed to maximise environmental benefits to the West Moorabool River while this water is travelling to the Moorabool Water Treatment Plant.

In 2015, Barwon Water delivered a 2,500 megalitre environmental entitlement to the Moorabool River (in partnership with Central Highlands Water) and is currently working to deliver a 1,000 megalitre environmental entitlement to the Barwon River in accordance with Victorian Government policy.

Like all water corporations, Barwon Water contributes to the Environmental Contribution Levy (ECL) that was established by the Victorian Government in 2004 to safeguard and support sustainable management of Victoria's water resources.

An amount equalling five per cent of Barwon Water's total revenue was provided to the ECL in 2015 - 16. On average, over \$6 million has been contributed annually over the last five years. The money is used by the Victorian Government to fund priority water projects across the state.

Supporting regional economic growth

Barwon Water is committed to supporting jobs, economic growth and sustainable agriculture across its region.

This commitment is delivered through the provision of safe, secure and affordable water, recycled water and sewerage services.

Barwon Water generates investment and creates jobs through its capital infrastructure program (on average Barwon Water invests \$70 million per year in infrastructure), including the new Barwon Water corporate head office building, 70 per cent of which is being completed by local trades.

Barwon Water partners with regional stakeholders to support agricultural, industrial and commercial development opportunities. Recently, Barwon Water collaborated with the Golden Plains Shire to construct a new water pipeline which will support development in Lethbridge and the surrounding region. The new pipeline will transfer drinking water from the Lethbridge tank to properties in the area, enhancing intensive agriculture development.

How do we charge our customers?

Setting affordable prices

Barwon Water is committed to providing the community and industry with affordable water and sewerage services while maintaining service excellence.

Every five years, Barwon Water calculates the prices to be paid for the water, sewerage and services provided to customers.

In calculating prices, Barwon Water considers:

- how much water customers in our service area are expected to use
- how many houses and businesses will be connected to the sewerage system
- how much it will cost to efficiently service all customers.

Prices are set in a way that Barwon Water does not make any profit¹, but rather breaks even over those five years.

The price submission process

A price submission is a five-year business plan that outlines:

- the service standards provided to customers
- capital and operating spending to deliver these services and meet regulatory obligations
- the prices customers will pay in return

All water corporations are required to submit a price submission to the Essential Services Commission on a regular basis.

The Essential Services Commission acts as an independent “umpire”, established by the Victorian Government, to regulate providers of essential services such as water, gas and electricity so that their prices are fair and reasonable for customers.

Independent economic regulation is especially important for providers of water and sewerage services, like Barwon Water, because customers don’t have a choice about who provides these services to them.

Barwon Water’s next price submission, covering the five-year period from 2018-19 to 2023-24, is due to the ESC on September 29, 2017.

New prices will come into effect on July 1, 2018.

Understanding your bill

Residential bill charges

A typical bill for a residential customer is separated into three components. These components, and the corresponding prices for 2016/17, are:

- **Water volume charge:** \$2.2481 per kilolitre. This is a usage charge. The amount charged varies depending on the amount of water used by the customer. The same unit price (\$2.2481 per kilolitre) applies to all customers.
- **Water service charge:** \$42.71 per quarter. This is a fixed charge. The amount charged the same every quarter (three months) for all customers, regardless of how much water is used.
- **Sewerage service charge:** \$137.59 per quarter. This is a fixed charge. The amount charged is the same every quarter (three months) for all customers, regardless of how much sewage is discharged. There is no usage (or variable) component of the sewerage charge as the discharge of sewage is not metered.

Residential customers in new dual-pipe subdivisions in Armstrong Creek and Torquay North (areas supplied with recycled water via a second pipe) also receive a volume charge for Class A recycled water. The amount charged varies depending on the amount of Class A recycled water used. The price is set at 80 per cent of the water volume charge (\$1.7984 per kilolitre in 2016-17).

Together, water and sewerage service charges make up around 70 per cent of the bill for most customers. This is because almost 90 per cent of Barwon Water’s costs are fixed, meaning they do not vary regardless of how much customers use our systems.

¹ There is a 4.0 per cent to 4.5 per cent return on Barwon Water’s assets recovered through Barwon Water’s tariffs to cover borrowing costs.

Non-residential (business) bill charges

A typical Barwon Water bill for a non-residential (business) customer is separated into four components. These components, and the corresponding prices as of 2016-17 for each component, are:

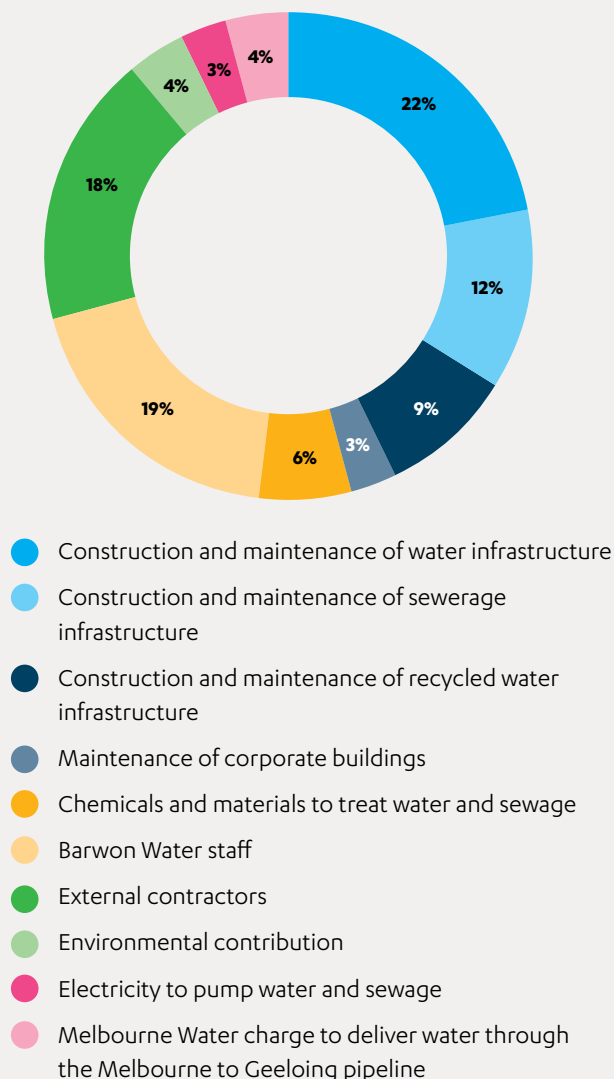
- **Water volume charge:** \$2.2481 per kilolitre. This is a usage charge. The amount charged varies depending on the amount of water used by the business.
- **Water service charge:** \$42.71 per quarter. This is a fixed charge. The amount charged is the same every quarter (three months), regardless of how much water is used.
- **Sewage volume charge:** \$1.8684 per kilolitre. This is a usage charge. The amount charged is based on a percentage of the amount of water used by the business, depending on the business type.
- **Sewerage service charge:** \$83.25 per quarter. This is a fixed charge. The amount charged is the same every quarter, regardless of how much sewage is discharged.

Business customers in new dual-pipe subdivisions in Armstrong Creek and Torquay North also receive a volume charge Class A recycled water. It is based on the amount of Class A recycled water that they use. The amount charged varies depending on the amount of Class A recycled water used. The price is set at 80 per cent of the water volume charge (\$1.7984 per kilolitre in 2016-17)

Business customers may have additional charges for other services, such as a trade waste tariff or fire service fee.

How the revenue is spent

Each dollar from customer bills is spent in the following way:



Recycled water costs

Both Class A and Class C recycled water are costly and energy intensive to produce.

Class A recycled water is more than 10 times the cost of most commonly used drinking water sources. Class C is 2.5 times the cost of surface water.

Prices for Class A recycled water to residential customers in Armstrong Creek and Torquay North have been set at 80 per cent of the drinking water volume price (with no additional fixed charge for Class A recycled water) as:

- recycled water is part of an integrated water resource planning system. It is another option in the suite of water supply options, therefore, costs should be recovered in the same way as for all other water supply options.
- recycled water helps maintain the balance of supply and demand for our potable water resources by reducing demand. This benefits all customers, so all customers should contribute to the cost of producing recycled water.

Examples of household bills

A residential customer will pay an average of \$1,081* in the 2016-17 financial year. This figure is spread over four quarterly bills. It is based on an average annual household consumption of 160 kilolitres and the current tariff structure.

The average amount paid will depend on the level of consumption. The table below indicates how this changes for small, average and large households.

Household size	1 to 2 people	2 to 4 people	4 or more people
Water volume price	\$2.2481	\$2.2481	\$2.2481
Level of consumption	110kL per year	160kL per year	308kL per year
Water volume total cost	\$247	\$360	\$692
Water service charge price	\$171	\$171	\$171
Total water volume and service cost	\$418	\$531	\$863
Sewer fixed price	\$550	\$550	\$550
Total bill amount	\$969*	\$1,081*	\$1,414*

**Residential customers who pay a variable charge on their bill also received a \$90 government water rebate in 2016/17.

Appendix B shows a comparison of Victorian water businesses average customer bills in the 2015-16 financial year. These bills are based on the water businesses tariffs in that financial year as well as the average household consumption for each different water businesses region.

Charges for tenants, landlords and owner-occupiers

Owner-occupiers pay both usage and service charges.

Tenants with a separate meter pay the water volume charge only. Landlords pay the water and sewerage service charges.

In some cases, where tenants do not have separate meters (for instance, where a block of units share one water meter), the landlord pays all charges.

Examples of non-residential (business) bills

Business size (based on water use)	Small	Medium	Large
Water volume price	\$2.2481	\$2.2481	\$2.2481
Level of consumption	1,000 kl per year	3,000 kl per year	50,000 kl per year
Total water volume cost	\$2,248	\$6,743	\$112,405
Water service charge price	\$171	\$171	\$171
Total water volume and service cost	\$2,419	\$6,914	\$112,576
Sewerage volume price	\$1.87	\$1.87	\$1.87
Level of sewer discharge*	\$950 per year	\$2,850 per year	\$47,500 per year
Total sewerage volume cost	\$1,775	\$5,324	\$88,747
Sewerage service charge price	\$333	\$333	\$333
Total sewerage discharge and service cost	\$2,108	\$5,657	\$89,080
Total bill amount	\$4,527	\$12,571	\$201,656

*Using a 95% sewerage discharge factor

Future prices

Prices have not yet been set for 2018 onwards. Barwon Water aims to deliver the most efficient services and prices for customers.

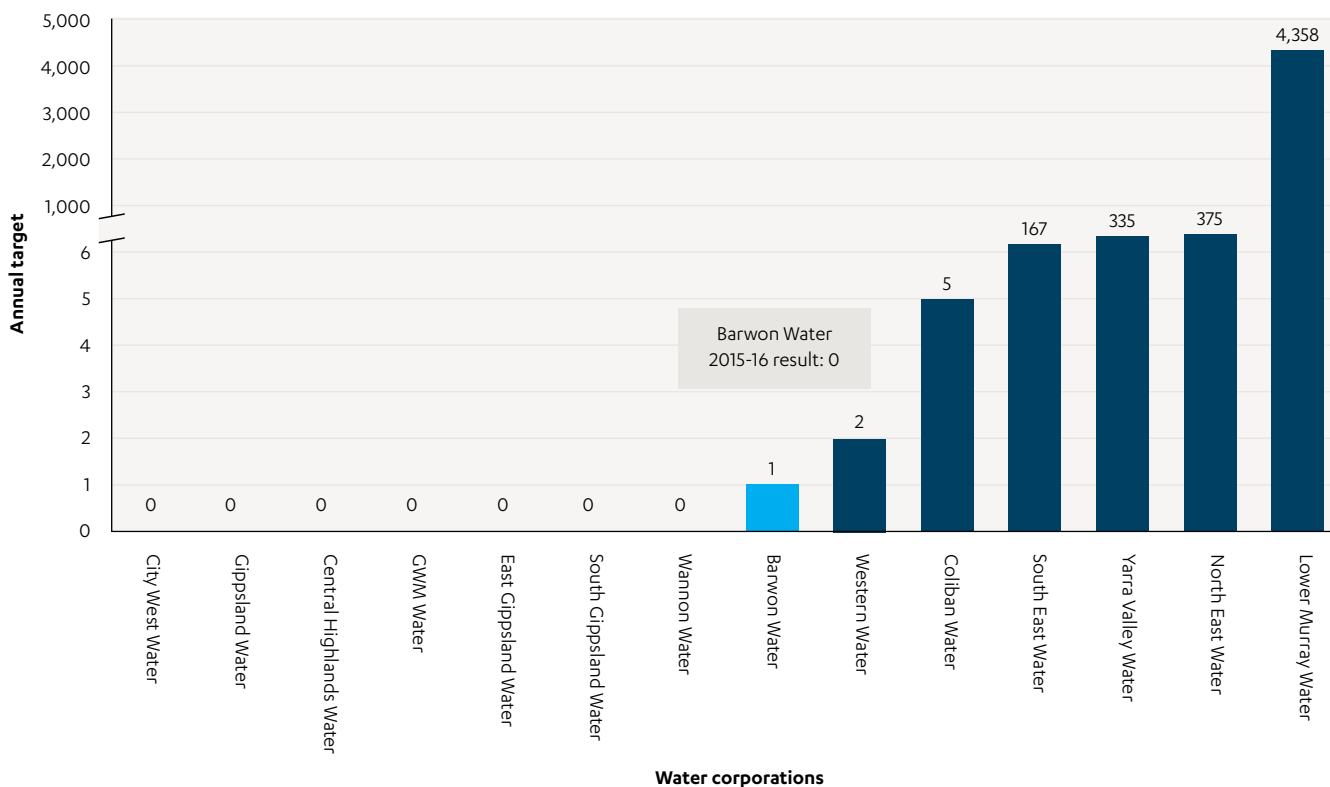
Barwon Water is currently consulting with the community on what they value most about water and sewerage services. This feedback will be used to shape the 2018 Price Submission, which will set out future services and prices.

Appendices

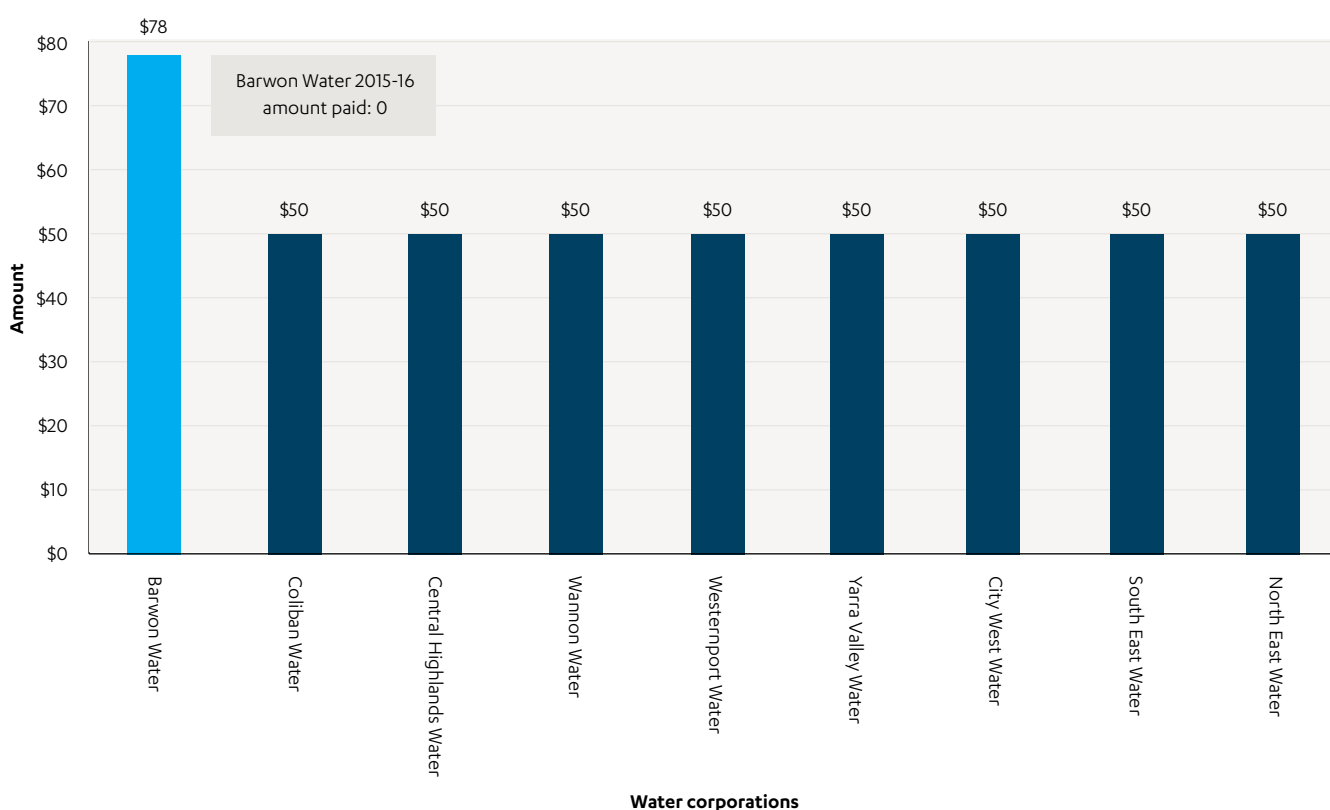
Appendix A – Comparison of guaranteed service level performance across Victoria

Customers experiencing more than five unplanned water supply interruptions in the year

Annual KPI target and latest Barwon Water result

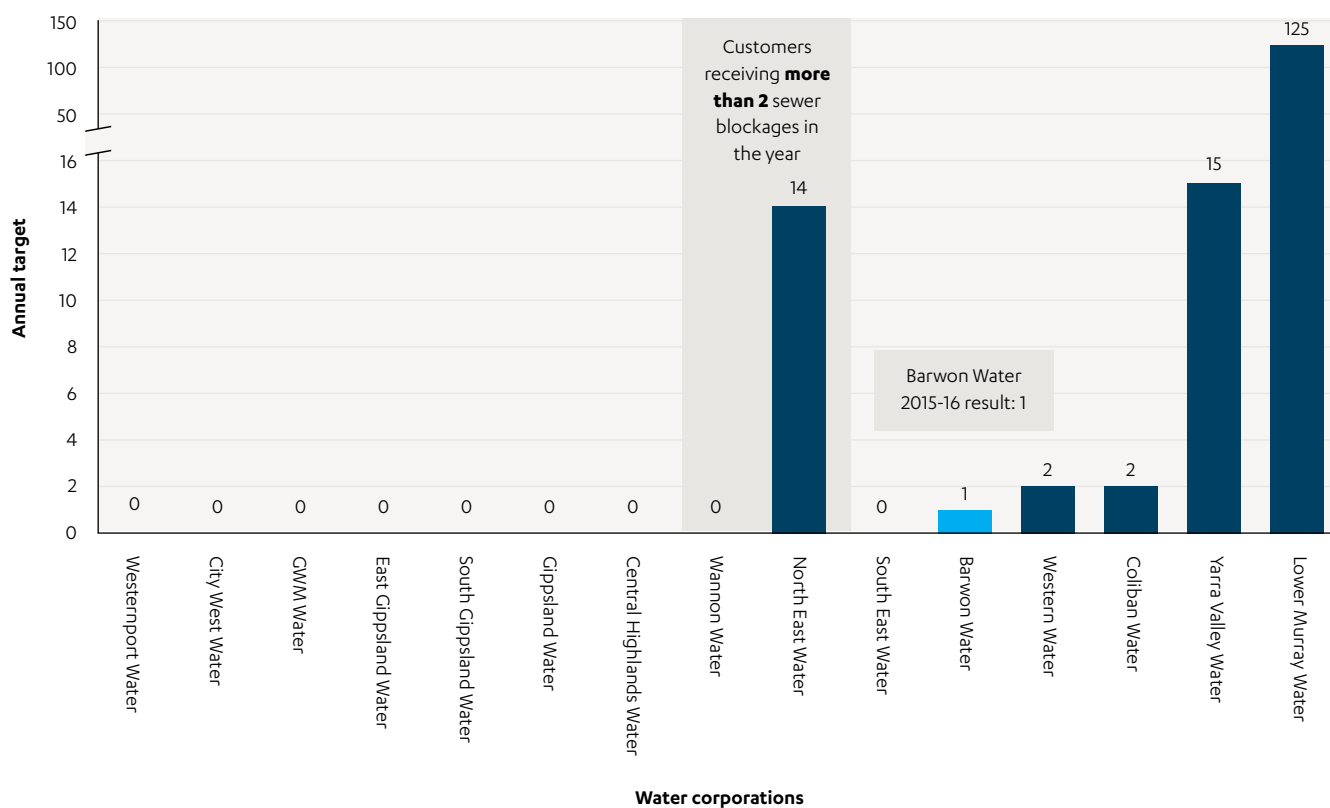


Guaranteed Service Level payment if target not met

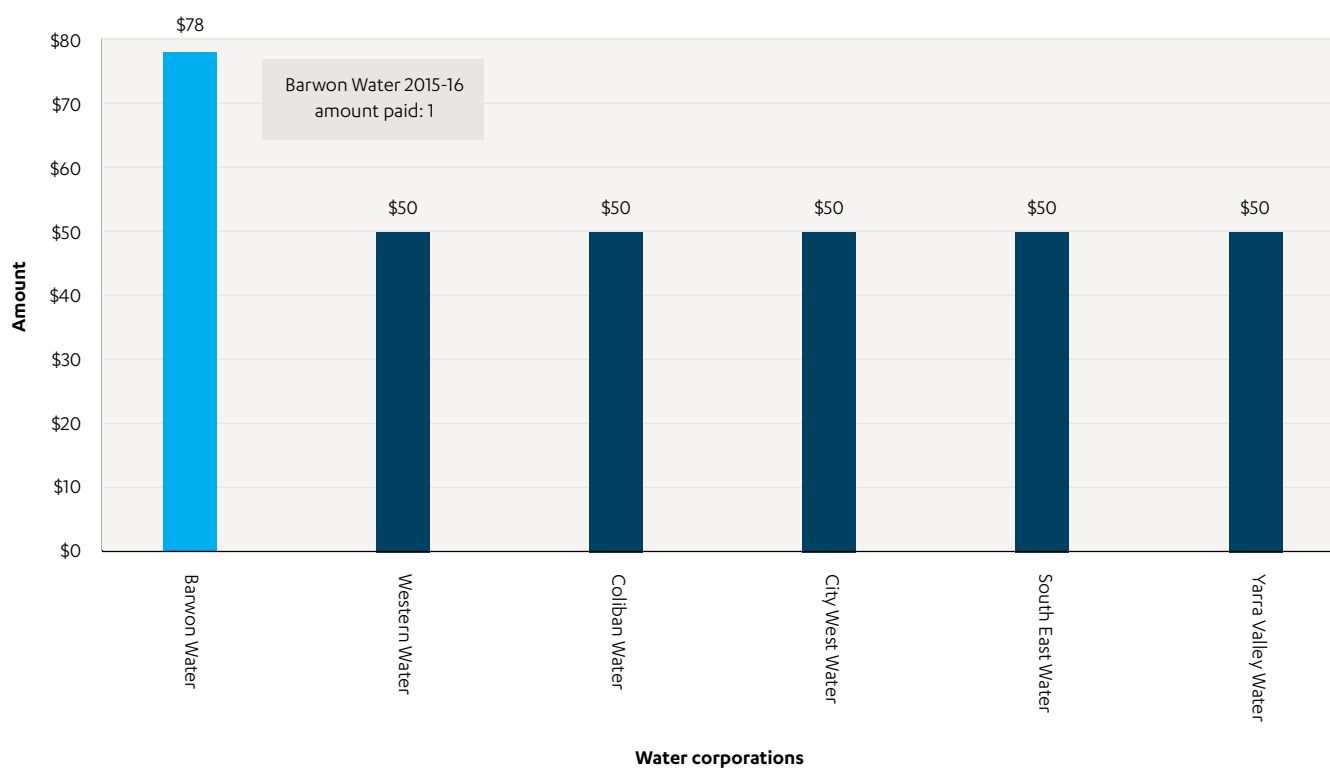


Customers receiving more than three unplanned sewer blockages in the year

Annual KPI target and latest Barwon Water result



GSL payment if target not met



No more than two sewer spills on a customer's property per year

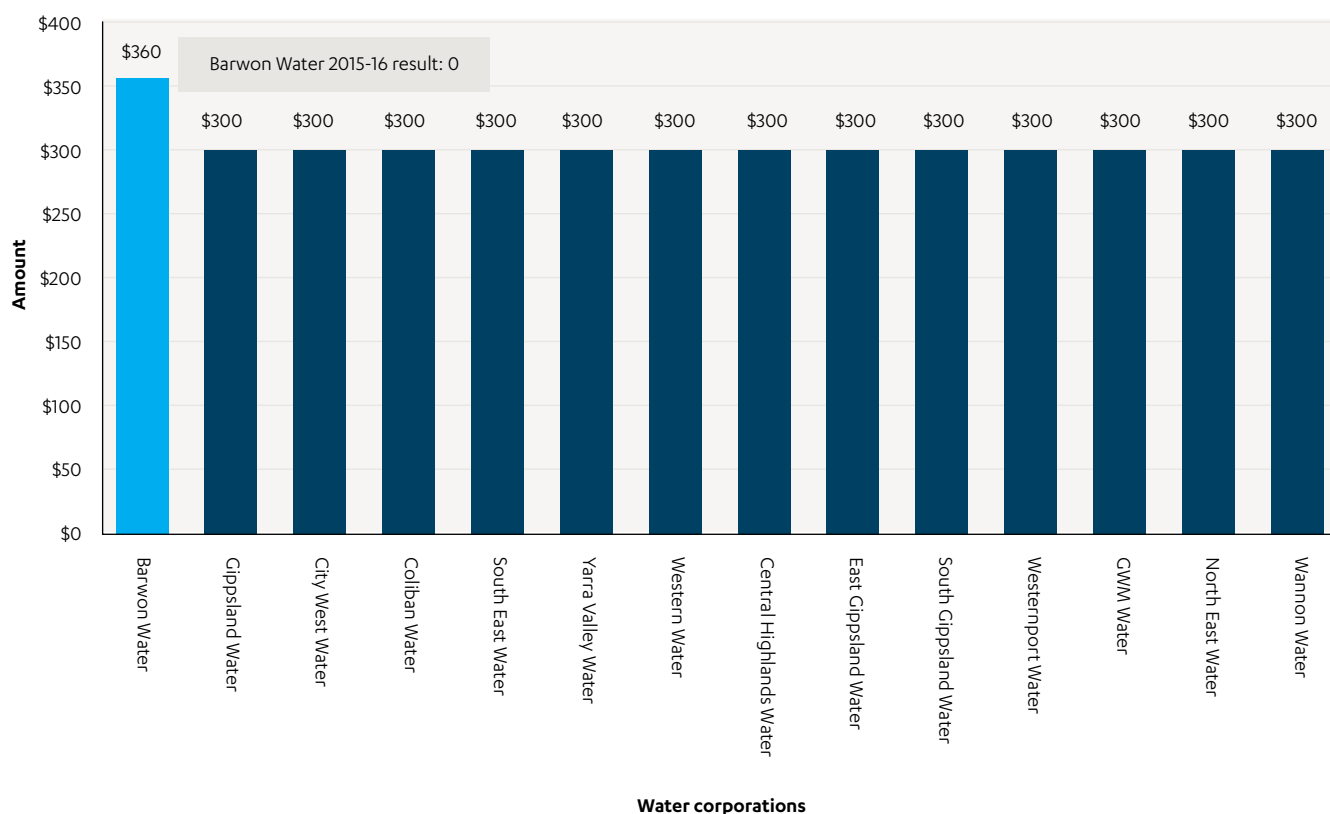
No other Victorian water business has this as a guaranteed service level. It is unique to Barwon Water. Barwon Water's result in 2015/16 was three.

The guaranteed service level payment if the target not met is \$600.

Restricting water supply or takes legal action prior to making reasonable efforts to contact

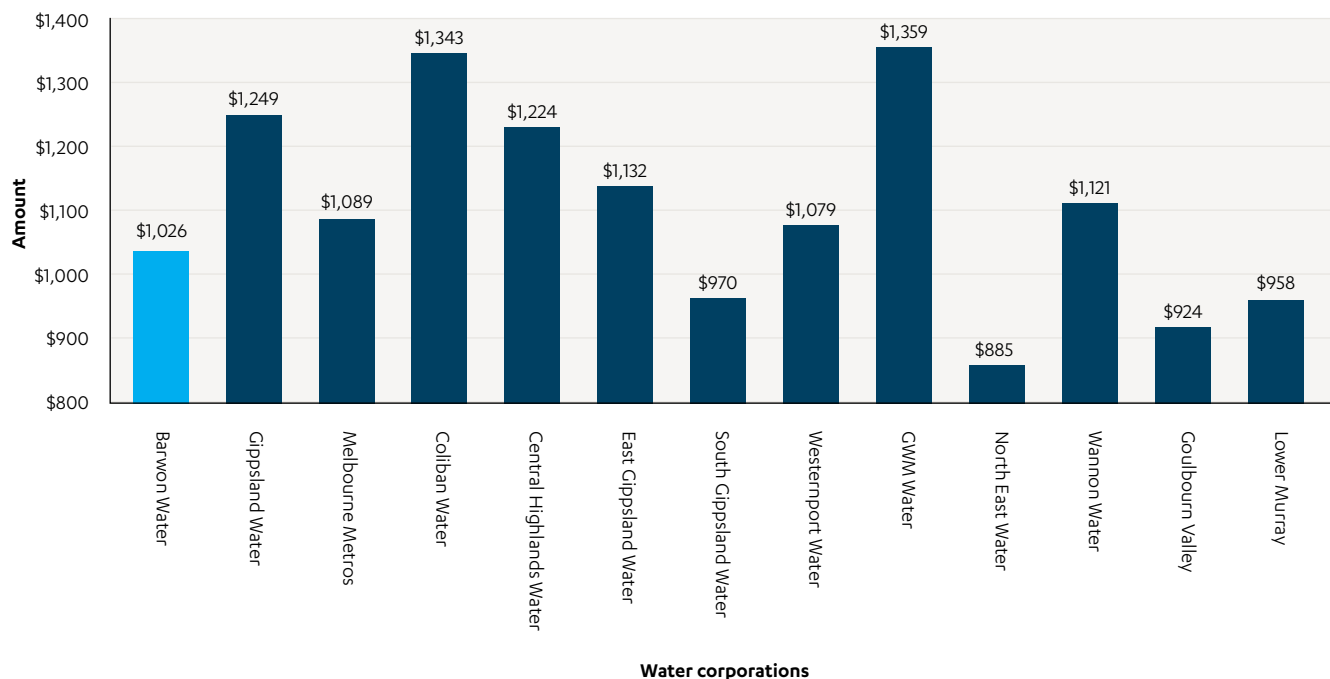
The target for each water business for this measure is zero.

GSL payment value if target not met

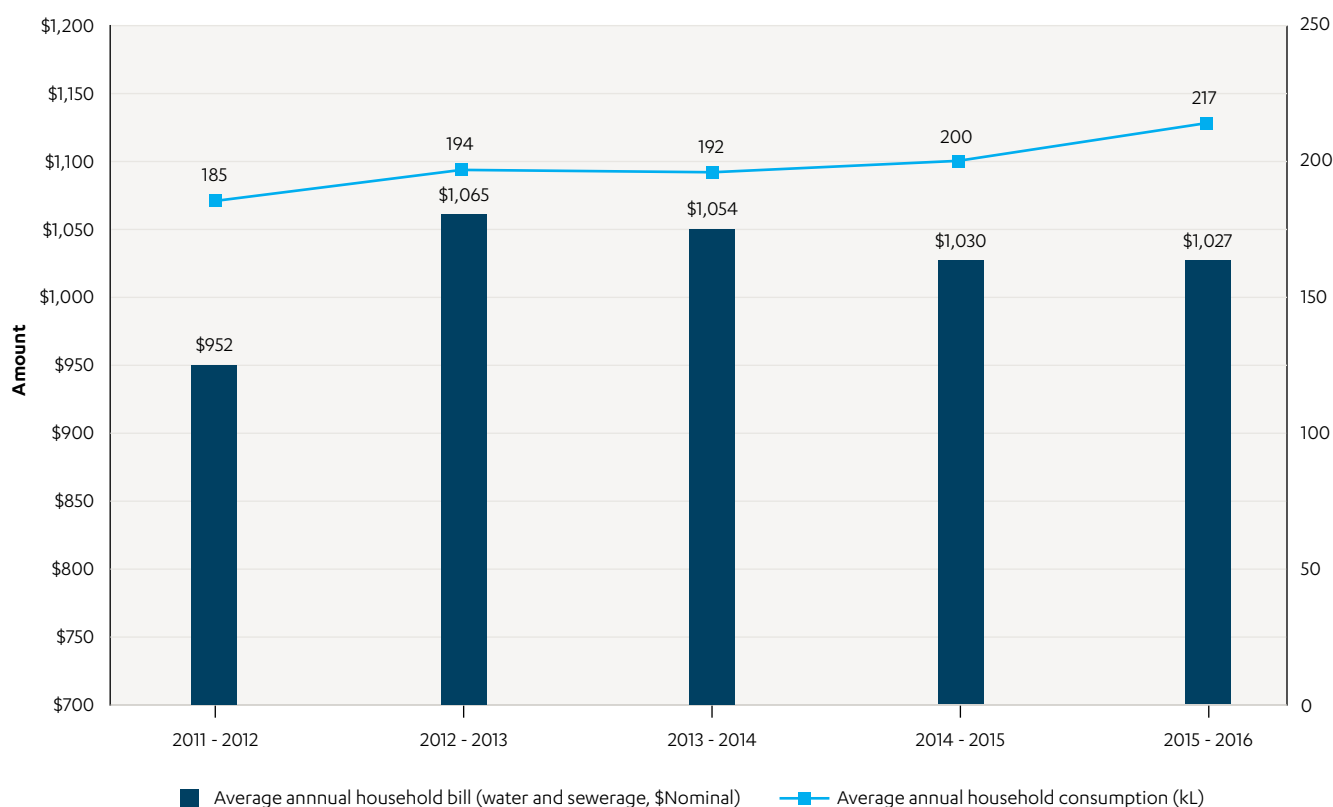


Appendix B – Average residential customer water and sewerage bills

Current prices for 2015-16



Barwon Water average annual household bill





For further information

For further information on the
2018 Price Submission, please visit:

www.yoursay.barwonwater.vic.gov.au
or telephone 1300 656 007 or
email info@barwonwater.vic.gov.au



Your Say Our Future