

2.2 Overview of future water demand

It is anticipated that water demand in the study area will continue to increase, principally driven by growth in the industrial and mining sectors and associated urban development, coupled with some growth in irrigated agriculture.

Demand for water is increasing. This increase is expected to be driven by industry and mining development, and growth in the population.

There is some potential for expansion of irrigated agriculture.

Industrial expansion is expected primarily in the Gladstone region and in the Stanwell–Gracemere Corridor in the Fitzroy Shire. Mining expansion is expected to continue throughout the Bowen Basin and northern Surat Basin coalfields.

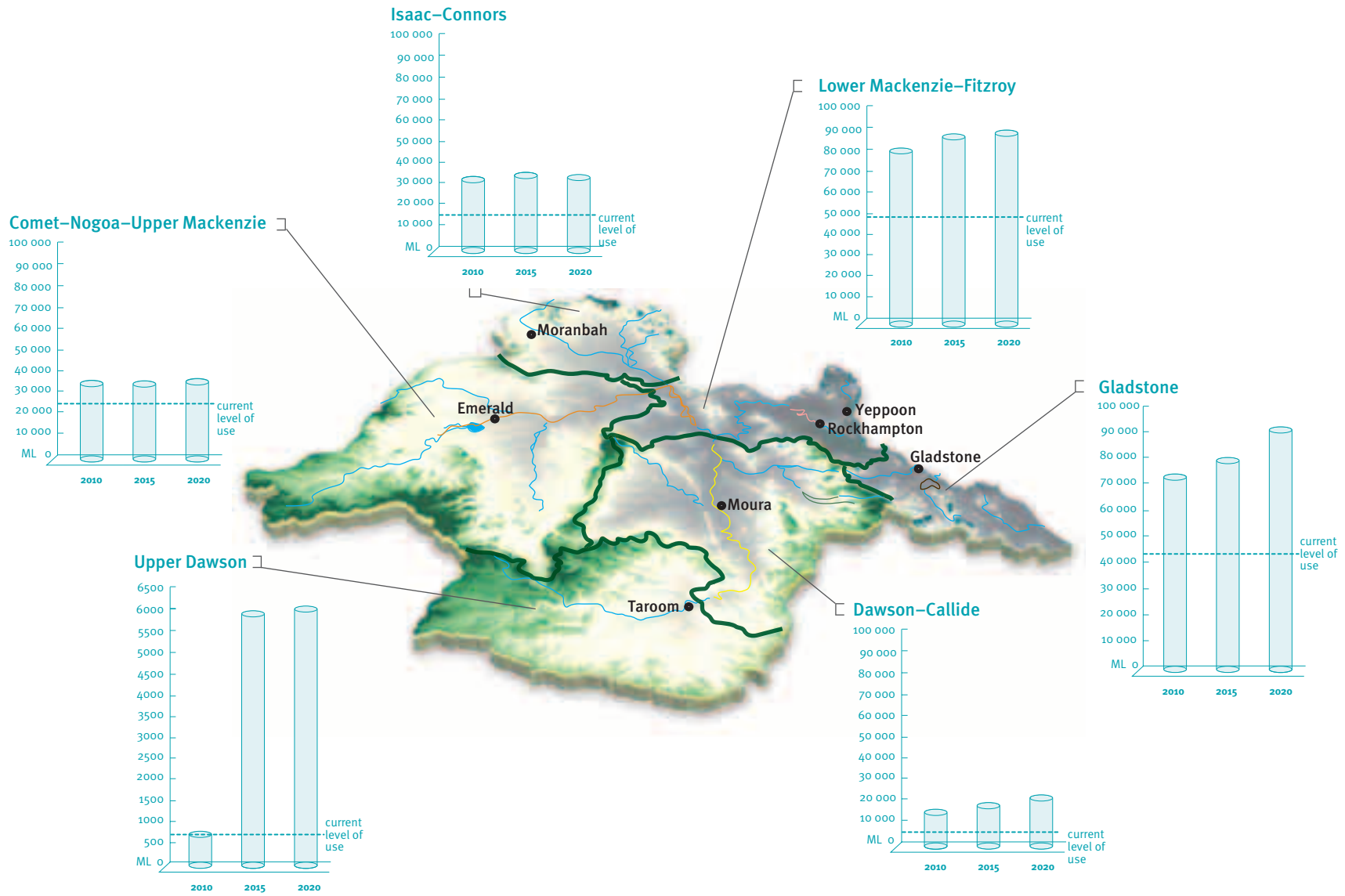
With full development of Nathan Dam, and further use of unsupplemented water, there is potential for expansion of irrigated agriculture.

In the Lower Fitzroy there is potential for intensive livestock production, dependent on a number of factors, including market conditions, availability of appropriate land and water systems to manage water use and waste disposal.

Projected water demands in each sub-region in the strategy area and the associated water supply shortfalls are shown in Figure 6a and 6b respectively, and discussed in Section 2.3. In most sub-regions, shortfalls have been predicted.

The water supply shortfall for high priority water users has been estimated by subtracting current and future water demands from current water supply scheme entitlements. This identifies whether there is a scheme shortfall. In some instances adjustments have been made to account for reduced scheme performances that were identified.

Figure 6a: Projected water demand – urban and industry



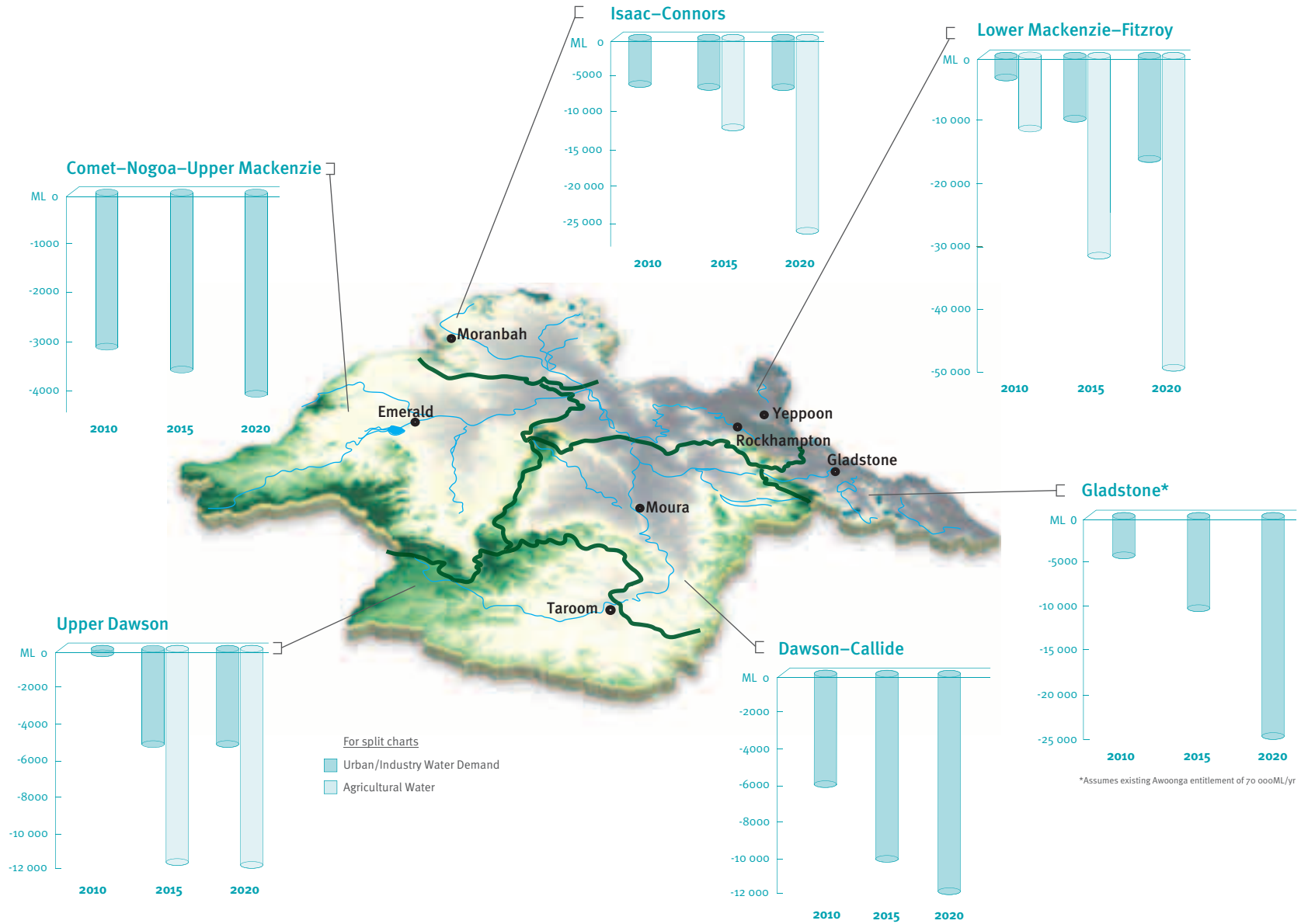


Figure 6b: Potential water supply shortfalls

The estimation of shortfalls has not included potential savings that could be made from demand management measures. Such measures may be able to reduce the shortfalls, and/or delay the need for additional sources beyond the timeframes identified in the strategy.

The estimates of future water use by industrial and urban sectors are based on the best information available. The methodology for the estimation of future water use is detailed in the study report. It should be noted that demand is likely to vary over time. This strategy is intended to be dynamic and flexible and allows for review and updating as circumstances change.

2.3 Adequacy of current supplies to meet existing and future demands in each sub-region

The strategy looks at each sub-region and considers the abilities of the current water supplies to meet demands.

2.3.1 Isaac–Connors

Current supply and use

The Bowen Broken Water Supply Scheme (Figure 3) is located in the Burdekin Basin to the north of the study area, outside the Isaac–Connors sub-region. The scheme supplies a pipeline network servicing the mining industry and urban areas in the upper Isaac–Connors sub-region. Water use from this network was about 7000 ML in 2003–04.

Water is also piped to coal mines in the Isaac–Connors sub-region from Bingeang Weir in the Comet–Nogoa–Upper Mackenzie sub-region and from the Braeside Borefield, Burton Gorge and Teviot Dams in the Isaac–Connors sub-region.

There are three local governments in the sub-region supplying water to a total population of about 17 300 in five towns. Of these, four towns source water from mine pipelines and one from groundwater. In 2003–04, total water use in the towns amounted to about 8500 ML.

There are no major urban or agricultural water supply schemes in the sub-region, and little unsupplemented water is diverted for agricultural use.

Adequacy of current supply for existing demands

Based on authorised entitlements associated with the various supply sources in the Isaac–Connors sub-region, supply should be adequate to meet current demands. However, the recent dry period has demonstrated that the supply performance of a number of these sources is well below that required for urban and mining use. For example, since mid 2004, persistent low storage levels in Eungella Dam have resulted in supplies being restricted to 40 per cent of entitlements. It is anticipated that development of the Gattonvale Off Stream Storage on the Broken River by SunWater will significantly improve system performance. Further assessment of the degree of this improvement is continuing.

Similarly, supply performance from the Braeside borefield is lower than previous estimates, with current extractions believed to be about twice the sustainable yield.

Adequacy of current supply for future demands

Growth in coal mining, associated urban expansion, and limitations of existing water supplies are the key drivers for future water demand in the Isaac–Connors sub-region. Based on demand projections established for the sub-region during preparation of the draft strategy, the supply shortfall was predicted to reach 6500 ML/a by 2020, as shown

Current supply in the Isaac–Connors is of concern.

There are issues with how the Eungella Dam ‘performs’ in very dry periods. Coupled with the growth in the mining industry, supply shortfalls are expected.

in Figure 6b. However, recent information suggests that there has been considerable growth in short and medium term demands in the area. This growth in demand is not quantified at this time.

The Fitzroy Basin ROP makes provision for the short to medium term release of up to 12 000 ML of unsupplemented maximum annual diversion in the Isaac–Connors system and tributaries of the lower Mackenzie and Fitzroy. This potential source would be based on unsupplemented flows, which are highly seasonal and quite irregular.

It is anticipated that this water may be sought by the irrigation and mining sectors.

Demand over the longer term by the irrigation sector is not expected to exceed 26 000 ML of maximum annual diversion.

2.3.2 Lower Mackenzie–Fitzroy including Capricorn Coast

Current supply and use

Capricorn Coast

The Capricorn Coast's water supply source is currently Waterpark Creek. Water use has ranged from 2560 ML/a to 3650 ML/a since 1990. Livingstone Shire Council's authorisation from Waterpark Creek is 4400 ML/a. The Council has implemented a range of demand management measures over the past 10 years, which has allowed for a three percent per annum growth in population, with no overall increase in water consumption. The Council also holds an authorisation to divert up to 7400 ML/a from Sandy Creek, which has not yet been developed, with the Council willing to forego this authorisation if an adequate pipeline supply from the Lower Fitzroy can be provided. The Council has authorisation to develop temporary works in Sandy Creek to access supplies in an emergency situation.

Lower Mackenzie–Fitzroy

The Lower Mackenzie Fitzroy sub-region contains two major water supply schemes—the Lower Fitzroy Water Supply Scheme and the Fitzroy Barrage Water Supply Scheme, which are operated in conjunction (Figure 3). Approximately 76 000 ML is allocated for high priority urban and industrial uses. The schemes also supply approximately 14 700 ML/a of medium priority water, predominantly for irrigation.

Four local governments servicing a total population of about 100 000 in seven towns and localities source supplies from the Fitzroy Barrage Water Supply Scheme, Water Park Creek and local surface water sources. In 2003–04 total water use for urban purposes was about 29 900 ML/a. Rockhampton City Council currently uses about half of its 50 000 ML high priority allocation.

There are also unsupplemented diversions from the Lower Mackenzie River within the Nogo Mackenzie Water Management Area and from the Fitzroy River within the Fitzroy Water Management Area (Figure 5). Water management arrangements for these two

areas are specified in the Fitzroy Basin ROP. These diversions are generally used for irrigation of fodder crops.

In the Fitzroy system, there is approximately 45 000 ML/a of unsupplemented allocations (waterharvesting allocations). There is currently significant under-utilisation of these entitlements. Whilst there is also some under-utilisation in the Lower Mackenzie sub-catchment, the extent is currently not as great.

Adequacy of current supply for existing demands

Capricorn Coast

Whilst the authorisations held by Livingstone Shire Council are adequate for existing demand, there are concerns in relation to the performance of the Waterpark Creek supply scheme. Flows have been declining in recent years in the Waterpark Creek system. If the current dry period continues this would impact on the existing Waterpark Creek supply scheme's ability to meet current needs.

Although the Council's combined authorisations from the Waterpark Creek and Sandy Creek systems total 11 800 ML/a, the combined potential yield of these systems is between 6000 ML/a and 8000 ML/a, dependent on the size of offstream storage and the size of environmental flows required.

Lower Mackenzie–Fitzroy

As indicated above, Rockhampton City Council currently uses only about half of its 50 000 ML water allocation. At this level of use, hydrologic assessments indicate that the performance of the high priority water allocations supplied by the Fitzroy Barrage and Lower Fitzroy water supply schemes is acceptable. This is supported by the fact that water levels in the Barrage have remained well above minimum operating levels in spite of the dry conditions over the last few years.

However, if full use was to be made of both the Rockhampton City Council and Stanwell Power Station allocations, the hydrologic assessments suggest that in times of extreme dry there may be extended periods where the supply, including essential supplies, would be severely restricted or fail. This is considered unacceptable, and additional water will need to be sourced to ensure at least essential supplies in these periods.

Improvements to bring the scheme's performance to an acceptable level could be achieved through new infrastructure, diversification of supply sources and/or improved management arrangements for infrastructure.

Current agricultural demands are considered to be adequately met in this sub-region.

Supply schemes in the Lower Mackenzie and Fitzroy sub-region currently have a large quantity of unused water.

Because the performance of the supplemented supply schemes is less than required, the scheme's performance will need to be improved before this water can be used to meet growing demands.

Adequacy of current supply for future demands

Capricorn Coast

Increased water demand is anticipated as a result of strong urban growth in this area.

If the Sandy Creek system were developed to allow Council to augment the Waterpark Creek supply scheme, the overall volume that could be extracted would be expected to meet supply to beyond 2020.

Alternatively, assuming a yield of 3000 ML/a from Waterpark Creek supply scheme, and no utilisation of the Sandy Creek supply source, the shortfall for the Capricorn Coast is expected to be 1800 ML/a in 2010, increasing to 3250 ML/a in 2020.

Given the reduced rainfall and runoff in this catchment over the past decade, and the relatively pristine environment of Sandy Creek, which is of environmental significance to the region, this strategy does not rely on a water supply from Sandy Creek being developed.

Lower Mackenzie Fitzroy–Urban and industry

Increased water demand is anticipated within this sub-region as a result of industrial growth, particularly in the Stanwell–Gracemere Industrial Corridor.

If rapid growth of the Stanwell–Gracemere Industrial Corridor occurs, projected demands from within this sub-region (including the Capricorn Coast), would create shortfalls in high priority supply of about 3500 ML/a by 2010 rising to 17 500 ML/a by 2020 (Figure 6b).

As outlined above, performance of high priority water allocations supplied from the Lower Fitzroy Water Supply Scheme and the Fitzroy Barrage Water Supply Scheme is of concern. It is anticipated that future demands for high priority water will also require high performance levels.

In addition, water supply from this sub-region is expected to be sought by the industrial sector in the Gladstone sub-region to meet increased forecast demand. Under some demand scenarios, the Awoonga Dam Water Supply Scheme may experience shortfalls of around 4000 ML/a by 2010 increasing to 23 000 ML/a by 2020. Larger shortfalls would result under higher demand growth scenarios.

Inclusion of the potential shortfalls in the Gladstone sub-region in the overall shortfall figures for the Lower Fitzroy sub-region, results in a total shortfall in water for urban and industrial needs of about 7500 ML/a by 2010, increasing to 21 000 ML/a by 2015 and 41 000 ML/a by 2020. These shortfalls would be larger under higher demand growth scenarios for the Gladstone sub-region. In addition, the shortfalls do not include projected demands for high priority water from the Fitzroy Agricultural Corridor discussed below.

Lower Mackenzie Fitzroy–Agriculture

Potential future water shortfalls for agriculture in the Lower Mackenzie Fitzroy sub-region are shown in Figure 6b.

In areas of the Lower Mackenzie and Lower Fitzroy with access to water trading, the majority of future demands could be satisfied by take-up and trading of currently under-utilised entitlements. In the tributaries of the Lower Mackenzie and Lower Fitzroy, where trading is not available, there is expected to be some additional demand that cannot be met from existing supplies.

Potential demands will arise from the development of feedlots and piggeries in the Lower Fitzroy area, referred to as the Fitzroy Agricultural Corridor. The Coordinator-General is currently investigating the feasibility of feedlots and piggeries in this area. Whilst economic and environmental assessments of the proposal are still being undertaken, if such developments were to proceed, there could be demand for up to 8500 ML/a of high priority water for cleaning and stock watering and 27 000 ML/a of medium priority water for the production of silage and to dispose of effluent.

This potential demand could be partially met via trading of currently under-utilised entitlements.

Supply in the Dawson–Callide sub-region is limited, with most sources being fully used.

Groundwater in the Callide Valley is not being replenished as quickly as it is being used.

In the Fitzroy area below the Barrage, demand for additional conventional irrigation is expected to be modest, and the Fitzroy Basin ROP provides for some development to occur. There may be additional demand for development of ponded pasture based on capture of overland flow. This demand may not be able to be satisfied under the existing Fitzroy Basin WRP and ROP.

2.3.3 Dawson–Callide

Current supply and use

There are two water supply schemes in the Dawson–Callide sub-region: the Dawson Valley Water Supply Scheme and the Callide Valley Water Supply Scheme (Figure 3). These schemes principally supply medium priority water for irrigation purposes, with some high priority water used for urban, industrial and mining purposes.

There are four local governments in the sub-region supplying water to a total population of 14 300 in 14 towns. Water for these schemes is sourced from the Dawson Valley Water Supply Scheme (five towns), the Callide Valley Water Supply Scheme (four towns) and other surface and groundwater sources (five towns). Total town water use is currently (2003–04) about 3600 ML/a.

In addition to the supply schemes, private diversions of unsupplemented water in the sub-region occur in the Dawson Valley Water Management Area, the Dawson River tributaries and the Callide Valley groundwater area. Over many years, extractions of groundwater in the Callide Valley have exceeded the area's recharge ability.

Adequacy of current supply for existing demands

Because the Dawson Valley Water Supply Scheme comprises a series of relatively small weir storages dependent on regular seasonal flows, access to medium priority allocations at the start of an irrigation season is restricted. In most years inflows during the course of the year enable this restriction to be eased, such that access increases toward full entitlement. Use in recent years has varied between about 15 000 ML/a to 39 000 ML/a.

Similarly, urban, mining and industrial users dependent on the scheme may have occasionally experienced restricted supplies at the start of a year until wet season flows replenish the weir storages. However, in most years, these restrictions do not impact on the ability of users to access their full entitlement.

Use of unsupplemented water on the Dawson River and a number of its tributaries also varies from about 200 ML/a to 10 000 ML/a depending on both occurrence of stream flows and crop water requirements.

Groundwater entitlements in the Callide Valley Water Supply Scheme total some 20 000 ML/a. Groundwater is used principally for irrigation, some town water supply and industry. Approximately 4300 ML/a of high priority surface water is supplied from Callide Dam for urban and industrial needs.

Groundwater entitlements in the Callide Valley Water Supply Scheme are known to substantially exceed the system's sustainable yield. Consequently access to this water is limited. Use in recent years has declined to about 11 500 ML/a.

Outside the area where groundwater is supplemented, groundwater entitlements totalling about 16 000 ML/a also substantially exceed the sustainable yield. Usage has declined to about 4000 ML/a due to limited water availability.

Adequacy of current supply for future demands

Currently all unallocated water in the Dawson–Callide sub-region is reserved to be developed as part of the Nathan Dam proposal, which is expected to proceed to development when commercially viable and all approvals obtained. The fully developed dam would meet agricultural demands in the Dawson Valley and part of the supply could be used to meet high priority urban and industrial demands both in the Upper Dawson area and in areas downstream of the dam.

However, an immediate shortfall of up to approximately 3300 ML/a of high priority water has been estimated associated with urban and industrial needs in the Moura area downstream of the dam. This supply is required predominantly for expansions of existing developments and associated urban growth.

The overall projected water demand and shortfall in the Dawson–Callide sub-region is shown in Figures 6a and 6b. By 2020 it is predicted that there will be a supply shortfall of approximately 12 000 ML/a (Figure 6b).

Supply in the Upper Dawson sub-region is limited.

Increased demand for water is expected to come from new mines which may develop in the area around 2011 or beyond.

In addition, it is possible that potential new coal mines in the Upper Dawson sub-region (Taroom, Wandoan) will need to obtain water from the Dawson–Callide sub-region by 2011. This requirement is projected to be around 5200 ML/a by 2015.

2.3.4 Upper Dawson

Current supply and use

There are no supplemented water supply schemes in the Upper Dawson sub-region.

Two local governments in the sub-region supply water sourced from the Great Artesian Basin to supply a population of about 1400 in three towns. In 2003–04 water use was about 770 ML.

There is only limited unsupplemented water development in the sub-region, with irrigation opportunities restrained by the high variability of stream flows and a lack of large waterholes. Fodder and grain are the principal crops, with others grown opportunistically.

Adequacy of current supply for existing demands

The existing groundwater sources are considered adequate to meet urban demands in Injune, Wandoan and Taroom.

Adequacy of current supply for future demands

New mining ventures are expected to be developed in the Upper Dawson area by 2011, depending on the development of rail infrastructure to this area. The projected water demand and shortfall in the Upper Dawson region is shown in Figures 6a and 6b.

By 2015 it is predicted that there will be a supply shortfall of about 5200 ML/a, mainly as a result of projected mining developments (Figure 6b). It is most likely that any Upper Dawson coal mines would be serviced from the Dawson–Callide sub-region, as outlined in Section 2.3.3.

Unsupplemented water for private irrigation development projects will be limited by resource constraints. The volume available for unsupplemented diversion cannot be established until details of the Nathan Dam project are finalised.

2.3.5 Gladstone including the Discovery Coast

Current supply and use

Discovery Coast

The towns of Seventeen Seventy and Agnes Water obtain their water supplies from bores and trenches in the shallow aquifer systems behind the coastal dunes. Demand has increased from 38 ML/a in 1992 to 104 ML/a in 2005. The water is used exclusively for urban water supplies for Seventeen Seventy and Agnes Water.

Gladstone

Awoonga Dam Water Supply Scheme is the major scheme in this sub-region. The scheme provides high priority supplies to urban and industrial users, including the Callide power stations (Figure 3). The Awoonga-Callide pipeline currently delivers about 20 000 ML/a of water (2003–04) from Awoonga Dam to Callide Dam for the Callide power stations.

Over 80 per cent of water used in the Awoonga Dam Water Supply Scheme is for industrial purposes, such as light metal production and electricity generation.

There are three local governments in the sub-region supplying a population of about 36 000 in 12 towns or localities. All supplies in Gladstone City and Calliope Shire, with the exception of Builyan, are supplied from the Awoonga Dam Water Supply Scheme. Supplies in Miriam Vale Shire are sourced predominantly from groundwater.

Gladstone City Council's Calliope River Sewerage Treatment Plant treats about 95 per cent of the city's sewage, with an average daily inflow of 7.5 ML. The treated effluent is reused by the NRG Gladstone Power Station and Queensland Alumina Limited alumina refinery.

Private diversion of unsupplemented water currently occurs in the Calliope, Boyne and Baffle Creek basins.

Adequacy of current supply for existing demands

Discovery Coast

There is significant development pressure in the Discovery Coast area and the existing water supply system is significantly overcommitted (by a factor of two) due to undeveloped planning approvals. The system has reached its sustainable limit and is only capable of supplying the current population of 1800 with severe restrictions. These supplies are supplemented from rainwater tanks, which have been compulsory since 1993.

Gladstone

After the raising of Awoonga Dam, but prior to the major inflows arising from Cyclone Beni in 2003, urban and industrial users supplied from the dam were subject to significant restrictions consistent with a Drought Management Plan developed by Gladstone Area Water Board. A major waste water re-use project was implemented at this time. After Cyclone Beni, restrictions were lifted, although urban users in Miriam Vale Shire are experiencing continuing restrictions.

The raised dam has not yet filled, and the associated water allocation is therefore limited to 70 000 ML/a, which exceeds existing demands. Once the dam fills for the first time, the allocation will be increased to 78 000 ML/a.

Supply in the Gladstone Region is considered adequate to meet demands until sometime between 2011 and 2015.

However, a continuation of the recent dry conditions may see the water demands of the Gladstone area exceeding the Gladstone Area Water Board's existing entitlement by as early as 2009–10.

Adequacy of current supply for future demands

Discovery Coast

The planned ultimate population for Seventeen Seventy and Agnes Water is about 26 500, which will require about 2000 ML/a. This will require the development of additional water supplies as the current bore and trench scheme has reached its sustainable limit of about 100 ML/a. The previous strategy of developing about 550 ML/a of overland flow in the Reedy Creek and Deepwater Creek catchments is no longer feasible due to significant development of individual water supply dams for rural properties.

Gladstone

The demand for reliable water from the Gladstone region is expected to substantially increase as a consequence of the arrival of new industry and the expansion of the operations of existing industry.

It is conservatively projected that demand may increase from the current 55 000 ML/a to between 74 000 ML/a and 88 000 ML/a by about 2010, increasing to between 93 000 ML/a and 118 000 ML/a by about 2020.

Provided Awoonga Dam fills to full supply level, supply augmentation will be required sometime between 2011 and 2015. However, a continuation of the recent dry conditions may see the water demands of the Gladstone area exceeding the Gladstone Area Water Board's existing entitlement by as early as 2009–10.

Should the recent dry conditions continue, it is estimated that Awoonga Dam has sufficient volume in storage to meet current demand obligations until late 2011.

2.3.6 Comet–Nogoa–Upper Mackenzie

Current supply and use

The Comet–Nogoa–Upper Mackenzie sub-region has one major water supply scheme—the Nogoa Mackenzie Water Supply Scheme (Figure 3). The majority of water use from this scheme is for irrigation.

Tradable water allocations have been established in the sub-region along the Nogoa and Mackenzie rivers from Fairbairn Dam to Tartrus Weir. These water allocations are managed under the Nogoa Mackenzie Water Supply Scheme and Nogoa Mackenzie Water Management Area.

There are five local governments in the sub-region supplying town water to a total population of about 24 100 in 10 towns and localities. Water is sourced from the Nogoa Mackenzie Water Supply Scheme either directly or indirectly via mine water supply pipelines, from other surface water sources and groundwater. Total town water use is currently (2003–04) about 10 800 ML/a.

Water use by mines in this sub-region totalled about 5300 ML/a in 2003–04.

Diversion of unsupplemented surface water supplies currently occurs in the Nogoia Mackenzie Water Management Area (Figure 5) and Nogoia–Mackenzie tributaries. In the tributaries the most significant development has been along the Comet River, where some large-scale waterharvesting and overland flow operations have been developed.

Adequacy of current supply for existing demands

Supplemented water allocations in the Nogoia Mackenzie Water Supply Scheme comprise a total of 190 925 ML/a of medium priority water used primarily for cotton irrigation, and 44 398 ML/a of high priority water used by 14 coal mines, several urban communities and for some irrigation of tree crops.

The scheme has been fully allocated for some years and, in recent years, the available water has been fully utilised. Hydrologic assessments suggest that the historical performance of both medium and high priority water allocations supplied by this scheme is suitable for the intended uses, although there have been extended periods where medium priority water has not been available due to restrictions.

Use of unsupplemented water on the Nogoia–Mackenzie River system and its tributaries, mainly the Comet River and Theresa and Retreat creeks, varies considerably depending on stream flows.

Adequacy of current supply for future demands

In this area it is expected that the key driver for increased water supplies will be coal mining developments and associated urban growth, particularly to the south of the Mackenzie River.

Developments to divert overland flow in the Comet area, undertaken prior to the commencement of overland flow regulation, have developed the water resource to the extent that the system is currently considered fully allocated.

This confirms that the area’s future urban, mining and agricultural demands will need to be met primarily from water trading, demand management and water efficiency improvements.

Projected water demand and shortfall in the Comet–Nogoia–Upper Mackenzie sub-region are shown in Figures 6a and 6b. It is predicted that by 2020 the shortfall will be about 4000 ML/a.

As the water available in the sub-region has been fully allocated, potential demand for agricultural expansion in this sub-region has not been estimated. Agricultural growth will be limited to producers who have the capacity to obtain allocations on the market or to reorganise the use of their existing allocation.

Supply shortcomings in the Comet–Nogoia–Mackenzie sub-region are highlighted. The supply scheme is fully utilised, and there is no capacity to augment supply.

Future demand can only be met through trading, demand management and water efficiency improvements.

2.4 Urban communities

2.4.1 Urban water supplies

The supply of water to urban communities is the responsibility of local government through the *Local Government Act 1993*.

In accordance with the water needs hierarchy outlined in Section 1.4, the highest value and best use of water can be attained through the trading of existing water entitlements. The high level of competing demands for water in some parts of the Central Queensland region could significantly impact on local government's ability to provide a reliable water supply for urban communities at an affordable rate.

While local governments appreciate that mines have often provided water for local government's urban needs at limited cost, in the longer term, local governments are seeking a greater level of entitlement security and a more direct role in planning for their town's future water requirements.

Currently there is rapid expansion in the coal mining sector in Central Queensland. The expansion of existing mines and development of new mines has a whole-of region impact on urban water supply needs as new workers move into the region.

Major industry development, such as mines, directly affects the local government authorities where the development occurs, as well as other areas in the region where the operational staff choose to reside, such as the coastal catchments.

Local governments have identified a number of concerns and issues with the reliability and affordability of water for urban communities in Central Queensland. The Central Queensland Local Government Association is progressing further investigation of these issues in conjunction with the Local Government Association of Queensland.

Many small communities in Central Queensland are experiencing supply shortfalls. The extended dry conditions exacerbate the issue.

2.4.2 Small communities water supplies

There are numerous smaller urban communities in the study area experiencing increasing difficulty over the recent dry years in maintaining adequate supplies to residents. Many of these communities are reliant on groundwater for all or part of their supply.

In many cases it has been necessary to impose severe restrictions to maintain a supply.

It is recognised that the level of technical expertise available to some local governments may limit the planning and management of these smaller water supply schemes. Traditionally, these small schemes have been considered on an individual basis without consideration of possible regional synergies. Consequently, a regional assessment of the water demand in smaller communities and alternatives for meeting these demands is warranted.

Examples of small communities currently experiencing supply difficulties are shown in Table 2.

Table 2: Examples of small communities experiencing supply difficulties

Sub-region	Town	Supply issue
Isaac–Connors	Nebo	Reliable yield of existing groundwater source unknown
	Glenden	Supply security and supply regime
Lower Mackenzie–Fitzroy	Dingo	Existing sources inadequate, trucking of supply required during drought periods
	Ogmore	Ageing infrastructure requires replacement/refurbishment
Gladstone	Agnes Waters-Seventeen Seventy	Severe restrictions required; development of additional sources involves high cost
	Bororen	Performance of supply of concern
Dawson–Callide	Banana	Now dependent on Moura supply
	Cracow	Has no town supply
	Duarínga	Performance of supply of concern
	Goovigen	Permanent/severe restrictions necessary; poor quality
	Thangool	Now dependent on Biloela supply
	Wowan	Unsuitable quality for most domestic uses
Nogoa–Mackenzie	Springsure	Restrictions required, concerns with ability to meet expected growth
	Rolleston	Restrictions required
	Capella	Performance of supply of concern
	Clermont	Performance of supply from Theresa Creek Dam uncertain