Water for life

Update | South East Queensland's Water Security Program

YEAR IN REVIEW

South East Queensland experienced one of the warmest and driest years on record. As a result, the combined level of our drinking water dams - the SEQ Water Grid - fell from 75% to 55%. While rain in early 2020 has boosted water supplies, the region must remain ready for drought. We can't count on the rain to fall where and when we need it, and need to plan accordingly.

HOW IT HAPPENED

March 2019

The combined level of the SEQ Water Grid dams (South East Queensland's drinking water dams) reached 70% on 14 March 2019 due to record low inflows. This is the trigger for the drought readiness phase - we are not in drought yet, but need to start preparing.

Seqwater established a Drought Response Team and increased awareness of waterwise behaviours in communities.

November 2019

On 18 November 2019, the combined level of the SEQ Water Grid dams reached 60%, which is the next trigger in the Drought Response Plan. This phase is called drought response.

The Gold Coast Desalination Plant ramped up to full production and we launched a water saving campaign, Everyone and Every Drop Counts. We also began preliminary preparations for restart of the purified recycled water treatment plants in the Western Corridor Recycled Water Scheme.

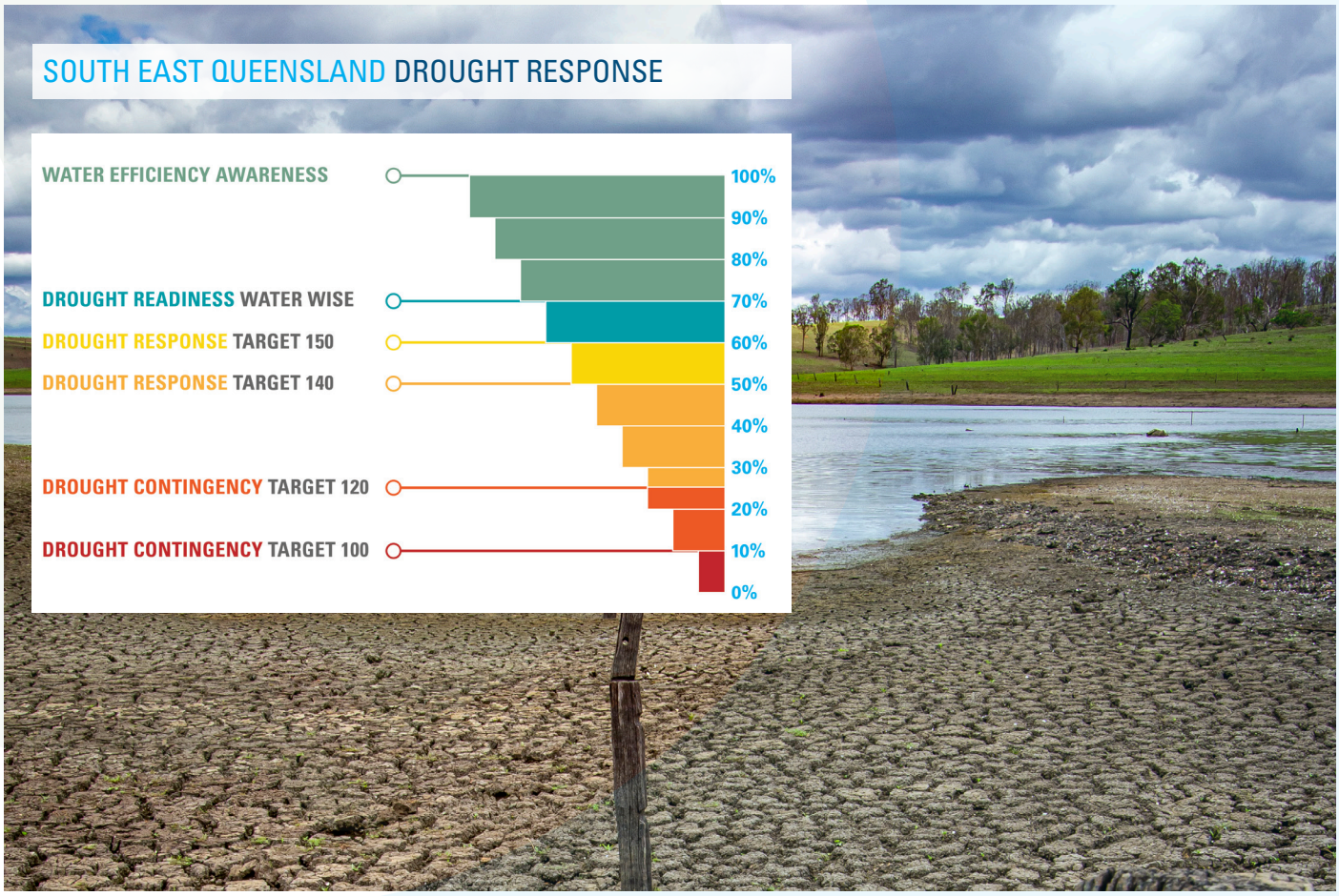
As this trigger was reached just before the start of the region's traditional wet season, it was prudent to wait until the end of summer before making signficant investments in the restart of the purified recycled water treatment plants.

February 2020

Rain in late Summer and early Autumn returned the combined level of our Water Grid dams to almost 70% - back into the drought readiness phase.

We also:

- Continued work to increase the capacity of the Water Grid to transfer water to the Northern sub-region.
- Returned a part of the Luggage Point Purified Recycled Water Treatment Plant to operation. The plant can now produce about 23 megalitres of water per day for industry and power stations. The water produced meets drinking water standards.
- Operated the Southern Regional Water Pipeline (Gold Coast to Brisbane) to take pressure off Wivenhoe Dam.



WATCHING WIVENHOE

All water supply droughts start with declining inflows into dams. It is the severity and duration of the drought that differs.

In South East Queensland, dam levels consistently declined over the course of 2019. There are 12 major urban water supply dams in SEQ that are connected to the Water Grid.

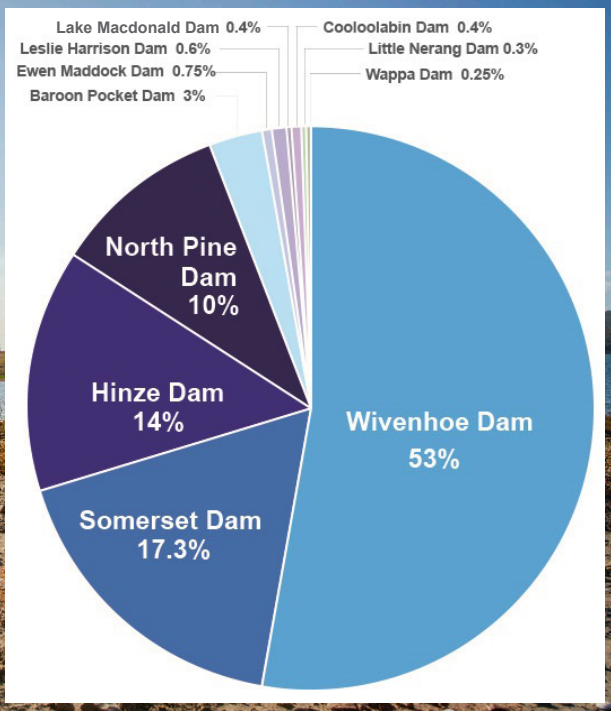
In 2019, the combined level of our Water Grid dams steadily declined from around 75% to 56% as a result of very little inflow, high evaporation and increased water demand.

The rate water levels declined for sub-regional dams varied in 2019, demonstrating the significant impact that the level of Wivenhoe Dam has on the combined Water Grid capacity.

While Baroon Pocket Dam (Sunshine Coast) and Hinze Dam (Gold Coast) both remained above 80% capacity, the dams in the central region of SEQ have dropped considerably. Wivenhoe Dam dropped over 20% during 2019 to reach 47% in November 2019 and was about 52% in March 2020.

Because there are limits to how much water the grid can move, we cannot supply all of the region's water supply without local rainfall, but the grid can help supplement water supplies to drier parts of the region.

Each of our Water Grid dams' capacity contribution to the SEQ Water Grid



Gold Coast Desalination Plant

We ramped up production at the desalination plant for the first time under the Drought Response Plan on 18 November 2019.

The desalination plant is a key component of the Drought Response Plan. It's continuously operated when Water Grid level reaches 60% and can produce up to 133 million litres of drinking water per day.

The plant generally operates in a mode called 'Hot Standby'. It must be able to ramp up to full supply within 72 hours. While in hot standby mode, the plant supplies about 15 to 20 million litres of drinking water to the SEQ Water Grid each fortnight.

We've used the plant to supply drinking water during floods and to supplement supply during temporary shutdowns of the Mudgeeraba, Molendinar and Mt Crosby water treatment plants for planned upgrade works.

Rainfall in early 2020 saw Gold Coast dams reach capacity. This allowed production at the desalination plant to be reduced and water taken from Hinze Dam increased.

The Gold Coast Desalination Plant uses reverse osmosis to turn seawater into drinking water - a climate-resilient supply of water during drought.

In 2020, the desalination plant will continue to play a vital role. The plant will remain in use but production will be scaled back to take advantage of the full storages in Hinze and Little Nerang dams.

IMPROVING THE SEQ WATER GRID

The water grid is a network of bulk water supply pipelines that stretch more than 600km to move treated drinking water around the region.

The water grid connects the region's major water treatment plants and our climate-resilient water sources, the Gold Coast Desalination Plant and the purified recycled water treatment plants of the Western Corridor Recycled Water Scheme. Seqwater continuously improves the SEQ Water Grid to more efficiently deliver water around the region.

In 2019, we:

- Changed the direction of the Southern Regional Water Pipeline to pump water from the Southern Sub-Region to the Central Sub-Region to take pressure of Wivenhoe Dam in November 2019.
- Invested in capital works to allow for a greater volume of water to be transferred to the Northern sub-region where the dams are smaller and therefore empty much quicker than in the south and central regions.

What is the SEQ Water Grid?

The water grid doesn't top up dams - it transports treated drinking water around the region. Due to the layout of the grid, we can't always move water directly from one area to another. For example, we can't move water directly from the Gold Coast to the Sunshine Coast. Instead water is transported via the grid from the Gold Coast to Brisbane then water produced in Brisbane is transported to the Sunshine Coast.

Water is usually sourced and treated locally. We can change the way we manage the water grid in times of extreme weather, water quality issues or when we need to carry out maintenance or repairs on treatment plants or pipelines.

Because there are limits to the amount of water the grid can move, it can't completely replace local water supplies - only supplement them. That's why we still need to plan for the future to make sure communities in South East Queensland have enough water to live, work and play.

The water grid was built during the Millennium Drought, when some parts of the region had lots of water and others had almost none, and we had no way to move it from one area to another. While we cannot supply all of the region's water supply without local rainfall, the water grid can help move some water to drier parts of the region and take pressure off local supplies.

WATER SERVICE PROVIDERS are the organisations that take bulk water Seqwater has sourced and stored, and deliver it to homes and businesses. In South East Queensland these are Urban Utilities, Unitywater, and the water businesses of the City of Gold Coast, Logan City Council and Redland City Council. They also treat wastewater.

Legend

- Northern Pipeline Interconnector
- Western Corridor Recycled Water Scheme
- Southern Regional Water Pipeline
- Eastern Pipeline Interconnector
- Network Integration Pipeline
- Other bulk water pipelines connecting the SEQ Water Grid
- Local Government boundary
- Reservoirs
- Water Treatment Plants (WTP) - connected to grid
- Water Treatment Plants (WTP) - off grid
- Water Treatment Plants (WTP) - other
- Western Corridor Recycled Water Scheme
- Desalination Plant
- Power Stations

Water Treatment Plants

1 Noosa
2 Image Flat
3 Landers Shute
4 Ewen Maddock
5 North Pine
6 Enoggera
7 Capalaba
8 North Stradbroke
9 Molendinar
10 Mudgeeraba
11 East Bank (Mount Crosby)
12 West Bank (Mount Crosby)

Water Treatment Plants - other

1 Kenilworth
2 Linville
3 Kirkleagh
4 Wivenhoe Dam
5 Moogerah
6 Hinze Dam

Desalination Plant

1 Gold Coast

Water Treatment Plants - off grid

1 Borumba Dam
2 Jimna
3 Kilcoy
4 Somerset Dam (Township)
5 Esk
6 Lowood
7 Dayboro
8 Boonah Kalbar
9 Maroon Dam
10 Kooralbyn
11 Rathdowney
12 Beaudesert
13 Canungra
14 Dunwich
15 Amity Point
16 Point Lookout

Western Corridor Recycled Water Scheme

1 Luggage Point
2 Gibson Island
3 Bundamba

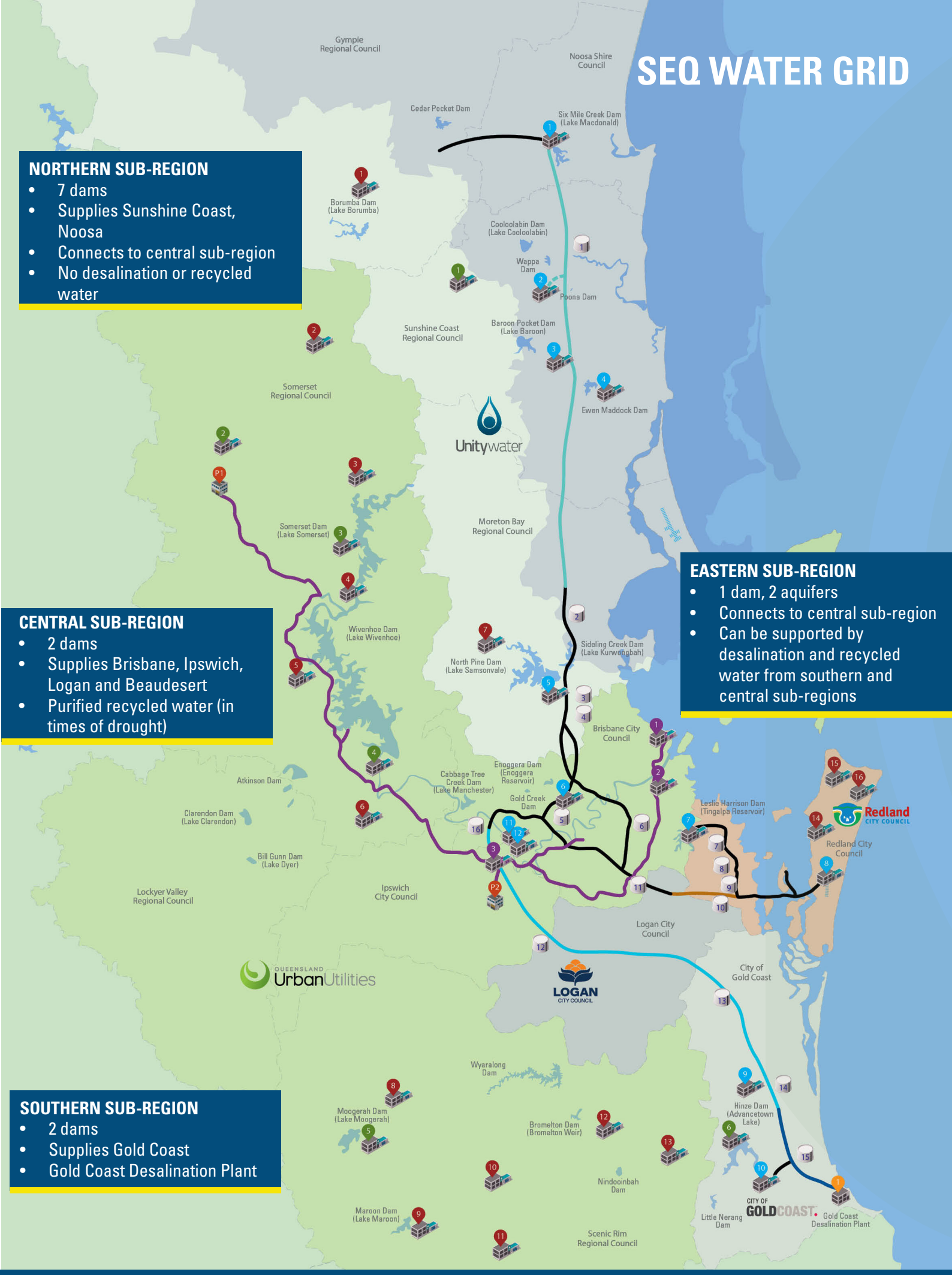
Reservoirs

1 Ferntree
2 Narangba
3 Aspley
4 Sparkes Hill
5 Green Hill
6 Wellers Hill
7 Alexandra Hills
8 Mt Cotton
9 Heinemann Road
10 Kimberley Park
11 Kuraby
12 North Beaudesert
13 Stapylton
14 Molendinar
15 Robina
16 Camerons Hill

Power Stations

P1 Tarong
P2 Swanbank

SEQ WATER GRID



NORTHERN SUB-REGION

- 7 dams
- Supplies Sunshine Coast, Noosa
- Connects to central sub-region
- No desalination or recycled water

CENTRAL SUB-REGION

- 2 dams
- Supplies Brisbane, Ipswich, Logan and Beaudesert
- Purified recycled water (in times of drought)

EASTERN SUB-REGION

- 1 dam, 2 aquifers
- Connects to central sub-region
- Can be supported by desalination and recycled water from southern and central sub-regions

SOUTHERN SUB-REGION

- 2 dams
- Supplies Gold Coast
- Gold Coast Desalination Plant

Although the region is interconnected, the Water Grid is operated to a large extent at a sub-regional level. Each of the sub-regions – northern, central, eastern and southern – is centred on a specific water storage to balance cost effectiveness and water security.

South East Queensland's water demand

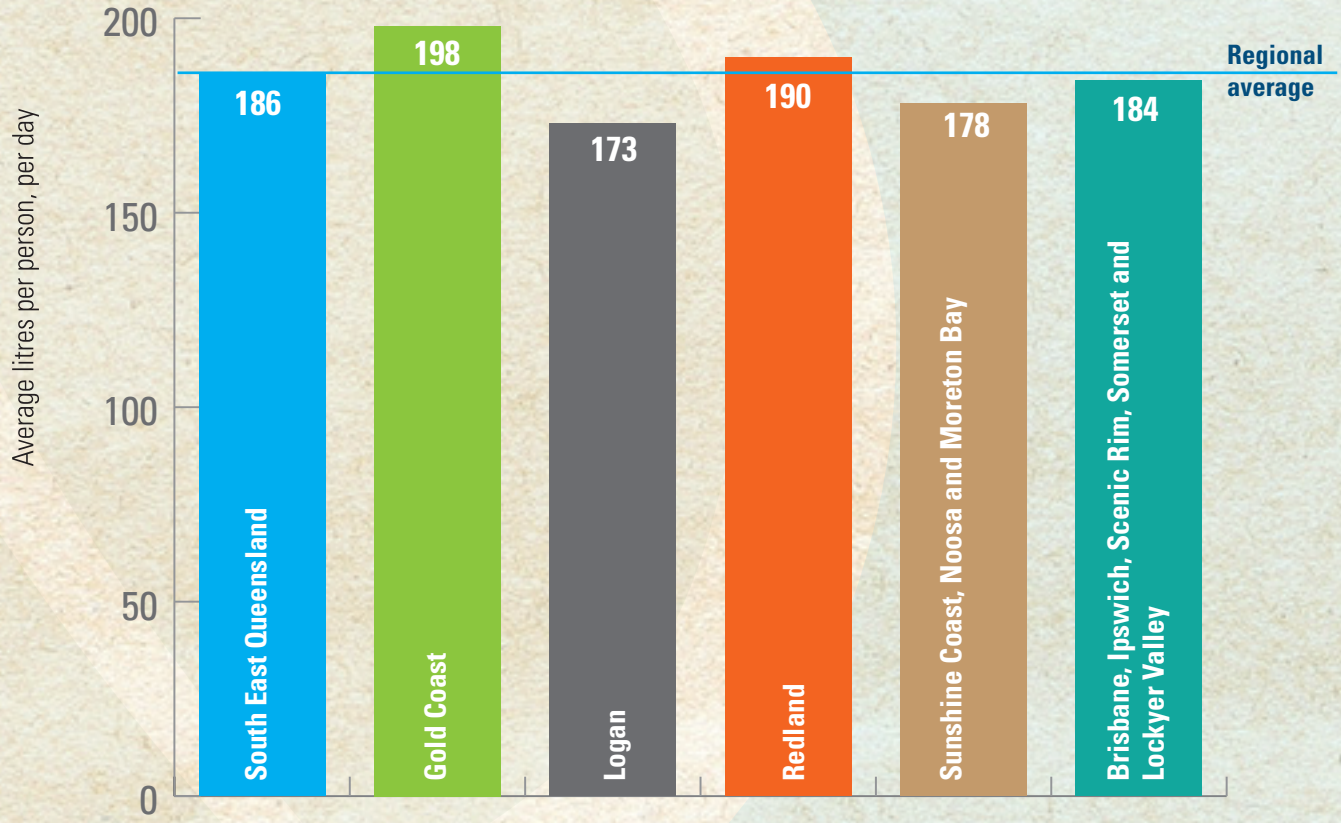
In 2019 the average person used 185 litres of water per day. This was up from about 173 litres a day in 2018.

Water demand is influenced by climatic conditions, population growth and consumption behaviour. In the past 12 months, water demand has risen and is reflective of the prolonged hot and dry weather conditions experienced in 2019.

In summer, we experienced high levels of water use not seen since before the Millennium Drought.These figures align with our long-term projections, but we regularly review our demand forecasts so we can plan for the future.

A water conservation campaign, Everyone and Every Drop Counts was launched to raise awareness of SEQ combined dam levels and encourage people to voluntarily save water.

2019 Residential water use in South East Queensland



SPOTLIGHT: OFF GRID COMMUNITIES

In 2019, several off-grid communities also experienced drought conditions. There are 16 off-grid communities in South East Queensland.

These are Beaudesert, Boonah-Kalbar, Canungra, communities on Minjerribah (North Stradbroke Island - Amity Point, Dunwich, Point Lookout), Dayboro, Esk, Jimna, Kenilworth, Kilcoy, Kooralbyn, Linville, Lowood, Rathdowney and Somerset.

Each off-grid community has its own water supply source, including dams, creeks and local aquifers. During drought events, every off-grid community is dependent on the SEQ Water Grid for a secure water supply via carting.

In 2019, the drought response plans for some communities were implemented as detailed in the Water Security Program. Since the development of these plans, Seqwater and the SEQ Water Service Providers drafted a water restrictions schedule.

The communities of Canungra, Dayboro and Beaudesert, Boonah, Kalbar, Mt Alford, Aratula, Rathdowney and Kooralbyn were on water restrictions over the 2019-2020 summer.

Other communities were also asked to reduce their water use over summer. Rain in January and February 2020 meant most of these communities could return to lower level restrictions

Discussions with SEQ Water Service Providers continue regarding the long-term demand forecasts for off-grid communities, in relation to population and demand.

The short-term demands for most off-grid communities have been significantly higher due to current drought conditions, including increased outdoor water use by consumers, but also increased reliance on the potable water supply by non connected consumers (i.e. consumers living outside of the water supply scheme using rainwater tanks or other suitable supplies).

As these rainwater tank supplies and other supplies are depleted, non-connected consumers rely on the drinking water supply (via carting) to top up their rainwater tanks. In some cases, this is adding additional demand of approximately 30% - 50% to the existing demand for the connected community, placing significant stress on the water treatment plants in these off-grid communities. Seqwater continues to monitor these demands closely.

From top: Canungra; Dayboro and Kenilworth water treatment plants. These plants are 'stand-alone' which means they are not directly connected to the SEQ Water Grid, but can be supplemented by water carting.

LOOKING AHEAD

In 2020, we will balance maintaining our readiness to respond to drought in the short-term, with planning for the water needs of the community 30 years from now.

Monitoring dam levels

Even with most of our main water storages at full capacity and with the combined level of our drinking water dams at about 68% in early 2020, without good inflows into the Somerset-Wivenhoe system, we may need to again enact our region-wide Drought Response Plan, such is the impact of these storages on the system as a whole.

Seqwater will continue to closely monitor the situation and respond accordingly based on changing conditions.

Readying our climate-resilient assets

2019 put our climate-resilient assets through their paces, as we ramped up the Gold Coast Desalination Plant to full production and began early preparations to turn on the purified recycled water treatment plants of the Western Corridor Recycled Water Scheme.

The community can be reassured we are well placed to use these assets, which don't rely on rainfall, should they be required to bolster our water supplies.

Talking about the future of water

The next version of our Water Security Program is due in 2022. That means we are starting to talk to communities now about how they see the future of water, and what they think we should be planning for now.

Building water infrastructure can take a long time, and it's important that we plan ahead. We don't know when the next drought will begin, or when the rain will fall, so we are committed to having a plan in place so we have enough water to live, work and play.

While our smaller coastal dam storages, like Little Nerang Dam above, may have healthy levels, good inflows into Wivenhoe Dam in 2020 will be a key factor in the region's overall water security position.

About Seqwater

Seqwater delivers a safe, secure and cost-effective water supply to South East Queensland. We manage up to $11 billion of water supply assets. This includes dams, weirs, conventional water treatment plants and our climate-resilient water sources, the Gold Coast Desalination Plant and the Western Corridor Recycled Water Scheme. This also includes the SEQ Water Grid, a 600 kilometre reverse flow pipeline network enabling drinking water to be transported around the region.

One of Seqwater's core functions is long-term strategic planning for a reliable and sustainable water supply. We call this plan our Water Security Program. In March 2017 we released an updated version of this plan, available at **seqwater.com.au**

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