

## 5. Alternatives to the Project

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## 5.1 Overview

This chapter addresses Part C, Section 1.37 of the terms of reference (ToR) for the environmental impact statement (EIS) for the Lower Fitzroy River Infrastructure Project (Project). This chapter describes prudent and feasible alternatives to the proposed action, including a 'no development' option.

Chapter 1 describes the action and provides the justification for the action, considers its relationship to other projects, sets out the legislative basis for the draft EIS in relation to matters of national environmental significance (MNES), describes the specific matters to be addressed under the *Environmental Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) and an overview of the structure of the draft EIS documentation.

The ToR are included in Appendix A. A ToR cross-reference table that links the requirements of each section of the ToR with the corresponding section of the draft EIS (where applicable) is included at Appendix B. Project approvals are addressed in Chapter 3 Planning and approvals. The public consultation process is described in Chapter 4.

## 5.2 Fitzroy Barrage

Raising the gates of the existing Fitzroy Barrage from FSL 3.75 m AHD to FSL 4.75 m AHD was considered as part of the Project. This would achieve an additional 8,000 ML/a yield over the base case (existing Fitzroy Barrage and Eden Bann Weir and no Rookwood Weir).

Project alternatives have been considered with consideration of their ability to match immediate demand and then keep pace with emerging demand while ensuring capture of available yield in the system. In terms of infrastructure options, raising the Fitzroy Barrage does not satisfy this requirement. Larger storage options are required. Yield modelling indicates that the Project (in the absence of raising the gates of the Fitzroy Barrage) provides viable options for meeting the ultimate water supply objectives (Appendix P).

The raising of the gates on the Fitzroy Barrage was further excluded from consideration within the context of the Project and its objectives as a result of potentially adverse environmental, economic and social impacts as follows:

- More residential properties would need to be acquired. In the order of 370 properties have the potential to be impacted by a 1 m raise of the Fitzroy Barrage
- Possible resumption of recreational land of high community value and changes to recreational use of the existing impoundment
- More private infrastructure affected
- Possible fluctuating river levels in close proximity to residential properties causing inconveniences for residents
- Increased risk of more vectors (such as mosquitoes) in and close to urban areas
- Increased risk of flooding of nearby residential properties
- Adversely impact on confirmed aggregated Fitzroy River turtle (*Rheodytes leukops*) nesting habitat at Alligator Creek near the upstream limit of the existing Fitzroy Barrage impoundment.

For these reasons, it was considered that raising the Fitzroy Barrage would not provide value for money and would have more substantial environmental issues compared to development at Eden Bann Weir and the proposed Rookwood Weir site.

### 5.3 GAWB second water source options

Given the linkage to the Gladstone-Fitzroy Pipeline (GFP) Project (Chapter 1 Description of the action)) and the predicted initial demand of 30,000 ML/a to service the GFP Project, it is considered notable that the Gladstone Area Water Board's (GAWB) 2004 Strategic Water Plan identified 13 water source augmentations. Evaluation of these options against water quality, security, environmental, social and water pricing criteria resulted in nine options being selected for further assessment comprising weirs on the Fitzroy River, weirs on Baffle Creek, raising Awoonga and/or Castle Hope dams and a desalination plant (GAWB 2013). Detailed analysis of these options is provided in GAWB's 2013 Strategic Water Plan.

Given GAWB's requirement that a contingent supply needs to be chosen based on the lowest preparatory cost but able to deliver certainty of supply within a three year period, GAWB's Strategic Water Plan concludes that the GFP Project is the preferred option.

### 5.4 Water storage infrastructure

Construction of Nathan Dam on the Dawson River (at AMTD 315 km and 620 km upstream of the Fitzroy River estuary) is being proposed by SunWater. Water from the dam (approximately 66,011 ML/a of high priority water) will be transported via a trunk pipeline to primarily service coal mines and power stations in the Surat Basin, extending to Dalby. Water will also be released downstream to towns along the Dawson River, to new mining customers in the Southern Bowen Basin and to existing and potentially new irrigation customers in the Dawson Valley Water Supply Scheme (SKM, 2010).

The Nathan Dam and Pipelines Project is currently undergoing separate environmental assessment and SunWater is preparing additional information to the EIS. Nathan Dam has the potential to transfer water to the lower Fitzroy system to meet critical urban supply needs, potentially in response to drought triggers. Given the location of Nathan Dam and distance to the Project, together with anticipated demand from Nathan Dam within the Dawson-Callide and Upper Dawson sub-regions, it is unlikely that supply from Nathan Dam will achieve Project objectives and provide an economically viable solution to long-term water supply requirements in the lower Fitzroy.

Connors River Dam is proposed by SunWater on the Connors River (at 95.7 km AMTD and 562 km upstream of the Fitzroy Barrage). Water from the dam (approximately 49,500 ML/a) will be transported via pipeline to Moranbah and will service coal mines and communities in the Bowen Coal Basin and surrounds. Downstream releases can be purchased and used by irrigators (up to 5,000 ML/a). A separate EIS was prepared for the Connors River Dam and Pipeline Project which was approved by the Queensland Coordinator-General in January 2012 and the Commonwealth Minister for Environment in April 2012. Supply from Connors River Dam to the lower Fitzroy system to satisfy the projected demands is however not considered viable due to significant transfer losses downstream of the dam.

Similar to the Project, no conservation significant fish species have been recorded or are considered likely to occur within the Nathan Dam and Connors River Dam study areas

(SKM 2010; SKM 2012). Both dams would be designed and operated to provide environmental flows and effective fish passage thereby minimising impacts to fish and fish habitat.

Construction of a dam at the Fitzroy Gap immediately upstream of and within the impoundment of the existing Eden Bann Weir has been previously considered. A feasibility study of a dam at this site was undertaken by the Queensland Irrigation and Water Supply Commission in 1977. The storage capacity was estimated at 10 million ML. The construction of Eden Bann Weir downstream of the site has increased the water level of the waterhole at the dam site by 5 m. Supply from a dam at The Gap will not however achieve Project objectives in the short- to medium term as construction of a mega-dam does not allow for incremental development in response to increasing demand. Further, while environmental impacts on the aquatic system can be expected to be similar in nature to those of the Project, such as loss of aquatic habitat, impeded upstream and downstream movement of aquatic fauna and so on, impacts on terrestrial flora and fauna and loss of land associated with inundation will be considerably more severe due to impoundment outside of the river bed and banks. The nearness of the existing Eden Bann Weir to the proposed site adds further complications. It is likely that the existing impoundment would need to be drained to accommodate construction and this would have the potential to severely disrupt the existing supply to Stanwell Power Station.

## 5.5 Non-infrastructure options

With an increased awareness of the scarcity of water as a resource, short-term supplies may be achieved through demand management strategies such as pricing, education, rostering, recycling and water use efficiency, combined with research and development programmes that reduce consumption. As reported in the Central Queensland Regional Water Supply Strategy however, demand management alone is not considered sufficient to meet the longer-term needs of the Rockhampton, Livingstone and Gladstone regions water needs and that provision of infrastructure on the Fitzroy River is required.

Agricultural demand has the potential to be met through the take up of currently unutilised, or under-utilised, water allocations. Trading is allowed for in the Fitzroy River upstream of the Fitzroy Barrage to facilitate uptake of these allocations.

Groundwater supply within the Rockhampton, Livingstone and Gladstone regions is limited to primarily stock and domestic purposes and supplies to small towns and is not considered to be a feasible alternative supply to the Project.

## 5.6 No development option

Limited ability to respond to short- and long-term future demands for water resources will result if the Project is not progressed in preparedness for future demands from existing and new customers, drought and meeting the required level of service (Chapter 1 Description of the action).

Inability to support the GFP Project increases GAWB's inherent risk of supply from a single source (Awoonga Dam). The primary objective of the Project is to support industrial and urban growth. The 'no development' option has the potential to inhibit growth locally (Rockhampton and Livingstone local government areas) and regionally (Gladstone local government area). Limiting industrial growth in particular has the potential to adversely impact on the Queensland economy with large scale industrial development potentially seeking alternative locations interstate due to this water supply constraint.