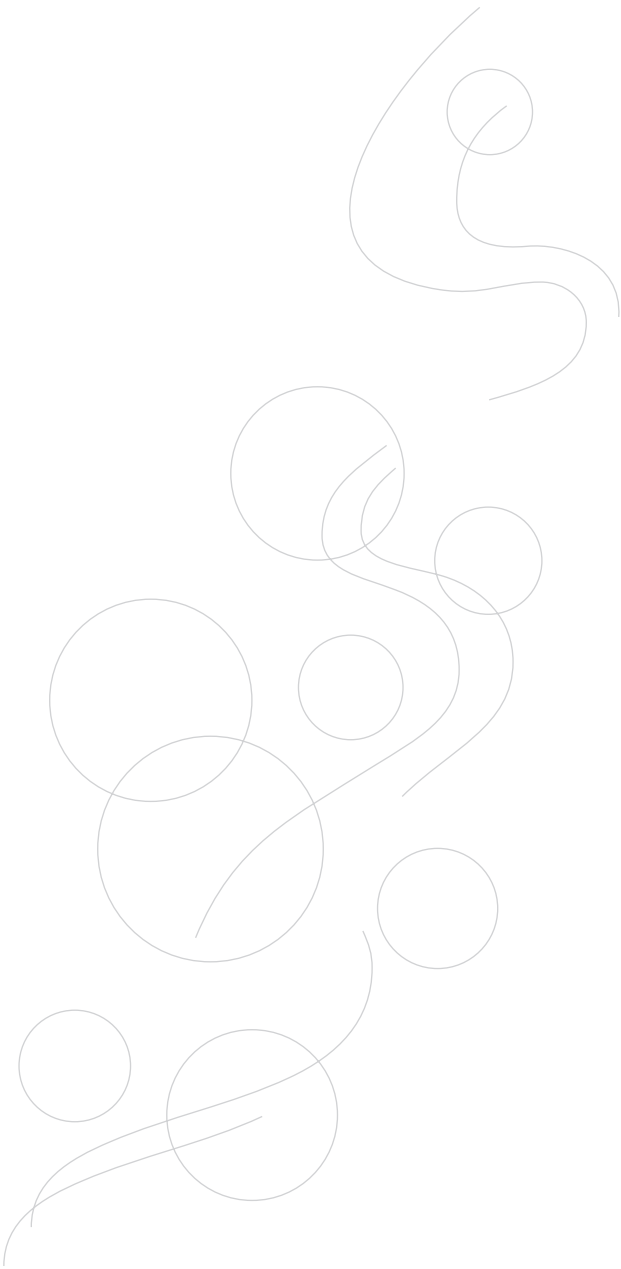


2. The Challenge

Will there be sufficient water?



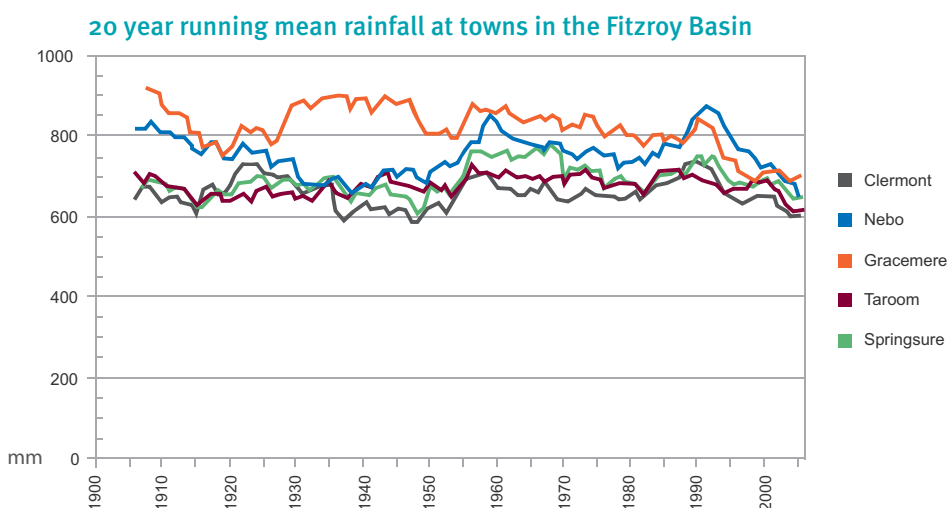
2.1 Overview of current situation

The first step in preparing the strategy was to consider the existing situation. Dry conditions in recent years have seen supply issues emerging in some of the area's major water supply schemes.

Central Queensland experiences a tropical to sub-tropical climate with warm to hot summers and mild dry winters. Rainfall, runoff and temperature are naturally highly variable and evaporation is high.

Climate variation and change is expected to have a major impact on our current water supplies and the planning of potential future water supply options. Figure 2 gives an indication of rainfall trends at various locations across Central Queensland since about 1900.

Figure 2: Mean rainfall at various locations in the Fitzroy Basin



The recent decline in rainfall in the region is associated with a decline in the number of tropical cyclones crossing the east coast and the consequent decrease in the number of days of high rainfall intensity.

There is also an increasing awareness of and desire to better match the performance of existing water supplies to their uses. Achievement of this goal requires improved water management, and in some cases, additional water sources.

For some communities, there is an additional challenge of balancing water supply and demand where competition for the scarce resource is strong.

Another potential challenge is that communities may have also experienced changes in land use. A number of land use change activities, such as vegetation thickening and plantation development, have potential to intercept surface and/or groundwater now and in the future.

In line with the National Water Initiative framework, NRW will determine through water resource planning processes whether the volume intercepted through land use change is a 'significant' water use.

A fundamental understanding of the region's current water supply arrangements is essential in effectively considering how future supply arrangements might evolve. Figure 3 identifies the major water supply schemes.

In undertaking the study, data on current water use and population trends were gathered from the best available information sources and used to project future water needs. Where no information was available, the best estimates based on representative areas or groupings were utilised. To ensure that any changes in circumstances are considered and projections remain as accurate as practicable, projected water requirements will be reviewed and updated as part of the implementation process for the strategy (see Section 5).

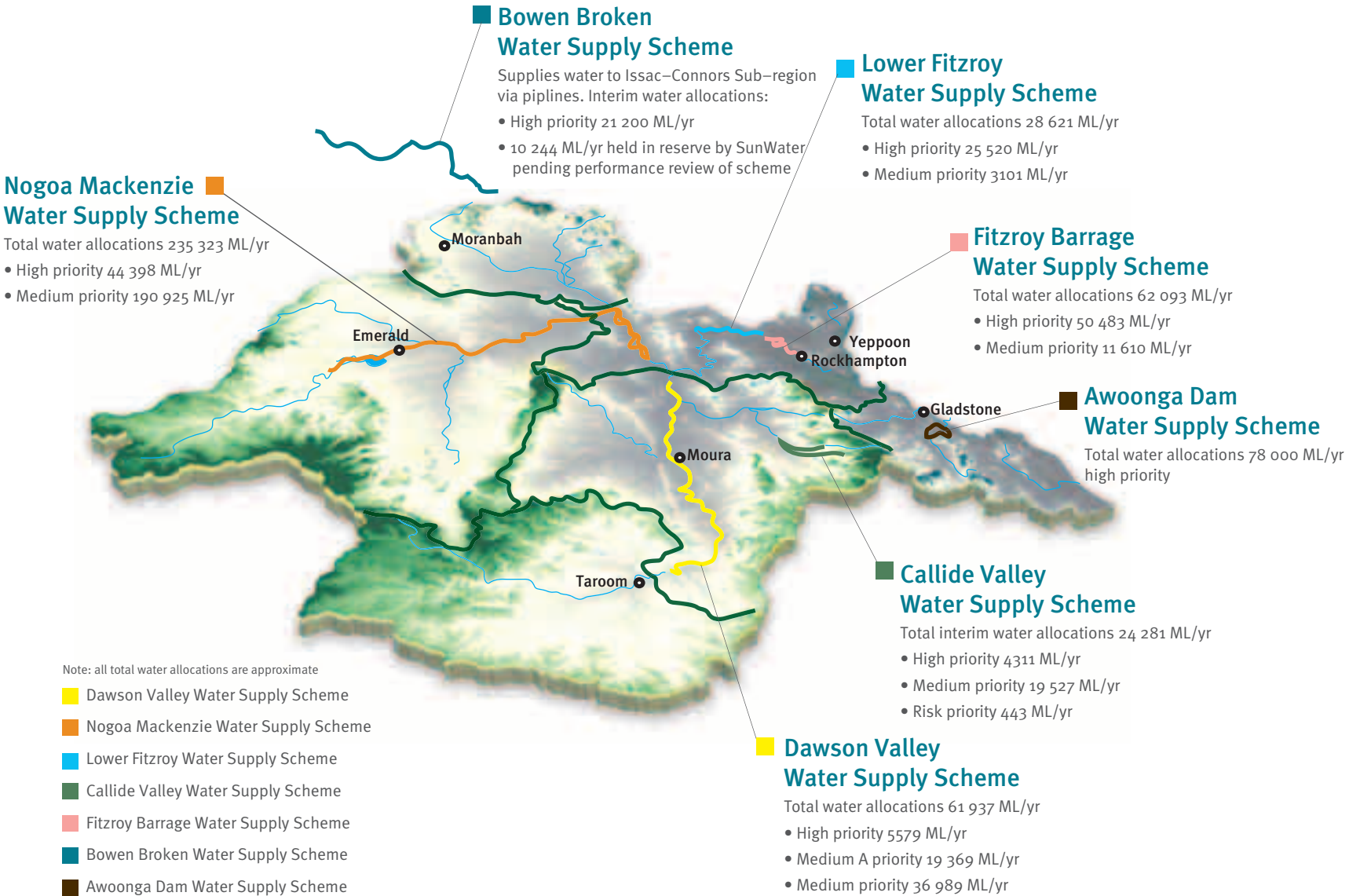


Figure 3: Major water supply schemes and water allocations

2.1.1 Supply schemes and private diversions

Major water supply schemes

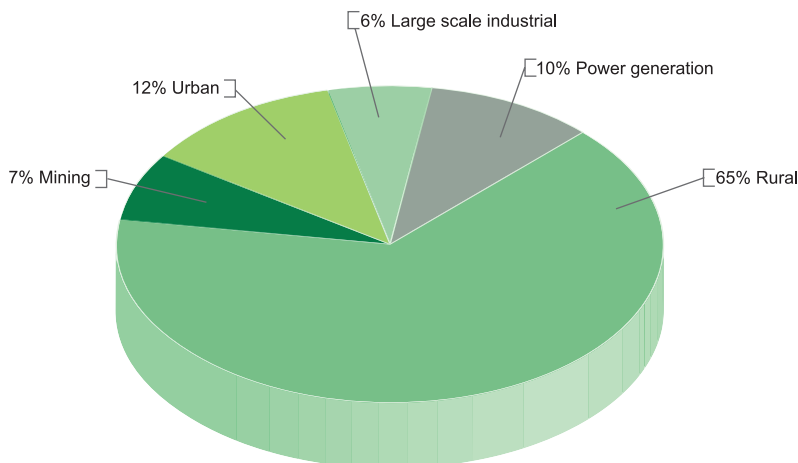
There are currently seven major water supply schemes (Figure 3) that provide supplemented water supplies within the strategy area:

1. Bowen Broken Water Supply Scheme operated by SunWater. This scheme has storages in the Burdekin River Basin and provides water to users (mainly mining) in the Isaac Connors sub-region via the BMA Eungella pipeline and EPC Eungella pipeline
2. Lower Fitzroy Water Supply Scheme operated by SunWater
3. Fitzroy Barrage Water Supply Scheme operated by Fitzroy River Water (FRW)
4. Dawson Valley Water Supply Scheme operated by SunWater
5. Callide Valley Water Supply Scheme operated by SunWater
6. Awoonga Dam Water Supply Scheme operated by the Gladstone Area Water Board (GAWB)
7. Nogo Mackenzie Water Supply Scheme operated by SunWater.

These schemes provide around 293 000 megalitres per annum (ML/a) of medium priority water entitlements and some 250 000 ML/a of high priority water entitlements to users in the study area. Combined, water delivered to users in 2003–04 was about 270 000 ML, with deliveries in some schemes significantly affected by drought.

Demand for this supplemented water is from the mining, industrial, urban and irrigation sectors. The approximate proportion of use by sector is illustrated in Figure 4. Use over the last 10 years peaked in 2001–02 with about 406 000 ML used, including 266 000 ML for irrigation.

Figure 4: Approximate break-up of water delivery by sector (predominantly 2002–03 data)



Factors currently impacting on the supplemented water supply to water users in the strategy area, include:

- the full utilisation of available water entitlements in existing schemes, in particular, the Nogoia Mackenzie Water Supply Scheme, Dawson Valley Water Supply Scheme and Lower Fitzroy Water Supply Scheme
- the performance of some of the major water supply schemes is below what is required by the water users dependent on them.

Other water supply schemes

- **Town water supplies**

There are about 50 town water supply schemes operated by 18 local governments (registered Service Providers under the *Water Act 2000*) servicing the urban water requirements for a population of about 178 000. Water for many of these schemes is drawn from the major schemes listed earlier. The remaining schemes draw additional supplies from other surface and groundwater sources. Urban use currently totals about 63 000 ML/a, the majority of which is drawn from the major supply schemes.

- **Mine and mining town water supplies**

There is a large network of water supply infrastructure (including over 1000 km of pipelines) comprising some 16 schemes servicing the water needs of the 23 Bowen and Callide Basin coal mines and six associated towns in the study area. The majority of these schemes are privately owned and operated by the mining companies. The primary water use at the mines is for coal handling and preparation. Total water use is currently about 38 500 ML/a.

- **Rural water supplies**

Statutory water boards (Category 2 Water Authorities and registered (small) Service Providers) operate seven small rural schemes that supply water for stock and domestic purposes. Total water use in these schemes is currently about 300 ML/a.

Other water supplies

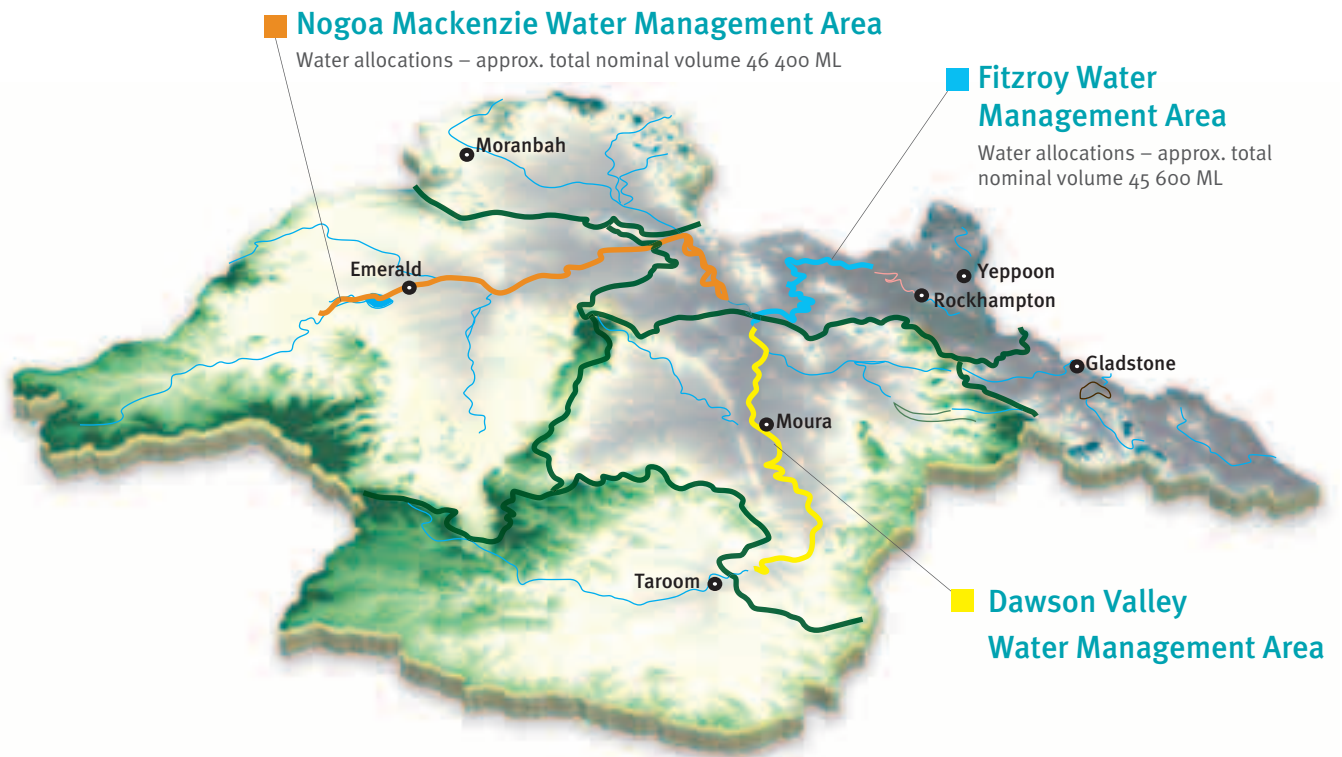
- **Unsupplemented surface supplies**

In the region, a large number of water users draw unsupplemented supplies direct from streams. Unsupplemented entitlements created as tradable water allocations under the Fitzroy Basin ROP, are located in two water management areas in the basin, namely the Nogoia Mackenzie Water Management Area and the Fitzroy Water Management Area. Detailed management arrangements have also been developed for the Dawson Valley Water Management Area, however tradable water allocations are not yet established in this area. Figure 5 shows the nominal volumes for water allocations in the Fitzroy and the Nogoia Mackenzie water management areas.

- **Groundwater supplies**

With the exception of the Callide Valley Groundwater Area and the Braeside borefield, groundwater use in the region is generally limited to supplying a number of smaller towns and for stock and domestic purposes. The Braeside borefield supplies water to mines in the Isaac–Connors sub-region. The Callide Valley Groundwater Area provides water for irrigation, urban and industrial purposes.

Figure 5: Water management areas and water allocations



- **Overland flow supplies**

In recent years there has been a significant increase in the diversion of overland flow water for irrigation and mining. In the past, these diversions were not generally subject to authorisation. The Fitzroy Basin Water Resource Plan has now been amended to include regulation of overland flow.

2.1.2 Water trading

New ways of managing water supplies have been introduced to the area in recent years, including water trading, management of overland flow water, and schemes to promote more efficient water use.

At present, tradable water allocations have been established in the following areas of the Fitzroy Basin:

- along the Nogoia and Mackenzie rivers from Fairbairn Dam to Tartus Weir
- along the lower Mackenzie and Fitzroy rivers from Tartus Weir to the Fitzroy Barrage
- along the Dawson River from Glebe Weir to about 18 km upstream of the Fitzroy River junction.

The extent of 'take-up' of trading opportunities between January 2004 and mid-June 2005 is illustrated by the following summary data.

Table 1: Transfer of water ownership in the Fitzroy Basin Water Resource Plan Area

Sub-region	Number of transfers	Volume transferred (ML)
Supplemented supply		
Lower Mackenzie Fitzroy	21	126
Dawson–Callide Valley	6	1051
Nogoia–Mackenzie	25	4362
Unsupplemented supply		
Lower Mackenzie–Fitzroy	5	1702

Notes:

The above trades were predominately medium priority water. The figures do not include transfers of land and water e.g. the sale of an irrigation farm.

Although the trading market is still developing, it is evident that some market participants have effectively improved their ability to meet water needs by purchasing additional allocation on the market.

2.1.3 Demand management and efficiency

Drought has provided a strong impetus for water service providers to implement management strategies that promote reduced consumption among water users. Water users have also invested in demand management measures. Many of these measures have resulted in changes in water use practices that will provide ongoing savings.

Demand management employs strategies like pricing, education, rostering, recycling and water use efficiency, backed by research and development programs, to reduce consumption. This freeing up of water within the existing water resource base extends its ability to support growth or sustain current developments. For example, water users who make efficiency gains are able to either sell surplus allocations or increase their own production.

Urban

In the urban sector, many local governments have initiatives planned to reduce supply network losses. In a number of areas, this is being combined with tariff improvement strategies in an attempt to reduce high consumption rates.

Agriculture

In the rural sector, changes in irrigation methods along a continuum—from current furrow irrigation methods to best practice furrow irrigation and through to subsurface drip irrigation—have seen opportunities for water use efficiency realised.

Water savings from improved water use efficiencies in this sector are usually used to increase production, maintain production levels in drier years and recently, as a potential resource for water trading.

Industry including mining and power generation

There is general industry recognition that water is becoming scarce and there is a requirement for improved water management. This awareness is leading to increased investment in measures to improve water management and better manage risks associated with water scarcity.