

Water Forever

Whatever the Weather

A 10-year plan for Western Australia

| June 2012



A 10-year plan

As Western Australia continues to grow strongly, water and wastewater services must keep pace. Water is the lifeblood of our communities, industry, agriculture and the environment.



We are faced with a drying climate that has depleted our dam storages and shallow groundwater reserves in southern parts of the state so we need to re-think the way we develop new water sources to make them more resilient to the vagaries of the weather.

That is why our planning to meet increasing and competing demands for water and growing needs for wastewater services looks well into the future.

Sound planning also enables the Water Corporation to make prudent capital investment decisions in line with State Government growth priorities.

The Corporation uses about 15 per cent of Western Australia's allocated water resources to provide water and wastewater services to over 2 million people. This plan focuses on the communities,

businesses and towns to which we provide water and wastewater services. It does not include agricultural, mining and industrial water users that independently access water resources managed by the Department of Water.

Our 10-year plan outlines the current state of our water supplies and wastewater systems, and the drivers of future demand in each region. It also discusses options for future new sources – where our water may come from until 2022 and beyond.

Western Australia is a dynamic state and new options, technologies and solutions will emerge over time. We will continue to work with and listen to the community and our customers as we progress.

Our commitment

The Water Corporation is firmly committed to providing reliable and cost-effective water and wastewater services to its current and future customers across the vast state of Western Australia.



We must do this sustainably, for the benefit and wellbeing of the communities we service and the environment.

This particularly applies to the fast-growing regional areas where many of our new customers are located, attracted by State Government initiatives such as Royalties for Regions, Pilbara Cities and SuperTowns, and the resources and agricultural industries.

The ability to supply adequate water and wastewater services is fundamental to supporting a growing state.

All suppliers of water in Western Australia, like the Water Corporation, are experiencing unprecedented change as the water industry meets the challenges of substantially reduced rainfall and inflows to dams and increasingly limited groundwater resources. It is now critical that we plan prudently, yet with vision, to ensure customers' water supplies are maintained.

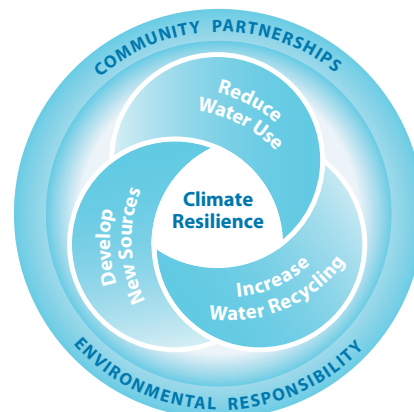
In southern areas we are turning more to sources that are independent of the climate, while we are committed to increasing recycling of water throughout the state for community parks and gardens, industry and perhaps to replenish groundwater aquifers. At the same time we are constantly improving our efforts to increase the efficient use of the water we have. There is no place for waste.

This plan helps to set the scene and points to the ways we can work together to secure our water supplies and wastewater services over the next 10 years.

State overview

Western Australia has entered a new era in water supply due to two major factors: strong state growth and the climate change that has reduced rainfall in the South West.

These factors affect most areas of the state and we have responded by accelerating planning to increase climate resilience and upgrading services to meet the needs of growing communities.



Climate resilience

Climate resilience requires consideration of all potential water source options and the development of an appropriate balance of water supply and demand management solutions.

To achieve climate resilience, the Water Corporation first evaluates a full portfolio of options including ways to reduce water use and leaks, opportunities to increase water recycling and the development of new water sources.

We then carefully select the best value for money solutions to meet the needs of our customers. As different parts of Western Australia have specific needs for water and wastewater services, we tailor our investment plans for each local community.

We work closely with Government, industry and communities to identify and evaluate the best and most environmentally responsible solutions to support regional development.

Traditional sources, such as, dams and groundwater, will continue to underpin water supplies for many Western Australian towns.

However, a number of areas are now utilising water sources that are climate independent, for example, seawater desalination in the South West. These sources are often developed in conjunction with water efficiency programs and new water recycling initiatives. We are also investigating the interconnection of some discrete water schemes to provide greater flexibility in water supply options.

For Perth, two major seawater desalination plants are operational, and we are trialling groundwater replenishment to greatly increase the proportion of water we recycle and to augment our deep aquifer resources.

For the fast-growing North West, our priority is delivering more water and wastewater services while working with the community to reduce the region's high water use. We are making major investments in the investigation and development of new water sources and upgrading existing schemes, in some cases, in partnership with resource companies and the State Government.

Existing wastewater systems will continue to effectively service many Western Australian towns over the next 10 years with investment in increased capacity where required due to population growth.

We continue to work with the community to reduce their water use by 15 per cent by 2030. This means reducing Perth's water use to 125 kilolitres per person, per year, and regional residents to 193 kilolitres per person per year.

To help us achieve these goals, we have invested over \$32 million, co-funded with the Australian Government Water for the Future program. This aims to save 6 billion litres of water across the state, in addition to the Target 60 campaign, which is estimated to have saved Perth nearly 22 billion litres of water. Similar programs are planned for select regional areas in the next 12 months, including a concentrated effort to help our non-residential customers save water.

We are committed to recycling 30 per cent of all wastewater we manage by 2030. In 2010/11 about 13.5 per cent of the total volume of wastewater, or about 19.6 billion litres of water, was recycled. This conserves precious drinking water sources by using lower quality water for some industrial uses, large area irrigation and watering of parks, gardens and sports facilities.

Investment	0-5 years	6-10 years
Water services	\$2.5 billion	\$3.22 billion
Wastewater services	\$1.67 billion	\$2.09 billion

This document outlines how we plan to invest about \$9.5 billion between 2012 and 2022 to provide water and wastewater services to meet the needs of our customers across Western Australia.

Some elements of our plan may change over time with the changing needs of the community and as our water and wastewater options for each region are evaluated and agreed. This means our 6-10 year investment program may also be adjusted.

We are confident that our plans will ensure a high level of service and supply security – wherever our customers are and whatever the weather.



Kimberley



Regional snapshot

Population 2010	35,700	Water supplied per person	220,000 litres pa
Forecast population 2022	46,200	Wastewater recycled	1.2 billion litres pa
Population growth rate (average)	2.45% pa	Percentage of wastewater recycled	53%
Water supplied	7.9 billion litres pa	10-year investment plan	\$450 million

Regional context

The Kimberley region is experiencing high growth led by the resources sector, tourism and Government investment in ports and agriculture, including:

- The proposed Browse Basin LNG precinct, which is planned to include a new port at James Price Point between Broome and Derby.
- The Ord-East Kimberley Expansion Project at Kununurra.

These projects are driving population growth in centres throughout the region, which are predominantly supplied by independent groundwater systems, although Wyndham is supplied by the Moolchalabra Dam.

Positive trends for rainfall and groundwater recharge continue to provide reliable supplies of traditional water sources to most towns. Halls Creek is the exception, and groundwater exploration has not yielded the results for which we hoped. So the town is on temporary water restrictions that limit watering to two days a week.



In collaboration with the Australian Government Water for the Future program, the Water Corporation aims to help reduce high water consumption in the Kimberley by identifying and repairing leaks in the system and helping customers manage their water use. A water efficiency program centred in Broome and Halls Creek aims to save 543 million litres of water and invests \$3.7 million in projects such as:

- Water use behavior change for our residential customers.
- Replacing inefficient fittings for residents and small business.
- Undertaking leak detection and repair work.



Broome water tank under construction

Future water efficiency efforts in Derby will retrofit residential and non-residential customers' inefficient water appliances.

The Water Corporation provides wastewater services to Broome, Derby, Fitzroy Crossing, Halls Creek, Kununurra and Wyndham.

Recycling schemes in Broome, Derby and Wyndham supply more than one billion litres of water annually to golf courses, public open spaces, wetlands and irrigation schemes that would otherwise be discharged to the environment.

Approximately 85 per cent of Broome's wastewater is recycled for a variety of community uses, including watering a golf course, school and sporting grounds. In October 2011 the new Broome North Wastewater Treatment Plant opened and is equipped with recycling facilities. The plant will provide treated wastewater to irrigate Rhodes grass that may in future be harvested for stock feed.

In total, the Kimberley Region annually recycles approximately 1.2 billion litres, or 53 per cent, of its treated wastewater. We expect recycled water use to increase further as wastewater volumes and demand for water for public amenity and industry grow.

Water

Investment plan	0-5 years	6-10 years
Water services	\$200 million	\$120 million

We are taking a staged approach to cater for regional growth through the continued expansion of groundwater schemes.

In Halls Creek we will upgrade the borefield and various other assets to increase water availability to the community and reduce the long-term risk of temporary water restrictions. The borefield that supplies Broome is being expanded to facilitate growth.

There will also be upgrades of water sources for Fitzroy Crossing and Derby. Moochalabra Dam has sufficient capacity to supply Wyndham for at least the next 10 years.

Wastewater

Investment plan	0-5 years	6-10 years
Wastewater services	\$40 million	\$90 million

We are responding to population growth and location constraints associated with new residential land releases in the Kimberley by investing in major capacity upgrades at the Derby, Halls Creek, Wyndham and Kununurra Wastewater Treatment Plants.

We continue to identify opportunities, particularly for Kununurra, Broome, Derby and Halls Creek, to recycle water for agricultural irrigation, industry processing, and for community gardens, parks and ovals. Recycling will be evaluated against the availability and suitability of other local water sources.

Pilbara



Regional snapshot

Population 2010	48,600	Water supplied per person*	468,000 litres pa
Forecast population 2022	109,400	Wastewater recycled	1.9 billion litres pa
Population growth rate	7.65% pa	Percentage of wastewater recycled	66%
Water supplied	22.7 billion litres pa	10-year investment plan	\$980 million

Regional context

The Pilbara is the economic power house of Australia and is dominated by major industrial projects, mainly in the iron ore and oil and gas sectors.

The State Government is investing to increase regional population, primarily through its Pilbara Cities initiatives. We are working with the Government to provide the required water and wastewater services.

The Pilbara Cities vision is for the regional centres of Karratha and Port Hedland to develop into cities of some 50,000 residents, and for Newman to become a regional centre with a population of 15,000, by 2035. This growth will more than double the number of customers requiring water and wastewater services.

The Water Corporation is focused on delivering safe and reliable town water supplies in the Pilbara. Increasingly, industrial users are finding independent water sources to meet their needs and requiring less drinking water from us. Where we do supply major industrial water demand, users pay the full cost of supply.



The Pilbara has Western Australia's highest average volume of water supplied per capita, due in part to its high average temperatures. To reduce consumption by 3.48 billion litres per year, we have invested, in partnership with the Australian Government Water for the Future program, \$11.2 million in water efficiency and recycling programs that:

- Encourage water efficient behaviour in the community.
- Replace old fittings with new, water efficient ones in homes and small businesses.
- Detect and repair leaks.
- Will expand our water recycling capacity in Karratha.

* Includes industrial customers.

- Provide water efficiency solutions for major non-residential companies.
- Install 'smart meters' that allow residents and small businesses to track water use.

As new housing and commercial developments are designed, they present opportunities to integrate waterwise features, which minimise unnecessary water use while retaining community amenity.

Population growth is increasing wastewater flows, so wastewater treatment plants will be upgraded to support the Pilbara Cities vision. This also provides the opportunity to ensure treatment plant locations allow, or facilitate, the expansion of residential land developments.

Wastewater treatment plants in Karratha and South Hedland supply about 1.5 billion litres of recycled water for public open spaces and sporting ovals. This is provided free of charge to support growth and improve the amenity and quality of life for residents.

We are also looking at the potential of using recycled water for dust suppression in mining activities, particularly at ports. As industry development increases, we are optimistic that the demand for recycled water will also continue to grow.

Water

Investment plan	0-5 years	6-10 years
Water services	\$250 million	\$250 million

The Water Corporation will commit to significant investment in the Pilbara to investigate and develop new water sources to cater for future growth. We will also substantially upgrade the capacity of many of our major distribution networks.

Two key networks will continue to supply most of the region's population: the West Pilbara Water Supply Scheme (WPWSS), sourced from the Harding Dam and the Millstream borefield, and the East Pilbara Water Supply Scheme, which has two independent groundwater sources, the Yule River and De Grey River borefields. Investment will focus on upgrading these two borefields and investigating new sources such as the West Canning Basin for the East Pilbara.

For the WPWSS, which services Karratha, Dampier, Wickham, Roebourne and Point Sampson, we will integrate new sources to increase the reliability of water supply. The first investment will be to integrate the borefield in the Bungaroo valley south of Karratha, which is being built by Rio Tinto. Additional water will be acquired from a further expansion of the Bungaroo groundwater scheme, or the potential addition of desalination as a longer term option.

In Onslow, we are partnering with Chevron to augment town water supplies either through a seawater desalination plant, or desalinating water from the Birdrong aquifer.



Karratha water tank

We will upgrade the capacity of Newman's water distribution infrastructure, while working with BHP Billiton to ensure water availability and source upgrades.

As some mineral resources are extracted from below the water table, there is an increasing need to dispose of groundwater that enters mines. This water will be considered in the mix of potential water sources that could supply community and industrial uses.

Wastewater

Investment plan	0-5 years	6-10 years
Wastewater services	\$400 million	\$80 million

We are making substantial investments to increase our wastewater treatment capacity to accommodate populations of 50,000 in both Karratha and Port Hedland. This includes relocating the Port Hedland Wastewater Treatment Plant to release more land for residential and other development. These works are co-funded by the State Government's Royalties for Regions scheme through its Pilbara Cities vision.

Although a significant volume of water is already recycled in the Pilbara, we are committed to exploring further recycling opportunities and investing substantially in technologies to improve the quality of treated wastewater from our new plants and increase the use of recycled water.

Possibilities being investigated include a dual reticulated scheme in Karratha that also supplies residents and public open spaces with recycled water, saving high quality drinking water for use inside the home. We are also exploring supplying commercial users with recycled water to replace drinking water for purposes such as dust suppression.

Gascoyne



Regional snapshot

Population 2010	10,000	Wastewater recycled	0.4 billion litres pa
Forecast population 2022	9,500	Percentage of wastewater recycled	82%
Water supplied	2.1 billion litres pa	10-year investment plan	\$100 million
Water supplied per person	213,000 litres pa		

Regional context

The dry Gascoyne region is experiencing steady growth in agriculture and tourism, and has two world heritage listed sites, which attract seasonal visitors.

There is increased oil and gas, and mining activity in the northern part of the region, which is placing demands on accommodation to support the operational workforce.

Towns in the region largely depend on independent local groundwater for water supply. Water efficiency programs in Exmouth have produced promising results in reducing water use to conserve limited resources. Future programs include behaviour change initiatives and retrofits for residential and non-residential customers.



Water recycling in Carnarvon ensures precious drinking water is conserved for the town water supply. The Carnarvon and Exmouth Wastewater Treatment Plants supply 100 per cent of their treated wastewater – 420 million litres annually for public open space including parks, gardens and ovals. This water is provided free of charge to Local Government to support community amenity.



Coral Bay Water Treatment Plant

Water

Investment plan	0-5 years	6-10 years
Water services	\$30 million	\$20 million

No major investment is required for the existing Gascoyne water systems as they are well placed to meet demand over the next 10 years.

The groundwater sources in Exmouth and Carnarvon will be expanded to secure more resilient supplies and support growth, particularly Exmouth. In Carnarvon, we will upgrade the borefield and supply mains to ensure reliable supply even during floods.

We are also planning an upgrade in capacity of the desalination treatment plant at Coral Bay and will work with the Government as new plans for land development are investigated.

Water supply solutions are adapted to suit the Gascoyne Region's environmental sensitivities. There is no fresh drinking water source in Denham, so desalination of salty groundwater sources is required. To minimise the cost of treatment for our customers, Denham has a dual reticulation scheme, which separately delivers drinking water, and lower quality but fit for purpose water for gardens and specific indoor uses such as toilet flushing.

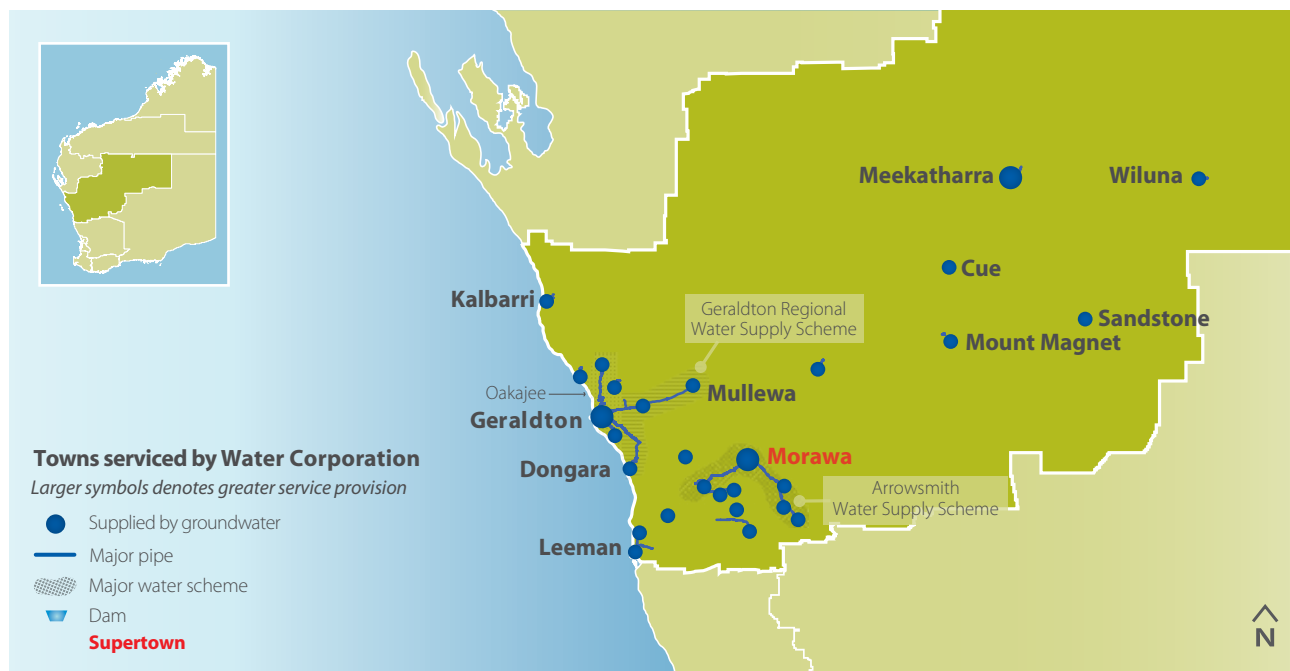
Wastewater

Investment plan	0-5 years	6-10 years
Wastewater services	\$40 million	\$10 million

The Carnarvon and Denham Wastewater Treatment Plants have adequate capacity to cater for growth to 2022.

At the appropriate time we will relocate the Exmouth Wastewater Treatment Plant to cater for long-term growth and enable further residential land releases. Volumes of recycled wastewater will also expand as the town grows, and will be used to irrigate the golf course.

Mid West



Regional snapshot

Population 2010	55,600	Water supplied per person	237,000 litres pa
Forecast population 2022	68,800	Wastewater recycled	0.4 billion litres pa
Population growth rate	2% pa	Percentage of wastewater recycled	23%
Water supplied	13.2 billion litres pa	10-year investment plan	\$380 million

Regional context

The Mid West Region has traditionally relied on agriculture and fishing, with mining recently growing in importance. There is a trend for people to migrate from inland to coastal towns due to amalgamation of farms, while an additional current factor is the movement of fly-in, fly-out (FIFO) mining workers.

The vibrant, growing City of Greater Geraldton accommodates more than 70 per cent of the region's population. It is home to significant projects like the proposed Oakajee Port and ancillary industrial park, the Square Kilometre Array project and has a growing role as a hub for FIFO workers.

Government has recognised the potential for increased residential growth to support mining workforces in the region and has nominated Morawa, the biggest town on the Arrowsmith Water Supply Scheme, as a SuperTown and regional mining hub.

The Mid West relies solely on groundwater. Many aquifers are found in fractured rock formations and are highly variable. The Yarragadee aquifer extends to areas along the southern coast, providing a more stable source of water, but is more challenging to access due to its depth and the region's difficult terrain.



The Water Corporation provides wastewater services to Dongara, Geraldton, Kalbarri, Horrocks, Leeman, Narngulu, Three Springs, Eneabba, Greenhead, Greenough-Bootenall and Wiluna. However, growth in wastewater services is anticipated to be confined to Geraldton.

Recycled water is used in Geraldton, Kalbarri and Dongara to replace about 375 million litres of drinking water every year. This water is often provided to these towns free of charge for uses that benefit the community, such as water for some public open spaces.

Community support has been strong for the Showerhead Swap and Toilets To Go water efficiency programs in Geraldton.



A section of the new Narngulu waste water treatment plant, South Geraldton

Water

Investment plan	0-5 years	6-10 years
Water services	\$90 million	\$150 million

The Water Corporation is using a staged approach to expand the borefield that supplies the Geraldton Regional Water Supply Scheme to cater for future growth. Due to the designation of Morawa as a SuperTown, we are also assessing the capacity of the Arrowsmith Water Supply Scheme to support its growth.

A new program to encourage water efficient behaviours and retrofit non-waterwise appliances will also be rolled out for Dongara's residential and non-residential customers.

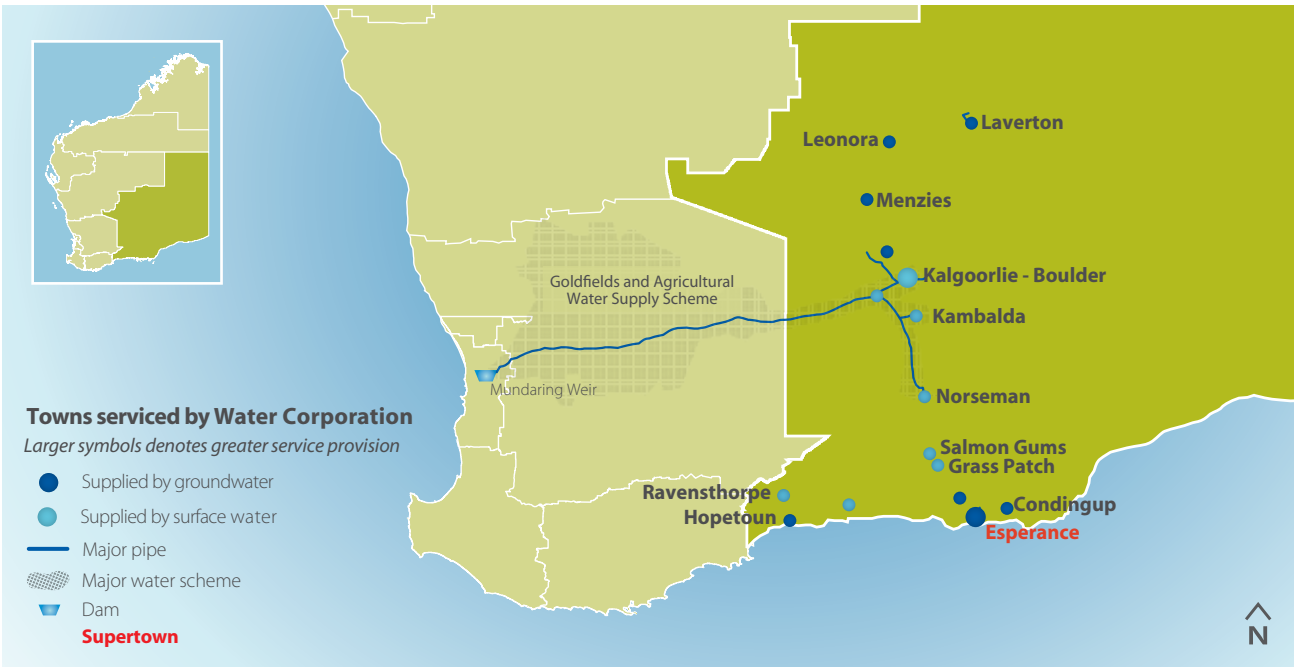
Wastewater

Investment plan	0-5 years	6-10 years
Wastewater services	\$70 million	\$70 million

As most growth is expected in Geraldton, that is where our investment in wastewater capacity upgrades is focused. Additional long-term recycling of water from Geraldton's wastewater treatment plants is being investigated to facilitate greater community amenity and conserve limited high quality drinking water.

We are planning an upgrade of the Kalbarri Wastewater Treatment Plant. Other Mid West towns serviced by us, including Morawa, have sufficient capacity to cater for growth in the next 10 years.

Goldfields/Esperance



Regional snapshot

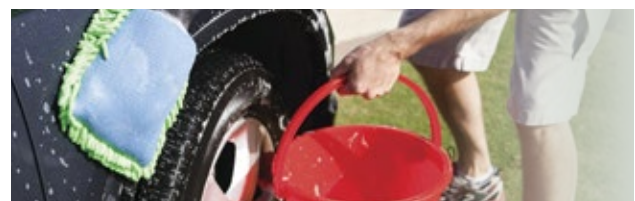
Population 2010	59,100	Water supplied per person	239,000 litres pa
Forecast population 2022	64,400	Wastewater recycled	0.4 billion litres pa
Population growth rate	0.75% pa	Percentage of wastewater recycled	40%
Water supplied	14.1 billion litres pa	10-year investment plan	\$360 million

Regional context

The region is supported by agriculture and mining, both of which are experiencing steady growth. Its main population centres are Kalgoorlie-Boulder and Esperance.

The backbone of water supply to most of the region is the iconic and historic Goldfields and Agricultural Water Supply Scheme. It comprises the Mundaring Weir and the Mundaring to Kalgoorlie pipeline, which has farmlands water supply networks feeding from it. Although this scheme is more than 100 years old, ongoing maintenance and improvements allow it to continue to meet domestic and commercial customer demand.

In the past decade, major improvements to the scheme include the upgrading or replacement of eight major pumping stations, the construction of 400 million litres of additional water storage at Kalgoorlie-Boulder, and the refurbishment of approximately 15 kilometres of the pipeline every year.



Several major towns, including Esperance, are supplied by independent water sources, predominantly groundwater. Demand in Hopetoun and Ravensthorpe has historically been linked to mining activity, and we are monitoring this activity so we are ready to meet domestic water demand should there be strong growth.

Towns north of Esperance, including Salmon Gums and Grass Patch, are supplied from independent surface water sources, which are at the mercy of unpredictable rainfall. Carting of water from nearby water schemes when required continues to enable safe and reliable water to be delivered.



Goldfields pipeline

The Government has identified Esperance as a SuperTown in recognition of its significance to the region as a key port for mining and agricultural exports. Its population is predicted to grow, and planning has been undertaken to support this. This may increase future opportunities for recycling as the town's water and wastewater volumes grow.

The Water Corporation provides wastewater services to Esperance, Kambalda, Leonora, Hopetoun and Laverton, but not to Kalgoorlie-Boulder. We are confident that capacity in the existing systems can cater for anticipated growth over the next 10 years.

In Esperance, Kambalda and Leonora, recycled water replaces about 370 million litres of water a year that would otherwise come from natural and climate dependent sources.

Water

Investment plan	0-5 years	6-10 years
Water services	\$90 million	\$240 million

Our investment program in the region focuses primarily on maintenance of the Goldfields and Agricultural Water Supply Scheme (GAWSS) and supporting the expected population growth in Esperance.

A key water treatment facility for the GAWSS is the Mundaring Water Treatment Plant near Perth. We have obtained substantial private sector participation to upgrade this plant. The upgrade and associated infrastructure will cost approximately \$350 million, and enable the plant to ensure safe and reliable water supplies for the scheme well into the future.

As the water supplied per capita on this scheme is still higher than desirable, we have invested \$4.3 million, co-funded by the Australian Government Water for the Future program, in water efficiency projects to better manage water demand. This includes the installation of 'smart meters' in Kalgoorlie-Boulder to help customers track their water use and an extensive leak detection and repair project, which aims to save 1.09 billion litres of water.

As the borefield supplying Esperance has experienced some fluctuations in water quality in recent years, we are investigating extending the borefield to cater for increasing demand and upgrading the water treatment plant to ensure suitable water quality.

Wastewater

Investment plan	0-5 years	6-10 years
Wastewater services	\$20 million	\$10 million

Our primary investment for the next 10 years will be in the Esperance Wastewater Treatment Plant. A new plant will have increased capacity and upgraded treatment technology to improve water quality and facilitate greater recycling opportunities. We are investigating the feasibility of moving the plant to create residential land development opportunities, but balancing this benefit with the water recycling potential that may be lost by relocating the plant too far from non-drinking water customers.

Wheatbelt



Regional snapshot

Population 2010	75,000	Water supplied per person	244,000 litres pa
Forecast population 2022	83,300	Wastewater recycled	0.6 billion litres pa
Population growth rate	0.9% pa	Percentage of wastewater recycled	39%
Water supplied	18.4 billion litres pa	10-year investment plan	\$920 million

Regional context

Agriculture is the traditional industry in the Wheatbelt and has resulted in many small, widely dispersed community centres.

Two large integrated water supply networks service most of the Wheatbelt: The Goldfields and Agricultural Water Supply Scheme (GAWSS) servicing northern areas and connected to the Integrated Water Supply Scheme from Perth, and the Great Southern Towns Water Supply supplied by the Harris Dam near Collie and servicing the southern Wheatbelt.

The State Government has identified two SuperTowns: Northam and Jurien Bay, as hotspots for future growth. Water and wastewater plans are in place to support growth in these towns. Northam is supplied by the GAWSS while Jurien Bay is supplied by an independent groundwater source, which has significant potential for expansion.



Population growth in other areas of the Wheatbelt is anticipated to be incremental, so new demand for water and wastewater services is predictable and can be planned for in advance.

Where the quality of local sources has changed over time we are investigating more opportunities to redirect water to fit-for-purpose uses such as on ovals or public open spaces to relieve pressure on potable sources.

Recycling takes place in many towns in the region, with larger schemes in Merredin, Northam and Narrogin. Around 600 million litres of water is recycled in the Wheatbelt each year, which is about 39 per cent of the region's total treated wastewater.



York Water Tank

Water

Investment plan	0-5 years	6-10 years
Water services	\$210 million	\$600 million

Integrating water sources for the two large integrated schemes continues to be a key strategy for the Water Corporation. This will help to improve the region's climate resilience by augmenting existing rainfall dependent water sources with climate independent options.

We will continue to upgrade capacity of the GAWS, including further improvements to storage capacity and the pipe network, to support steady population growth in the Wheatbelt as well as towns further downstream in the Goldfields. This scheme is considered climate resilient as it is supported, when needed, by water from the Integrated Water Supply Scheme (IWSS) and sources including seawater desalination.

Over the next 10 years, we will remove the sole reliance of the Great Southern Towns Water Supply on the Harris Dam by integrating it with other sources. One option to be investigated is augmentation from the Stirling Dam, which would provide a degree of climate resilience through support, when needed, from the IWSS.

Some independent water sources will be upgraded over the next 10 years, including a new borefield, and treatment and storage facilities for Cervantes. A major upgrade of storage facilities in Cunderdin is scheduled to begin within the next 10 years, as is a minor infrastructure upgrade for the Nilgen Water Supply Scheme near Lancelin.

Wastewater

Investment plan	0-5 years	6-10 years
Wastewater services	\$40 million	\$70 million

The Water Corporation is confident that its existing wastewater systems, with some upgrades, can accommodate the region's predicted steady population growth.

Wastewater treatment plant capacities in York, Jurien Bay, Northam and Pingelly are planned to be upgraded and there will be a longer term investigation of wastewater recycling opportunities across the Wheatbelt.

With Northam and Jurien Bay designated as SuperTowns, we are exploring further recycling opportunities to cater for anticipated growth in wastewater volumes and demand for non-drinking water in these towns.

South West



Regional snapshot

Population 2010	162,200	Water supplied per person	131,000 litres pa
Forecast population 2022	218,500	Wastewater recycled	2.9 billion litres pa
Population growth rate	2.9% pa	Percentage of wastewater recycled	40%
Water supplied	13.9 billion litres pa	10-year investment plan	\$1.33 billion

Regional context

The drying climate and population growth present major challenges for the Water Corporation in the South West Region. Limited water resources and growing demand from industry and agriculture are increasing competition amongst all water users.

We service most of the region's towns through independent local sources. The two largest centres, Bunbury and Busselton, are supplied with drinking water by two independent service providers, Aqwest and Busselton Water, respectively.

Water supply schemes utilise dams, groundwater and a number of integrated networks, the largest being the Bridgetown Regional Water Supply Scheme (BRWSS).

When completed, the BRWSS will provide a single network for Bridgetown and other towns in the area.

Population growth along the coast, particularly in the northern half of the region, is steady. Industry growth, and Government plans for SuperTowns in Collie, Margaret River and Manjimup will also drive the greater demand that is accommodated in our 10-year plans. Diversification of Margaret River's water source and further exploration



to support growth in Manjimup are under way. Collie is supplied by the Great Southern Towns Water Scheme, and its water security will be achieved through scheduled upgrades of this scheme.

Our customers in the South West are strongly committed to water conservation, recording among the state's lowest average volume of water supplied per capita. However, a recent water efficiency program conducted in Margaret River has demonstrated that further savings can be made when our customers work with us.

In the South West recycled water is used for commercial uses, mainly tree farms and irrigating public facilities, such as golf courses and public open spaces. Major recycling schemes include the Busselton Golf Club irrigation scheme and Kemerton and Manjimup tree farms.



Southern Seawater Desalination Plant

The South West Region recycles 2.9 billion litres, or about 40 per cent, of its wastewater every year, and we expect recycling volumes to increase in the future. We are now working with the Manjimup and Dalyellup communities to encourage waterwise behaviours and will retrofit inefficient appliances for Manjimup residential and non-residential customers.

Water

Investment plan	0-5 years	6-10 years
Water services	\$540 million	\$370 million

While dams will continue to be important water sources for South West towns, our drying climate means we cannot rely on them solely in the future.

Millstream Dam on the Bridgetown Regional Water Supply Scheme is supplemented with groundwater from the Yarragadee aquifer. This scheme will be expanded to progressively connect other towns, including Manjimup.

The Margaret River, Augusta and Walpole water supply schemes will be upgraded to improve source capacity, water treatment, storage and pipe networks. A new groundwater source is planned for Pemberton.

We are investigating the further purchase of bulk water from Aqwest and Busselton Water to help support adjacent towns that use independent local sources.

Harris Dam is the main source for the Great Southern Towns Water Supply Scheme and the SuperTown of Collie. It will need to be augmented, and investigations are under way to evaluate the potential of a range of options, including a connection to Stirling Dam, to best ensure water security for the towns supplied by this scheme.

Due to the high-cost of treating unpredictable water quality of some local sources, particularly Northcliffe and Quinninup, and the cost of integrating these towns into a larger water scheme, the best mid-term solution for some towns is to cart water from nearby schemes. This will provide safe, reliable water to our customers at the lowest cost.

Wastewater

Investment plan	0-5 years	6-10 years
Wastewater services	\$190 million	\$230 million

We plan to upgrade key wastewater treatment plants and install new conveyance systems to meet expected population growth and industrial development in the South West Region.

As the wastewater service provider for Busselton and Bunbury, we are supporting growth in these key regional centres by investing in major upgrades to treatment plants. We are also committed to increasing long-term water recycling for public open space and industrial use, from these newly upgraded treatment plants.

Major upgrades to the Margaret River, Manjimup and Pemberton wastewater systems will be carried out, as well as minor upgrades to wastewater treatment plants at Capel, Augusta, Bridgetown and Dardanup. New wastewater conveyance systems will be installed from Eaton to Bunbury Wastewater Treatment Plant and from Vasse and Provence to the Busselton Wastewater Treatment Plant to cater for strong growth in these areas.

Great Southern



Regional snapshot

Population 2010	59,000	Water supplied per person	135,000 litres pa
Forecast population 2022	69,400	Wastewater recycled	2.3 billion litres pa
Population growth rate	1.4% pa	Percentage of wastewater recycled	94%
Water supplied	8.0 billion litres pa	10-year investment plan	\$590 million

Regional context

Water and wastewater services in the Great Southern Region will need to adapt to the drying climate and accommodate steady population growth, particularly in Albany and the SuperTown of Katanning.

The region has a number of independent local water sources, primarily surface water. There are two integrated networks: the Lower Great Southern Towns Water Supply Scheme and the Great Southern Towns Water Supply Scheme.

Great Southern customers have set a high state benchmark for efficient water use, but there is still room for improvement, and we are committed to assisting communities to achieve this.

Our integrated water efficiency program in Albany, Cranbrook, Denmark, Frankland, Kendenup, Narrikup, Walpole and Mt Barker cost about \$8 million, co-funded by the Australian Government Water for the Future program. This aimed to save 665 million litres of water by encouraging people to change their behaviours when using water, replaced residential and small business fittings that



were not water efficient and reduced water losses through leak detection and repair work. A future program will look at Bremer Bay's waterwise behaviours and retrofit residential and non-residential appliances.

Our recycling activities have a long history in the Great Southern and we continue to find new opportunities. In Albany about 2 billion litres of treated wastewater is used on a tree farm each year. At Katanning recycled water is provided free of charge to Katanning Country Club for golf course irrigation and for irrigation of the shire's public open spaces.



Water storage tank construction, Albany

The Great Southern Region recycles a very high 94 per cent of all wastewater. We are encouraged by our Great Southern customers' support for recycling and will continue to develop further recycling opportunities where we have available wastewater.

Water

Investment plan	0-5 years	6-10 years
Water services	\$150 million	\$270 million

Our planned investment aims to strengthen the Great Southern Region's climate resilience by working towards connecting more independent schemes to the network and exploring new water sources.

This includes augmenting the Harris Dam, the main source for the Great Southern Towns Water Supply Scheme, to accommodate State Government growth plans for Katanning. A number of options are being considered, including connection to the Stirling Dam.

New bores near Albany will meet the immediate needs of the city. To ensure we are prepared for a full range of possible climate scenarios we will investigate appropriate sites around Albany for a desalination plant, which would make the integrated Lower Great Southern Towns Water Supply Scheme (LGSTWSS) fully climate independent. Desalination was identified as a preferred option for the community in *Water Forever: Lower Great Southern, October 2010*.

Independent local sources for Denmark and Bremer Bay will also have their capacity upgraded. Some communities such as Rocky Gully and Lake King that are isolated from the two major schemes

and do not have local sources of drinking quality water, which will continue to have water carted in from nearby water schemes. This will ensure the delivery of safe and reliable water at the lowest possible cost.

In the long-term, integrating communities like Denmark into the LGSTWSS to provide long-term water security will be investigated.

Wastewater

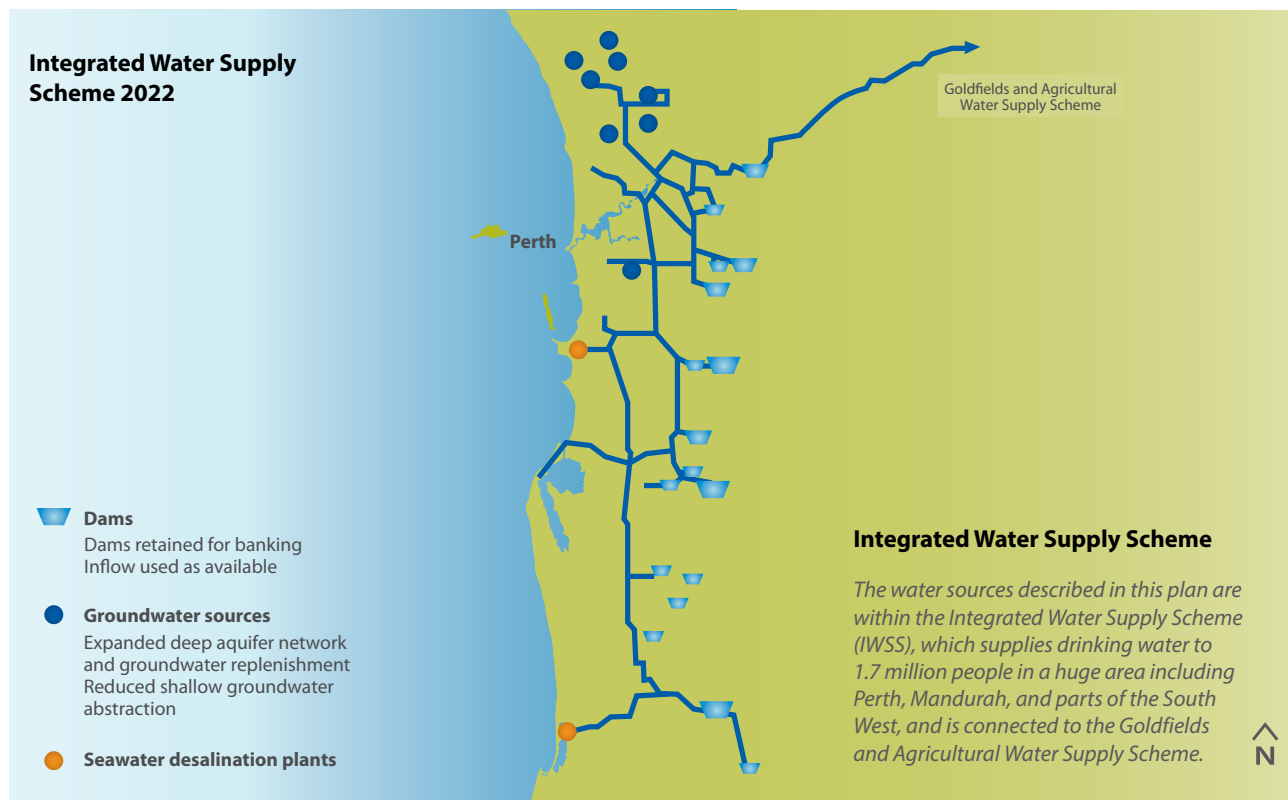
Investment plan	0-5 years	6-10 years
Wastewater services	\$40 million	\$130 million

The Water Corporation operates wastewater treatment plants at nine towns across the Great Southern Region: Albany, Bremer Bay, Cranbrook, Denmark, Gnowangerup, Katanning, Kojonup, Mt Barker and Tambellup. Investment is focused on maintaining these systems and catering for projected steady growth over the next decade.

We will upgrade wastewater treatment plant capacity at Denmark, Albany and Mt Barker. These upgrades also present opportunities for new long-term recycling initiatives, such as watering community gardens and ovals, or irrigating expanded woodlots.

With Katanning's designation as a SuperTown, growth and investment are expected to increase. We support the SuperTowns initiative and will work with the community and Government to explore further water recycling opportunities to assist in providing for the town's growth and managing its drinking water demand.

Perth & Peel



Regional snapshot

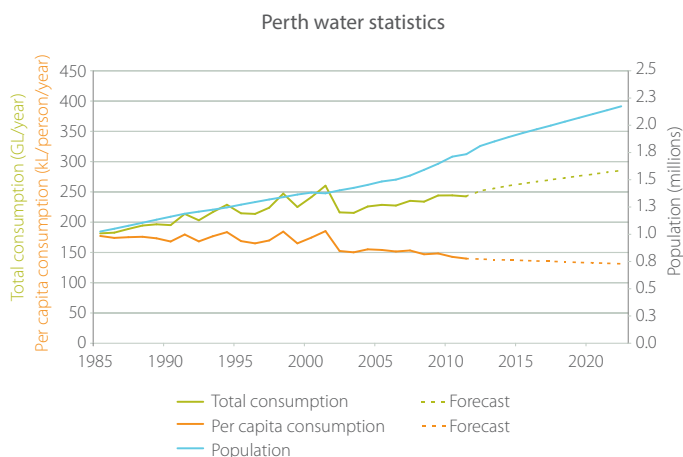
Population 2010	1.8 million	Water supplied per person	137,000 litres pa
Forecast population 2022	2.3 million	Wastewater recycled	9.5 billion litres pa
Population growth rate	2.5% pa	Percentage of wastewater recycled	7.5%
Water supplied	255 billion litres pa	10-year investment plan	\$4.37 billion

A challenging decade for Perth and Peel

The climate has been changing for several decades, but over the past 10 years the impacts have become more obvious and presented us with new challenges. Reduced rainfall and changes in rainfall timing have greatly reduced run-off into our dams around Perth and dramatically reduced their role in drinking water supply. We simply can no longer rely on them.

The Water Corporation has worked hard on demand management through Target 60, which was a voluntary campaign that sought to encourage customers to reduce water use over the summer months. This program saved an estimated 22 billion litres of water since it started in 2010.

Other initiatives include the Showerhead Swap, which so far has seen Perth residents exchange over 100,000 inefficient showerheads, and is co-funded by the Australian Government's Water for the Future Program. Future programs will roll out in





Kwinana Water Recycling Plant

Yanchep and Two Rocks to encourage water efficiency behaviour and retrofit inefficient water appliances for residential and non-residential customers.

Even though the community has achieved significant reductions in water use in Perth in recent years, we still need to continue to invest in new water sources that are climate independent to support a growing population in the Perth and Peel region.

The region's water and wastewater services will need to grow to cater for around 500,000 more people by 2022, including the impact of State Government plans for Boddington to become a SuperTown.

The Perth and Peel water supply is delivered through the Integrated Water Supply Scheme (IWSS), which also helps to supply communities in neighbouring regions. This is the largest integrated scheme in Western Australia, servicing over 2 million customers, and the need to establish climate resilient water sources has been paramount in our future planning for the IWSS.

Seawater desalination plants constructed at Kwinana and north of Bunbury will have the capacity to supply 150 billion litres per year by the end of 2012. This is half of the region's annual water needs, and desalination will remain a cornerstone of its water supply system for many years to come.

Our recently released report *Water Forever: Whatever the Weather* outlines our 10-year plan to reduce reliance on dams and groundwater from shallow aquifers that also supply wetlands and lakes. This plan aims to sustainably drought-proof Perth by 2022.



It will achieve this by:

- Expanding the Southern Seawater Desalination Plant.
- Transferring groundwater abstraction to the deeper aquifers to protect the groundwater environment and secure our groundwater supplies.
- Replenishing deep aquifers with recycled water through a new groundwater replenishment scheme, subject to receiving necessary approvals.
- Continuing to make gains in water use efficiency while preserving an outdoor lifestyle and enabling continued growth.
- Using wastewater recycling as a resource for industry, public open spaces and agriculture.

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Disclaimer The Water Corporation is committed to delivering quality service to customers, and that includes providing reliable data in this document. However, the content of this document may be affected by new information, which becomes available after its publication. Numbers in this publication have been rounded.

We have estimated residential population at June 2010 based on the Western Australian Planning Commission's *Population Report No. 7: Western Australia Tomorrow Forecast Summary for Planning Regions* (WA Tomorrow). Estimated residential population forecasts and growth rates use WA Tomorrow band D scenarios for most regions. Due to recent activity in the North West, band E forecasts have been used for the Kimberley. For the Pilbara, we have used WA Tomorrow population estimates as at June 2010 and population growth targets established by LandCorp and Department of Planning. Historic population data for Perth data is based on ABS.

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