1. Introduction

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1.1 **Overview**

This chapter explains the function of the draft environmental impact statement (EIS) for the Lower Fitzroy River Infrastructure Project (Project) and provides an overview of the structure of the draft EIS documentation. In addressing Part B, Sections 3.1 – 3.9 of the terms of reference (ToR) for the draft EIS, this chapter describes the Project proponents, provides a summary description of the Project (with greater detail in Chapter 2), provides the justification for the Project, considers its relationship to other projects and assesses Project alternatives.

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. Appendix C provides a consolidated glossary of technical terms and a list of acronyms and abbreviations. The study team are listed in Appendix D. Appendix E provides the proponents' environmental records as described in Section 1.2.

The environmental impact assessment (EIA) process and public consultation program (Appendix F) are also described herein, in response to Sections 3-10 – 3-12 and Sections 3-13 – 3-15, respectively, of the ToR.

Project approvals are addressed in Chapter 3 Legislation and project approvals.

Project proponent 1.2

The Gladstone Area Water Board (GAWB) and SunWater Limited (SunWater) are joint proponents undertaking technical, environmental, social, cultural and economic investigations for the Project. SunWater and GAWB are herein referred to as the proponents for the Project.

The contact details for the Project are:

Lower Fitzroy River Infrastructure Project

Reply Paid 668, Brisbane, QLD, 4001

Telephone: 1800 423 213

Email: fitzroyweirs@ghd.com.au

Website: www.fitzroyweirs.com.au

1.2.1 GAWB

On 1 October 2000, GAWB commenced operations as a Category 1 commercialised Water Authority under the Water Act 2000 (Qld), responsible to the Minister for Water. As from 1 July 2008, GAWB became a registered service provider under the Water Supply (Safety and Reliability) Act 2008 (Qld). GAWB owns and operates Awoonga Dam on the Boyne River along with a network of delivery pipelines, water treatment plants and other bulk water distribution infrastructure in the Gladstone Region in central Queensland. GAWB holds an allocation of 78,000 ML/a from Awoonga Dam by virtue of a Resource Operations Licence (ROL) issued pursuant to the Water Resource (Boyne River Basin) Plan 2000 (GAWB, 2009). GAWB's corporate objective is to ensure that the long- and short-term water needs of current and future customers are met in ways that are environmentally, socially and commercially sustainable. Specifically, GAWB will:

- Contribute to long-term environmental sustainability
- Apply best practice in the management of natural resources and the development of infrastructure



 Maintain environmental (ISO14001:2004), quality (ISO9001:2008), compliance and risk management systems.

GAWB achieves its objective through planning for future water needs, and developing, operating and maintaining its infrastructure in a sustainable manner, while minimising the impact its operations have on the environment.

The contact details for GAWB are:

Gladstone Area Water Board

147 Goondoon St, Gladstone, QLD, 4680

PO Box 466, Gladstone, QLD 4680

Telephone: (07) 4976 3000

Website: www.gawb.qld.gov.au

1.2.2 SunWater

SunWater was established as a statutory Government Owned Corporation on 1 October 2000 under the *Government Owned Corporations Act 1993* (Qld). SunWater owns and operates the Queensland Government's bulk water supply and distribution infrastructure located throughout regional Queensland. SunWater manages 40 per cent of commercially used water in Queensland via 23 water supply schemes and three subsidiary companies. Under ROLs and interim ROLs held, SunWater manages a total water allocation of 2.82 million ML, including the existing Eden Bann Weir (28,621 ML/a). SunWater provides a range of services including infrastructure ownership, water delivery, operation and maintenance of infrastructure and engineering consultancy services. SunWater shares the values and responsibilities of the wider communities within which it operates, namely to secure water for the future. SunWater provides support to regional communities through its sponsorship and education initiatives.

SunWater's Environmental Management System ensures that best practice environmental management and compliance is achieved across the business in accordance with ISO 14001:2004. SunWater's key environmental objectives are:

- To optimise project management and operational procedures that minimise SunWater's ecological footprint and to ensure full compliance with environmental legislation
- To minimise SunWater's impacts on native fish populations and prevent the spread of pest fish
- To proactively manage weeds on SunWater owned and managed property and investigate alternate, more sustainable methods of weed control.

The contact details for SunWater are:

SunWater Limited

Level 10, 179 Turbot Street, Brisbane, QLD, 4002

PO Box 15536, City East, Brisbane QLD, 4002

Telephone: (07) 3120 0000

Website: www.sunwater.com.au



1.2.3 **Environmental record**

GAWB and SunWater have good environmental records and neither party has been found to be in contravention of environmental conditions imposed on their projects. GAWB and SunWater are committed to managing and operating their infrastructure in a safe and sustainable manner as is evident in their environmental policies included in Appendix E.

1.3 **Project description**

The Project comprises the construction and operation of a raised Eden Bann Weir and construction and operation of Rookwood Weir on the Fitzroy River, Central.

Key Project components include the following:

- Eden Bann Weir
 - Eden Bann Weir Stage 2 a raise of the existing Eden Bann Weir (Stage 1 full supply level (FSL) 14.5 m Australian Height Datum (AHD) to a FSL 18.2 m AHD and associated impoundment of the Fitzrov River.
 - Eden Bann Weir Stage 3 the addition of 2 m high flap gates to achieve FSL 20.2 m AHD and associated impoundment of the Fitzroy River.
- Rookwood Weir
 - Rookwood Weir Stage 1 a new build to FSL 45.5 m AHD, a saddle dam and associated impoundment of the Fitzroy, lower Mackenzie and lower Dawson rivers
 - Rookwood Weir Stage 2 the addition of 3.5 m high flap gates to achieve FSL 49.0 m AHD and associated impoundment of the Fitzroy, lower Mackenzie and lower Dawson rivers.
- Aquatic fauna passage infrastructure, namely fish locks and a turtle bypass, at each weir
- Any combination of the above stages.

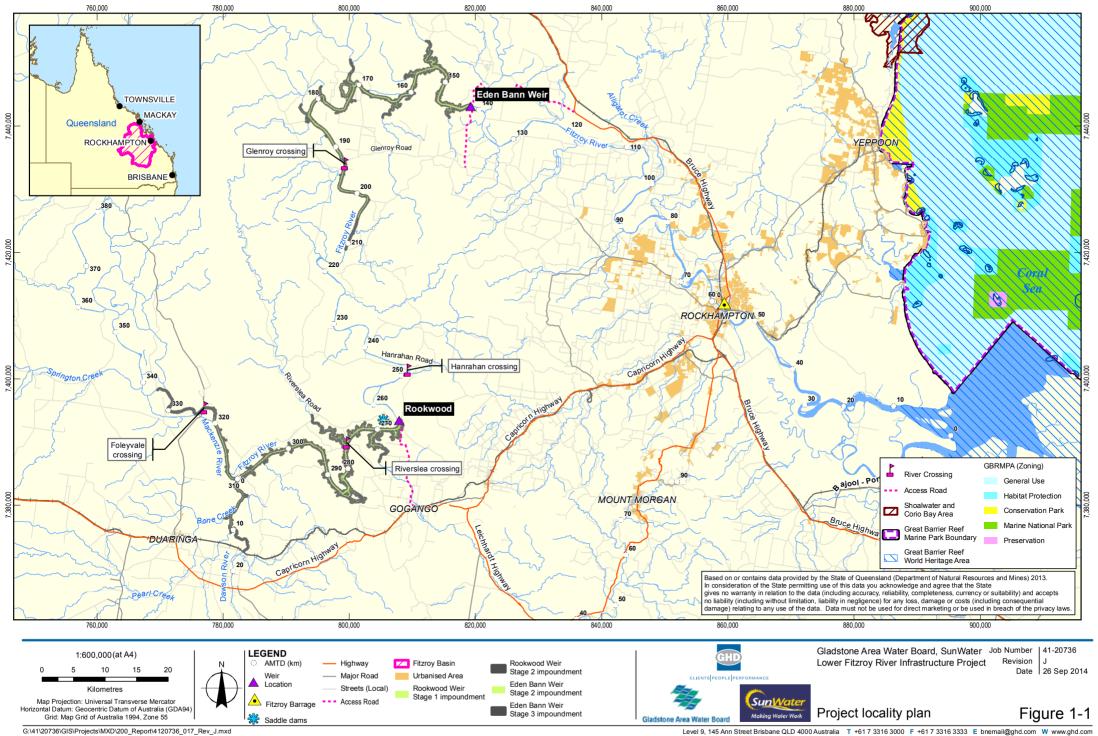
The Project is expected to be staged, with sequencing and timing dependant on a number of demand triggers including existing and new consumers, drought conditions and security of supply requirements.

Other infrastructure components associated with the Project include:

- Augmentation to and construction of access roads (public and private) to and from the weir sites for construction and operations and upgrades to intersections
- Construction of low level bridges in areas upstream of weir infrastructure that will be impacted by • the impoundments, specifically at Glenroy, Riverslea and Foleyvale crossings
- Installation of culverts at Hanrahan Crossing downstream of Rookwood Weir to facilitate access • during operation releases
- Relocation of existing and/or installation of new gauging stations
- Removal and decommissioning of existing low level causeways and culverts at river crossings described above
- Water supply for construction will be sourced directly from the river and will not require the construction of additional water supply infrastructure. Operational water supply at each weir will be provided through rainwater harvesting systems.

Figure 1-1 shows the Project location.





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Data Source: Copyright Commonwealth of Australia (Geoscience Australia): Places, Waterways (2007); Sunwater: Waterways, Weir Locations - 2008; DNRM: Railways, Roads, RAMSAR Wetlands, World Heritage Area - 2010; Copyright

Commonwealth of Australia (GBRMPA) Zoning, Boundary - 2011. Created by: MS *See Appendix for disclaimers and copyrights.

Operationally the Project comprises the maintenance and management of the weir infrastructure, private access roads and impoundments, inclusive of a flood buffer. Water releases will be made through 'run of river' methods and no water distribution infrastructure is required as part of the Project. Water releases will be made to satisfy environmental flow and water allocation security objectives in accordance with the Water Resource (Fitzroy Basin) Plan 2011 (Fitzroy WRP). Operating regimes will be developed and implemented through the Fitzroy Basin Resource Operations Plan (Fitzroy ROP) (as augmented) (Chapter 9 Surface water resources).

The development of weir infrastructure (and associated works), the resultant storage of water (inundation of the river bed and banks) and the transfer of water between storages through 'run of river' methods on the Fitzroy River comprise the scope of the Project. Abstraction, transmission and distribution to end users are not considered as part of the proposed Project and are subject to their own environmental investigations and approvals where applicable.

Power supply, telecommunications and construction material resource extraction areas have been considered for the Project and will be assessed under separate approvals processes.

A detailed Project description is provided in Chapter 2.

1.4 Project rationale

1.4.1 Strategic and economic justification

The Queensland Government is committed, through the National Water Initiative Agreement (2004), to working with the Commonwealth, New South Wales, Victoria, South Australia, the Australian Capital Territory and the Northern Territory governments to progress national water reforms. Planning, management and delivery of water to urban, industrial and agricultural communities is the role of State and local governments collaborating to implement water reforms to provide secure water entitlements to users while protecting the natural values and ecosystems of the region.

At the State level and of relevance to the Project, the Fitzroy WRP seeks to achieve general and specific outcomes for the sustainable management of water, specifically security for water users and licence holders through the establishment of water allocation security objectives (WASOs) and environmental water for aquatic ecosystems through the establishment of environmental flow objectives (EFOs). The Fitzroy ROP implements the Fitzroy WRP and defines the rules for allocation and management of water in order to achieve WASOs and EFOs.

The Fitzroy WRP reserves a nominal volume of water (76,000 ML) for strategic water infrastructure on the Fitzroy River as the strategic water infrastructure reserve. The Project is recognised as strategic water infrastructure to which water allocations may be granted.

The Fitzroy ROP specifies that submissions to make unallocated water available from the strategic water infrastructure reserve on the Fitzroy River may be made as follows:

- GAWB: up to 30,000 ML of the reserve for urban and industrial water supplies
- Local government authority: up to 4,000 ML of the reserve for urban water supplies for the Capricorn Coast.

The Fitzroy ROP does not specify the intended use of the remaining 42,000 ML and nominates that any person or entity may make a submission in this regard.



The priority assigned to a supplemented water supply refers to the level of reliability assigned to the supplemented water supply or the probability in relation to achieving the reliability of supply. High priority water under the Fitzroy WRP must achieve an annual supplemented water sharing index (or reliability) of at least 94 percent and a monthly supplemented water sharing index of at least 98 per cent. Medium priority water supply must achieve a monthly supplemented water sharing index of 82 per cent. The Project's primary objective is secure high priority supplemented supplies.

At a regional level and in response to a prolonged and severe drought in Central Queensland, a Central Queensland Regional Water Forum was held in May 2003. The forum identified the need for a study (the Central Queensland Regional Water Supply Study) into key water supply issues, challenges and priorities.

In December 2004 the Queensland Government, in partnership with local government, committed to developing the Central Queensland Regional Water Supply Strategy (CQRWSS) (DNRW 2006), a long term water supply strategy for the region to address the following key issues:

- Continued urban growth and industrial development, particularly in the Lower Fitzroy and Gladstone areas, and mining development in the Bowen and Surat coal basins
- Entitlements in some existing regional water supply systems are at or approaching full usage
- · Some existing water supply schemes are performing below water user requirements
- Water demand projections indicate regional supply shortfalls exist to meet urban, industrial, coal mining and agricultural requirements through to 2020.

In the absence of implementing measures from the CQRWSS, it is considered that ongoing demand management measures (including water restrictions) will be needed to maintain adequate levels of water supply services; and the economic prosperity of the region will be adversely impacted as industrial and urban (and to a lesser extent agricultural) expansion and new development is currently limited by this constraint.

While the CQRWSS acknowledged that more emphasis on water efficiency improvements, water allocation trading and demand management was required it was recognised that there was a need to reserve additional water sources for future infrastructure projects. The Lower Fitzroy river system is identified as the next main supply source for urban and industrial needs of the Rockhampton Regional Council (RRC) and Livingstone Shire Council (LSC) local government areas and for the needs of GAWB's supply area. The CQRWSS identified that further infrastructure on the lower Fitzroy River is required in order to provide the appropriate reliability of supply (mainly for high priority water). Raising and operating Eden Bann Weir and constructing and operating Rookwood Weir were identified as appropriate infrastructure to satisfy short- to medium-term supply requirements for this high priority water. Further the CQRWSS identified the need for pipeline infrastructure to deliver the water to the intended locations. Accordingly, GAWB's Gladstone-Fitzroy Pipeline (GFP) Project was identified. Long-term demands were predicted to be achieved through the Project operating in conjunction with the Fitzroy Barrage, Awoonga Dam and the proposed Nathan Dam, thereby improving the overall performance of water supplies and enabling additional water to be made available.

In December 2007, the Governor in Council approved, under the *State Development and Public Works Organisation Act 1971* (Qld) (SDPWO Act), the establishment of a state-wide water program of works to facilitate the development of water infrastructure projects (through to business-case stage), including the Project. GAWB, SunWater and the then Rockhampton City

Council were nominated to deliver a business case for the Project. Subsequent to this, RRC withdrew from the proposal but remain a key stakeholder (Section 1.6.1). While the program of works has ceased, the proponents are committed to progressing the studies required for the Project in line with the Queensland Government's initiatives to secure future supply sources to address the future water needs of the Central Queensland region.

Through a series of workshops held in early 2009, it was recognised that a flexible strategy was required to deliver water quickly to meet anticipated future demands, while not knowing the exact timing of these future demands. It was determined that a strategic project development route be adopted to enable access to all available but as yet unallocated water in the lower Fitzroy system rather than selecting a single option for further assessment. Investigations proceeded to 'map out' potential development option staging needing to be flexible to changes and timing in demand growth while offering overall value for money and affordability. Staging will enable proponents to progressively respond to demand growth over time but not compromise the full development scenario. This will ensure that infrastructure developed is sustainable in terms of performance (yield) and cost, inclusive of social, cultural and environmental considerations.

1.4.2 Technical feasibility and commercial drivers

Cumulatively, the CQRWSS predicted a total shortfall of high priority water for urban and industrial needs in the order of 41,000 ML/a by 2020. Future demand for water resources is predicted to be primarily due to the continued growth of industrial and urban expansion in the Lower Fitzroy and Gladstone area and potentially some agricultural development within the Fitzroy Agricultural Corridor. In addition to direct increases in demand there is also a potential requirement to improve the level of reliability of the existing water supplies locally and regionally. This improved reliability may also take into account the need for some contingency within the system to meet climate change variability.

Yield modelling (Chapter 9 Surface water resources) indicates that a number of Project development scenarios achieve the yield attributed to the strategic water infrastructure reserve (a nominal volume of 76,000 ML). However, smaller demands are likely to occur in stages, thus development will be staged. Given that there are two development sites and two development stages proposed for each site (raised Eden Bann Weir to Stage 2 and the addition of gates to Stage 3; and Rookwood Weir to Stage 1 and the addition of gates to Stage 2), in the order of 20 staging permutations could be undertaken should an interim demand trigger arise.

Future demands are difficult to predict with any degree of certainty. It is also noted that since the 2004-2007 drought that stimulated investigations into the Project, generally wetter than average weather and widespread flooding has been experienced in the region, until recently when drier conditions have again been prevalent. It is acknowledged that, as at June 2015, the demand for water that the full Project development can deliver is not yet realised. A staged approach to development will enable proponents to respond to potentially smaller demands in the short-term and progressively respond to increasing and/or larger demand requirements over time through intermediate infrastructure builds until full development is reached. The current Project concept/preliminary design is modular to facilitate staging in order to respond quickly and efficiently to deliver water quickly to meet anticipated future demands.



Key potential water demand may arise from the following:

• GAWB

The CQRWSS identified that shortfalls in the order of 23,000 ML/a by 2020 would eventuate in the Gladstone sub-region as a result of a strong industrial sector growth.

GAWB's water reservations (contracted demand) have increased from 53,472 ML in 2011 to 60,926 ML in 2013 of a total water allocation of 78,000 ML/a from Awoonga Dam. Forty-two per cent of the 2012/13 water reservation was for the Callide Power Station. GAWB (2013) predict that:

- Base case demand (60,000 ML/a) will remain constant over the next 20 years
- An additional demand of 30,000 ML/a could arise over the next ten years as a result of known and credible projects being developed
- Base case and future demand totals approximately 90,000 ML/a which exceeds Awoonga Dam's supply capacity by 12,000 ML/a
- While unlikely, if all currently known and credible projects were commissioned in the shortest timeframes, possible demand could exceed 120,000 ML/a by 2020.

While not realised, water supply to the GFP Project of 30,000 ML/a is considered a likely first demand for the Project (Section 1.5.3). Separately the Project would provide a second water source solution for GAWB to improve reliability of supply risks (Section 1.5.3).

RRC

The Fitzroy Barrage currently provides an allocation of 50,000 ML of high priority water to RRC (Fitzroy River Water) in accordance with the current licence conditions. This represents around double Rockhampton City's current annual urban rate of consumption. Whilst the current allocation is well in excess of demand, the Fitzroy Barrage only generates a supply reliability of 99.6 per cent, meaning that Rockhampton City is exposed to a potential supply shortfall under an extreme drought scenario.

Whilst the existing reliability highlights potential supply issues facing Rockhampton City, the RRC's ultimate demand for additional yield from the Project will be subject to their required level of service (LOS), which has yet to be determined. The Department of Energy and Water Supply is working with the RRC to determine LOS requirements and solutions. The LOS requirement can be converted into a volumetric demand on the Project; at which time the RRC may consider further participation in the Project.

Demand in the lower Mackenzie-Fitzroy sub-region is predicted in the CQRWSS as a result of industrial growth, particularly in the Stanwell-Gracemere Industrial Corridor. Demand shortfalls in the order of 17,500 ML were predicted by 2020. RRC is currently promoting the need and desire for this development.

LSC

The Capricorn Coast's (LSC local government area) traditional water supply is Waterpark Creek (4,400 ML/a). Implementation of demand management measures has allowed growth without an overall increase in water consumption. The CQRWWS predicted an increased water demand for the Capricorn Coast as a result of urban growth, with a shortfall in the order of 3,250 ML by 2020. An average daily demand of 37 ML per day is predicted by 2056.



In July 2010, the Rockhampton to Yeppoon Pipeline project was officially opened supplementing supplies from Waterpark Creek. Water is provided through the pipeline from the Yaamba Road Reservoir in Rockhampton to St Faiths Reservoir (feeding Yeppoon and the northern areas) and Tarangaba Reservoir (feeding Emu Park and southern areas) (RRC 2013). The Rockhampton to Yeppoon Pipeline supplements supply from Water Park Creek. The pipeline is designed to deliver up to 37 ML per day of treated water from the Glenmore Water Treatment Plant in Rockhampton; the average predicted daily demand by 2056. Water delivered through the pipeline is part of the RRC's current entitlement. Together with the existing supply capacity of 17 ML per day (from the Woodbury Water Treatment Plant) a total supply capacity of 54 ML per day is available to meet future demand. In addition to significantly increasing the daily supply capacity, the pipeline delivers a major improvement in the long term security of supply from the current 2,400 ML/a safe yield from Waterpark Creek to greater than 53,000 ML/a year when combined with the reliable water allocation available to Fitzroy River Water in the Fitzroy Barrage (Fitzroy River Water, undated). Discussions with LSC indicate that given this improved reliability and supply is provided from the Fitzroy River, the LSC remains interested in further water resources being made available and/or supply reliability being improved as a result of the Project.

Industry and mining

Whilst regional planning for the development of future infrastructure in the Rockhampton region has been undertaken, notably in the form of the Gracemere-Stanwell Industrial Corridor, none of the expected projects have yet materialised, and demands are uncertain. Demand shortfalls in the order of 17,500 ML were predicted by 2020 (DNRW 2006). RRC is currently promoting the need and desire for this development. Increased industrial demand within Gladstone is expected, and these demands are catered for in the 30,000 ML being sought by GAWB.

In the order of 94 per cent (in the order of 24,000 ML/a) of the high priority allocation from the existing Eden Bann Weir from the Lower Fitzroy Water Supply Scheme is allocated to Stanwell Corporation Limited for the Stanwell Power Station.

A number of mining and petroleum exploration projects are proposed for the Rockhampton region, particularly copper and gold in the Mount Morgan area (south of Rockhampton). While some demand for water can be expected in the long term, volumes required are difficult to predict. There are no existing or proposed coal mines in the Rockhampton and Gladstone regions.

Agriculture

In terms of the demand for water from the agricultural sector, the CQRWSS reported that while the majority of demand could be satisfied by the take-up and trading of under-utilised entitlements, some demand from agriculture was predicted (DNRW 2006). With regard to the Project, tradable water allocations have been established for the lower Mackenzie and Fitzroy rivers from Tartrus Weir to the Fitzroy Barrage.

Further to this the Fitzroy Industry and Infrastructure Study (DIP 2007) identified that the potential existed for animal production, fodder crops and some horticulture to be undertaken within the Fitzroy Agricultural Corridor. The study was completed in 2007 but no further implementation plans were developed and no demand profiles were confirmed. More recently, through Regional Development Australia's Growing Central Queensland initiative and RRC's





Gladstone Area Water Board promotion of agricultural development within the region (the Fitzroy Agricultural Corridor) it is possible that some future demand for high priority water will arise.

1.5 Relationships to other projects

1.5.1 Existing Eden Bann Weir

The existing Eden Bann Weir (Stage 1) was constructed in 1994 on the Fitzroy River (Figure 1-1) primarily to supply high priority water (in the order of 24,000 ML/a) to Stanwell Power Station. Eden Bann Weir is owned and operated by SunWater under the Lower Fitzroy Water Supply Scheme.

Water released from Eden Bann Weir is captured in the Fitzroy Barrage, which is then pumped to various water consumers.

Whilst no specific provision for future raising of Eden Bann Weir was made in the original design, some care was taken to accommodate future expansion through crest design provisions and downstream excavation was extended sufficiently to accommodate a larger structure warranted under a raising (SunWater 2007). This allows for the co-location of the existing weir infrastructure and the proposed raised weir infrastructure.

1.5.2 Fitzroy Barrage

The Fitzroy Barrage is located on the Fitzroy River in Rockhampton (Figure 1-1). The Fitzroy Barrage forms a barrier between downstream intertidal/saltwater and upstream freshwater environments.

The Fitzroy Barrage was completed in 1970 and is owned and operated by Fitzroy River Water (a business unit of RRC). The storage is used to supply water for urban supply, irrigation and recreation. The Fitzroy Barrage Water Supply Scheme has a total 50,000 ML/a of high priority and 12,335 ML/a of medium priority supplemented water allocations. Water from the impoundment is treated at the Glenmore Water Treatment Plant before being distributed via an existing reticulation system.

Within the lower Fitzroy system, the Lower Fitzroy Water Supply Scheme (Eden Bann Weir) and the Fitzroy Barrage Water Supply Scheme (Fitzroy Barrage) operate in conjunction with each other providing in the order of 75,500 ML/a of high priority water and 15,500 ML/a of medium priority water (Chapter 9 Surface water resources).

The Project will operate in concert with the existing Fitzroy Barrage with releases from Rookwood Weir to Eden Bann Weir to the Fitzroy Barrage for abstraction (Chapter 2 Project description; Chapter 9 Surface water resources).

1.5.3 Gladstone-Fitzroy pipeline project

GAWB owns and operates Awoonga Dam on the Boyne River. Awoonga Dam is the fourth largest dam in Queensland with a total storage capacity of 776,854 ML and a maximum allowable yield of 78,000 ML/a (GAWB 2013). Industrial and power generation demand represents 80 per cent of the total water supplied. The remaining 20 per cent is supplied as potable water to the Gladstone Regional Council for residential and small business uses.

Analysis shows that, over a 120 year data period, 78,000 ML can be reliably extracted every year. GAWB acknowledges that while 120 years is a relatively long period of analysis, it is possible that better or worse hydrological outcomes could be experienced in the future. Stochastic analysis of

historical data shows that over a 10,000 year simulated period at an annual extraction rate of 78,000 ML, Awoonga Dam has a failure frequency of 0.36 per cent (GAWB 2013).

Whilst Awoonga Dam is regarded as a secure water source, it remains GAWB's sole water source. Consequently, compared to other water supply systems with multiple integrated supply options, GAWB's water supply system has a higher inherent risk as it has a single point of potential supply failure. GAWB plans to augment its existing system by construction of a second water source. Development of a second water source would provide greater security for GAWB's water customers and will form part of GAWB's Contingent Supply Strategy (CSS). The CSS provides GAWB with a strategic approach to respond to emerging demand or supply shortages caused by drought.

GAWB has identified the development of the GFP Project as its preferred delivery mechanism for a second water source. The GFP Project is designed to transfer 30,000 ML of water per annum (and possibly more if required) from the Fitzroy system. Water supply is proposed to be sourced from water secured through development of the Project. Extraction is proposed to be from the Fitzroy Barrage impoundment near Laurel Bank, approximately 12 km upstream of the Fitzroy Barrage infrastructure (Chapter 21 Cumulative impacts). The pipeline's capacity aligns with the Gladstone reserve volume provided for in the Fitzroy ROP and the Fitzroy WRP's strategic water reserve for strategic water infrastructure on the Fitzroy River.

The GFP Project preliminary design has included an additional concept of reversibility of the pipeline to supply water to Rockhampton as an exercisable option in order to improve the long-term reliability of the RRC water supply.

GAWB has completed detailed design for the pipeline, gaining the appropriate approvals and securing easements and land so that when a trigger of either drought or increased demand is activated, the pipeline can be constructed within a three year timeframe to ensure water is available when it is needed.

GAWB considers that preparatory works that have been undertaken since 2004 for the GFP Project will reduce the implementation timeframe from a period of six to eight years to in the order of three years. In a drought scenario a solution requiring a six to eight year implementation period would be unlikely to provide relief in time. Similarly, an implementation period of six to eight years would limit GAWB's ability to respond in a timely manner to a fast ramp up in demand or a large single source of emerging demand.

Construction of the Project will enable the development of the GFP Project. GAWB consider that this water supply is essential to increase the reliability of supply to the region and meet additional future demand that GAWB will be unable to service under existing supply arrangements from Awoonga Dam. The EIS for the GFP Project was approved by the Queensland Coordinator-General in February 2010¹ and by the Commonwealth Minister for Environment in November 2011. Prudent Project planning through this EIS, and associated concept/preliminary design, is considered to align the Project implementation period (an approximate two to two and a half year build period plus 10 - 12 months of preparatory works from a Project trigger) with that of the GFP Project (an estimated period of three years from a trigger).

¹ The validity of the Coordinator-General's report on the GFP Project EIS hasbeen extended to 2 February 2016.





1.6 **Project alternatives**

1.6.1 **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 (Chapter 9 Surface water resources) 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.

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 ٠
- Increased risk of flooding of nearby residential properties •
- Adversely impact on confirmed aggregated Fitzroy River turtle (Rheodytes leukops) nesting ٠ habitat at Alligator Creek near the upstream limit of the existing Fitzroy Barrage impoundment.

For these reasons, it was considered that raising the Fitzrov 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.

1.6.2 GAWB second water source options

Given the linkage to the GFP Project (Section 1.5.3) and the predicted initial demand of 30,000 ML/a to service the GFP Project, is it considered notable that GAWB's 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 Dam and/or Castle Hope Dam 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.



1.6.3 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 AMTD 95.7 km 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.





1.6.4 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 CQRWSS 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.

Some 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.

1.6.5 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 LOS.

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.

1.7 Environmental impact assessment process

1.7.1 Methodology of the EIS

The Project EIS is being undertaken in accordance with the provisions of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the *State Development and Public Works Organisation Act 1971* (SDPWO Act) and addresses the requirements of the Project ToR included in Appendix A.

As detailed in Chapter 3 Legislation and project approvals, the Project is a 'controlled action' requiring assessment and approval under the EPBC Act (EPBC referral 2009/5173). In June 2010, the Commonwealth Department of the Environment issued Guidelines for an EIS in relation to matters of national environmental significance (MNES) under the EPBC Act. In May 2011, the Coordinator-General declared the Project to be a 'significant project' (now a 'coordinated project') for which an EIS is required pursuant to Section 26 (1) (a) of the SDPWO Act. ToR for the EIS were finalised by the Coordinator-General in April 2012. As at 10 January 2014, the Project transitioned to assessment through the bilateral assessment process executed between State and Commonwealth governments. As a result, a single EIS addresses both State ToR and Commonwealth Guidelines. To facilitate this process, draft ToR addressing both State and Commonwealth requirements were re-issued and finalised in September 2014.

Environmental impact assessment (EIA) is an approach for assessing a proposed action (or project) and describing these in an EIS. The approach taken for this EIA was to identify and link the actions associated with the Project to the potential direct and indirect impacts, develop mitigation measures and then management strategies for residual impacts.

Environmental impacts may encompass both potential impacts and uncertain risks to the environment. Assessment of impacts involves a risk management approach to determine both the severity of the potential consequence and the likelihood of events occurring. Feasible approaches to manage the risk are then described and the reasons for selection of a preferred approach are clearly identified. Throughout the EIS, compliance with legislation, standards, policies and community acceptance is acknowledged and adhered to, to maximise environmental benefits and minimise risks.

Potential impacts can be both positive and negative and characteristics can vary in terms of the:

- Nature (positive/negative, direct/indirect)
- Magnitude (severe, high, moderate, low)
- Extent/location (area/volume covered, distribution)
- Timing (during construction, operation etc., immediate, delayed)
- Duration (short term/medium term/long term, intermittent/continuous)
- Reversibility/irreversibility
- Likelihood of occurrence (probability, uncertainty)
- Significance (local, regional, national, global)

The methods for predicting impacts vary according to the technologies and data available and include:

- A qualitative method. This is a professional judgement, based on professional experience with a particular environmental value in a specific region. It is acceptable where suitable professional experience and/or third party peer review can be obtained. Where residual impacts are not quantifiable, qualitative methods should be as detailed as reasonably practicable.
- Use of quantitative mathematical models (e.g. CALPUFF, MODFLOW). Where the ability to utilise these models is limited due to technology and data availability, conservative assumptions as inputs to the models are utilised.
- Experiments and physical models where suitable engineering design data is available.
- Case studies as analogues or references. Virtually all assessment of baseline data includes a thorough literature search and review to identify case studies, available references and available information. These are commonly then supplemented by field collection of project specific data.

If a potential impact is identified, available management and mitigation measures are applied. If a residual impact exists after the application of these measures, the test for significant effects is then applied as follows:

- If there are any residual impacts, are these likely to be significant?
- If yes, are these significant impacts likely to occur?



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Each Chapter of the report includes identification of the actions associated with the construction and/or operation of the Project for that technical discipline, and the environmental impact resulting from that action. Table 1-1 provides a summary of the structure of the draft EIS.

Table 1-1 Draft EIS structure

Volume 1 Part B of the ToR (focussing on State matters)		Volume 2 – Part C of the ToR (focussing on MNES)		Volume 3 – Appendices (supporting material)	
Е	Executive summary	Е	Executive summary	А	Final terms of reference
1	Introduction	1	Description of the action	В	Terms of reference cross- reference
2	Project description	2	Project description	С	Glossary and abbreviations
3	Legislation and project approvals	3	Planning and approvals	D	Study team
4	Climate, natural hazards and climate change	4	Consultation	Е	Proponents' environmental policies
5	Land	5	Alternatives to the Project	F	Consultation report
6	Flora	6	Methodology	G	Land - detailed mapping
7	Aquatic ecology	7	Existing environment	Н	An assessment of the potential implications on native vegetation and terrestrial ecosystems (Nangura 2007)
8	Terrestrial fauna	8	General impacts	I.	Flora - detailed mapping
9	Surface water resources	9	World Heritage properties and National Heritage places	J	Eden Bann Weir baseline aquatic ecology report
10	Groundw ater resources	10	Threatened species and ecological communities	К	Rookw ood Weir baseline aquatic ecology report
11	Water quality	11	Migratory and marine species	L	Fitzroy River turtle (<i>Rheodytes leukops</i>) technical report
12	Air quality	12	Cumulative and consequential impacts	М	Fitzroy River turtle (<i>Rheodytes leukops</i>) species management program
13	Greenhouse gas emissions	13	Environmental Management System	Ν	Eden Bann Weir baseline terrestrial fauna report
14	Noise and vibration	14	Offsets	0	Rookw ood Weir baseline terrestrial fauna report
15	Waste	15	Conclusion	Ρ	Surface w ater resources supporting material
16	Transport	16	Information sources and reference list	Q	Traffic and transport supporting material
17	Cultural heritage			R	Social impact assessment report
18	Social impact			S	Economic assessment report (Commercial in confidence)



Volume 1 Part B of the ToR (focussing on State matters)		Volume 2 - Part C of the ToR (focussing on MNES)Volume 3 - Appendices (supporting material)		
19	Economics		Т	Counter-terrorism and critical infrastructure protection reports (Commercial in confidence)
20	Hazard and risk		U	EPBC Protected Matters Search Tool Results
21	Cumulative impacts			IQQM yield assessment (Commercial in confidence)
22	Offsets		W	Project commitments
23	Environmental Management Plan		х	Fish passage technical report
24	Conclusions and recommendations			Consolidated mitigation measures for impacts on matters of national environment significance
25	References			

1.7.2 Objectives of the draft EIS

The objective of the draft EIS is to ensure that all potential environmental, social and economic impacts of the Project are identified and assessed, and that adverse impacts on the natural, built and social environment are avoided or mitigated. The draft EIS covers all phases and possible staging of the Project and identifies and assesses the direct, indirect and cumulative impacts for the Project area. The draft EIS document provides information for the following persons and groups, as Project stakeholders:

- For interested bodies and persons: a basis for understanding the Project, feasible alternatives, affected environmental values, impacts that may occur and the measures to be taken to mitigate adverse impacts
- For directly affected persons: an outline of the effects of the Project
- For the Coordinator-General, government agencies and referral bodies: a framework for decision-makers to assess the environmental aspects of the Project with respect to legislative and policy provisions, and based on that information; to make an informed decision on whether the Project should proceed or not and if so, subject to what conditions
- For the proponents: a mechanism by which the potential environmental impacts of the Project are identified and understood, including information to support the development of management measures, such as an environmental management plan, and to mitigate the effects of adverse environmental impacts of the development.

1.7.3 Submissions

Any person, group or organisation can make a submission about the draft EIS to the Office of the Coordinator-General. Any submissions which are properly made submissions must be accepted by the Coordinator-General and considered in evaluating the draft EIS.

Under section 24 of the SDPWO Act a properly made submissions must:



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- Be made in writing
- Be received on or before the last day of the submission period
- · Be signed by each person who makes the submission
- State the name and address of each person who makes the submission
- State the grounds of the submission and the facts and circumstances relied on in support of those grounds

A person wishing to make a submission about the draft EIS should also:

- · Clearly state the matter(s) of concern or interest and list points to help with clarity
- Reference the relevant section(s) of the draft EIS
- Ensure the submission is legible

The Coordinator-General may also accept submissions which are not properly made. However, only properly made submissions will trigger rights to appeal against a decision about a development application for the project under the *Sustainable Planning Act 2009* (Qld). Any submission accepted by the Coordinator-General may be amended by written notice given to the Coordinator-General during the submission period, or may be withdrawn at any time before a decision is made about the EIS.

Any submissions regarding this draft EIS should be addressed to:

The Coordinator-General

EIS Project Manager – Lower Fitzroy River Infrastructure Project

Coordinated Project Delivery

Office of the Coordinator-General Box 15517

City East QLD 4002

Tel: (07) 3452 7458 Fax: (07) 3452 7458

Email: LowerFitzroy.InfrastructureProject@coordinatorgeneral.qld.gov.au

Website: www.statedevelopment.qld.gov.au/lower-fitzroy

The draft EIS is on public display for a period of 30 business days commencing 20 July 2015 and concluding 31 August 2015. All submissions must be received prior to the completion of the public display period.

The Coordinator-General will consider public submissions in making decisions in relation to the Project and coordinate a consultation program between the proponents and other regulatory agencies that may assess aspects or provide specific technical inputs. All submissions from the public and other regulatory agencies will be collated and provided to the proponents for review and response. The proponents may then be required to prepare additional information to address the comments submitted by the Advisory Bodies and the public.



1.8 Public consultation

1.8.1 Consultation methodology

Public consultation is being undertaken as part of the Project EIS. The process is outlined in the Consultation Report (Appendix F). The associated public consultation program was undertaken in accordance with Part b, Section 3.7 of the Project's ToR, and aligning with requirements for the Social Impact Assessment (SIA) component of the draft EIS.

The aim of the public consultation program is to enable a structured process to facilitate open, meaningful and accountable public consultation and engagement with relevant stakeholders during the preparation of the draft EIS for the Project.

The aim is supported by the following objectives:

- To build awareness and understanding of:
 - The need for the Project
 - The investigations required to inform the EIS
 - The potential impacts and benefits for industry, government and the community
- To provide opportunities for stakeholders to contribute in a meaningful way to the Project's investigations and assessments and to understand how this input was considered
- To manage stakeholder issues and expectations including what was and was not negotiable
- To enhance existing stakeholder relationships established by the proponent and contribute to the overall objectives of the Project.

The overall approach to public consultation implemented for the EIS is guided by the core values and principles of the International Association of Public Participation (IAP2). A Consultation Plan was developed to guide effective and timely delivery of the consultation programme. The consultation plan identified:

- A framework for the implementation of consultation and communication activities
- Key stakeholders including government, industry and community
- Roles and responsibilities for communication and consultation
- Communication protocols
- Reporting and feedback arrangements.

1.8.2 Stakeholder identification and involvement

A stakeholder list was initially developed based on desk-based research using the internet, documentation and previous consultations held by the proponents and State agencies with regard to the Project. This stakeholder list was expanded through ongoing stakeholder identification as part of the implementation of the consultation program. In addition to the directly affected landholders, community stakeholders were primarily from the Rockhampton, Duaringa and Gogango areas, including broader surrounding communities. An indicative list of the stakeholders is provided in Table 1-2 with a complete list provided in Appendix F.

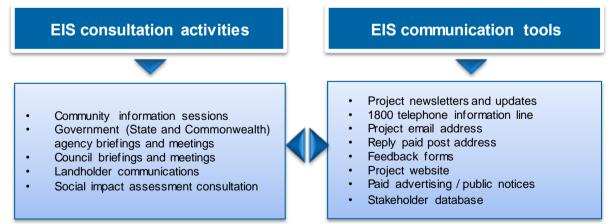


Stakeholder category	Member list (non-exhaustive)				
Internal stakeholders					
Project partners	SunWater and GAWB Boards, Executive Management Teams, Project Control Groups, Project Technical Teams				
GHD and sub-consultants	Project Manager, assessment teams, consultation team, sub-consultants				
External stakeholders					
Commonwealth Government	Departmental ministers, elected representatives, Government departments and authorities				
Queensland Government	Premier and departmental ministers, elected representatives, State departments and authorities				
Local government	RRC, LSC, Central Highlands Regional Council, Woorabinda Aboriginal Shire Council, Gladstone Regional Council				
Community and business	Directly affected landholders, local residential areas, environmental groups, local business, industry/peak bodies, community/interest groups, cultural heritage representatives, health and educational institutions, recreational groups, media, utility service providers				

Table 1-2 Project stakeholders

The consultation program has been ongoing since 2008. To assist in undertaking these consultation activities, a variety of communication tools were developed to facilitate two-way flow of information between the Project team and stakeholders and assisted in capturing stakeholder feedback throughout the EIS process, as depicted in Figure 1-2.

Figure 1-2 EIS consultation activities and communication tools





A number of communication techniques have been used to engage with stakeholders. To date, approximately 8,800 newsletters have been distributed, workshops and briefings have been held, including 250 telephone discussions and 52 face-to-face meetings, and three community information sessions hosted where people could 'drop in' and talk to the Project team. Feedback forms have also been used and all stakeholder feedback, both positive and negative, was recorded in the Project stakeholder database. This database facilitated effective tracking of stakeholders engaged, and ensured timely responses to enquiries.

At the conclusion of the public exhibition period, stakeholder and community feedback will be reviewed and addressed as necessary, including the provision of additional information as required. Following completion of the EIS, consultation will focus on maintaining the relationships with key stakeholder and community representatives established during the draft EIS consultation, through the 'holding period' until such time as a Project development trigger is realised. At this time consultation will focus on construction related matters before moving into an operation planning phase.

Issues relating to the loss of land or access to land along with impacts on productivity will be negotiated and agreed on a one-on-one basis with directly impacted landholders. Ongoing communication as the Project progresses will facilitate that individuals are able to plan for the future operational requirements of their properties (Chapter 18 Social impact).

1.8.3 Integration of consultation program into Project EIS

The public consultation program commenced in late 2008 and was phased in line with key EIS milestones, namely:

- Phase 1: Scoping and planning
- Phase 2: EIS development
- Phase 3: Public exhibition and release of the EIS
- Phase 4: Evaluation and EIS finalisation

The sequencing of consultation activities is shown in Table 1-3.

Of particular significance to the consultation approach was the integration within the SIA, in order to:

- Avoid potential duplication and 'consultation fatigue' among stakeholders involved in both the broader EIS consultation and social research for the SIA
- Enable cross-pollination of the EIS consultation and SIA processes based on stakeholders information and feedback.

Further detail is provided in Appendix F Consultation report.



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Table 1-3 EIS consultation stages and timeframes

Period	October 2008 – August 2009	August 2009 – June 2015	Q3 2015	Q3-Q4 2015
Phase Summary of Activities	Phase 1 Scoping and planning • Identification of stakeholders	Phase 2 EIS development • Production and distribution of	Phase 3 Public exhibition • Production and distribution of	Phase 4 Evaluation and EIS finalisation • Close out activities
	 Identification of stateholders and establishment of stakeholder database Issue/risk assessment Preparation of information materials (including website, 1800 number and reply paid post facilities) Consultation plan preparation and approval (internal) Preparation of land access protocols, media protocols etc. 	 Project newsletters and updates Maintain w ebsite, 1800 number and reply paid post facilities and stakeholder database Stakeholder briefings Landholder meetings Community information sessions Management of enquiries and media relations 	 Project newsletters and updates Maintain website, 1800 number and reply paid post facilities and stakeholder database Community and agency information sessions Management of enquiries and media relations 	 Production and distribution of Project newsletters and updates Maintain website, 1800 number and reply paid post facilities and stakeholder database Consultation evaluation Public notification of EIS assessment outcomes
Regulatory consultation requirements	Consultation plan	Prepare consultation report for the draft EIS	Public display of draft EIS Community information sessions and regulatory agency briefings	Prepare response to draft EIS submissions as directed by Coordinator-General requirements

