

## 9.0 PIPELINE FROM THE FITZROY RIVER

### 9.1 Pipeline Route from Glenmore Water Treatment Plant

Five routes have been considered for the transfer of treated water supplies to the Capricorn Coast from Fitzroy River Water's Glenmore Water Treatment Plant. For the purposes of this report these routes have been designated as follows.

- € Route 1A: Rockhampton – Yeppoon Rd to Yeppoon;
- € Route 2A: Yamba Rd, Greenlake/Artillery Rds & Rockhampton – Yeppoon Rd to Yeppoon;
- € Route 3A: Yamba Rd, Rossmoya/Lake Mary Rd & Limestone Ck Rd to Yeppoon;
- € Route 4A: Rockhampton – Yeppoon Rd & Coorooman Rd to Emu Park; and
- € Route 5A: Yamba Rd, Greenlake/Artillery Rds & Coorooman Rd to Emu Park.

Figures 9.1 to 9.5 shows the alignment of Routes 1A to 5A.

### 9.2 Pipeline Routes from the Fitzroy River Barrage

Should the Capricorn Coast not be supplied with treated water supplies from Fitzroy River Water's Glenmore Water Treatment Plant it will be necessary for Livingstone Shire to construct its own intake to the Barrage and treatment plant prior to pumping supplies to the Capricorn Coast. The following routes only traverse lands within Livingstone Shire Council. For the purposes of this report these routes have been designated as follows.

- € Route 2B: Yamba Rd, Greenlake/Artillery Rds & Rockhampton – Yeppoon Rd to Yeppoon;
- € Route 3B: Yamba Rd, Rossmoya/Lake Mary Rd & Limestone Ck Rd to Yeppoon; and
- € Route 5B: Yamba Rd, Greenlake/Artillery Rds & Coorooman Rd to Emu Park.

Figures 9.1 to 9.5 shows the alignment of Routes 2B, 3B and 5B which are similar to Routes 2A, 3A and 5A except for the source intake location.

### 9.3 Conurbations Served by each Pipeline Route

Table 9.1 lists the conurbation served by each of the forgoing routes. The conurbation designation 'Northeast RCC' refers to the more elevated land within Rockhampton City area and located adjacent to the Rockhampton - Yeppoon Road. The designation 'Rural LSC' refers, generally, to small rural communities within Livingstone Shire located immediately adjacent to the route of the pipeline.

No allowance has been made for significant development along the route of the pipeline within Livingstone Shire. Should development eventually occur along the route of the pipeline, and access to the pipeline be approved, it is assumed that this development would result in corresponding reduction in the population of the Capricorn Coast.

**Table 9.1  
Conurbations Served**

<b>Pipeline Route</b>	<b>Conurbations Served</b>
1A	Parkhurst, Northeast RCC Area, Rural LSC and Capricorn Coast.
2A	Parkhurst, The Caves, Rural LSC and Capricorn Coast.
3A	Parkhurst, The Caves and Capricorn Coast.
4A	Parkhurst, Northeast RCC Area, Rural LSC and Capricorn Coast.
5A	Parkhurst, The Caves, Rural LSC and Capricorn Coast.
2B	The Caves, Rural LSC and Capricorn Coast.
3B	The Caves, Rural LSC and Capricorn Coast.
5B	The Caves, Rural LSC and Capricorn Coast.

#### **9.4 Existing Allocations – Fitzroy River Barrage**

Rockhampton City Council has an allocation of 50,000ML/a. The actual reliability that can be ascribed to this allocation cannot be stated with absolute certainty at this time. It is understood that Fitzroy River Water is currently addressing the matter in consultation with the Department of Natural Resources. Resolution of this matter is necessary to confirm the availability of 'high priority' water.

#### **9.5 Rockhampton City Water Requirements**

The Glenmore Water Treatment Plant has a capacity of 116ML/d (1,620L/s) based on a 20 hour operation. A 900mm dia. main exists from the Glenmore Water Treatment Plant clear water storage to the Yaamba Road Reservoir. From the Yaamba Road Reservoir a 600mm dia. main serves the Ramsay Creek Pump Station.

Historically the annual water consumption by the City of Rockhampton has generally ranged between 20,500ML/a and 25,000ML/a. However, with the introduction of water meters Fitzroy River Water anticipates a reduction in overall consumption (a likely reduction of 25% with demand management is considered possible following the introduction of a two-part tariff).

Based on a high growth scenario it is expected that the year 2056 water demand by Rockhampton City and Gracemere with demand management could be limited to 20,000ML/a. This demand would equate to a MDMM requirement of 83ML/d (ie. 1,150L/s over 20 hours).

On the basis that the year 2056 flow from Glenmore Water Treatment Plant is limited to 650L/s or less the overall maximum pumping capacity required from Glenmore Water Treatment Plant is unlikely to exceed 1,600L/s over a 24 hour period. Hence, it is unlikely that there would be a need to augment the Glenmore plant in the next 50 years.

#### **9.6 Existing Pipeline Serving 'The Caves'**

The 600mm dia. pipeline which now serves 'The Caves' and Mt Charlton was originally constructed in the year 1920 to serve Rockhampton City from the Fitzroy River in the vicinity of Yaamba.

The pipeline draws supplies from the high level pumps at Glenmore Water Treatment Plant. These supplies are then boosted to Mt Charlton Reservoir which has a bottom water level of RL 115m AHD, by the Ramsay Creek Pump Station located within Livingstone Shire.

Examination of the pipeline indicates that the wall thickness is significantly reduced at various locations over the length of the line and that its overall service life can only be extended if continual maintenance is undertaken. Currently a detailed assessment of the 'life' remaining of this pipeline is being undertaken and it is possible that, on the basis of this assessment, the assumption that the pipeline will not need to be replaced prior to the year 2026 may need to be altered. However, for the purposes of this report it has been assumed that with continually maintenance the pipeline will not need to be replaced before the year 2026.

## 9.7 Pipeline Termination at Capricorn Coast

Termination of a pipeline from the Barrage will be at a location either within the environs of Yeppoon or Emu Park depending on the pipeline route selected.

### 9.7.1 Accommodating Variations in Taste

An issue, which needs to be considered in relation to the connection of the pipeline from the Fitzroy River Barrage to the existing Capricorn Coast distribution system, is the taste of this water compared with the taste of water from the existing Waterpark Creek supply. These waters will differ in terms of taste and therefore it is necessary that residents not be exposed to water supplied from different sources depending on overall demand patterns at different times of the day. Residents exposed to varying sources will experience differing tasting water depending on the source of the water received.

To overcome the problem of differing taste two options need to be considered. These are :

- 1) Terminate the pipeline from the Barrage at a location which allows mixing of the waters from both sources prior to being supplied to the distribution system; and
- 2) Divide the distribution system into two separate systems by valving and supply each water to different areas of the overall distribution system.

For pipeline routes terminating within the environs of Yeppoon Option 1 is preferred while for pipeline routes terminating in the vicinity of Emu Park consideration will need to be given to having each source service different areas.

Overall the feasibility of Option 2 is less attractive as the existing distribution system has been designed to service the Capricorn Coast from north to south and because the proportion of supply from each source will vary with time necessitating continual adjustment to the respective areas serviced by each source water.

### 9.7.2 Connection to the Existing Distribution System

Where a pipeline from the Barrage will connect to the existing Capricorn Coast distribution system in the vicinity of Yeppoon will need to be carefully assessed in the design phase. However, for the purposes of this investigation the following scenarios have been adopted.

- € Scenario 1: Where a lesser proportion of the 2056 water supply requirement is derived from the Fitzroy River Barrage the pipeline will terminate at either St Faiths Reservoirs or a new reservoir to the west of St Faiths Reservoirs.
- € Scenario 2: Where a significant proportion of the 2056 water supply is derived from the Fitzroy River Barrage the pipeline will terminate at a new reservoir to the west of Yeppoon near to the Rockhampton Yeppoon Road.

For Scenario 2 supplies from the existing Waterpark Creek (and possibly Sandy Creek) will be pumped from St Faiths Reservoirs (or alternatively from a new reservoir to the west of St Faiths reservoir) to the new reservoir to be located near to the Rockhampton Yeppoon Road and from where supplies, combined with the Fitzroy River water, will be directed to the distribution system.

The exact location of a new reservoir, referred to above as being to the west of St Faiths reservoir, has not been considered further in this report as doubts exist, at this time as to whether a reservoir at this location is required. Also to some extent, whether a new reservoir is constructed to the west of St Faiths reservoir will depend on whether or not and when the western road by-pass is constructed.

## 9.8 Geological Considerations

In examining each of the pipeline routes it is necessary to consider the topography and the geology of the areas through which each pipeline passes. Table 9.2 provides a summary of the dominant geological types that will be encountered along each pipeline route and indicates the likely excavation difficulty expected.

**Table 9.2**  
**Geology of Pipeline Routes**

<b>Pipeline Route</b>	<b>Geological Type</b>	<b>Length (m)</b>	<b>Excavation Difficulty</b>
1A	Mixed Sedimentary Rocks and Felsites	10,000	Medium
	Granitoid	2,250	Hard
	Alluvium	10,750	Easy
	Ultramafic Rock	3,000	Hard
	Arenite- Mudrock	1,500	Easy to Medium
2A	Gabbroid	3,700	Hard
	Felsites	1,750	Medium
	Mixed Sedimentary Rocks and Felsites	2,500	Medium
	Alluvium	10,500	Easy
	Ultramafic Rock	2,750	Hard
	Arenite- Mudrock	14,000	Easy to Medium
3A	Gabbroid	6,000	Hard
	Felsites	10,500	Medium
	Alluvium	21,000	Easy
	Arenite- Mudrock	9,000	Easy to Medium
	Mixed Volcanic and Sedimentary Rocks	7,500	Medium to Hard
4A	Mixed Sedimentary Rocks and Felsites	13,500	Medium
	Alluvium	5,000	Easy
	Ultramafic Rock	2,500	Hard
	Arenite- Mudrock	10,500	Easy to Medium
5A	Gabbroid	3,700	Hard
	Felsites	1,750	Medium
	Mixed Sedimentary Rocks and Felsites	2,500	Medium
	Alluvium	5,000	Easy
	Ultramafic Rock	2,500	Hard
	Arenite- Mudrock	10,500	Easy to Medium