

2020 Water Security Program Annual Report 2020



December 2020



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Executive summary

Seqwater is responsible for the long-term planning to ensure a reliable and sustainable water supply is maintained in South East Queensland (SEQ). This planning is contained and published in the 30-year Water Security Program.

Seqwater is required to prepare and report on water security for SEQ annually. This 2020 report assesses changes in water security compared to the Water Security Program (2017) (released March 2017).

Highlights

The highlights for 2020 include:

- continued supply of a safe, reliable and high-quality bulk water supply despite the challenges presented by the COVID-19 pandemic.
- drought response phase (60% Water Grid Storage level) triggered in September 2020 resulting in the Gold Coast Desalination Plant (GCDP) operating at full capacity.
- a water savings campaign launched August until early October, and a further campaign in December 2020.
- pre-start activities continued for the Western Corridor Recycled Water Scheme (WCRWS) to support readiness for the decision for full restart following the coming summer, if required.
- supply of purified recycled water to Tarong power station began November 2020 to offset demand from Wivenhoe Dam.
- progress on more detailed planning for regional long-term and contingency supply options as input to the Water Security Program (2022), including actions to secure land and water resources to provide future water security options.
- further water quality testing on the WCRWS with the ongoing use of purified recycled water by Swanbank power station.
- review of the regional demand forecast in collaboration with the SEQ Service Providers in preparation for the next Water Security Program. The review confirmed the demand projections from Water Security Program (2017) are still aligned to current trends.
- effective engagement with the Department of Regional Planning, Manufacturing and Water (DRPMW) and our SEQ Service Provider partners on the development of the Water Security Program (2022).
- Seqwater has continued to respond to the current drought in accordance with the SEQ adaptive drought response plan and reports monthly on the water security status (<https://www.seqwater.com.au/waterforlife>)

Major changes to the bulk water supply system in 2020

- Throughout 2020 Seqwater continued to deliver capital works to improve the capacity of the Water Grid to transfer water into the Northern sub-region. These projects will continue to be implemented during 2021.
- Seqwater enhanced the capability of the WCRWS to reinstate capacity to the offtake to Tarong Power Station, near Caboonbah, and started supplying purified recycled water in November, 2020.

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Manufactured water facilities

Both the WCRWS and GCDP are operational, with partial capacity at the WCRWS available.

Seqwater has continued to undertake additional risk mitigation activities to improve readiness should the full Western Corridor Recycled Water Scheme restart be required.

Annual water usage and projected regional average urban demand

Water demand is influenced by weather conditions, population growth and consumption behaviour. Water demand this year rose slightly and is reflective of the weather conditions at the time. The demands are consistent with long-term historical trends, influences observed this year and the assumptions made about medium demand projections in the Water Security Program.

Long-term water security

Seqwater has made significant progress towards SEQ's future water security in 2020. Seqwater has:

- Completed more detailed planning assessments to understand the needs and available options for the next water supply augmentation
- Progressed a strategic assessment on future water security needs and options.

Assessment of the regional water balance

Commencing in 2017, Seqwater has continued to implement capital works and a change to the grid operating mode to allow for a greater volume of water to be transferred to the Northern sub-region of SEQ. This change has a positive influence on LOS yield and deferral of augmentation. Other influences on LOS yield, including climate change, are being assessed for the 2022 Water Security Program.

Drawdown scenarios

The region's Water Grid storage level has declined to 58.5% (21/12/2020).

Drawdown scenarios are updated as part of drought status reporting. For the latest scenario refer to <https://www.seqwater.com.au/waterforlife>

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1 Introduction

Seqwater released the Water Security Program in March 2017. This report can be found at:

<http://www.seqwater.com.au/waterforlife>

Details about the SEQ Water Grid infrastructure and the sub-regions are as detailed in the Water Security Program.

The purpose of this report is to provide an update on water security planning and implementation during the 2020 calendar year, in accordance with the Water Regulation 2016. This report addresses:

- major changes to the bulk water supply system over the past year
- total volumes of water supplied over the last year
- current operation and changes to risks to readiness of manufactured water assets in the past year
- projected regional average urban demand
- assessment of the regional water balance
- relevant drawdown scenarios.

Water Security Program actions and review triggers

The Water Security Program (2017) set key actions for future improvements in SEQ and also triggers for review of the Water Security Program outside of the five yearly regulated review. Since 2017 many of these key actions have been achieved and further learnings have indicated that some triggers are no longer necessary. The following two sections detail the status of these actions and triggers.

Water Security Program Action status

All Water Security Program actions are well underway. Appendix B provides detail of the status of each action item. Highlights for 2020 have included the increased collaboration with the SEQ Service Providers in the development of the next Water Security Program, particularly in discussions around strategic options assessment, long-term collaborative planning and reporting. Also, increased collaboration has occurred with the Department of Regional Planning, Manufacturing and Water in the development of the Water Security Program.

Water Security Program Trigger Review status

The Water Security Program (2019) Annual Report re-considered the Water Security Program review triggers. This resulted in the removal of most of the triggers as they indicated longer-term trends which are more appropriately considered as part of the five-yearly Program review process.

The remaining triggers for review of the Water Security Program are:

| Trigger for review | 2020 Status |
|---|--|
| Change to operating full supply level (FSL) of a Grid Water Storage (GWS) | Changes to the FSL in 2020 have not impacted water security at this time as storages are currently lower than the revised level. |
| Significant change to drought response approach has occurred | No significant change to drought response approach has occurred in 2020. The drought response is currently being implemented in alignment with the adaptive SEQ Drought Response plan. |

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Off-grid triggers were also removed in the Water Security Program (2019) Annual Report. The water security status, demand forecasts and actions for each off-grid community are considered in the development of this annual report and matters of significance or change from the Water Security Program (2017) are detailed in this report.

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2 Major changes to the bulk water supply system in 2020

Change in asset base / capacities

There have been no material changes to the bulk water supply system's storage, treatment or transfer capacities during 2020.

Within the WCRWS facility the western pipeline from Bundamba to Caboonbah has been reinstated to enable supply of purified recycled water to the Tarong Power Station.

The Aspley Water Quality Management Facility was completed and commissioned during the year in preparation for increased flows from the Brisbane supply zones to the northern region.

On 27 December 2019, a Reduced Full Supply Level (RFSL) was enacted for North Pine Dam (part of the North Pine Dam Upgrade). The new level equates to a storage percentage of approximately 68% capacity. This new level will remain in place until dam improvement work is completed on North Pine Dam.

Change in Water Grid operations

The following Water Grid operation changes occurred during the year:

| Date/s | Water Grid operation |
|---|--|
| Throughout 2020 | The Gold Coast Desalination Plant has maintained operation in various operational modes to support both major treatment upgrade works at the East Bank WTP and to augment water supply as per the drought response plan. |
| November 2020 | Commenced supply of purified recycled water from existing Luggage Point Advanced Water Treatment Plant to Tarong Power Station. |
| 11 December 2019 to 18 February 2020 and from 1 December 2020 | Baroon Pocket Dam was below 80% capacity, and the Northern Pipeline Interconnector operated in a northerly direction from the central region and in a southerly direction from Noosa to protect storage levels in Baroon Pocket Dam. |

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3 Readiness of climate-resilient supply assets

Seqwater has two climate-resilient water supply sources: the Gold Coast Desalination Plant (GCDP) and the Western Corridor Recycled Water Scheme (WCRWS).

Gold Coast Desalination Plant (GCDP)

The GCDP is a key asset for the provision of water security in SEQ. The GCDP is used to manage peak water demands, support the Water Grid when other assets are being maintained, and is a critical drought asset.

There has been no change in readiness for the GCDP, which continues to operate and can be operationalised within 24 hours from a 'hot-standby' position. With this current mode of operation, the GCDP can respond as a contingent supply and provide 33% production capacity within 24 hours and full capacity within 72 hours.

Asset capability testing is undertaken on a regular basis at various production capacities as part of GCDP preparedness. This is considered prudent to demonstrate readiness for continuous operation during a drought event or for responding to an emergency event requiring operation of the GCDP at short notice. This ongoing testing includes a plant performance and reliability trial. This testing results in operational improvements which provide greater readiness for drought response.

Western Corridor Recycled Water Scheme (WCRWS)

The WCRWS is operational using partial capacity at the Luggage Point AWTP, supplying industrial users (power stations).

This operation, combined with other activities, has improved the readiness of the WCRWS to respond to drought.

Seqwater has undertaken risk mitigation activities to de-risk the implementation of full restart of the WCRWS.

Building on earlier restart plans, Seqwater has undertaken further work in 2020 on critical pre-requisite activities including: updating the Recycled Water Management Plan and implementation of validation and verification in conjunction with Urban Utilities; and work with Department of Regional Planning, Manufacturing and Water on requirements for the transmission licence and a framework to account for water released into Wivenhoe Dam.

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4 Projected regional average urban demand

Seqwater has assessed the demand using the latest available information. The assessment found the Water Security Program 2017 medium demand to be 2.6% above actual consumption for the last financial year (2019-20). This variation is within the 10% tolerance trigger for review in the Water Security Program.

Demand is significantly impacted by weather conditions, population growth and changes in water consumption behaviours. Consequently, the projected regional average urban demand must be assessed annually to understand changes to the forecast demand.

This section outlines:

- Key elements of the demand assessment and the outcomes
- Annual demand forecast assessment - 2020
- Off-grid community demand projections review.

In accordance with legislative requirements, Seqwater must complete a review of its Water Security Program at least every 5 years or if there is a significant change to any matter affecting, or likely to affect, the achievement of the desired level of service objectives. Seqwater must also annually assess whether the projected regional average urban demand is still current. This section comprises the annual assessment.

Demand assessment

To understand emerging water consumption trends, the annual demand assessment includes a comparison of changes across the three core demand drivers: weather conditions, population, and consumption behaviour across various residential cohorts and non-residential sectors.

In late 2019, a new sector-based demand model was developed to improve the representation of non-residential sector water consumption at the sub-regional level in preparation for the Water Security Program (2022). The development of the new model included:

| New model inclusion | Description of inclusion |
|--|---|
| Population update | Updated population to latest Queensland Government Statistician's Office (QGSO) 2018 edition medium series population projection. |
| Removal of Rebound factor | Removal of future residential water consumption rebound based on daily consumption analysis under specified weather conditions over the past six years from 2013. Outcome of the analysis has shown no significant change in consumption trend if weather conditions remain relatively constant. |
| Inclusion of short-term weather influence factor | Introduction of a short-term weather influence factor to be applied for the next 5 years to address the observed annual consumption growth in response to recent years gradual increase in temperature and decrease in rainfall. |
| Improved non-residential consumption growth estimation | Transition from using residential population growth as a proportional proxy for non-residential water demand growth, to a demand projection based on observed non-residential account and per account consumption growth trends by sectors, e.g. commercial, industrial etc. Updated non-residential demand projection demonstrated higher degrees of alignment to historical growth trends in non-residential demands. |
| Incorporation of local development planning target | Further consideration of Council's strategic growth and development plans in collaboration with SEQ Service Providers to verify projections. |

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The following sub-sections provide an overview of the new sector-based demand model core inputs, and a summary of 2020 annual demand review outcomes of those core inputs based on actual 2018/19 SEQ Service Providers' billing information and 2019/20 actual water demand data.

Weather conditions and demand forecasting

Weather conditions predominantly impact short-term demand behaviour.

SEQ water consumption behaviour was significantly altered during the Millennium Drought, when residential per capita consumption dropped from over 300 L/p/d to more recent 169 L/p/d. Reduction of demand during this time can be attributed to two categories of demand management initiatives:

- structural change (considered permanent)
- behavioural change (potentially diminishing over time).

It was expected, after a certain amount of time, that the effectiveness of the behaviour change influences would subside. This suppression of consumption would reduce over time and a new stabilised consumption level would be reached for SEQ. Based on that assumption Water Security Program (2017) demand projection incorporated a rebound factor.

To explore whether the recent observed growth in annual water consumption was in response to this rebound factor, or alternatively correlated with warmer and drier weather conditions, consumption variability caused by weather influence (i.e. hot dry days) was isolated and a typical-day consumption trend analysis was conducted over the filtered sample. The outcome of this analysis showed that no significant change in consumption trends were identified when weather conditions remain relatively constant. Based on this finding, previously adopted rebound factor has been removed as an assumption in demand projections, and a weather influence factor has been introduced. Based on six years of actual historical water demand observations (2013 to 2018), it has been observed that the warming and drier weather conditions have driven up annual water demand approximately by 0.82% per annum. This has been adopted as the annual growth factor associated with weather influence for demand projections.

The recorded 2019/20 annual water demand was 330,774 ML, an increase of 2.6% from the previous financial year. With SEQ population growth over this period accounting for 2.1% of this increase and a 0.5% difference in water demand growth due to the continuing warming and drier conditions.

The impact of these prevailing weather conditions has been reflected in water consumption data. Analysis of 2019/20 production data compared to the previous 6 years (Figure 1) shows that residential per capita consumption in much of the September, November and December 2019 was significantly higher than typical historical observations.

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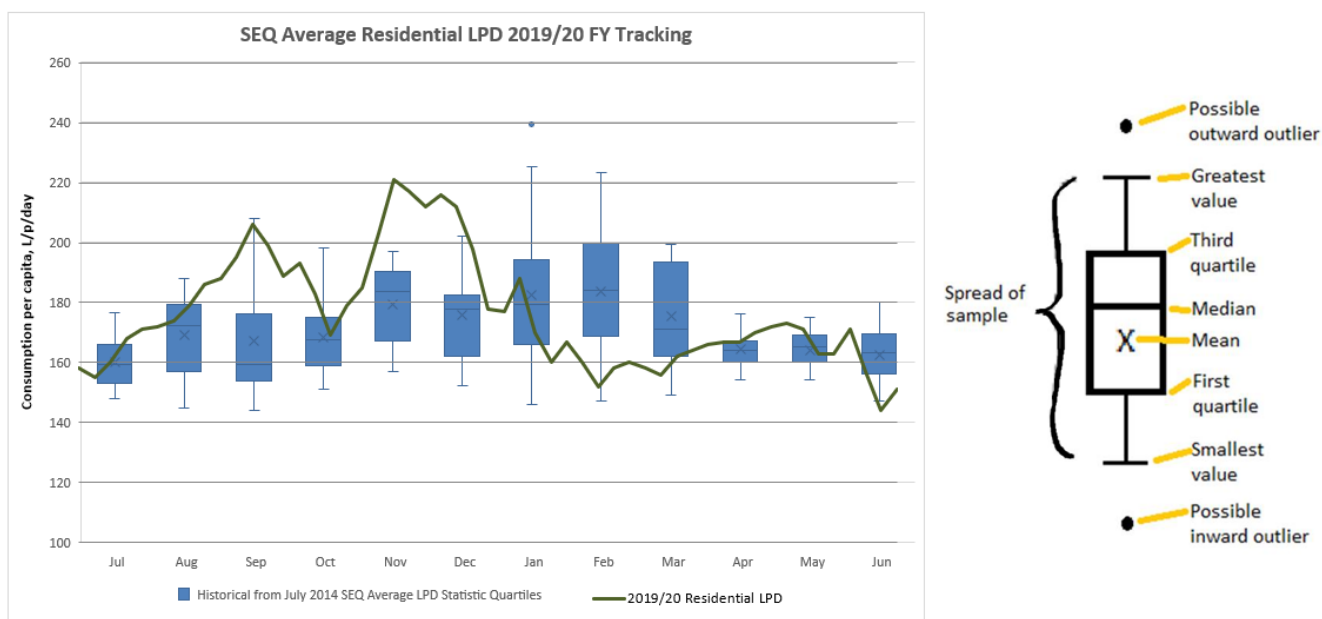


Figure 1: 2019/20 SEQ residential per capita consumption tracking to long term statistics

Population Growth

Seqwater uses the Queensland Government Statistician’s Office (QGSO) population profiles as an input to determining demand projections for SEQ. The population forecast profiles are validated against the most recently available information sourced from the SEQ Service Providers. The QGSO population forecast profiles are used as a key base input for demand forecasting as they represent a whole of government view on future SEQ population growth. This approach ensures alignment with planning for infrastructure and services at the Local Government Area (LGA) levels.

The current demand forecast review uses the latest published population forecast (2018 edition) by QGSO and has also been validated against findings from the connection/account growth analysis to obtain an updated medium (planning) population growth for SEQ. The serviced population is calculated by applying the “percentage of connection” based on the people who are connected or will be connected to the Water Grid in future. Seqwater reviews the percentage of connection on a regular basis using end-customer billing information, census published data and SEQ Service Providers’ information.

The QGSO 2018 Edition Medium Series population estimated an SEQ population growth of approximately 2% in the 2019/20 financial year from the previous year. The same 2% long-term average growth rate is estimated for the next five years to 2024/25. Differences in projected population growth vary more on a sub-regional scale as shown in Figure 2. The aggregated populations for each region include the following:

- Central includes the population of Brisbane, Ipswich, Scenic Rim, Somerset and Lockyer Valley;
- North includes the population of Moreton Bay, Sunshine Coast and Noosa; and
- South includes the population of Logan, Redland and Gold Coast LGAs.

See Appendix A for a map of the sub-regions.

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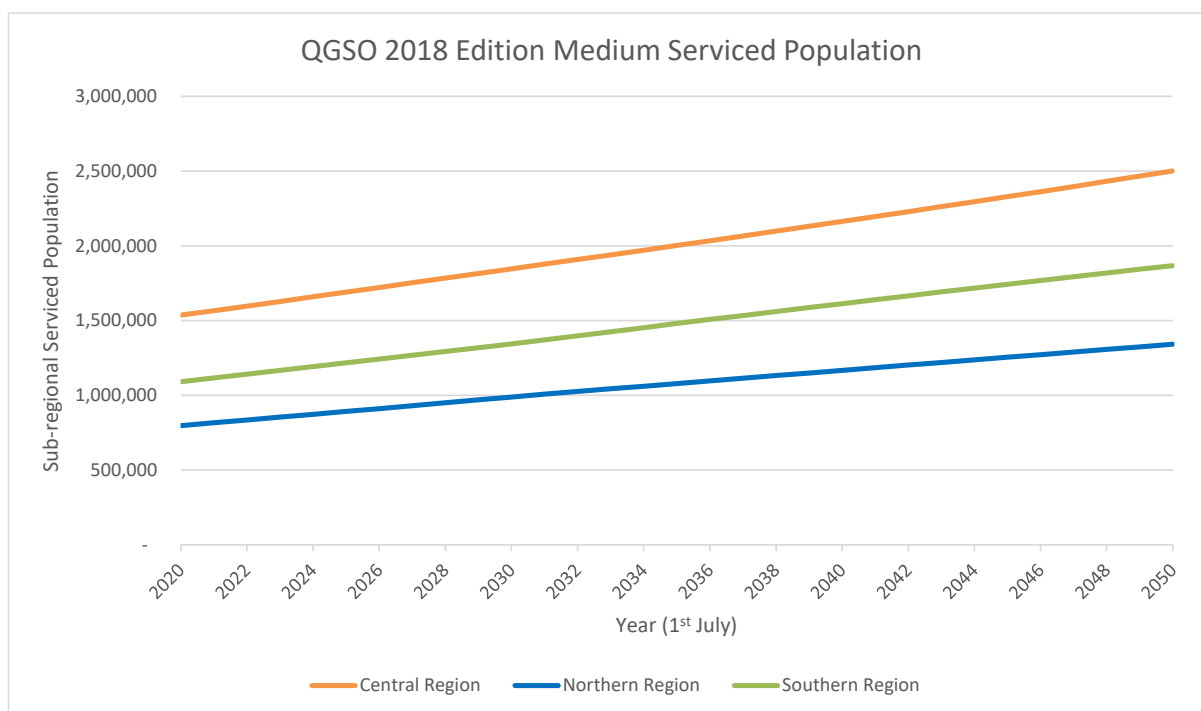


Figure 2: QGSO 2018 edition medium population projection –Sub regional

SEQ combined serviced population is estimated to grow by 67% at the end of the next 30 years planning horizon. Sub-regional growth, shown in Table 1 below, can vary significantly over the same period from one Local Government Area (LGA) to another.

| | Estimated Sub-regional Serviced Population Growth % in 30 years |
|-----------------------|---|
| Brisbane | 35% |
| Gold Coast | 70% |
| Ipswich | 204% |
| Lockyer Valley | 75% |
| Logan | 94% |
| Moreton Bay | 66% |
| Noosa | 22% |
| Redland | 27% |
| Scenic Rim | 115% |
| Somerset | 86% |
| Sunshine Coast | 78% |
| SEQ | 67% |

Table 1: SEQ LGA estimated service population growth by the end of the 30-year planning horizon

Consumption Behaviour

The 2018/19 financial billing data was the latest available consumer level information at the time of the assessment. The residential and non-residential sector consumption split is derived from this billing data and used for the 2020 annual demand review.

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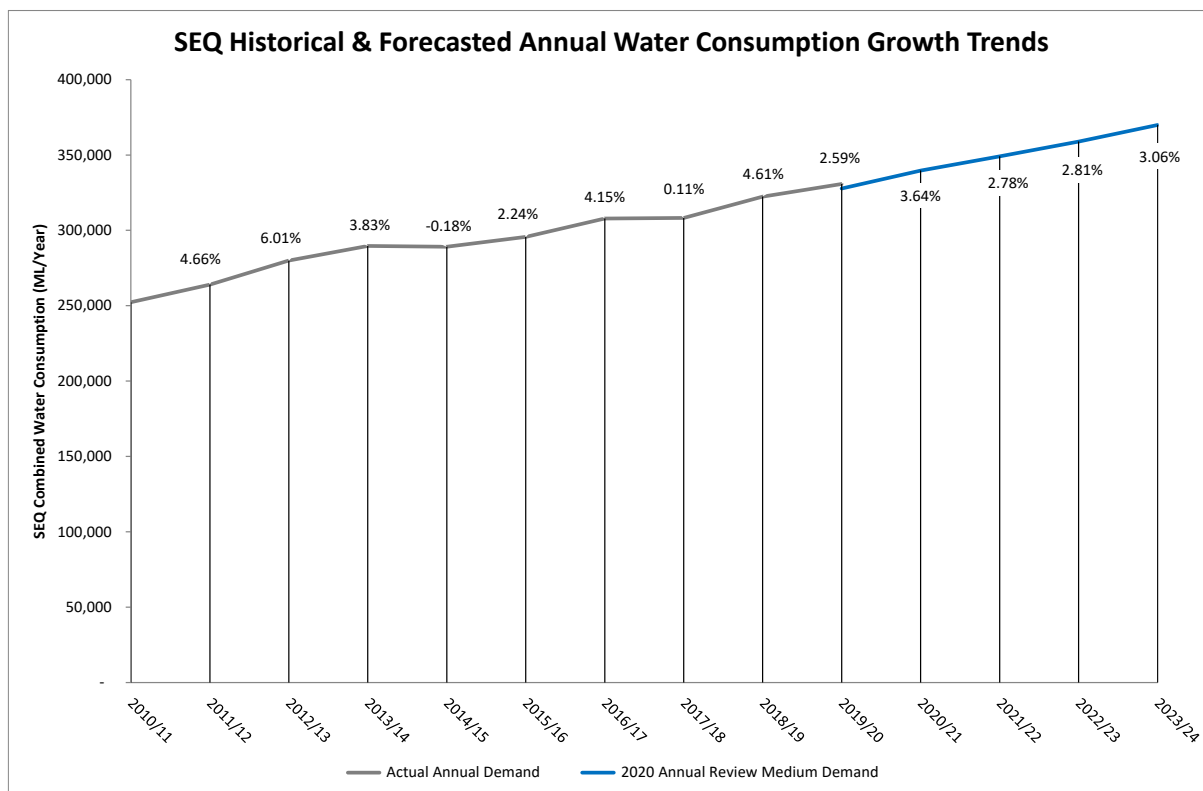


Figure 3: Historical annual demand with 2020 annual review demand projection.

Figure 3 shows a historical annual water consumption growth, since 2010/11 of 3% per annum. 2019/20 water consumption annual growth rate was 2.6%.

Recent water usage

Based on 2019/20 water production data (Table 2), the total combined (residential and non-residential) water usage has increased by 2.59% from the 2018/19 financial year, comprising a total increase in usage of 8,356 ML for the 12-month period.

| Financial Year | Actual Annual Financial Year Demand |
|----------------|-------------------------------------|
| 2018/19 | 322,419 |
| 2019/20 | 330,774 |

Table 2: SEQ historical total annual water consumption

The 2019/20 production volume was analysed to examine water consumption behaviour by sector. Analysis showed that about three quarters of all water demand in SEQ is for residential demand, and the remainder for non-residential demand. These sectors have been further broken down into groups as shown in Table 3.

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| | Sector Name | Annual Consumption Split (%) | |
|---------|--------------------------------|------------------------------|--------|
| RES | Single Family Residential | 71.30% | 75.80% |
| | Multi-Family Residential | 27.87% | |
| | Rural Residential | 0.83% | |
| NON-RES | Commerical | 24.11% | 24.20% |
| | Large Manufacturing Industrial | 11.27% | |
| | Industrial | 26.33% | |
| | Irrigation | 3.63% | |
| | Rublic | 22.11% | |
| | Rural | 4.32% | |
| | Tourism | 8.22% | |

Table 3: SEQ residential and non-residential total water consumption

Local Government Area water consumption

Combining the consumption breakdown information in Table 3, actual 2019/20 total sub-regional production information and serviced population estimates, current per capita residential and non-residential average daily consumption figures (starting consumption for demand forecasting) were determined as shown in Table 4.

| | 2018/19 | | |
|----------------|---------|-------------|---------------------|
| Council | Res LPD | Non-Res LPD | Serviced Population |
| Brisbane | 175 | 104 | 1,231,632 |
| Gold Coast | 194 | 94 | 603,920 |
| Ipswich | 162 | 127 | 219,683 |
| Lockyer Valley | 156 | 131 | 27,255 |
| Logan | 161 | 46 | 311,285 |
| Moreton Bay | 157 | 50 | 442,571 |
| Noosa | 266 | 108 | 44,640 |
| Redland | 184 | 59 | 153,063 |
| Scenic Rim | 178 | 124 | 18,094 |
| Somerset | 168 | 258 | 13,592 |
| Sunshine Coast | 175 | 77 | 291,926 |
| SEQ | 175 | 88 | 3,357,661 |

| | 2019/20 | | |
|----------------|---------|-------------|---------------------|
| Council | Res LPD | Non-Res LPD | Serviced Population |
| Brisbane | 178 | 104 | 1,248,488 |
| Gold Coast | 192 | 93 | 618,602 |
| Ipswich | 147 | 117 | 228,947 |
| Lockyer Valley | 174 | 137 | 28,113 |
| Logan | 168 | 46 | 318,977 |
| Moreton Bay | 159 | 50 | 451,615 |
| Noosa | 278 | 109 | 45,096 |
| Redland | 184 | 59 | 154,891 |
| Scenic Rim | 181 | 123 | 18,817 |
| Somerset | 193 | 280 | 14,058 |
| Sunshine Coast | 178 | 76 | 301,447 |
| SEQ | 177 | 87 | 3,429,052 |

Table 4: 2018/19 and 2019/20 per capita residential consumption at the local

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Non-residential sectors consumption breakdown is summarised in Table 5 and Table 6. The adopted SEQ non-residential sector categories are:

- COM - Commercial
- HIND - Heavy Large Industrial
- IND - Industrial
- IRR - Irrigation
- PUB - Public Sector
- PUR – Rural
- TOU – Tourist

| | Non-Res Sectors Breakdowns | | | | | | |
|----------------|----------------------------|--------|--------|--------|--------|--------|--------|
| | COM | HIND | IND | IRR | PUB | RUR | TOU |
| Brisbane | 21.17% | 9.10% | 32.11% | 1.24% | 20.48% | 5.40% | 4.89% |
| Gold Coast | 30.86% | 6.33% | 15.09% | 3.85% | 22.67% | 2.17% | 13.81% |
| Ipswich | 10.61% | 34.42% | 33.18% | 4.08% | 13.92% | 0.86% | 1.80% |
| Lockyer Valley | 14.9% | 9.1% | 5.7% | 3.0% | 45.2% | 18.0% | 3.3% |
| Logan | 16.63% | 17.01% | 17.29% | 0.58% | 4.41% | 3.31% | 2.15% |
| Moreton Bay | 32.66% | 4.11% | 16.38% | 7.80% | 26.35% | 3.22% | 9.13% |
| Noosa | 32.09% | 0.35% | 9.45% | 15.22% | 17.01% | 3.56% | 22.26% |
| Redland | 19.20% | 1.39% | 32.03% | 14.67% | 16.85% | 4.16% | 6.43% |
| Scenic Rim | 16.01% | 0.99% | 8.21% | 4.28% | 26.00% | 20.09% | 7.22% |
| Somerset | 6.97% | 73.99% | 5.38% | 0.39% | 4.99% | 3.52% | 4.06% |
| Sunshine Coast | 23.40% | 0.61% | 19.52% | 4.94% | 31.71% | 2.62% | 16.71% |

Table 5: 2018/19 Non-Residential Sector Total Consumption Volume % Split

| | Initial Accounts | | | | | | | Consumption per account (L/day/account) | | | | | | |
|----------------|------------------|------|-------|-------|-------|-------|-----|---|---------|--------|-------|-------|-------|--------|
| | COM | HIND | IND | IRR | PUB | RUR | TOU | COM | HIND | IND | IRR | PUB | RUR | TOU |
| Brisbane | 5,802 | 62 | 5,623 | 1,011 | 1,937 | 2,872 | 475 | 3,340 | 134,831 | 5,228 | 1,122 | 9,679 | 1,721 | 9,419 |
| Gold Coast | 6,680 | 11 | 6,223 | 369 | 1,322 | 603 | 140 | 1,649 | 204,809 | 865 | 3,727 | 6,120 | 1,284 | 35,294 |
| Ipswich | 823 | 22 | 505 | 184 | 367 | 114 | 65 | 2,624 | 313,512 | 13,366 | 4,518 | 7,723 | 1,540 | 5,608 |
| Lockyer Valley | 192 | 9 | 110 | 24 | 95 | 267 | 19 | 1,525 | 20,105 | 1,016 | 2,456 | 9,319 | 1,325 | 3,412 |
| Logan | 856 | 7 | 1,271 | 15 | 156 | 267 | 32 | 1,315 | 161,856 | 920 | 2,634 | 1,909 | 837 | 4,480 |
| Moreton Bay | 1,064 | 26 | 1,178 | 578 | 639 | 362 | 96 | 3,748 | 19,352 | 1,697 | 1,647 | 5,031 | 1,086 | 11,566 |
| Noosa | 307 | 4 | 184 | 164 | 89 | 106 | 28 | 2,047 | 1,712 | 1,005 | 1,814 | 3,747 | 655 | 15,738 |
| Redland | 648 | 14 | 953 | 409 | 371 | 75 | 42 | 1,372 | 4,713 | 1,556 | 1,660 | 2,102 | 2,576 | 7,144 |
| Scenic Rim | 208 | 12 | 126 | 32 | 101 | 235 | 32 | 847 | 891 | 719 | 1,483 | 2,843 | 942 | 2,508 |
| Somerset | 196 | 6 | 74 | 19 | 92 | 125 | 26 | 818 | 268,551 | 1,669 | 472 | 1,252 | 649 | 3,565 |
| Sunshine Coast | 1,380 | 21 | 1,168 | 509 | 793 | 288 | 140 | 1,808 | 3,164 | 1,782 | 1,034 | 4,266 | 970 | 12,726 |

Table 6: Non-residential sector account and per account consumption rate

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Other direct customers

Seqwater also supply other direct customers with raw water including the power stations and Toowoomba Regional Council. Table 7 provide the summary of their take from the SEQ water system.

| | Total Water Take from SEQ System (ML/year) | |
|---------|--|----------------|
| | Toowoomba Take from Wivenhoe Dam | Power Stations |
| 2018/19 | 3,437 | 6,508 |
| 2019/20 | 8,990 | 14,140 |

Table 7: Other direct customers water demand for 2018/19 and 2019/20

Annual demand forecast assessment - 2020

The 2020 annual demand forecast assessment included a review of key parameters including population projections, residential and non-residential water consumption, total system losses and seasonal variation.

The residential per capita daily consumption (LPD) assessment outcomes summarised in Table 4 were used as the starting residential consumption in the 2020 annual demand review. The difference in the combined residential and non-residential per capita consumption at the SEQ level when comparing the 2019 annual demand review and the 2020 annual demand review projections is 0.2%. At the local government area level there were larger differences with the maximum being 15%

Historical demand vs 2020 annual demand review

Actual 2019/20 annual demand

- Compared to consumption in the previous financial year (2018/19), the actual 2019/20 annual demand is 2.59% higher. This is lower than the average long-term historical growth of 3% per annum since 2010/11. COVID-19 travel restrictions likely contributed to the decline despite extended hot and dry weather conditions experienced through the year.

Medium demand – 2020 Annual Demand Review assessment

- The 2020 annual review medium demand (solid blue line in Figure 4) is 3.4% lower than the Water Security Program (2017) medium demand profile at the beginning of the period and ended at 6.1% higher by the end of the 30-year planning horizon in 2049/50.

Long-term forecast demand deviation

- Long-term deviation shown in Figure 4 is attributed to the variation in the starting consumption, however, the long-term variation of 6.1% remains under the 10% revision threshold stipulated by the Water Security Program demand review principle.

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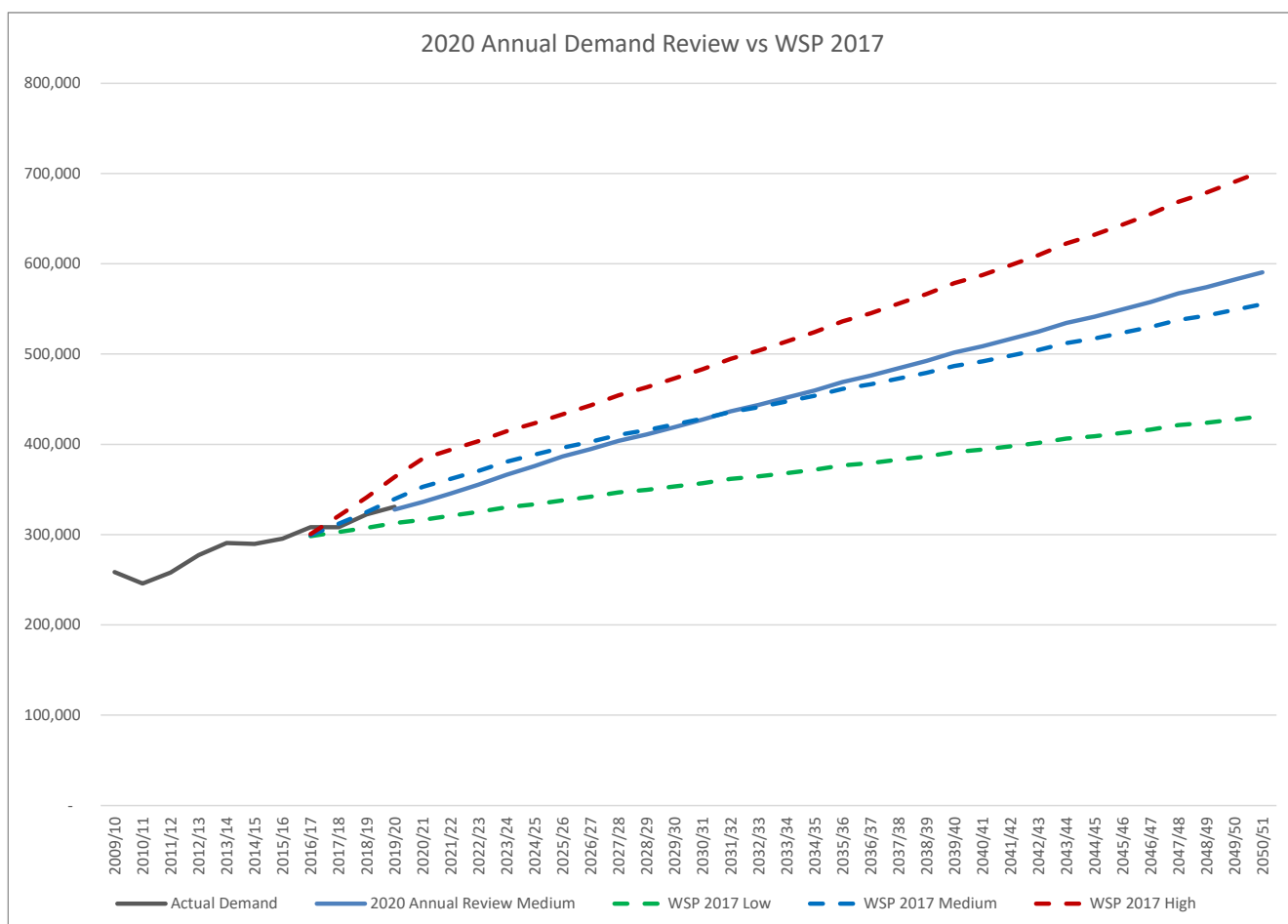


Figure 4: Overview of 2020 annual demand forecast review

Table 8 details the 2020 Annual Demand Review medium demand for SEQ from 2019/20 to 2024/25, excluding power station consumption and Toowoomba demand.

| Financial Year | 2020 Annual Demand Review Medium Demand (ML/Year) |
|----------------|---|
| 2019/20 | 327,739 |
| 2020/21 | 336,075 |
| 2021/22 | 345,512 |
| 2022/23 | 355,335 |
| 2023/24 | 366,327 |
| 2024/25 | 375,877 |

Table 8: 2020 Annual demand review – 2019/20 to 2024/25

Seqwater continues to work with the SEQ Service Providers to understand longer-term demands and potential demand management options.

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Off-grid community demand projection assessment

In preparation for the Water Security Program (2022), the SEQ Service Providers endorsed the following for off-grid communities:

- Population projections
- Average day demand forecasts,
- Mean Day Maximum Month (MDMM) demand forecasts.

Further collaborative assessment with the SEQ Service Providers is underway for the current and forecast demands for Boonah-Kalbar, Dayboro and Kilcoy. Changes to the current and forecast demands for those communities could have implications under normal and drought conditions. This will be explored further in the Water Security Program (2022).

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 off-network 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, the consumers rely on the potable water supply (via carting) to top up their rainwater tanks. In most cases, this is adding additional demand of approximately 20% - 30% of existing demand for the connected community. While this is considered a significant volume, in Rathdowney and Canungra, demand from carting can more than double 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 and are developing a methodology to assess and incorporate the off-network demands into the off-grid demand forecasting model. A comparison of 2018/19 and 2019/20 off-grid demand is shown in Table 9.

| Annual Water Demand (ML/year) | | | | | | | | |
|-------------------------------|---------------|---------------|-------------------|------------|-----------|----------|---------|------------|
| Year (FY) | Amity Point | Boonah-Kalbar | Dunwich | Beaudesert | Kooralbyn | Linville | Lowood | Kenilworth |
| 2018/19 | 117 | 653 | 144 | 811 | 226 | 8 | 3,748 | 50 |
| 2019/20 | 105 | 669 | 154 | 870 | 211 | 9 | 4,137 | 71 |
| Annual Water Demand (ML/year) | | | | | | | | |
| Year (FY) | Point Lookout | Rathdowney | Somerset Township | Jimna | Esk | Kilcoy | Dayboro | Canungra |
| 2018/19 | 73 | 418 | 87 | 492 | 140 | 6 | 2,287 | 29 |
| 2019/20 | 63 | 349 | 92 | 483 | 119 | 6 | 2,260 | 44 |

Table 9: 2018/19 and 2019/20 Off-Grid Demand

During sustained hot and dry weather experienced generally prior to water restrictions demands can significantly increase due to outdoor water consumption and increased water carting. Supply difficulties are expected at Kilcoy, Lowood/Lockyer Valley, Esk, and Beaudesert where supply upgrades are currently being planned for. Boonah-Kalbar is also expected to experience a supply difficulty this year and a review of the plant capability is currently underway. These supply difficulties are generally due to the current water treatment plant capability to meet these increased demands, rather than raw water source limitations. Consequently, demand management messaging may be required for these communities until the upgrades are complete to respond to the ability to manage these peak demands even though the raw water source has not reached a drought trigger.

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5 Drawdown scenarios

On a regional basis, the combined Water Grid Storage levels increased from 56.5% to 68.4% then dropped to 54.8% before receiving some rains in December to increase again to 58.3% (as at 22/12/20).

Drawdown scenarios are updated as part of drought status reporting. For the latest report refer to <https://www.seqwater.com.au/historic-dam-levels>.

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Appendix A – SEQ bulk water supply sub-regions

- Northern sub-region
Bulk water supply assets from Noosa to North Pine WTP; interface with the central sub-region.
- Central sub-region
Areas supplied by Wivenhoe and Somerset dams via the Mt Crosby WTPs (i.e. Brisbane, Ipswich, Beaudesert and Logan).
- Eastern sub-region
Assets from the transfer interface between the central sub-region through to Capalaba and North Stradbroke Island WTP.
- Southern sub-region
Encompasses the Gold Coast supply area and interfaces with the central sub-region.

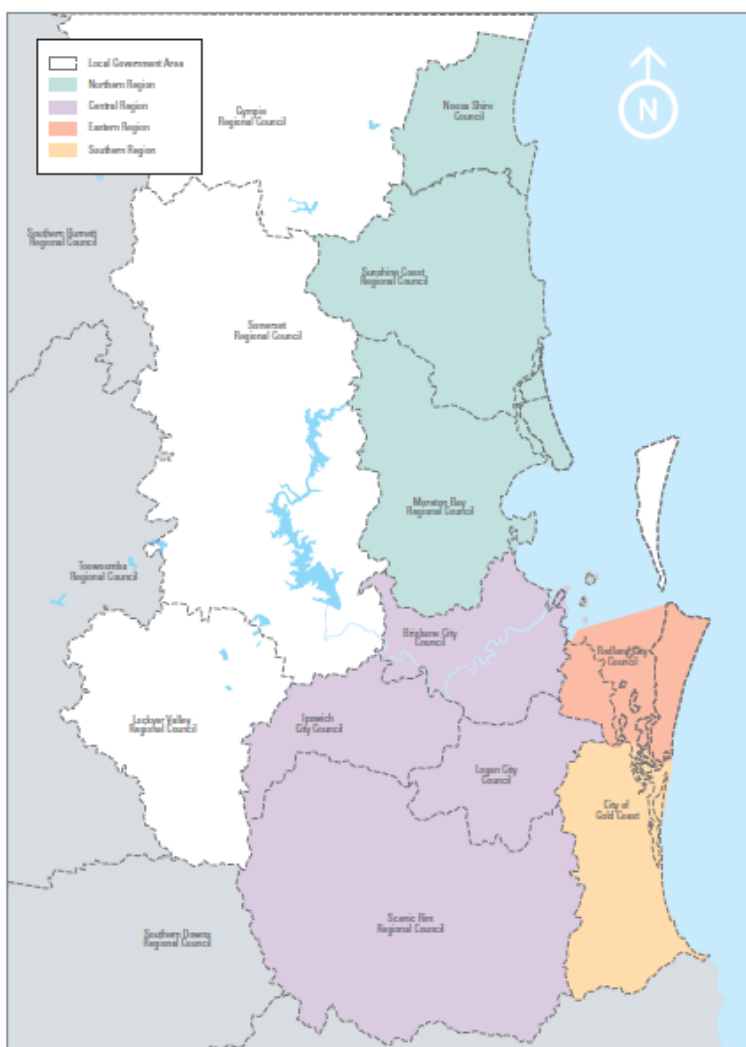


Figure A-1: Sub-regions of the South East Queensland Water Grid

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Appendix B – Status of Water Security Program key actions

Note, only actions which remain outstanding or in progress will be reported in the next annual report. Ongoing projects are considered part of Seqwater’s normal operations and will not be reported beyond this annual report. This action list will not be included in Water Security Program (2022) unless there are outstanding actions to complete, and only those outstanding actions will be included.

| Action | Status | Comments |
|---|-------------|---|
| <p>Develop Seqwater’s liveability objectives and the role of Seqwater in contributing to the liveability of the SEQ region, by:</p> <p>Defining Seqwater’s role in contributing to the liveability of the region,</p> <p>In accordance with the defined role above, working with SEQ service providers, local councils and relevant government departments to define liveability objectives for the region,</p> <p>Define water security related liveability objectives for incorporation into the Water Security Program (2022).</p> | Ongoing | <p>Definition and roles and responsibilities developed with the SEQ Service Providers.</p> <p>Developed with the SEQ Service Providers the Water for SEQ vision and strategic direction statements which will inform the Water for SEQ Plan. This Plan will underpin the work with local councils and others to drive efficient, sustainable and liveable outcomes.</p> |
| <p>Develop an options assessment framework which will underpin progress toward meeting the United Nations definition of water security, which will balance multiple considerations and consider broader societal impacts beyond the strict provision of bulk water service. The options assessment framework should:</p> <p>Incorporate liveability into objectives of the framework</p> <p>Broaden the consideration of the Total Economic Value of options, and</p> <p>Expand the boundary of assessment (catchment-to-tap as opposed to a focus on the bulk water supply system in isolation).</p> | ✓ Completed | <p>The strategic assessment developed for reviewing initiatives for Water Security Program is underpinned by principles which include consideration of the UN Sustainable Development Goals and more holistic outcomes.</p> |
| <p>Work with water service providers and regulatory agencies to further develop the options assessment approach for future versions of the Water Security Program.</p> | ✓ Completed | <p>Work has been completed with the SEQ Service Providers to develop the approach and complete the adaptability scoring.</p> |
| <p>Integration of flood mitigation, dam safety and water security planning so that trade-offs can be concurrently assessed and planning is integrated.</p> | Ongoing | <p>Scoping considerations for the Water Security Program (2022) which will then be embedded in future modelling processes as an ongoing consideration.</p> |
| <p>Develop and implement a site security strategy for future water supply options, to ensure that suitable sites remain available and options are not inadvertently lost due to lack of a suitable site.</p> | In progress | <p>Significant progress made. In the process of securing strategic parcels of land for possible future water supply assets.</p> |
| <p>Continue investigations into the potential for implementing decentralised schemes on a</p> | Ongoing | <p>Considered as part of the strategic assessment for the next bulk water supply.</p> |

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| <p>sub-regional basis, to understand the role and feasibility of decentralised water schemes in SEQ (including consideration of scheme types, cost-benefit analysis, role in drought, contribution to resilience and contribution to liveability).</p> | | |
| <p>Improve understanding of SEQ groundwater systems, their reliability and performance for improvement management and understanding of contribution to water security (i.e. refine groundwater model).</p> | <p>Ongoing</p> | <p>Brisbane aquifer system - study completed to better understand the possible yield from these systems Banksia Beach system on Bribie Island – study completed. Minjerribah (North Stradbroke Island) groundwater system – Seqwater is working closely with the state government to complete groundwater modelling.</p> |
| <p>Develop a detailed drought response plan with SEQ service providers.</p> | <p>Ongoing</p> | <p>Seqwater and the SEQ Service Providers have continued ongoing drought response plan development, including roles and responsibilities and processes</p> |
| <p>Broaden involvement with SEQ’s water service providers, and partner with them in the ongoing development and review of the Water Security Program so that future versions can provide more integrated outcomes. Includes:</p> <ul style="list-style-type: none"> • Development of options assessment framework with SEQ service providers • Analysis of impacts from catchment to bay, incorporating impact on SEQ service provider systems | <p>✓ Completed</p> | <p>The previously established Water Security Program Partner Panel with the SEQ Service Providers has matured to become the Regional Planning Partner Panel with responsibility for involvement in the development and shaping of the Water Security Program, but also for the progression of the Water for SEQ Plan which aims to support the SEQ Regional Plan as a key pillar for water and sewerage services.</p> |
| <p>Finalise a risk assessment and quantify high priority extreme weather and climate change risks</p> | <p>✓ Completed</p> | <p>Climate change vulnerability assessment for Seqwater’s built infrastructure has been completed to consider relevant climate change hazards and understand exposure. A further climate change deep dive is proposed for later in the 20-21 financial year.</p> |

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