Department of Natural Resources, Mines and Energy

Atherton

regional water supply security assessment

TRC
TABLELANDS REGIONAL COUNCIL

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Government

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Introduction

Atherton is the largest urban centre in the Tablelands Regional Council area, and is located in Far North Queensland, roughly 50 km south-west of Cairns. It supports a diverse agricultural sector and associated industry and, increasingly, tourism.

Tablelands Regional Council (Council) supplies reticulated water to Atherton and the surrounding communities of Kairi, Tinaroo, Tolga and Rangeview through the local reticulation (pipe network) that Council refers to as the Atherton Water Scheme (AWS). The AWS comprises two partially connected water supply areas, each with their own water sources. The first services the communities of Tolga and Rangeview and can, if necessary, receive limited supply from the second, larger network which services Atherton, Kairi and Tinaroo. Reference to 'the Atherton communities' is inclusive of all of these communities.

The Queensland Government Statistician's Office estimates the combined population of the Atherton communities will increase from approximately 11 500 (at 2019) to approximately 15 000 by 2041. Some locations around Atherton are not serviced by the reticulated water supply. The 'serviced population' — those that receive water from the AWS — is projected to increase from about 10 000 (at 2019) to about 13 000 by 2041. Around three quarters of the population serviced by the AWS is resident in Atherton and around one quarter is resident in the Tolga and Rangeview area. Kairi and Tinaroo have comparatively small populations. It is assumed population growth in the area serviced will maintain these proportions.

Safe, secure and reliable water supplies are an essential resource for the Atherton communities, not only providing for the health and wellbeing of the community, but also providing opportunities for economic and community development. Council is the registered water service provider under the *Water Supply (Safety and Reliability) Act 2008* for these communities, and provides both water supply and wastewater services to the Atherton communities.

The Queensland Government, through the Department of Natural Resources, Mines and Energy (DNRME), and Council committed to a partnership to investigate and establish a shared understanding of the existing security of the water supply system for the Atherton communities and its capacity to support current demands and future growth.

Council is currently developing a water business strategy and infrastructure development plan to confirm the short, medium and long term actions required to improve the security of the existing water supply. Arising from the partnership between Queensland Government and Council, this regional water supply security assessment (RWSSA) provides valuable information to the community and water supply planners about the urban water supply security, thereby providing a foundation for future water supply management by Council.

This assessment has considered several water demand scenarios for the Atherton communities to identify the timing and magnitude of potential water supply risks. It also considered the water supply security risks if greater reliance to meet demands was placed on groundwater. The assessment shows that sole reliance on either of the AWS's surface water sources or its groundwater sources, can't reliably meet current and projected urban water requirements for the Atherton communities — albeit for different reasons. However, security improves significantly when these sources are used together, and these sources could potentially be sufficient to meet demand to 2041 and beyond.

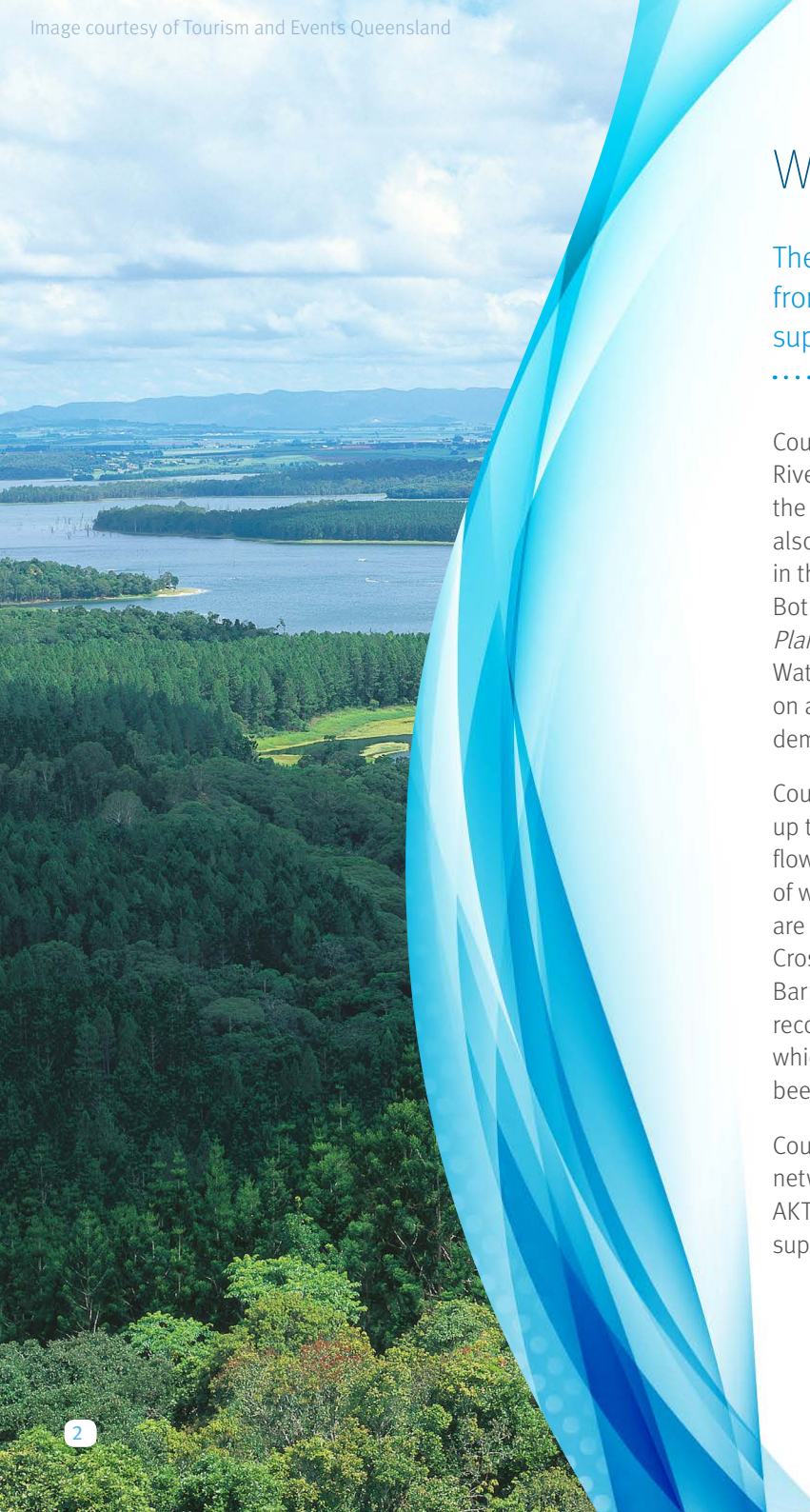

Image courtesy of Tourism and Events Queensland

Water supply sources

The Atherton communities have two types of primary water supplies. They can source surface water from the Upper Barron River and Scrubby Creek, and groundwater from its network of town water supply bores.

Council can take surface water from the Upper Barron River and Scrubby Creek — both of which are located in the Barron Water Management Area (WMA). Council can also take water from five town water supply bores located in the Atherton Groundwater Management Area (GMA). Both bulk water sources are managed under the *Water Plan (Barron) 2002* and administered through Barron Water Management Protocol (Barron WMP). Historically, on average, Council met about half of the total AWS water demand from river flows and half from groundwater.

Council currently holds licences that allow annual take of up to 3785 megalitres per annum (ML/a) of run of river flows from the Barron WMA. These licences limit the take of water from these surface water sources when there are low flows in the Barron River (measured at Picnic Crossing gauging station). Although the flows in the Barron River are seasonally variable, across the historical record (dating back to 1925) there are no occasions in which Council's take under their licences would have been restricted.

Council operates the AWS as two conjoined reticulation networks. One services Atherton, Kairi and Tinaroo (the AKT water supply area). The AKT water supply area is supplied from surface water as well as groundwater from the central and north west zones of the Atherton GMA. The second water supply area services Tolga and Rangeview (the TR water supply area). The TR water supply area is supplied from bores in the central zone of the Atherton GMA, and can receive up to 1 ML per day from the AKT water supply area through a connecting pipeline.

Council disinfects its surface water sources by chlorination before distribution through the AKT water supply area. The effectiveness of this water treatment is impacted by the level of turbidity (cloudiness caused by fine suspended matter in the water). Council is often unable to use the surface water to meet demand due to the turbidity. Increased reliance on surface water would require Council to establish a water treatment plant to enable appropriate water treatment.

Groundwater taken from the Atherton GMA is also disinfected before distribution through the AWS. While Council does not currently have the infrastructure to take its full groundwater entitlement of 4525 ML/a from the Atherton GMA, the modelling assumed that council could access up to its full entitlement if needed.

The area map (Figure 1) shows Council's water sources and associated infrastructure for the AWS, including the Atherton communities and how these areas are serviced by the AWS reticulation.

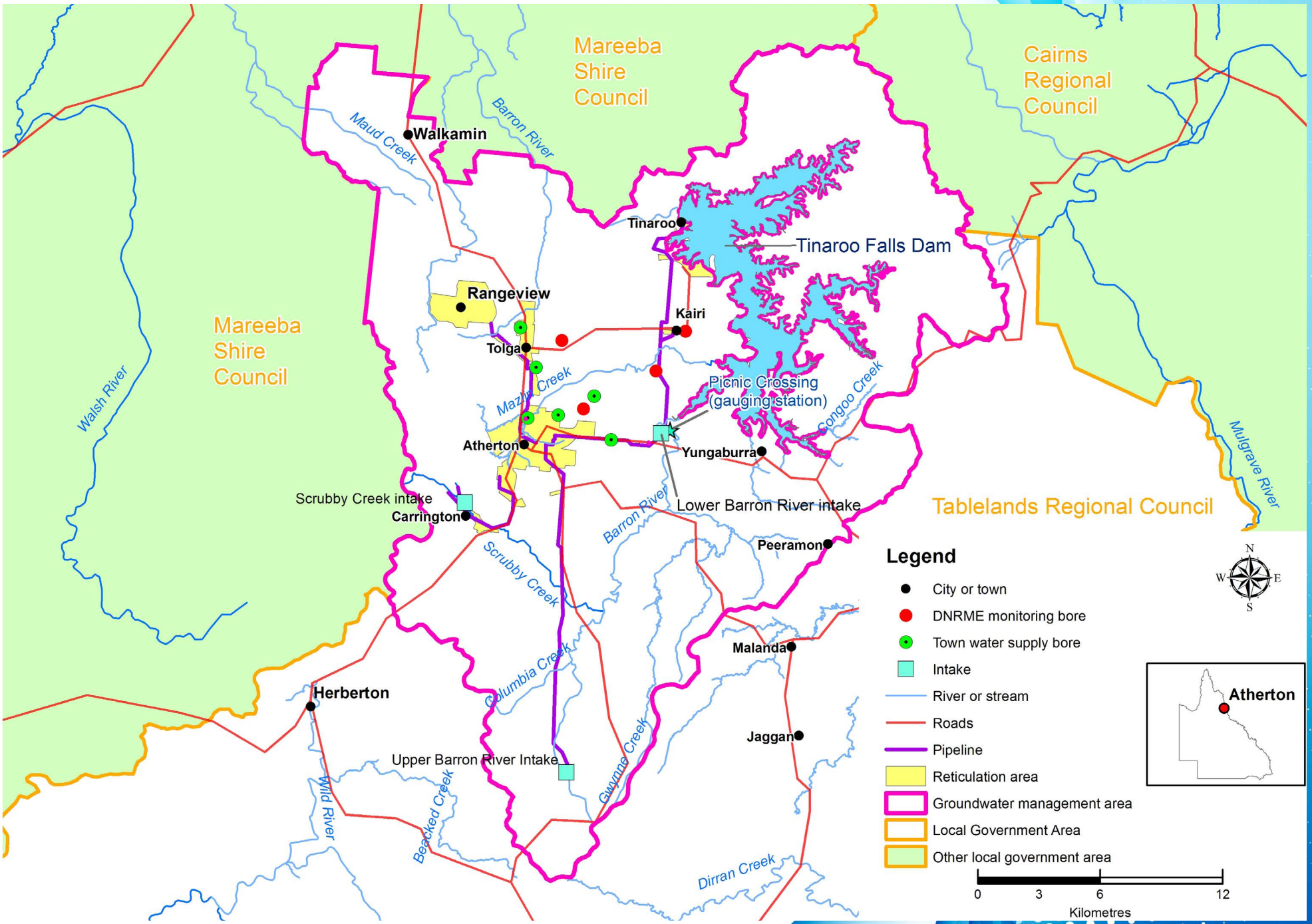

Figure 1: Area map — bulk water supply and service infrastructure for the Atherton communities

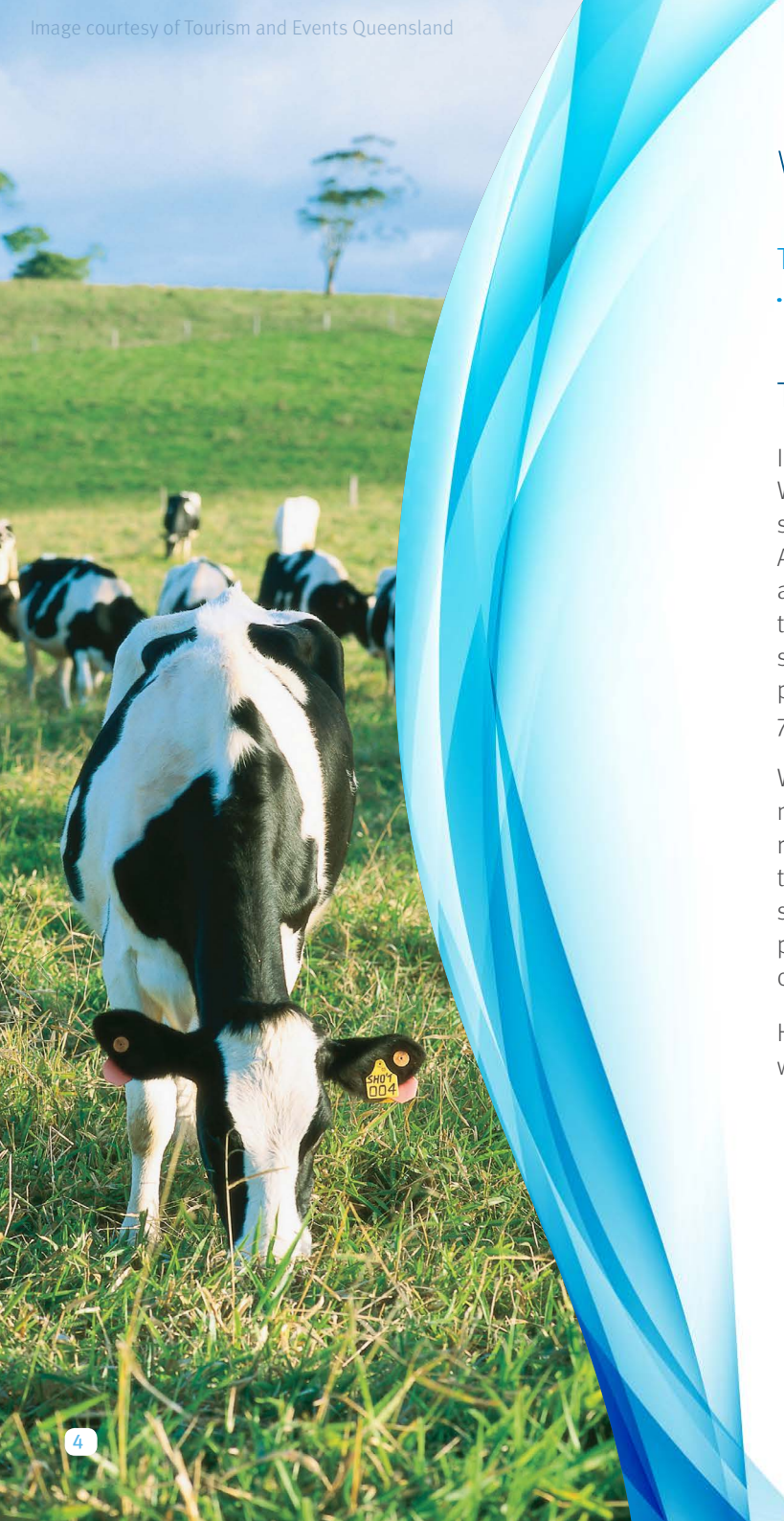

Image courtesy of Tourism and Events Queensland

Water users and water demand

The Atherton reticulation network provides water for urban purposes to about 10 000 residents (at 2019).

The Atherton communities

Information reported by Council through the Statewide Water Information Management (SWIM) database shows the total volume of water sourced for the AWS over the nine years from 2009–10 to 2017–18 averaged about 2660 ML/a (ranging from 1554 ML/a to 3604 ML/a). Based on the total volume of water sourced and the serviced population during this period, the average water demand was approximately 750 litres per capita per day (L/c/d).

Water demand includes household, commercial, municipal, and industrial water demands on the reticulation network, water use by tourists and temporary workforces, and any system losses. The serviced population does not include transient population (which is typically an additional 10 per cent of the serviced population).

Household demand was about 60 per cent of the total water demand.

Other users of the bulk water supply sources

Agriculture

The Tablelands region is heavily dependent on agriculture, with the local economy largely based on agriculture, agricultural support industries (e.g. rural produce and machinery suppliers) and tourism. The Australian Bureau of Statistics report the 2015–16 value of the Tablelands agricultural commodities as $256.7 million, of which the Atherton area contributed more than $140 million. Agricultural productivity around Atherton is weighted toward cropping and intensive livestock. Relative to the rest of the Tablelands region, the Atherton area has three and a half times the area of broadacre cropping, three times the area of cut flower and turf farms, more than five times the fruit and nuts, and one and a half times the vegetables. This is similarly true of livestock production, which is more intensive in the Atherton area than elsewhere in the region — for instance, pig production is more than three times higher and poultry production more than 26 times higher than the rest of the region. This concentration of production is even more remarkable, given the Atherton area occupies less than a quarter of the total area of the Tablelands region.

The productivity of the area is supported by access to water resources, and around 60 per cent of the surface water and 70 per cent of the groundwater entitlements in the area support agricultural use. Specifically, agricultural water demand is met through about 15 360 ML of entitlements in the Central and Northwest zones of the Atherton GMA and 7090 ML/a of unsupplemented water allocations in the Barron WMA (the same sources used by Council).

Agricultural surface water allocations have tighter restrictions on when they can take water compared to Council. This means surface water is available for town water supply, even when it is cut back for agricultural use.

In contrast, groundwater entitlements do not use a priority system for water sharing rules. Instead when water levels drop below a certain level in identified monitoring bores, all allocations are reduced incrementally. Consequently, agricultural groundwater demand is more likely to impact the Council's supply security.

Industry

The extensive agricultural sector in the Tablelands region influences the local manufacturing industry. In 2016–17, 6.8 per cent of regional employment was in manufacturing, generating $152.8 million in total sales.

In 2016–17, food manufacturing contributed $93 million in total sales — more than 60 per cent of the manufacturing sector's total sales. Food manufacturing industries in the Atherton reticulation area include the abattoir and the Peanut Company of Australia processing plant in Tolga. These businesses are supplied with water from the AWS and are included in the 'industrial, commercial and municipal' water use data reported by Council. This data does not indicate that the manufacturing sector operating outside the AWS is likely to place a particular strain on water availability for the AWS — now or in the foreseeable future.

The Tolga Industrial Estate is just south of the main part of Tolga and home to over 90 lots; mainly trade, mechanical services, depots and dealership businesses. Water is supplied through the AWS and water use by these industries is included in the 'industrial, commercial and municipal' component of the water use data reported by Council.

The Atherton Tablelands is rich in mineral resources and contains several major mining operations. However, mineral resources in the Tablelands are concentrated toward Herberton and Mount Garnet in the south west. These mines are in a different catchment and do not affect Atherton's water supply. Similarly, the Wongabel Quarry, 7km south of Atherton is serviced by its own bores and does not have access to the Council reticulation. An active peat mine and a small gold quarry near Tinaroo also exist but, due to the size and type of businesses, it is not expected that these companies are large water users. There are no water allocations in the Barron WMA that indicate industrial or mining use.

Tourism

The Tablelands attracts visitors because of its scenic landscapes, abundance of natural features and rich historical value. Tourism Research Australia (TRA) conduct annual visitor surveys to measure the size and composition of the tourism market in each area. Tourism may include overseas visitors in the country for a holiday, business or education, Australian visitors staying overnight, or local day trippers visiting the area. On average each year over the five years up to 2015–16, the Tablelands hosted 14 468 international visitors and 155 414 domestic overnight visitors staying one night or more. Average length of stay for the international visitors was 10.5 days, and for the domestic visitors, 3.0 days — both slightly lower than the averages for the whole of Queensland.

Water demand by the tourist sector is assumed to be accounted for in the non-residential demand.


Image courtesy of Tourism and Events Queensland

Historical performance of Atherton's water sources

Figure 2 illustrates the availability of water in the Barron WMA is closely related to the rainfall received in the preceding 1–2 months. While the average monthly flows vary significantly over the year, there is still sufficient flow that the ability for Council to take water is not impacted. However, turbidity in the surface water sources, which is usually associated with the months of larger flow, limits Council's capacity to use this water.

Availability of groundwater in the Atherton GMA may be limited through the year by the application of announced allocations (AA), which is the percentage of the allocation volume that can be taken throughout the year whilst ensuring sustainable use of the aquifer. From 2009–10 to 2015–16, the AA for the Atherton GMA was 100 per cent, except from 2013–15 that had an AA of 75 per cent. In 2016, the GMA was divided into three zones that have different AA rules. Since 2016 AAs have been as low as 50 per cent in each of the zones but have generally increased to 100 per cent at some point during the year.

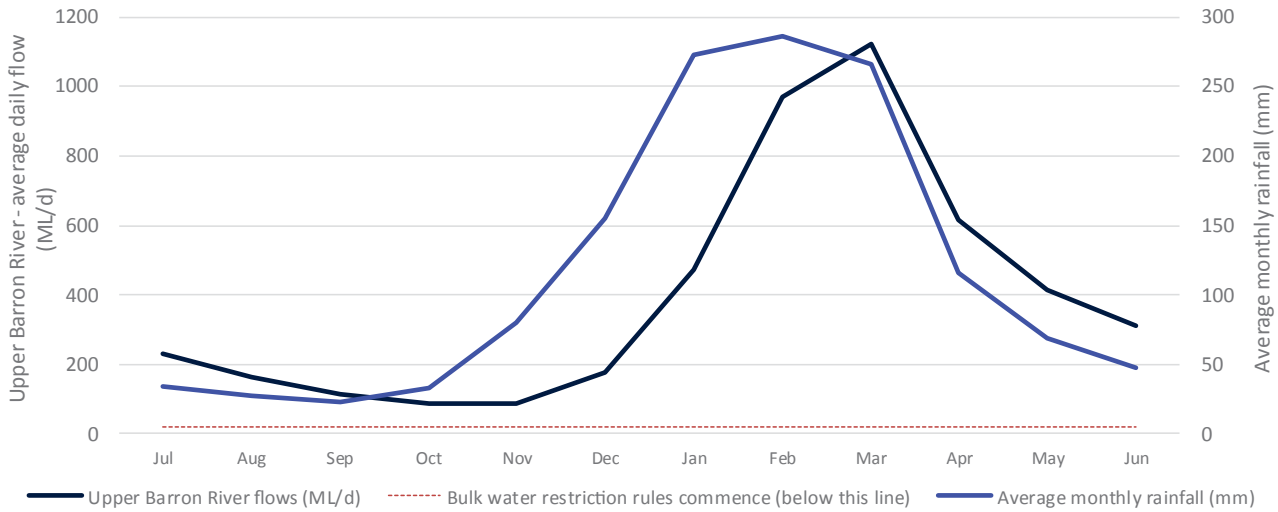

Figure 2: Barron River flows and rainfall*

* Based on flows at Picnic Crossing gauging station 1926–27 to 2017–18.

Climatic impacts

Water demand is variable

Urban water demand varies from year to year and within each year, depending on various factors including climatic conditions such as rainfall, with higher demand during hotter, drier periods. Figure 3 shows the annual average daily water demand of the Atherton communities against total annual rainfall for the period 2009–10 to 2017–18. Demand has been quite variable (ranging from 451 L/c/d to 1039 L/c/d) and the relationship between rainfall and reduced water demand is not as strongly borne out as it is in other centres in Queensland.

Climate change

Climate change is a shift in the long-term average weather patterns or trends over many decades. The impacts of climate change will be different across Queensland's diverse communities. To better understand the possible impacts of climate change, regional scaled climate change projections based on global climate models have been developed by the Department of Environment and Science[1]. These models have been referenced against the historical period 1986–2005. Climate change projections are frequently reviewed as climate change knowledge evolves.

1 Climate change projections developed by the Queensland Government's Department of Environment and Science (2018) Queensland Future Climate Dashboard (https://app.longpaddock.qld.gov.au/dashboard/). The climate futures dashboard provides downscaled (10km² resolution) climate information from 11 global climate models.

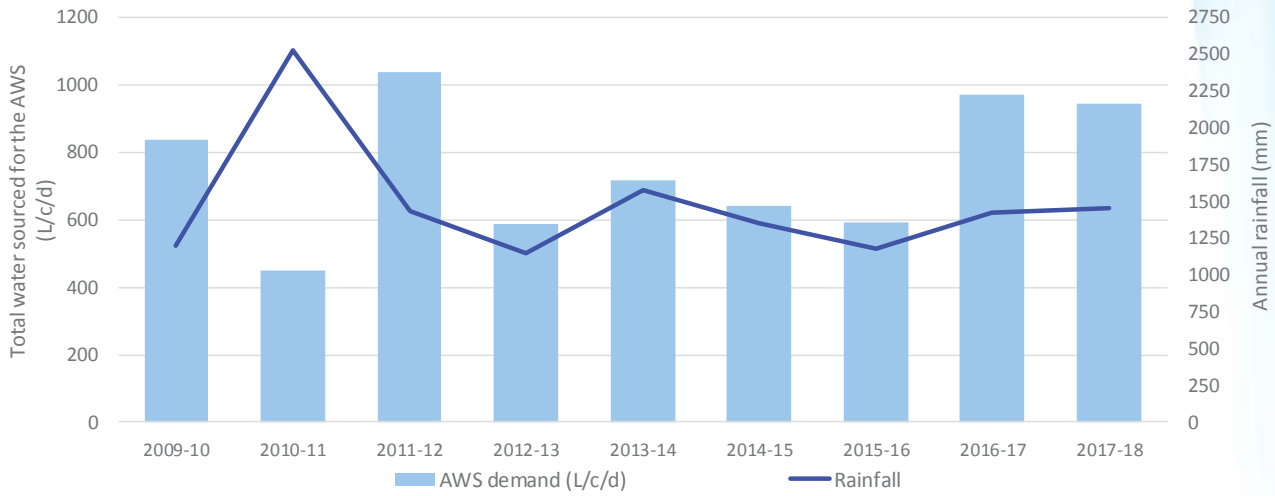

Figure 3: Water demand of the Atherton communities and annual rainfall

For Tablelands Regional Council local government area, under a scenario where greenhouse gas emission levels remain unchanged, climate change impacts by 2050 may include:

- slightly higher average temperature across all four seasons
- increased evaporation, with greatest increase in summer
- reduced average annual rainfall.

The projected climatic changes could result in reductions in water supply availability.

Image courtesy of Tablelands Regional Council

Image courtesy of Bernie Lakey

Image courtesy of Tourism and Events Queensland

Future water demand

Effective water supply planning requires an understanding of the likely (and possible) changes in water demand into the future.

Council and DNRME collaboratively developed water demand projections for the Atherton communities based on agreed key assumptions (such as rates of water use and population growth). The projections remain subject to ongoing monitoring of actual population growth and variations in water use trends (e.g. changes in water use practices may increase or decrease consumption).

Atherton water supply

Atherton and the nearby communities of Kairi, Tinaroo, Tolga and Rangeview are, collectively, projected to increase from a current serviced population of about 10 000 (at 2019) to about 13 000 by 2041.

The average daily water demand for the Atherton communities over the 9-year period from 2009–10 to 2017–18 was approximately 750 L/c/d. It is important to note that this figure represents average demand rather than high demand, such as may occur during hotter and dry periods, and therefore the average daily demand level may be exceeded. The use of an average demand provides a means of directly comparing future demand projections to determine when demand is likely to exceed available supply. For planning purposes, this means an appropriate balance can be reached between the cost of water supply and the demand for available water.

Figure 4 shows two projected water demands for the Atherton communities. The first, which assumes average demands remains at 750 L/c/d, results in total demand increasing to approximately 3500 ML/a by 2041. The second, which assumes a possible demand target of 500 L/c/d can be achieved, takes the 2041 projection to approximately 2300 ML/a.

To assist in understanding the potential changes in demand under varying forecasts, and provide an indication of the flexibility in water supply planning and growth required, a possible demand target of 500 L/c/d as well as the current observed demand level has been adopted and displayed in this assessment. If demand were to develop along the current projection, then a water supply shortfall may occur sooner than under the 500 L/c/d demand projection.

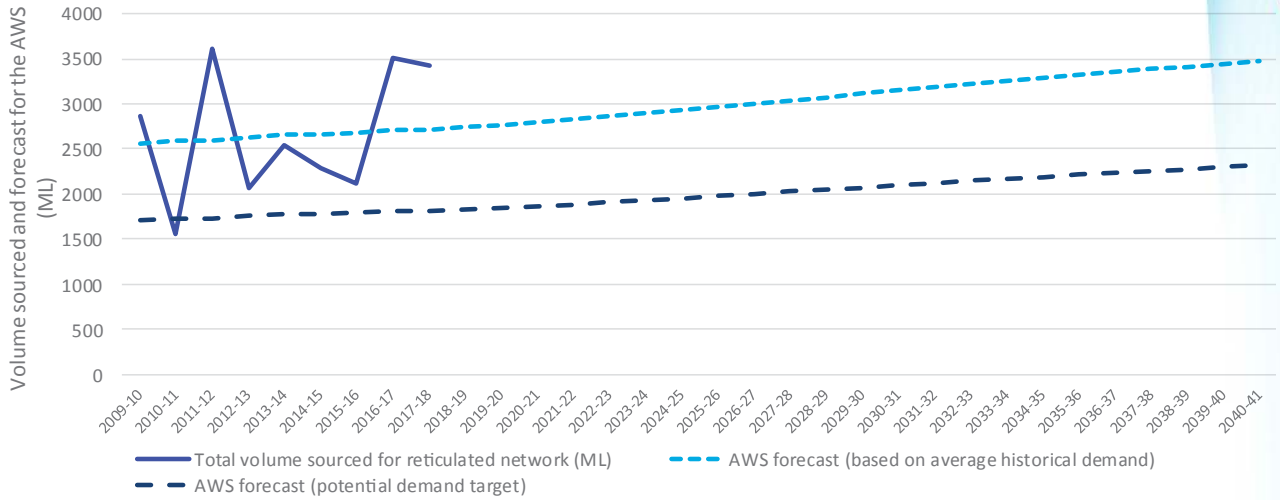

Figure 4: Projected average urban water demand for the Atherton communities

Other users of the bulk water supply sources

Agriculture

Agriculture makes the largest demand on the local water resources, with 22 450 ML of the 33 421 ML available annually allocated to agricultural use. The scope for increasing agricultural production in the Atherton area appears to be limited by several factors, including the existing high intensity of agricultural development in the area, availability of suitable land for cultivation and the availability of water for irrigation. Most of the land suitable for cultivation is already under cultivation, which limits the potential for further agricultural land development.

Industry

Aside from the demand from industrial users placed on the AWS there is not considered to be other significant industrial demand placed on the water sources relied on by Council. The Queensland Government's Business Queensland website reports little potential for growth in the mining area immediately surrounding Atherton.

Industry output data covering the period 2008–09 to 2016–17 show industry productivity is gradually but steadily contracting (around 1 per cent per annum). Despite this, the industrial sector of the total water demand for the Atherton communities is expected to increase at the same rate as residential growth.

Tourism

Some local studies highlight the unrealised potential for tourism in the Atherton Tablelands due to its natural assets and proximity to transport links. For the purposes of the RWSSA, water use associated with tourism is part of the urban demand. Similarly, the proposed method for considering future water demand associated with tourism is that, as with all industry, an assumption is made that non-residential water demands increase proportionally with residential demand.

Image courtesy of Travel and Tourism North Queensland

Image courtesy of Tourism and Events Queensland

Water supply system capability

Hydrological modelling of Atherton's bulk water supply system assessed its capacity to meet current and projected future water demands.

Performance of Atherton communities' water supply

At face value, with 3785 ML/a of surface water allocation and 4525 ML/a of groundwater allocation, it appears that Council has sufficient allocation to meet current demand entirely from groundwater, or entirely from surface water for the Atherton communities. Hydrological modelling was undertaken to determine the capability of Council's water supply sources to meet current and projected demands, both as independent and combined sources. Scenarios incorporated different assumptions relating to infrastructure, including Council having additional works to be able to access all of its entitlements (e.g. to be able to take its 2000 ML/a water allocation from the Upper Barron River Zone D and from an additional bore in the Central Atherton GMA zone).

Both historical and stochastic modelling techniques were used to simulate the performance of the Atherton communities' water supply from Council's groundwater entitlements in the Atherton GMA and surface water entitlements in the Barron WMA. Historical modelling (based on 105 years between 1913 and 2017) was used to show how the water supply would have performed under historical climatic conditions for a range of demand levels and operating arrangements. Stochastic modelling was used to demonstrate how the water supply may perform under a wider variation of potential climatic scenarios, including during more severe droughts than those in the historical period of record. This approach involves generating data sequences that incorporate key statistical indicators from the historical record.

To stochastically model the surface water sources in the Barron WMA, 100 replicates of 10 000 years of stochastic rainfall, evaporation and streamflow data were generated for the catchment areas, and hydrologic modelling of each of the 100 replicates undertaken. To model the Atherton GMA, the 105 year historical climate record was matched with 500 replicates of stochastically-generated groundwater parameters (transmissivity, hydraulic conductivity etc.), and hydrologic modelling of each of the 500 replicates undertaken.

Median outputs from the stochastic modelling have been presented in this assessment. Using the median outputs means that half of the replicate sequences had a lower frequency and half had a higher frequency of an event occurring. These assessments assumed that all existing water entitlements are fully operational and fully used (in accordance with any conditions), except for the water entitlements used to supply the Atherton communities. The water demands of the Atherton communities are, instead, represented at a range total annual demand levels, as shown in Table 1, reflecting the impact of population growth and variable average demand rates.

Table 1: Water demands modelled ^*

Demand scenario	Demands modelled (ML/a)			Description
	Atherton, Kairi and Tinaroo (AKT) water supply area	Tolga and Rangeview (TR) water supply area	Total (AWS)	
Low	1940	160	2100	Approximation of 2040–41 demands at 500 L/c/d
Current	2465	335	2800	Approximate current demand*
Medium	3065	535	3600	Approximation of 2040–41 demands at 750 L/c/d and full surface water entitlement
High	3740	760	4500	Approximate full groundwater entitlement

^ The urban demands for AKT have been increased by 365 ML/a to reflect the 1 ML/d transfer to the TR water supply area (and conversely the TR demands have been reduced by 365 ML/a to reflect that 1 ML/d is met from AKT water supply area).

* Based on QGSO estimated population and demand of 750 L/c/d.

To reduce water consumption and extend the duration of the available water supply during extended dry periods, Council may put in place a water restriction regime for the Atherton communities. The water restrictions may target outdoor water uses including watering of gardens, irrigation of sports fields and swimming pool use. Further details on water restriction rules are available on Council's website. The hydrologic assessment did not incorporate any water restrictions during periods of low water availability.

Frequency and duration of water supply shortfalls

For this assessment, a water supply shortfall is considered to have occurred when the bulk water sources are unable to meet the water demands placed on the system by the Atherton communities. This could occur, for example, as a result of the demand being greater than is allowed to be taken due to either announced allocations or flow threshold limits.

As this assessment is about the capability of the existing bulk water resource, there is no accounting for potential water supply shortfalls resulting from other factors, such as an inability to meet demand as a result of a pump or pipeline failure.

Image courtesy of Tourism and Events Queensland

Assessment of combined water sources

Modelling was undertaken to reflect historical operating conditions for the take of water, i.e. it assumed both surface water and ground water sources were used to meet Atherton demands. The modelling assumed surface water was unable to be taken from December through to April due to turbidity and Council had access to its full 4525 ML/a of groundwater entitlement through its existing bores, which had no associated limitation to pumping capacity[2].

The modelling indicated the combined sources would be unable to meet all of the current demand once every 105 years on average for the Atherton, Kairi and Tinaroo (AKT) water supply area (refer to Figure 5). Modelling indicated the water supply security will decline over the next 20 years, with full demand unable to be met about once every 26 years on average in 2040–41.

The modelling indicated, due to its reliance on a sole groundwater zone and limited transfer capability from the AKT water supply area, the Tolga and Rangeview (TR) water supply area has less water security over the long term. The modelling suggests that demand on the TR water supply area would not be met in full nearly once every eight years on average, as shown in Figure 6.

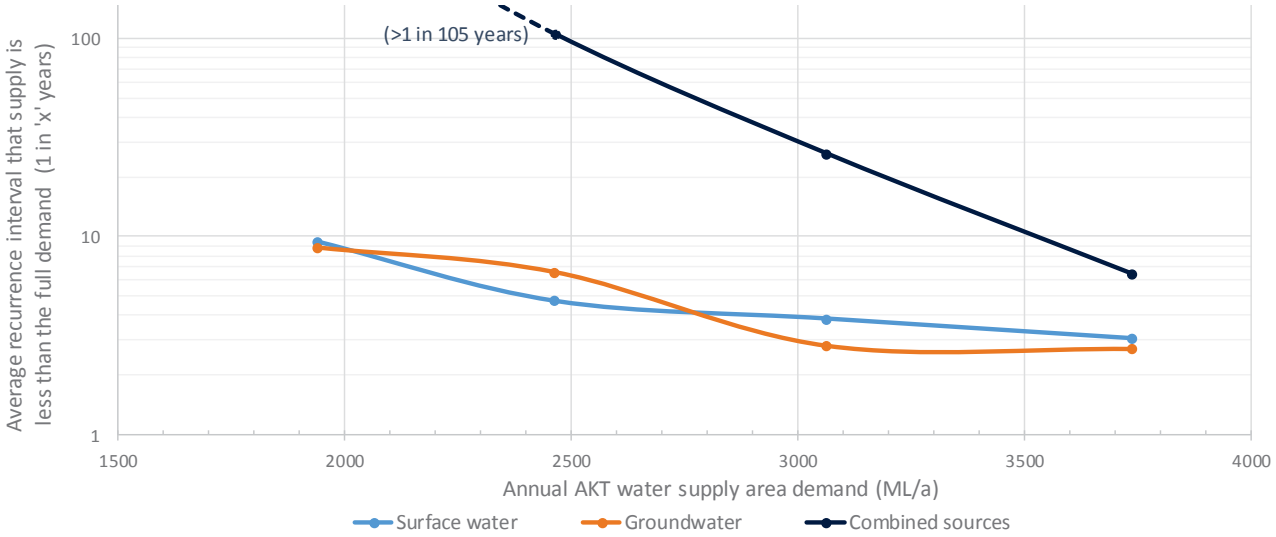

Figure 5: Source water supply security for the Atherton Kairi and Tinaroo (AKT) water supply area*

* Modelling of supply solely from surface water assumed no limitation on take due to turbidity (in comparison to modelling of combined sources that assumed surface water was unable to be taken from December to April due to turbidity)

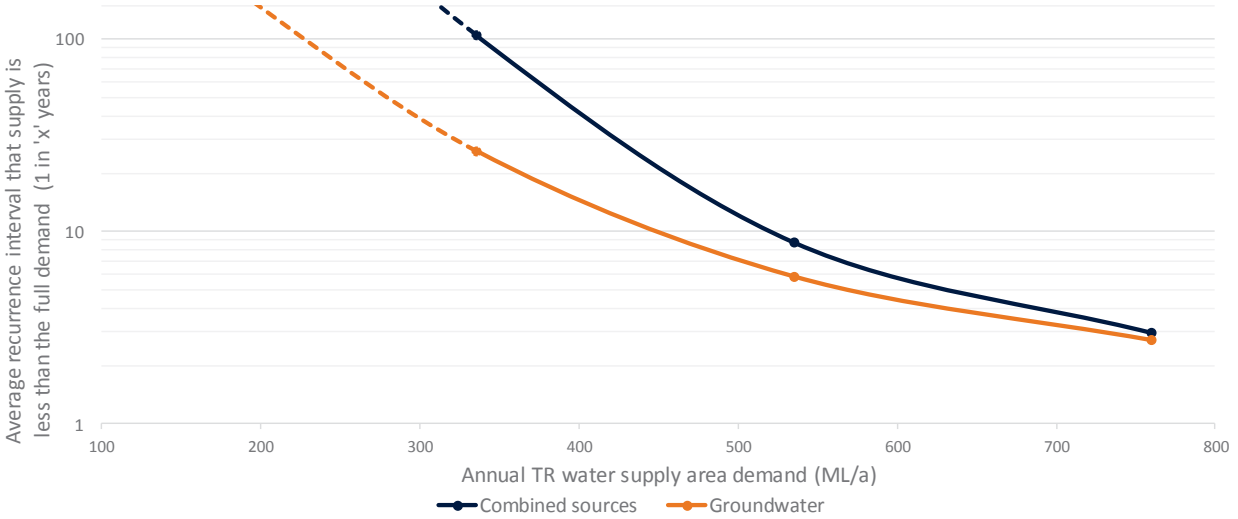

Figure 6: Source water supply security for the Tolga and Rangeview (TR) water supply area*

2 Groundwater modelling also had a range of operational assumptions incorporated, including the minimum groundwater level at which water could be taken from the bores, and that the announced allocation could not increase during the water year. Therefore it is likely the modelling has provided a more conservative result of groundwater supply security.

Figure 7 shows the number and duration of the supply shortfalls that could be expected if Council relied on both groundwater and surface water sources to meet water demand across the Atherton communities. At higher demands, the modelling showed aquifer recharge can not sufficiently replenish drawdown on the aquifer, causing more frequent and sustained supply failures. This graph also highlights the greater water supply security for the AKT water supply area compared to the TR water supply area, particularly at higher demands.

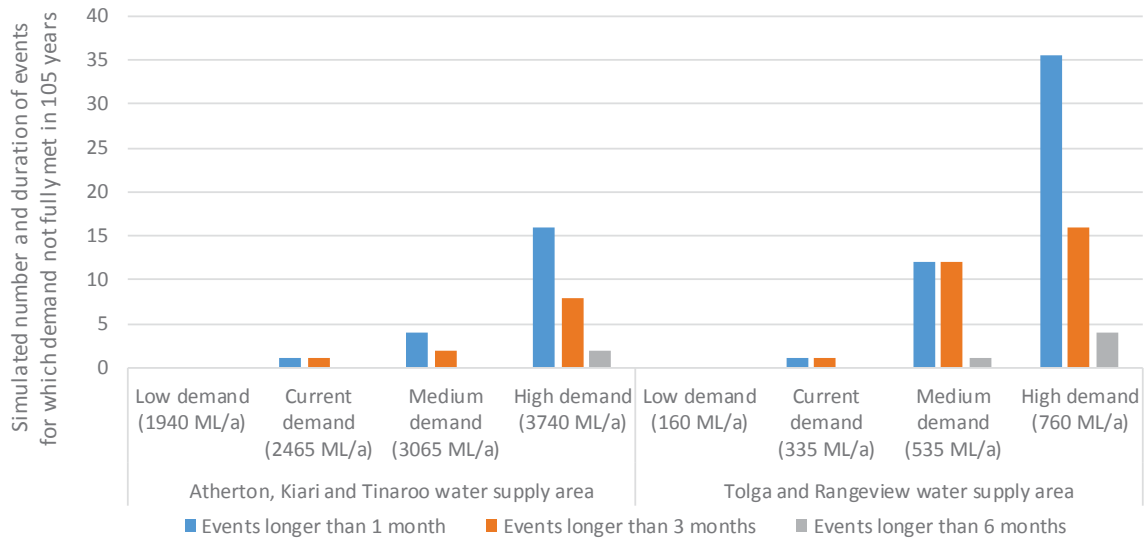

Figure 7: Number and duration of combined source water supply shortfalls

Image courtesy of Tourism and Events Queensland


Image courtesy of Tourism and Events Queensland

Assessment of supply from one source type

Modelling was undertaken assuming that supply was provided by only either surface water or groundwater.

Figure 5 above shows how much water supply security improves for Atherton, Kairi and Tinaroo when using a combination of water sources, compared to using the sources independently. The frequency at which demand is not met is at least halved when using the combined sources. For example, the modelling predicts that average frequency at which full demand will be unable to be met in 2040–41 will be reduced from around one every three years on average when relying solely on either surface or groundwater to one every 26 years on average when the sources are used together. As well as occurring more often, the modeling shows that shortfalls would occur for longer when relying on just one supply source.

It is recognised that surface water has had higher reliability historically. The reliability of surface water is impacted by the water use of other surface water entitlement holders in the Upper Barron River. Modelling assumed full entitlement use that significantly influences the modelling results and represents a conservative water availability scenario that has not been experienced in the historic streamflow record to date.

Figure 6 illustrates that Tolga and Rangeview currently have improved water supply security if Council uses combined sources compared to solely using groundwater. The impact is not as great for this water supply area as the portion of its demand assumed to be met from the AKT water supply area through the connecting 1 ML/d capacity pipeline is reduced as the demands on the TR water supply area increase.

Conclusions

Assuming that demand remains at an average of 750 L/c/d, urban water demand for Atherton communities is anticipated to increase from the current average of about 2660 ML/a to approximately 3500 ML/a by 2041. It may be higher during prolonged hot, dry periods or under higher population growth scenarios. Modelling indicated that Council's water entitlements are likely to be sufficient to meet Atherton's projected water demand to 2041 and beyond if it can make more effective use of its existing surface water resources.

A final assessment removed all of the existing treatment and distribution restrictions in Council's water supply infrastructure. This assessment determined the extent to which water demand for Atherton communities could be met from Council's combined sources, assuming two additional points of take to enable full access to both surface and groundwater entitlements (e.g. to be able to take its 2000 ML/a water allocation from the Upper Barron River Zone D and 1500 ML/a from an additional bore in the Central Atherton GMA zone). This modelling assumed there was no turbidity restriction on take and no limitation on the take of groundwater due to pumping capacity[3]. Under this scenario, no failures or shortfalls were observed (over the historical simulation period of 105 years), even at high demand. This indicates that Council has sufficient volumes of entitlement as long as appropriate infrastructure is in place to access these sources.

3 Groundwater modelling also had a range of operational assumptions incorporated, including the minimum groundwater level at which water could be taken from the bores, and that the announced allocation could not increase during the water year. Therefore it is likely the modelling has provided a more conservative result of groundwater supply security.

Moving forward

This RWSSA represents a collaborative approach between the Queensland Government and Tablelands Regional Council to establish a shared understanding of the existing security of Atherton's water supply and its capacity to support future growth.

In April 2019, Council resolved to endorse the development of a region-wide Water Business Strategy and Infrastructure Development Plan that includes the Atherton communities. After much advocacy on behalf of the community, Council secured a $607 000 grant from the Queensland Department of State Development, Manufacturing, Infrastructure and Planning's (DSDMIP's) Maturing the Infrastructure Pipeline Program. The Water Business Strategy will determine the most efficient and effective solution to improve the reliability of the Atherton communities' water sources, and meet water quality requirements in accordance with Australian Drinking Water Guidelines. It will also look at optimising the water supply infrastructure to ensure potable water can be provided to the community at the lowest possible whole-of-life cost while meeting both current and future demands. Council is working with the community during the development of the strategy and, once complete, will have a strong position to support water planning and investment.

Council secured a $3.9 million grant from the Queensland Government Local Government Grants and Subsidies Program to support its Water Quality Improvement Plan (WQIP). Additionally, a $3.41 million grant from Works for Queensland and $1 million from Council are funding the extension of pipelines and augmentation of bore water supplies in the Ravenshoe Road, Carrington Road and Hastie Road areas of Atherton, consistent with the objectives of the Water Business Strategy. In the Ravenshoe, Millstream, Bellview and Cassowary areas, an alternative water supply will be provided, or treatment capacity improved. The end result will be a reduction of the frequency and duration of boil water notices.

Consistent with the outcomes of this RWSSA, both the Water Business Strategy and Water Quality Improvement Plan serve to make better use of existing surface water by:

- increasing the availability of the existing surface water resources in a cost effective manner;
- enabling full access to its groundwater entitlements from an additional bore in the Central Atherton GMA zone;
- investigating optimal use of groundwater and surface water sources in a cost effective manner to meet demands over the next 30 years; and
- investigating options to integrate the TR water supply area into the AKT water supply area.

Image courtesy of Travel and Tourism North Queensland

For more information on the Regional Water Supply Security Assessment program please visit

business.qld.gov.au