

The Coordinator-General's Report  
on the

Environmental Impact Statement  
for the proposed

Southern Regional Water Pipeline

August 2006



**Queensland** Government  

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**The Coordinator-General**

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## **1. INTRODUCTION**

This report has been prepared pursuant to Section 35 of the *Queensland State Development and Public Works Organisation Act 1971* (SDPWO Act) and Part 5 of the *SDPWO Regulation 1999* to evaluate the environmental impact documentation prepared on the proposed Southern Regional Water Pipeline (SRWP) project.

### **1.1 TERMINOLOGY**

Key terms used within this report are defined below.

*Conditions* – specific requirements that the Coordinator-General has stated pursuant to the following sections of the SDPWO Act:

- Section 39, 'Application of Coordinator-General's report to IDAS'
- Section 43, 'Application of Coordinator-General's report to Designation'
- Section 52, 'Application of Coordinator-General's report to other approval process'
- Section 54B, 'Report may impose conditions'.

*Responses* – all statements provided by the SRWP Company in response to public submissions made on the EIS. The submissions were subsequently included in the Supplementary Report to the EIS.

## **2. PROJECT DETAILS**

### **2.1 THE PROPONENT**

The proponent for development of the SRWP project is the purpose-created Southern Regional Water Pipeline Company (SRWP Co.).

The SRWP Co. is a wholly government-owned company established under the *Corporations Act 2001*. Shareholders of the company include SEQWater, Brisbane City Council, Ipswich City Council, Logan City Council, Gold Coast City Council and Beaudesert Shire Council.

The SRWP Co. has enlisted the support of an Alliance, the Southern Regional Water Pipeline Alliance (SRWP Alliance), for design and delivery of the project. For ease of reference, any mention within this report of 'SRWP Co.' or 'the proponent' is taken to include the SRWP Alliance and any contractors that may undertake works in accordance with the project.

## 2.2 BACKGROUND AND NEED FOR PROJECT

The *South East Queensland Regional Water Supply Strategy* (2004) identified that beyond 2020, demand on resources of existing water sources within the region could exceed supply. Deficiencies in the ability of existing water infrastructure models to supply future need were acknowledged, with the need for diversified supply with transportability between resources and robust connectivity across the region identified.

Recent climatic conditions experienced by the region have highlighted the need to achieve a more flexible and adaptive water supply system to guarantee water supply in times of extended dry periods. At the time of writing, South East Queensland is in the midst of the worst drought on record, with key storages that supply Brisbane at less than 30 percent capacity.

There is growing awareness that our climate is changing: climatic trends in Queensland include observable changes in how often and how much rainfall is experienced, increases in temperature and increased evaporation and a decline in average annual rainfall in the eastern parts of the state. In addition to impacts of climate conditions, the region is currently experiencing significant population growth, with an extra million people projected to be living in the region by 2026.

The regional pipeline is a strategy designed to make best use of existing resources and to address existing deficiencies in supply certainty due to isolated resources. It will initially provide for enhanced supply for Brisbane, Ipswich and Logan cities, Beaudesert Shire and the Gold Coast, as required. However, its scope will be extended to address future need.

The project will deliver adaptability to an existing water supply network by linking existing and future water storages and pipelines, thereby creating an enhanced water grid for South East Queensland. The pipeline will have dual flow capability, advancing the project's objective to deliver a piece of infrastructure that will provide a responsive and flexible water supply solution for the region.

## 2.3 PROJECT DESCRIPTION

The Southern Regional Water Pipeline (SRWP) project will provide an interrelatedness of South East Queensland's water supply, enabling potable resources from multiple storages to be distributed across the region.

The proponent is proposing to build, own and operate approximately 90 kilometres of high pressure water transmission pipe spanning from the Cameron's Hill Reservoir at Mt Crosby, running south via Swanbank Power Station and south-east through North Beaudesert and Chambers Flat, then southwards through Ormeau to connect to the existing Helensvale to Molendinar network, operated by Gold Coast Water. In addition to the pipeline, four pump stations (at Bundamba, Swanbank, Chambers Flat and Coomera) and two balance tanks (at North Beaudesert and Staplyton) are proposed. Attachment C indicates the locality map for the pipeline.

Subject to identified need, the pipeline's range may be augmented to connect to existing supply networks or planned infrastructure as it comes on line, for example, the proposed South East Queensland (Gold Coast) Desalination Plant, the Cedar Grove Weir at Logan and the Wyaralong Dam at Boonah.

Detailed design and feasibility planning is currently underway to see the pipeline's traverse increased by an additional 10kms to connect it from the Molendinar network to the proposed SEQ (Gold Coast) Desalination Plant at Tugun, with a projected completion date of July 2008 to coincide with the desalination plant's construction end-date. While this part of the SRWP project is included in the project's definition as a designated Significant Project under the SDPWO Act, its scope is not included within the project's EIS or therefore, this Report. A separate environmental impact assessment process will be commenced as design and planning works are further progressed. This component of the project will also be referred to the Commonwealth Department of the Environment and Heritage for consideration under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

A detailed description of the project that indicates the route, construction and operation of the pipeline and location of the associated infrastructure (four pump stations and two balance tanks) is presented in Section 3 of the EIS.

Should all necessary approvals be obtained, SRWP Co. hopes to commence construction in mid-October 2006 and achieve project completion for the phase of works addressed within this report by the end of 2007.

The estimated capital expenditure for the project is over \$600 million. The project is expected to generate in excess of 200 jobs during its 13 month construction period and approximately three jobs for its operation.

## 2.4 PIPELINE

The steel pipeline will be buried with a minimum cover of approximately 750mm for most of its length. The pipe will range in diameter from 750mm-1050mm, and be supplied in 13m lengths that will be rubber-ring jointed or welded at connection points. It will be coated for corrosion protection prior to delivery and cathodic protection will also be provided to supplement the protective coating. The construction of the pipeline will be undertaken in accordance with Australian Standard 1170. The pipe will transport up to 130 ML/day of potable (drinking) water per day and will be operated at a maximum allowable operating pressure of 1.6 MPa.

The pipeline has an estimated design life of 75 years. During operation, it is likely to be controlled at a number of points including at pump stations and existing Council infrastructure linkages. A Scada software system will be used to administer the pipeline's operation.

No water treatment infrastructure is required to be constructed as part of the project as resources will have already been purified prior to distribution to the pipeline through existing local government infrastructure.

## 2.5 PUMP STATIONS

Pumping will need to be introduced along the full length of the pipeline to ensure suitable flow. Four pump stations are proposed for Bundamba, Swanbank, Chambers Flat and Coomera. Located in either industrial or rural areas, the stations will be designed to muffle noise, will be automatic and unmanned and designed to blend with the environment. The pump stations will have a design life of 50 years for the structure and mechanical asset and 20 years for the electrical componentry.

It is anticipated the pump stations will have the following approximate dimensions:

- Bundamba: 33m long by 21m wide
- Swanbank: 25.7m long by 20.5m wide
- Chambers Flat: 33m long by 21m wide

- Coomera: 22.9m long by 20.7m wide.

Figure 3.1 (EIS) depicts a typical layout for both the pump stations and balance tanks.

## 2.6 STORAGE BALANCE TANKS

Two balance tanks, necessary to assist with regional off-takes and to maintain pipeline pressure, are proposed to be located at North Beaudesert and Staplyton.

The Staplyton site was initially proposed to be located within an existing State Resource Area. However, based on a submission to the EIS received from the business owner of the land, the site was relocated, as reflected in Map 5.1 of the SREIS.

The balance tanks have a design life of 25 years for the roof and 50 years for other parts of the structure. Approximate dimensions for the balance tanks and associated access roads are as follows:

### North Beaudesert

Balance tank: 54m diameter.

Access road: 2,460m long by 5m wide (sealed road).

### Staplyton

Balance tank: 56.5m diameter.

Access road: 247m long by 5m wide (sealed road).

## 2.7 ANCILLARY WORKS

In addition to the pipeline, pumping stations and balance tanks, other associated infrastructure such as pigging (pipe cleaning) pits, air valves and drain-down valves for the pipeline will be incorporated during construction and buried in pits.

Ground-level pipeline marker plates will be incorporated at 200m intervals and at all changes in pipeline angle and direction. Above-ground pipeline markers will be placed on either side of each event where the pipeline crosses roads, creeks or rivers. Markers will be highly visible and include a contact phone number and an 1100 'Dial before you dig' contact number.



For the construction phase, construction site offices will be established on the route. The exact number and locations are to be determined prior to construction. There will be some areas used for stockpiling of pipe materials to store materials where the rate of pipe supply exceeds construction progress. This is likely to occur in periods of extended wet weather or when works are slowed within constrained easement conditions. The proponent has undertaken that wherever possible, the pipe materials will be delivered from the manufacturers directly to the site for laying.

## 2.8 CONSTRUCTION

The main construction activity will involve creation of a trench to lay the pipeline in and will involve use of a trenching machine excavator, rock saws or blasting in hard rock terrain. For water crossings, roads and railway lines different techniques such as thrust boring, micro-tunneling or horizontal directional drilling will be used. Construction for the pipeline will involve the refinement and survey of the route to determine the right of way (ROW). The EIS details that sediment and erosion management will be a key aspect of construction work.

The proponent states that generally, a 30 metre easement will be used during construction. It is acknowledged that this width takes into account allowing construction to be completed quickly, safely and with minimal impact on site-based activities to adjacent landholders. Clearing will be undertaken using graders, bulldozers and excavators. Root stock will be left in situ.

The proponent has undertaken that constrained-width construction corridors will be used in some locations for environmental, social and engineering reasons. A constrained corridor of 12-15 metres will be achieved by reducing the width of the right of way (ROW) and the movement of vehicles and machinery through the construction site, slowing activities at these locations. Figures 2.1 and 2.2 of the SREIS indicate the proposed layout of constrained and unconstrained construction sites and these are included in this report as Attachment D.

## 2.9 ROUTE SELECTION

SRWP Co. selected the preferred route by taking into account the topography, current and planned land use, social, environmental and cultural issues and the location of existing infrastructure. The pipeline will traverse four local authorities: Gold Coast, Beaudesert, Ipswich and Brisbane. There are no World Heritage properties, RAMSAR wetlands, conservation reserves, Commonwealth marine areas or Commonwealth land either on or bounding the project area.

The results from detailed investigations and comments received from consultation with key stakeholders during the EIS process have led to further refinement of the proposed alignment to avoid or minimise adverse impacts, particularly with regard to significant ecological species, remnant vegetation, private land use and an identified state resource area.

## 2.10 LAND USE

The EIS affirms that the project is compatible with adjacent agricultural, industrial, sub-rural and residential land uses and will not have adverse impacts on these land uses. However, it is acknowledged that there will be a need for some restrictions on future land use activity in the immediate vicinity of the pipeline in order to have regard for the maintenance of the pipeline's integrity and for safety reasons.

Approximately 220 landholders will be directly affected by the proposed pipeline route. While small amounts of freehold title will need to be acquired to locate the balance tanks and pump stations, the majority of land that is required is via easements across properties within which the pipe will be laid.

SRWP Co. undertakes that for the majority of cases, private land owners will be able to resume previous land use activities on top of the pipeline, provided that the use will not damage the pipe. Section 4.8 'Landholders' of this report assesses landholder impacts in greater detail.

### **3. THE IMPACT ASSESSMENT PROCESS**

#### **3.1 SIGNIFICANT PROJECT DECLARATION**

In August 2005, SRWP Co. submitted a project Initial Advice Statement (IAS) and a proposal to the Coordinator-General requesting that the project to be declared as a Significant Project pursuant to Section 26 of the *State Development and Public Works Organisation Act 1971* (SDPWO Act).

In considering information within the IAS that detailed the proposed objectives, scope potential impacts and deliverables of the initiative the Coordinator-General declared the SRWP Project to be a 'significant project' on 28 September 2005.

The Coordinator-General determined that the proponent would be required to prepare and submit an Environmental Impact Statement (EIS) on the SRWP project. The EIS process was undertaken in accordance with Division 3 of the SDPWO Act.

#### **3.2 TERMS OF REFERENCE FOR THE EIS**

The Draft Terms of Reference (TOR) for the EIS were prepared by the Coordinator-General and released for public comment on 18 February 2006, with submissions invited until 17 March 2006. The TOR were finalised by the Coordinator-General after incorporation of public comment and provided to the proponent shortly after. A copy of the TOR is included at Appendix A of the EIS.

#### **3.3 PUBLIC INPUT TO THE EIS**

The draft EIS was prepared by the proponent and submitted to the Coordinator-General on 14 April 2006. The document was based on input provided by a team of consultants specialising in plant and animal ecology, soils, hydrology, noise, cultural heritage and indigenous relations, risk assessment and emergency management, social and economic assessment and community relations.

The document was publicly released and distributed to State and Commonwealth agencies for comment. It was advertised in *The Courier Mail* and the *Weekend Australian* on 29 April 2006 and listed on the websites of the Coordinator-General and the proponent. In addition, in May 2006, the proponent conducted six staffed public displays at locations across the proposed pipeline route, to publicise the draft EIS to the community and invite submissions.

### *3.3.1 Submissions received*

Submissions on the draft EIS were invited from 29 April to 29 May 2006. A total of 10 submissions from the following agencies and individuals were received.

- Commonwealth Department of the Environment and Heritage
- Environmental Protection Agency (Queensland State Government)
- Department of Main Roads (Queensland State Government)
- Queensland Transport (Queensland State Government)
- Department of Emergency Services (Queensland State Government)
- Ms Anne Page, Brisbane Region Environment Council
- Mr Ted Fensom, Brisbane Region Environment Council
- Mr Vince Sawyer
- Brett Kerr, Flinders-Greenbank/Karawatha Conservation Partnership
- Mr Anthony Stephens, Darlington International Raceway

The submissions are included at Table 1.1 of the Supplementary Report to the EIS (SREIS). In addition, key issues arising from feedback received during public displays were tabulated at Table 4.1 of the SREIS.

### *3.3.2 Issues raised within submissions*

Issues raised within submissions included:

- Degree of impact on threatened species
- Nature conservation
- Construction corridor width
- Water course crossings
- Contaminated land certification
- Road infrastructure impacts
- Non-indigenous cultural heritage
- Emergency planning.

## 3.4 REVIEW OF THE SUPPLEMENTARY REPORT TO THE EIS

Submissions on the EIS were forwarded by the Coordinator-General to SRWP Co. and following discussions with the proponent it was mutually determined that preparation of a Supplementary Report to the EIS (SREIS) was necessary to address issues that had been raised.

The SREIS was submitted to the Coordinator-General on 29 June 2006 and subsequently distributed to advisory agencies and other respondents to the EIS

for consideration. In addition, the SREIS was listed on the websites of the Coordinator-General and the proponent for public viewing.

Agencies were invited to comment on the SREIS and to provide specific advice to the Coordinator-General for consideration when applying conditions or requirements within this report that qualify the project's approvals or policy scope.

The Department of Emergency Services contacted the Coordinator-General on 14 July 2006 and advised that the SREIS had sufficiently addressed issues raised within the agency's initial submission to the EIS.

On 20 July 2006 the Commonwealth Department of Environment and Heritage (DEH) corresponded with the Coordinator-General and advised that the department was satisfied with the SREIS's responses to its submission on the EIS.

Agency responses on the SREIS were provided to SRWP Co. for additional comment. In response to further questions raised by agencies in consultation with me subsequent to the release of the SREIS, further information has been provided by the proponent, in order to obtain a finer level of detail to supplement that already provided.

### 3.5 THE COORDINATOR-GENERAL'S REPORT

The objective of this report is to synthesise and evaluate the key issues associated with the SRWP project with regard to potential physical, environmental, social and economic impacts. It focuses on substantive issues identified during the EIS process.

To enable decisions to be made on the project by Government, the Coordinator-General's Report provides an evaluation of the adequacy of the draft EIS and SREIS's analysis of the probable social, environmental and economic impacts of the project and the proponent's suggested measures to avoid or reduce negative effects.

Considered herein, in addition to the EIS and SREIS, are submissions made on the EIS, advice received from advisory agencies and further documentation provided by the proponent. The Coordinator-General's Report states conditions under which the project may proceed. The release of this report and its referral to the

Federal Minister for the Environment and Heritage indicates completion of the State assessment process on the project.

### 3.6 COMMONWEALTH IMPACT ASSESSMENT

Following referral of the project to the Commonwealth in late 2005, on 24 February 2006 the Commonwealth Minister for the Environment and Heritage determined that the SRWP Project constituted a "controlled action" likely to affect matters of national environmental significance under Section 75 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The controlling provisions of Part 3, Division 1 of the EPBC Act for the proposed action are:

- Sections 18 and 18A (Listed threatened species and communities); and
- Section 20 and 20A (listed migratory species).

On 27 February 2006 the Commonwealth Minister decided pursuant to Section 87 of the EPBC Act that assessment of the controlled actions would be by accredited assessment. The accredited process is as described within Division 4 of the SDPWO Act and Part 5 of the SDPWO Regulation. This allowed SRWP Co. to conduct, within the EIS, an impact assessment process for the investigation and evaluation of potential project impacts and proposed mitigation measures that was acceptable for the purposes of both Federal and State jurisdictions.

Following the provision of this report to the Commonwealth Government, the Minister for the Environment and Heritage will decide under the provisions of Section 133 of the EPBC Act whether or not to grant approval for the controlled actions.

Should approval be granted, in order to protect or mitigate impacts from the approved action on the declared matters of national environmental significance, the Minister may also attach conditions, over and above those set by the Coordinator-General as described within this report, to any approval. For the project to proceed, the proponent is subsequently required by law to adhere to these conditions.

This process allows for the assessment of new infrastructure while ensuring the social and environmental impacts of the proposal will not outweigh its intended benefits.

### 3.7 LEGISLATIVE PROVISIONS: APPROVALS, PERMITS AND LICENCES

Apart from approval under section 133 of the EPBC Act to undertake a controlled action, key Queensland legislation under which approvals would be required for the construction and operation of the SRWP include:

- *Integrated Planning Act 1997*
- *Environmental Protection Act 1994* and Regulation
- *Aboriginal Cultural Heritage Act 2003*
- *Queensland Heritage Act 1992*
- *Water Act 2000*
- *Vegetation Management Act 1999*
- *Nature Conservation Act 1992*
- *Fisheries Act 1994*
- *Coastal Protection and Management Act 1995* and  
*Coastal Protection and Management Regulation 2003*
- *Native Title (Queensland) Act 1993*
- *Health Act 1937*

### 3.8 COMMUNITY INFRASTRUCTURE DESIGNATION

The proponent has requested that should the Commonwealth and State approval for the project to proceed be granted, that the required *Integrated Planning Act 1997* (IPA) approvals be obtained by means of a Community Infrastructure Designation in accordance with the process detailed in Chapter 2, Part 6 of IPA.

Section 1 of the draft EIS outlines the licences, permits and approvals likely to be required for the project. There are a number of approval options available for permitting the proposed land use. In particular, the type of the proposed development falls within the definition of community infrastructure as defined in Schedule 5 of IPA.

As the proposed infrastructure will be located across four different local authorities, the use of a community infrastructure designation would provide a means of putting in place uniform requirements across the different local authorities. Based on an assessment of the project through the EIS, a number of other approvals are required for the project for which the detailed information to enable assessment has not been provided in the EIS and realistically could not be provided until further work, particularly with regard to finalising the route and location of ancillary works, has been carried out.

Assessment of these further approvals can proceed after any community infrastructure designation when the detailed information required to assess these applications is available. Conditions for the proposed use of the land identified through the EIS process could be included as requirements of such a designation.

However, should a community infrastructure designation not be sought, the conditions within this report may be applied in accordance with the following provisions of the SDPWO Act:

- Section 39, 'Application of Coordinator-General's report to IDAS'
- Section 52, 'Application of Coordinator-General's report to other approval process'
- Section 54B, 'Report may impose conditions'.

### *3.8.1 Environmental Relevant Activities*

The pipeline itself is not an Environmentally Relevant Activity (ERA). However, some temporary ERAs will be required for construction requirements such as fuel storage facilities and screening beds.

## **4. EVALUATION OF ENVIRONMENTAL IMPACTS**

The SDPWO Act defines 'environment' as including ecosystems and their constituent parts, including people and communities, all natural and physical resources, and the qualities and characteristics of locations, places and areas, however large or small, that contribute to their biological diversity and integrity, intrinsic or attributed scientific value or interest, amenity, harmony and sense of community <sup>1</sup>.

'Environmental effects' means 'the effects of development on the environment, whether beneficial or detrimental'. These effects can be direct or indirect, of short, medium or long-term duration and cause local or regional impacts <sup>2</sup>.

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<sup>1</sup> *State Development and Public Works Organisation Act 1971 – Schedule Dictionary*

<sup>2</sup> *Ibid.*



The following section outlines the major environmental effects raised during the EIS process, including in the EIS and SREIS, in submissions to the EIS and in consultation with advisory agencies and other key stakeholders.

Comments have been provided on these effects and, where necessary, conditions to mitigate the impacts are provided. The requirements made in this report are intended to flag the preferred management of particular issues identified during the EIS process and to ensure a place for these matters on the public record. SRWP Co. should implement these requirements in line with best practice methods to either avoid or mitigate specific impacts of the project.

All conditions that I specify should apply to necessary approvals for the SRWP project are contained within Attachment A. These conditions should be included in any decision to afford the project a Community Infrastructure Designation.

#### 4.1 COMMONWEALTH EPBC ACT ISSUES

As previously discussed, controlling provisions under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) relate to Commonwealth-listed threatened species, communities and migratory species.

Within impact assessment studies on the ecosystems, ecology, flora and fauna present within the project's footprint, the proponent undertook an assessment of the regional ecosystem types likely to occur on the proposed pipeline alignment (EIS, Table 4.3).

Section 16 of this report, 'Assessment of the relevant impacts of the project on matters of National Environmental Significance', provides detail of impacts and suggested ways to avoid, reduce or remediate impacts on Commonwealth listed threatened species.

Notably, while 36 ecological communities are listed as 'threatened' under the EPBC Act, none of these listed ecological communities occurs within, or adjacent to, the project area. However, a number of endangered regional ecosystems as listed under the *Nature Conservation Act 1992* do occur within the project corridor and these are discussed in detail in the following section.

While these vegetation communities are afforded a level of protection under the *Vegetation Management Act 1999* and the Environmental Protection Agency's

biodiversity conservation status classifications, a key criteria of the EIS process was for the proponent to identify a range of measures to minimise the effects on resident endangered species.

#### 4.2 ENDANGERED REGIONAL ECOSYSTEMS

The EIS indicates that a key consideration in determining the pipeline's alignment and location of ancillary works has been in the first instance, to avoid impacts on the environment and particularly, areas of environmental significance, by locating the route in existing cleared areas. The maps included at Figures 1.1-1.10 of the EIS confirm that this is the case for much of the intended circuit.

With a length of 90kms, the proposed pipeline route travels through varying degrees of semi-rural, industrial and residential settings for its length. The EIS indicates that largely, the environments the project traverses are highly fragmented and disturbed ecologies characterised by extensive clearing and previously modified land use. Habitat areas along the alignment are typically isolated and degraded.

Given these conditions, the proponent has acknowledged the need to mitigate further damage and to repair impacts that construction cannot avoid, with particular attention to be paid to endangered regional ecosystems.

The following commitments relating to ecological effects are indicated in Appendix I of the SREIS and are also included in this report at Attachment B:

- Construction of the SRWP will not adversely affect species of national significance (Commitment 4-13)
- Species-specific studies may be conducted prior to construction of the SRWP in order to develop suitable mitigation plans (4-14)
- Hollow-bearing roadside and habitat trees will be avoided where possible (4-15)
- SRWP Co. maintains a policy for leaving a positive environmental legacy post-construction (4-16)
- All cleared sites will be revegetated with appropriate species following construction (4-17)
- Work methods suitable for reducing impacts on the aquatic and riparian environment will be implemented through the EMP (4-18).

In its submission on the EIS, the Commonwealth requested consideration that the proposed corridor clearing width of 30 metres could be restricted in sensitive environmental areas (i.e. important habitats of flora and/or fauna species listed under the *Nature Conservation Act 1992* and/or the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) as presumed endangered, vulnerable or rare).

In the SREIS, SRWP Co. have agreed that a constrained corridor of between 12-15 metres may be used during construction for social, environmental and/or engineering reasons. Figure 2.2 of the SREIS and Attachment D of this report provides the dimensions of the constrained corridor model and I support its feasibility as a significant way to minimise the impact of works in sensitive environmental areas.

Some areas may require the clearing of additional tracks to provide access to the right of way. The EIS supports that the location and rehabilitation of the access tracks will be conducted in consultation with affected landholders. The proponent has undertaken that no sensitive ecosystems will be affected by additional tracks.

I note that a few submissions received have raised concerns with the project's impacts on State and Commonwealth-listed significant species of flora and fauna and how impacts on endangered regional communities that may contain listed species will be managed.

The EIS and SREIS have identified ten areas listed on State environmental records which contain threatened flora communities that are either adjacent, or near to, the proposed pipeline's alignment. For these specific sensitive areas, section 3.1.10 of the SREIS provides results of on-ground investigations and good strategies specific to each area that will significantly reduce impacts on threatened species due to construction activities.

For many of the sensitive areas indicated, a full width construction corridor of 30 metres can be used with no additional clearing necessary due to the pipeline's route being located in an existing clearing. In other instances, ground-truthing confirmed that the endangered species were located up to 100 metres from the pipeline alignment and therefore would not be impacted by construction activities.

Mitigation strategies the SREIS indicated that could be used to offset impacts in these areas included:

- A restricted width corridor (12-15 metres) to be used in areas that require clearing, to minimise further damage
- Vegetation to be reinstated to offset any necessary clearing
- Weed management of existing infestations and preventative measures to be undertaken
- Pipeline construction to proceed without trenching or locating plant or equipment in close proximity to the sensitive ecosystem.

### Stapylton Balance Tank

The SREIS indicated that as a result of a submission to the EIS and subsequent consultations with a landholder who would have been impacted by the proposed location of the Stapylton Balance Tank (SBT), the site has been relocated from that indicated in the EIS. The proponent altered the SBT location and pipeline route with a deviation of approximately 2 kms southwards along the route.

The SREIS indicates that the revised SBT site is located in an area with two remnant vegetation communities (RE12.11.3) nearby. Both are listed as 'not of concern', however, there are numerous significant species indicated via desktop surveys as being possibly present, including the Shiny-leaved Condoos (*Pouteria eerwah*), the Macadamia Nut, (*Macadamia integrifolia*) and Floyd's Walnut (*Endiandra floydii*). The two communities will not be affected by clearing required for the balance tank, however the pipeline will bisect one of the 'not of concern' communities. Table 5.1 of the SREIS provides further information on other species that may be present in this location.

Subsequent to release of the SREIS, a representative from the Commonwealth Department of the Environment and Heritage has requested that the area in the vicinity of the Stapylton Balance Tank should also be considered a 'sensitive environmental area' and management of construction works at this location to afford due consideration and care to mitigate impacts.

In consultation with the proponent on this matter, SRWP Co. have affirmed that the company will maintain its commitment to ensuring minimal environmental harm and will apply this approach to this area. Clearing in this location and subsequent revegetation of the remnant community through which a constrained corridor will be cleared will be undertaken in accordance with the proponent's Vegetation Management Plan, with the Department of Natural Resources, Mines and Water as the compliance manager for these actions. In the subsequent

condition I impose on the matter, I detail how impacts at this site will be managed by the proponent.

The SRWP project's draft Environmental Management Plan (EMP) (Appendix B, SREIS) contains four sections that describe work practices that apply specifically to sensitive environmental areas:

EM\*1.9—Sensitive land/aquatic area: erosion control

EM2.5—Sensitive land/aquatic areas: water/stormwater quality

EM5.1—Sensitive species (refers mitigation strategies –fencing off sensitive areas; divert stormwater; consult with relevant state agencies; locate works away from sensitive area if possible)

EM6.1—Minimising pests and weeds (refers construction equipment wash-down prior to entering site to avoid introducing seeds).

(\*EM: Environmental work method)

In addition, the EMP lists comprehensive strategies for minimising harm to all vegetation during construction works:

EM5.2—Material handling (avoid soil compaction in tree drip zones; keep materials, access tracks and parked machinery out of drip zones; use tree guards to prevent injury)

EM5.3—Vegetation removal (fence off/delineate not-to-be-cleared areas; remove tree dwelling animals prior to clearing; avoid clearing native trees; workers to be briefed on approved clearing process)

EM5.4—Activities around vegetation (use only designated access tracks; any surface sealing near tree roots to allow aeration; avoid damage to tree roots)

EM 5.5—Revegetation (species selection/density appropriate; native species to be used; fencing turfed areas; post planting care until plants are self-maintaining).

I acknowledge that the SRWP Co. will appoint a full-time Environmental Officer during construction who will be independent of personnel with direct responsibility for works being performed. This officer will have the necessary authority and responsibility to ensure compliance with the EMP and will monitor performance requirements for the pre-construction and construction phases of the project.

The practices within the EMs discussed above offer robust measures to minimise impacts on habitat, and particularly on sensitive ecological communities. The EMs'

inclusion in the EMP will ensure they become part of the procedures and practices that SRWP Co. instructs its construction workforce to abide by and which management is to enforce.

#### *Conclusions and Recommendations*

It is acknowledged that the proponent has attempted to select an alignment that avoids environmentally sensitive areas, and has re-aligned the proposed route on a number of fronts to respond to concerns identified regarding potentially impacted sensitive areas. Further, the proponent's strategy of locating the alignment in existing easements and road reserves wherever possible has significantly reduced the impacts this project will have on the environment and particularly, on sensitive regional ecosystems.

While it is noted that some permanent clearing will be undertaken for the two balance tanks and four pump stations where these are located in sites that are not already cleared, none of these sites are located within significant ecosystems. Revegetation of remnant communities will be undertaken in accordance with the proponent's Vegetation Management Plan.

I am also satisfied that the mitigation strategies proposed by the proponent, particularly within Section 3.1.10 of the SREIS that offers a good deconstruction of how each sensitive area will be managed during construction, will provide a location-specific approach to minimising sensitive area habitat loss.

Additionally, the strategies indicated within the revised EMP at Appendix B of the SREIS are responsive and workable impact mitigation methods. Particularly, EM 5.5, 'Revegetation', (EMP, Appendix B, SREIS) provides an appropriate approach to ensuring impacted communities are repopulated with area-specific flora species and enabled to recover from construction impacts, with due regard for the need of ongoing monitoring and care of new growth, post-construction.

However, I would like to see a new section included within the EMP specifically on sensitive environmental areas within the project footprint that consolidates the proponent's intent to minimise harm to threatened ecological communities as discussed in various sections of the EIS, SREIS, the proponent's listed commitments and the EMP.

### Condition 1: Sensitive Area Plans (SAP)

A Sensitive Area Plan must be created for the ecological communities at the following locations, and included in the EMP:

1. Regional ecosystems that contain *Eucalyptus tereticornis* (RE 12.3.3)  
Location 1A: Camerons Creek, at Mt Crosby  
Location 1B: Creek crossing adjacent to Chambers Flat Road
2. Regional ecosystem that contains *Eucalyptus tereticornis*,  
*Eucalyptus siderophloia*, *C. intermedia* (RE 12.3.11)  
Location: Chambers Flat Road, Chambers Flat
3. Regional ecosystem that contains Notophyll vine forest (RE 12.3.1)  
Location: Yuan Creek
4. Regional ecosystems that contain *Corymbia citriodora*, *Eucalyptus crebra*  
*Eucalyptus moluccana* (RE 12.8.24)  
Location 4A: Swanbank  
Location 4B: West of Woogaroo Creek, Springfield
5. Regional ecosystems that contain  
*Eucalyptus seeana*, *Corymbia intermedia*, *Angophora leiocarpa*  
(RE 12.9-10.12)  
Location 5A: Wirrabara Drive  
Location 5B: South-east of Greenbank Substation  
Location 5C: Powerlink easement, Greenbank 'Ch 400000-42000'  
Location 5D: Cnr Old Pub Land/Teviot Road
6. The area affected by the Stapylton Balance Tank and associated pipeline section that bisects the RE 12.11.3.

Each SAP must include, but not be limited to, the following:

- location-specific mitigation strategies, as described in the SREIS's Section 3.1.10
- confirmation that a constrained pipeline construction corridor of no greater than 15 metres, as detailed in Figure 2.2 of the SREIS, will be used in these locations
- the provision that no unnecessary clearing will be undertaken

- confirmation that, wherever possible, construction activities will be limited to existing clearings
- that established threatened flora species will not be cleared wherever possible
- that wherever possible, trees with hollows will not be cleared, or new constructed hollows installed
- that, wherever possible, damage to the edges of remnant communities will be minimised and erosion controls implemented
- mitigation strategies as listed in EM 1.9-Sediment and erosion: Sensitive land/aquatic area; EM 2.5-Water and stormwater management: Sensitive land/aquatic area; EM 5.1-Flora and fauna: Sensitive species; EM 5.2-Material handling; EM 5.3-Vegetation removal; EM 5.4-Activities around vegetation; EM 6.1-Minimising weed and pest invasion (and others as appropriate)
- a rehabilitation plan for each sensitive area impacted during construction that adheres to the performance criteria in section 5.5-'Flora and Fauna' of the EMP: successful rehabilitation will be as measured against pre-construction assessment
- a revegetation plan for each sensitive area that will experience clearing with revegetation strategies as indicated, but not limited, to EM 5.5-Revegetation
- that ecologically sensitive weed management will be undertaken, as per sections 5.6 and 9.5 of the EMP.

A map is to be created that clearly indicates each sensitive environmental area along the pipeline's route.

The SAP must be prepared in consultation with the Environmental Protection Agency.

#### 4.3 THREATENED SPECIES: OVERVIEW

Section 16 of this report provides a detailed analysis of potential impacts and mitigation strategies for Commonwealth-listed threatened species of National Environmental Significance ('significant species'). However, an overview of the issue is provided herein.



The EIS and SREIS suggest that the project will not have a significant impact on matters of environmental significance under the EPBC Act for the following reasons:

- the alignment has been selected to avoid environmentally sensitive areas
- the majority of the alignment is located in existing easements and road reserves
- significant regional ecosystems that may be inhabited by listed species and migratory species will not be directly impacted by the project
- for other ecosystems that may provide habitat, only small amounts of habitat relative to the existing communities will be cleared
- constrained corridors (12-15 metres) are able to be used in sensitive areas
- where habitat is to be affected, strategic site rehabilitation and revegetation will be undertaken to assist with the re-establishment of habitat.

Procedures detailed in the Environmental Management Plan (EMP) (Appendix B, SREIS) that will be undertaken on construction sites to minimise effects on species of significance include:

EM1.9—Sensitive land/aquatic area: erosion control

EM2.5—Sensitive land/aquatic areas: managing water/stormwater quality

EM5.1—Sensitive species (refers mitigation strategies –fencing off sensitive areas; divert stormwater; consult with relevant state agencies; locate works away from sensitive area if possible)

EM6.1—Minimising pests and weeds (refers construction equipment wash-down prior to entering site to avoid introducing seeds).

In addition, the EMP lists comprehensive strategies for minimising harm to all vegetation during construction works:

EM5.2—Material handling (avoid soil compaction in tree drip zones; keep materials, access tracks and parked machinery out of drip zones; use tree guards to prevent injury)

EM5.3—Vegetation removal (fence off/delineate not-to-be-cleared areas; remove tree dwelling animals prior to clearing; avoid clearing native trees; workers to be briefed on approved clearing process)

EM5.4—Activities around vegetation (use only designated access tracks; any surface sealing near tree roots to allow aeration; avoid damage to tree roots)

EM 5.5—Revegetation (species selection/density appropriate; native species to be used; fencing turfed areas; post planting care until plants are self-maintaining).

As addressed within the EIS and SRIES, apart from the significant measures identified above, indirect environmental management on the following matters will also minimise environmental impacts on significant species:

- ensuring the integrity of water quality is maintained
- responsive waste disposal methods
- proper spoil handling in Fire Ant areas
- preventing erosion and sedimentation; and
- using trenchless construction techniques on all major water crossings.

The approaches described in the EIS and SREIS on these matters will be discussed further within subsequent sections of this report.

While desktop studies have indicated a number of Commonwealth-listed threatened flora may be found in the vicinity of the pipeline's route, a detailed on-ground confirmation for the project's total traverse has not yet been undertaken. It is acknowledged that particular attention to listed Commonwealth flora species that may be impacted by the project are required and therefore I impose the following condition, based on information and advice provided by the Commonwealth Department of the Environment and Heritage.

Condition 2: Significant flora species: Investigation and remediation

On-ground studies at the following locations must be undertaken prior to construction to determine if the following significant flora species are present.

- Lloyd's Olive (*Notelaea lloydii*) (may be located at Cameron's Hill/Mount Crosby, Swanbank, Springfield, Greenbank);
- Brush Sophora (*Sophora fraseri*) (Cameron's Hill/Mount Crosby, Hotham Creek/Ormeau, Yaun Creek);
- *Fontainea venosa* (Cameron's Hill/Mount Crosby);
- Floyd's Walnut (*Endiandra floydii*) (Hotham Creek/Ormeau, Staplyton);
- Native Jute (*Corchorus cunninghamii*) (Hotham Creek/Ormeau);
- Macadamia Nut (*Macadamia integrifolia*) (Stubbin Street/Randle Road, Staplyton, Hotham Creek/Ormeau, Yaun Creek);

- Shiny-leaved Coondoo (*Pouteria eerwah*) (Stubbin Street/Randle Road, Staplyton, Ormeau);
- Spiny Gardenia (*Randia moorei*) (Staplyton);
- Marbled Baloghia (*Baloghia marmorata*) (Staplyton);
- Native Coleus (*Plectranthus habrophyllus*) (Oxley Creek, Woogaroo Creek, Opossum Creek, Greenbank, Springfield, Staplyton, Ormeau); and
- Slender Milkvine (*Marsdenia coronata*) (Woogaroo Creek, Opossum Creek, Hotham Creek/Ormeau).

The study methodology is to be of at least the same degree, and utilise the same methods, of those already undertaken for other sensitive sites within the project area.

Should the species be confirmed, a Sensitive Area Plan (SAP) for each such location is to be created and included in the EMP.

Each SAP will include, but not be limited to, the following:

- location-specific mitigation strategies
- confirmation that a constrained corridor of no greater than 15 metres, as detailed in Figure 2.2 of the SREIS, will be used in these locations
- mitigation strategies as listed in EM 1.9-Sediment and erosion: Sensitive land/aquatic area; EM 2.5-Water and stormwater management: Sensitive land/aquatic area; EM 5.1-Flora and fauna: Sensitive species; EM 5.2-Material handling; EM 5.3-Vegetation removal; EM 5.4-Activities around vegetation; EM 6.1-Minimising weed and pest invasion (and others as appropriate)
- the provision that no unnecessary clearing of significant flora species will be undertaken
- confirmation that wherever possible, construction activities in the vicinity will be limited to existing clearings
- that wherever possible, trees with hollows will not be cleared, or new constructed hollows installed
- a rehabilitation plan for each sensitive area impacted during construction that adheres to the performance criteria in section 5.5-'Flora and Fauna' of the EMP: 'successful rehabilitation will be as measured against pre-construction assessment'
- a revegetation plan for each sensitive area that will experience clearing, with revegetation strategies as indicated, but not limited, to EM 5.5-

Revegetation, and confirmation that species-specific seed or tubestock to be sourced wherever possible to ensure 'like for like' revegetation

- that wherever possible, damage to the edges of remnant communities will be minimised and erosion controls implemented
- that ecologically sensitive weed management will be undertaken, as per sections 5.6 and 9.5 of the EMP.

Should the location above coincide with a sensitive area for which a SAP is to be created in accordance with Condition 1, the original SAP may be augmented to include provisions relevant to this Condition. The requirement as listed above on 'like for like' revegetation must however be included and complied with.

The SAP must be prepared in consultation with the Environmental Protection Agency and the Commonwealth Department of the Environment and Heritage. A report on implementation of this condition is to be submitted to DEH at quarterly intervals, or as otherwise requested by DEH.

#### 4.4 FLORA AND FAUNA

On-ground search and trappings investigations undertaken along the route confirmed the existence of 147 terrestrial vertebrate species. Approximately 100 flora species, in addition to those occurring in sensitive regional ecosystems as described previously in this report, were identified in field investigations along the corridor.

The proponent's strategy of placing the majority of the pipeline's proposed route within existing cleared areas will significantly minimise impacts on flora and fauna in the vicinity. Additionally, the proponent has demonstrated regard for minimising impacts by redirecting the pipeline's initial route as the existence of known species has been identified – for example, the SREIS indicated changes to the route in the Chamber's Flat area removed the corridor from potential impacts on known communities of the Spotted-tail Quoll (*Dasyurus maculatus maculatus*) and the Commonwealth-listed Wallum Froglet.

Similarly, in the case of an endangered lizard, the Collared Delma, which has suitable habitat in the Mt Crosby area, while no sightings of the species were indicated during field investigations, the proponent accommodated for the possibility of adverse impacts by diverting the preliminary route away from the

area's rocky slopes and sloughing rocks which are a preferred habitat of the species.

Since the publication of the draft EIS, the proponent has allocated \$5,000 to support an existing research program into the threatened Spotted-tail Quoll populations in the North Beaudesert area. This is commended, and I advocate the proponent's support for region-specific fauna studies, particularly with regard to species categorised as being of concern and/or threatened.

During the construction phase, suitably qualified Environment Officers will be present on-site to deal with any hitherto unidentified environmental issues and to identify local species and communities as the need arises. Sites will be inspected for significant plant species and any discernible signs of fauna activity prior to the commencement of works and animal spotters/catchers will be on site to move fauna that may be in danger of construction works.

The EMP indicates that a detailed Fauna Management Plan is also being developed for use during construction.

#### 4.5 AQUATIC FLORA AND FAUNA

The EIS indicates that studies undertaken at proposed locations where the pipeline will cross waterways indicated that areas of riparian vegetation were often small (less than 1 hectare) and isolated, with the average width not exceeding 20 metres from the bank. As a result of high levels of disturbance, exotic weed species were a dominant component of all strata in most cases.

While SRWP Co. found that some smaller creeks were less affected by weed species, particularly where the adjoining land retained some native vegetation, creeks adjacent to major roads and urban environments were highly modified with hardened culverts and drainage lines.

Desktop searches identified a number of listed species as potentially occurring within the larger project area. However, field investigations at water crossings failed to confirm habitat suitable to support many of these species and only limited observations were recorded. Species observed at waterway crossings have been incorporated into the overall species list in Table 4.6 of the EIS.

The project will have minimal impacts on aquatic flora and fauna as the preferred method of water crossings construction, micro-tunneling, was selected for the majority of tidal river crossings on the basis that it affords minimal environmental disturbance.

At the Brisbane River which the proponent proposes to bridge the pipeline across, reporting on the site's environmental values will be undertaken within a permit that will be required under the *Coastal Protection and Management Act 1995* and *Coastal Protection and Management Regulation 2003*.

The proponent has indicated within the EMP's EM1.9–Sensitive land/aquatic area, that sedimentation and storm water run-off impacts will be mitigated within construction activities in aquatic areas. The EMP contains a thorough indication of how this will be managed, which is discussed in more detail in Section 5.9.1 'Erosion and Sedimentation'.

#### 4.6 PIPELINE ALIGNMENT

As previously discussed, the pipeline will pass through a number of different land use types including rural, residential, road infrastructure and utilities easements.

The proponent has demonstrated flexibility in seeking to reduce environmental and social impacts of the project by redefining the initial pipeline route and location of the pump stations and balance tanks in response to potential impacts as they have been identified. Care has been shown in attempting to locate the route in existing cleared easements, road verges and road reserves or other cleared areas to avoid further fragmentation of vegetation.

While an advisory agency has raised concerns with the project's management of works within the Coastal Management Area (CMA) relating to the project, the SREIS confirms that the proposed route has been selected with the aim of minimising disturbance to coastal species and ecosystems. I am satisfied with the proponent's statement that mitigation methods as detailed in the EMP (Appendix B, SREIS) relating to management of erosion, sedimentation, water quality, site rehabilitation and revegetation as discussed in this report will also apply well with the boundaries of the CMA to mitigate and remediate the project's impacts.

#### 4.7 ROUTE CHANGES

Section 5 of the SREIS indicates four key changes made to the project alignment have been made in response to issues that arose from the consultation phase on the EIS. Importantly, all changes are located within the initial project footprint and accordingly are still valid within the impact assessment processes as described in the SDPWO Act and also for the purposes of this assessment report.

While the SREIS includes findings from desktop surveys relating to the new areas and maps of the proposed changes, at my request the proponent has subsequently provided me with further information and assessments of potential impacts at these locations. This has resulted in me being confident that the proposed alterations pose no insurmountable environmental or social issues and any impacts are able to be avoided or minimised. The following section details the proposed changes and subsequent impacts.

##### A) Chamber's Flat Road deviation

The pipeline will cross to the other side of the road to the route initially proposed in the EIS and as a result, will impact on 13 less landholders than the previous traverse.

While the pipeline will align along an existing road verge adjacent to an endangered regional ecosystem, the proponent has advised in discussion subsequent to the SREIS that ground truthing has been undertaken at this location and confirmed that no predominant species will be removed as a result of clearing activities.

SRWP has undertaken to replace any vegetation removed for this section in accordance with the project's Vegetation Management Plan. Beaudesert Shire and the Department of Natural Resources, Mines and Water will be consulted through this process.

##### B) Mt Crosby Road deviation

The pipeline was moved in response to an affected landholder's concerns that the corridor would impact negatively on their future intended use of the land (property redevelopment). While figure 5.4 (SREIS) indicates that the realignment is currently being considered along two possible redirections, one would intersect the periphery of a small 'of concern' regional ecosystem (RE 12.11.14/12.9-10.7).

In a subsequent discussion with me on the matter, the proponent has indicated that their preference is to construct through the cleared corridor and has undertaken to attempt to negotiate an alignment that is both outside the regional ecosystem while still meeting the affected landowners' requirements.

While I acknowledge that at the time of writing the route is yet to be defined, I have included provision within the following recommendation to ensure mitigation strategies will occur if construction works are to be undertaken that will impact on the 'of concern' community.

Condition 3: possible impacts: RE 12.11.14/12.9-10.7 at Mt Crosby Road

A Sensitive Area Plan (SAP) in accordance with the specifications indicated in Condition 1 is to be created and included in the EMP should the 'of concern' Regional Ecosystem indicated in the vicinity of the Mt Crosby Road works (RE 12.11.14/12.9-10.7) be impacted by construction works.

The SAP must be prepared in consultation with the Environmental Protection Agency.

C) North Beaudesert Balance Tank (NBBT)

SRWP Co. advises that the revised location of the NBBT is similar to that indicated within the EIS and is within a large area of vegetation adjacent to the Springfield residential development site. Land designated as Forest Park in this area is currently being transferred to Ipswich City and will form part of the Flinders to Greenbank/Karawatha Forest Corridor.

The proponent reports that the current business owner of the site has not allowed site investigations for environmental or Cultural Heritage purposes to be undertaken, however this will be possible shortly as the corridor will soon be made freehold land through the relevant Local Authority.

As per the previous location described within the EIS, the site is still located within the Fire Ant Restricted Area. Details of the approved Fire Ant Management Plan which relates to this area are included in section 5.5 of this report.



While I acknowledge that a submission received raised concerns with the effects of the NBBT on the Forest Corridor, I accept that the decision to locate the balance tank in this location was necessitated for engineering and operational reasons. The proponent has located the pipeline in this location to take advantage of a corridor of 'non-remnant' habitat, thereby reducing impacts on the remnant ecosystem.

The SREIS indicates the proponent's commitment to offsetting clearing required for the site and undertaking area rehabilitation following construction. Clearing will be managed through the Vegetation Management Plan, with the Department of Natural Resources, Mines and Water as the concurrence agency.

#### D) Stapylton Balance Tank (SBT) deviation

As a result of this realignment, 17 less landholders will be impacted; however, the SREIS indicates the new location is in the vicinity of two remnant vegetation communities. Both are listed as 'not of concern', however, there are numerous significant species indicated via desktop surveys as being possibly present, with initial on ground investigations confirming the presence of a listed species, the Grey Headed Flying Fox. Section 4.2 and the associated recommendation places direction on how impacts at this location are to be managed to ensure environmental impacts are managed.

#### 4.8 LANDHOLDERS

Approximately 220 landholders will be directly affected by the proposed pipeline route. While small amounts of freehold title will need to be acquired to locate the balance tanks and pump stations, the majority of land that is required is via easements across properties within which the pipe will be laid. The proponent has confirmed that no residents will need to be permanently relocated due to the project's land requirements.

It is reasonable to assume that on the whole, the project's works will present a temporary inconvenience as the pipe will, for the majority of its traverse, be underground and will therefore not be an aesthetic or practical impediment for nearby landowners.

I acknowledge the proponent's undertaking to rehabilitate all affected areas to at least their pre-construction condition. Commitment 4-16 (EIS) states that SRWP Co. maintains a policy for leaving a positive environmental legacy post-construction.

As previously discussed, SRWP Co. has stated that private land owners will be able to resume previous land use activities on top of the pipeline, provided that the use does not include excavation or ripping activities. Deep rooted plants will not be able to be planted over the pipe in order to protect the pipe's corrosion protection mechanism.

Development approvals under the *Integrated Planning Act 1997* (IPA) would be required for the construction and operation of the SRWP. As discussed previously, it is recommended that these approvals be undertaken by means of a Community Infrastructure Designation in accordance with the procedure detailed in Chapter 2, Part 6 of IPA. The relevant conditions, detailed in Attachment A of this evaluation report, are proposed to become requirements of the proposed Community Infrastructure Designation. Under the designation, in accordance with Section 2.6.19 of IPA, an owner of an interest in designated land can request that the designator buy the interest.

Construction impacts will include noise, dust and vibration created by the project's construction works and from heavy vehicle traffic along the main haul routes. Other impacts include temporary alteration to property access while pipe is installed across access ways, possible short-term interruptions to stock movement, minor road detours and part road closures, and construction route rehabilitation and revegetation activities.

In each case, the EIS supports that the proponent will negotiate these effects with residents directly. The EIS indicates flexibility on these matters is able to be addressed – for example, wherever possible, steel plates may be put across property access points to ensure entry will be not be unduly restricted.

In subsequent information provided by the proponent on the matter of landholder impacts, advice was provided that temporary relocations may be offered to some households along the pipeline alignment, for example if a section of a Court or similar needs to be closed for safety reasons during construction. In such cases, residents may be offered alternative accommodation or 'a holiday' to compensate for any inconvenience.

Additionally, there may be a need to temporarily relocate stock during the period of construction, to ensure safety of the construction team or the stock. The

proponent will negotiate such arrangements individually with landholders, prior to construction.

The proponent has undertaken to advise landholders of specific dates and times that works will occur in their vicinity and to negotiate with landholders prior to construction should works impact on them. I am satisfied with the proponent's undertaking to liaise with affected residents directly on the schedule of activities so as to minimise disruption to daily activities.

In line with SRWP Co.'s policy of leaving a positive environmental legacy post-construction, the proponent has undertaken to remediate and revegetate all properties that require clearing of an easement for the pipeline to at least their preconstruction state.

The EIS indicates that the project has employed a Community Liaison Officer and contact details of this person, including a freecall number, have been made available to affected landholders. A comprehensive complaints receipt, recording, actioning and outcomes review process has been indicated in the EIS and I am satisfied with the proponent's indication that this process will also be used to review and refine existing procedures that relate to minimising social and environmental impacts of the project on the region it will traverse.

SRWP Co. has undertaken preliminary discussions with various entities on co-locating the pipeline within existing easements. These organisations include Powerlink Queensland, Queensland Transport, Santos Ltd, Queensland Rail, Department of Main Roads, Agility Pty Ltd, Department of Natural Resources, Mines and Water, Energex, Telstra, Optus, and various Local Authorities.

#### *Conclusions and recommendations*

I believe that land use and planning matters associated with the project are adequately addressed in the EIS and SREIS.

It is recommended that the proponent is to provide a clear process statement to affected landholders that will be adhered to in all dealings with these parties. It is also recommended that the proponent will offer fair compensation to ensure that wherever possible, the securing of tenure of the project's land requirements is able to occur in cooperation with landholders.

#### Condition 4: Land acquisition policy

A land acquisition policy must be provided to affected landholders.

The policy must, at a minimum, include:

- a clear process statement that will be adhered to by the proponent in all dealings with affected landholders
- a freecall telephone number to enable affected landholders to contact the proponent for the purpose of land acquisition negotiations.

Steps must be undertaken to obtain voluntary agreement on acquisition using normal commercial negotiations.

## **5. LAND MANAGEMENT**

### **5.1 EROSION AND SEDIMENTATION**

SRWP Co. undertook an inclusive review of relevant mapping and documentation on area soils and also of findings indicated within field investigations undertaken along the proposed route.

Investigations focused on the susceptibility of different soil types in the area to erosion and best methods for soil handling, project impact reduction and disturbed area rehabilitation. Findings indicated that erosion impacts for the project are more of a risk in areas with land sloping (with a gradient greater than 10 percent) rather than with regard to specific soil types. Similarly, stream banks at pipeline crossing points were also identified as having significant erosion risks.

SRWP Co. has included with Section 5.1 'Sediment and Erosion Control' of the EMP (Appendix B, SEIS) comprehensive methods for utilising best practice topsoil management techniques, such as installing sediment control devices and implementing appropriate revegetation methods as soon as practicable after disturbance to ensure that the pipeline development does not instigate or exacerbate soil erosion (EMs 1.1-1.12). Microtunnelling beneath major water courses will be used in the majority of crossings to avoid the impacts, including erosion risks, of conventional open cut methods.

EMs 3.1 to 3.4 of the EMP on dust management techniques also provide comprehensive measures to avoid erosion and stabilise soils through strategies such as minimising work areas to avoid unnecessary soil disturbance from work sprawl, progressively rehabilitating sites after construction and using sealed roads where possible during construction activities.

The potential risk of stormwater releases creating or accelerating erosion are also addressed within the EMP and include requirements for the use of control structures such as swales, stormwater pit inlets and silt fences to minimise sediment and stormwater impacts, with the provision that regular checks on the structures are to be made to ensure functionality.

EMs 1.1-1.12 also indicate good management techniques to minimise sediment impacts resulting from construction activities. I believe SRWP Co. has presented workable strategies for achieving commitment 4-7: Construction planning will minimise the potential for erosion and sedimentation impacts.

## 5.2 SITE REHABILITATION

The EIS indicates that an important component of the construction activity is the final rehabilitation stage which will be undertaken in accordance with best practice pipeline construction and ensure the following actions occur:

- Topsoil cover is re-established and all land and waterways disturbed by the project are returned to a stable condition as soon as possible after construction
- Land is returned as close as possible to its previous level of productivity
- Stable landforms are re-established to original topographic contours
- Natural drainage patterns are reinstated
- Erosion control measures are installed in erosion prone areas
- The pre-construction environment is reinstated and disturbed habitats rehabilitated.

Revegetation will be an important component of rehabilitation activities undertaken by the proponent post-construction to restore work fronts to as near to their prior state as possible. The proponent's positive commitment to revegetating all cleared sites with species endemic to the area is addressed elsewhere in this report.

I am satisfied that the proponent's intentions for remediating sites post-construction will minimise impacts on the construction areas. However, I require a section included in the EMP on rehabilitation works that consolidates intent mentioned within the EIS, SREIS, and parts of existing EMs within the EMP.

#### Condition 5: Rehabilitation Plan

A Rehabilitation Plan must be included in the EMP which specifies, at a minimum, the intentions as described in the EIS, SREIS, including:

- Topsoil cover to be re-established and all land and waterways disturbed by the project are returned to a stable condition as soon as possible after construction
- Land to be returned as close as possible to its previous level of productivity
- Stable landforms are re-established to original topographic contours
- Natural drainage patterns are reinstated
- Erosion control measures to be installed in erosion prone areas
- The pre-construction environment to be reinstated and disturbed habitats rehabilitated.

Rehabilitation of disturbed areas must take place progressively as works are staged.

The Plan must be prepared in consultation with the Environmental Protection Agency.

### 5.3 CONTAMINATED LAND

A submission on the EIS received from the Environmental Protection Agency directed that correct procedure must be followed for dealings with identified contaminated land sites found along or in close proximity to the proposed alignment.

The EIS indicates the SRWP Co. have identified, within 500 metres either side of the pipeline corridor, all land recorded on the Environmental Management Register (EMR) and Contaminated Land Register managed by the EPA. Figure 4.7 of the EIS indicates sites as identified on the EMR.

As described within the SREIS, the proponent has consulted with EPA on the process for identifying Site Management Plans (SMPs) for identified properties with contaminated land likely to be affected by the project and confirmed that no sites within the project area have SMPs.

Therefore, the EPA has advised that contaminated soil will need to be addressed on a site specific basis. If there is reason to suspect that the soil to be excavated will be contaminated (and it is unable to be placed back within the excavation), a disposal permit must be sought. If there is no reason to suspect that the soil is contaminated a disposal permit will not be required. Potentially contaminated soil must be managed within each lot boundary, i.e. not disposed to the adjoining or nearby lot.

The EIS states an undertaking that in the event that contaminated sites are identified during construction, the source will be verified by a relevant expert and the pipeline relocated up to 100 metres away from the contaminated source.

Commitment 4-5 of the EIS indicates: All on-site impacts associated with contaminated lands will be managed through the EMP; and Section 4 of the EIS indicates the proponent's awareness of the need to manage contaminated land under Chapter 7, Part 8 of the *Environmental Protection Act 1994*.

#### Condition 6: Contaminated Land

Where the pipeline traverses land as designated on the Environmental Management Register or Contaminated Land Register, the Contaminated Land Unit, Environmental Protection Agency, must be notified prior to construction.

I nominate the Environmental Protection Agency as concurrence agency under the provisions of the *Environmental Protection Act 1994* for this condition.

#### 5.4 ACID SULPHATE SOILS

Figure 4.6 of the EIS details that SRWP Co. has undertaken a mapping of the likely occurrence of acid sulphate soils (ASS) and potential acid sulphate soils (PASS) along the proposed alignment. The EIS posits that the low occurrence of these features within the project area shows that the potential for negative environmental impacts as a result of encountering acid sulphate soils is low.

However, the EIS anticipates that ASS is likely to be encountered within microtunnelling activities under the Coomera River and in the vicinity of Wet 'n' Wild theme park. Additionally, poor rock foundations at the Brisbane River crossing, where the pipeline is to be bridged over the river on piling structures,

may result in piling needing to be placed deeper than usual, which may trigger an increase in acid sulphates into the river system.

#### Condition 7: Acid Sulphate Soils Management Plan

An Acid Sulphate Soils Management Plan must be included within the EMP.

The Plan must be developed in accordance with the State Planning Policy 2/02: Planning and Managing Development Involving Acid Sulphate Soils and the SPP 2/02 Guideline: Acid Sulphate Soil and with reference to the *Guidelines for Sampling and Analysis of Lowland Acid Sulphate Soils in Queensland 1998*.

I nominate the Department of Natural Resources, Mines and Water as the concurrence agency for this activity.

#### 5.5 FIRE ANTS

The draft EIS confirms that the project's Bundamba and Swanbank sites are within the South-West Fire Ant Restricted Area.

Commitment 3-6 (EIS) undertakes that works in the South-West Fire Ant Restricted Area will be in accordance with an approved risk management plan. The proponent has subsequently advised that a plan has been developed and approved by the Department of Primary Industries and Fisheries.

The following EMs from the EMP (SREIS) detail procedures when construction activities are being undertaken in the Fire Ant Restricted Area:

- EM3.1—Stockpiling
- EM5.2—Material handling
- EM6.3—Weed infested and Fire Ant Declared areas
- EM6.1—Minimising weed and pest invasion.

Importantly, the proponent undertakes that no spoil will be transported from Fire Ant Declared areas other than to sites listed in the approved Fire Ant Management Plan.

#### 5.6 WEEDS

Section 5.6 of the EMP (Appendix B, SREIS) details comprehensive and responsive weed management strategies that indicate the proponent's desire to minimise the environmental impacts of existing weed infestation and to avoid the introduction



of weed species as a result of project activities. Performance criteria of no new weeds; no increase in weed distribution and pestiferous species will occur as a result of project works, are indicated.

EMs 6.1-6.4 (SREIS) indicate process for the handling and removal of weeds, while EM 9.5–Hazardous materials satisfactorily details management of pesticides to be used for weed management and indicates that, in accordance with the *Agricultural Chemicals Distribution Control Act 1966* any ground distribution of herbicides is to be undertaken by, or under the direct supervision of, a licensed commercial operator. Subsequent to the responsive removal of weed species, the proponent undertakes that revegetation with native species will occur.

I am satisfied with the proponent's strategies for weed management as addressed in the EIS and SREIS.

## **6. WATER MANAGEMENT**

### **6.1 WATER CROSSINGS**

The alignment crosses a number of waterways including rivers, creeks and drainage channels. The waterways are all located within the Moreton Bay catchment area.

The EIS indicates that the quality of most of the waterways are degraded for reasons mostly attributable to urbanisation and changed land uses, and also found that the upper catchment is not in pristine condition. The proponent has determined that construction of the pipeline may have only localised impact and will not have a noticeable effect on water quality within the bay, both due to distance from the project and also as a result of construction activities.

Key potential impacts on water crossings may include the effects of erosion from corridor clearing and siltation. Both issues, as described previously, are addressed within the EMP with a view to prevention of these impacts.

A number of water crossings are located near regional ecosystems. Methods the proponent proposes to mitigate and remediate impacts on these communities are discussed in section 4.2 of this report.

## 6.2 CONSTRUCTION METHODS INVOLVING WATERWAYS

The EIS indicates that the majority of water crossings will involve microtunnelling under the river bed and is the case for five of the six rivers to be crossed. The remainder, being the Brisbane River, will be bridged using piling. These construction methods will result in minimal impacts to riparian and in stream vegetation.

I note that under the *Coastal Protection and Management Act 1995* (CPM Act) and Regulation the proponent is required to seek a permit for crossing a tidal section of a river for works involving trenching or bridging. Therefore this will apply to the Brisbane River crossing, with the EPA as the concurrence agent and the Local Authority as the assessment manager.

While the SREIS indicates that the Brisbane River crossing occurs on the boundary of two local authorities, SRWP Co. has subsequently indicated that Ipswich City Council have agreed to be the assessment manager for this aspect of works.

The proponent states that trenching will be used only for ephemeral freshwater creeks and is to be undertaken during low or no flow periods. While trenching was to be undertaken on the larger Saltwater Creek, the SREIS indicates that SRWP Co. have amended this crossing method due to comments received within a submission from the Environmental Protection Agency. Consequently, the pipeline will cross over the creek via a piled bridge and as a result will have significantly less impacts on the creek and surrounding vegetation.

These water crossings will be undertaken on non-tidal waterways that are above the high water springs tide and therefore not within the bounds of the CPM Act and Regulation and as such, tidal crossings permits for these watercourses will not be required.

The EIS and SREIS indicate that discussions on statutory approvals involving marine plants are being undertaken with representatives of the Department of Primary Industries and Fisheries.

Concerns about how potential impacts to riparian vegetation associated with construction of the pipeline at river crossings would be managed were raised within a submission on the EIS. SRWP Co. has committed to minimising clearing of

riparian vegetation in order to safely construct the pipeline and meet other environmental controls, such as minimising erosion impacts (commitment 4-18).

A Riverine Protection Permit under the *Water Act 2000* will be required for any riparian vegetation destruction or to excavate or place fill in a watercourse. The Department of Natural Resources, Mines and Water will be the concurrence agency for such permits and this process affords some protection to riparian impacts.

### 6.3 WATER QUALITY

The draft EIS and SREIS provide information on the existing water quality conditions of the project area and the likely impacts on these conditions caused by the construction and operation of the pipeline.

The EIS indicates the proponent's undertaking that there shall be no deterioration in water quality in creeks or drainage lines adjacent to the proposed development caused by erosion and sedimentation from construction activities associated with the works. Management strategies for erosion and sedimentation are discussed further in Section 5.1 Erosion and Sedimentation, of this report.

Environmental work methods (EMs) are included in the EMP that provide positive water and stormwater management techniques. These include:

- EM2.1—Water use
- EM2.2—Stormwater drainage pit
- EM2.3—Drainage channel
- EM2.4—Water disposal
- EM2.5—Sensitive land/aquatic areas.

SRWP Co.'s intentions for minimising impacts on water quality from waste are discussed in section 13: Waste Management, of this report.

## 7. AIR QUALITY

The EIS confirms that the main impact on air quality from the project would be as a result of dust generation during construction. Construction activities identified as a specific potential source of dust generation include:

- vegetation clearing
- earthmoving activities and excavation

- movement of vehicles and construction machinery on unsealed surfaces
- transport of construction materials, fill, rubble and waste
- stockpiling of materials
- build-up of material around erosion and sedimentation controls.

Dust will be mitigated by the use of water trucks as necessary. Dust emissions from cleared areas will be minimised through the undertaking of various strategies, including prompt and progressive reinstatement of disturbed areas in order to stabilise soils and prevent wind blown dust emissions.

The EIS acknowledges that the presence of increased vehicle use on any unsealed roads may also cause localised dust impacts to residences located adjacent to haul routes. These effects will generally be of short-term duration as the construction teams work through the area.

Small quantities of gaseous pollutants will be emitted from internal combustion engines in construction equipment but ambient concentrations of these substances are expected to be low compared to compliance levels advised in relevant guidelines. Air pollutant emissions during pipeline operation will be very low and will mainly relate to maintenance activities.

Most of these activities will occur for a limited period at any location along the pipeline route although the construction period may be as long as six months at pump station locations. Assessment of impacts likely to be generated by a 'worst case' construction scenario predicted a maximum offsite dust deposition rate of 80 mg/m<sup>2</sup>/day compared to the Queensland EPA guideline (1997) of 120 mg/m<sup>2</sup>/day.

Predicted maximum offsite pollutant levels for other measures are also below the guidelines published in Queensland's *Environmental Protection (Air) Policy 1997* and the national goals published in the *National Environment Protection (Ambient Air Quality) Measure* (National Environment Protection Council 1998).

#### *Conclusions and recommendations*

Air quality matters associated with the proposed project are adequately addressed in the draft EIS and SREIS and work methods are comprehensively addressed within section 5.3 'Air Quality and Dust Suppression' of the EMP.

## 8. NOISE AND VIBRATION

It is noted that for portions of the traverse, the pipeline route comes into close proximity to urban or rural residential areas. The EIS indicates that approximately 475 residences are within 50 metres of the construction corridor.

Commitments that address noise impacts include: (4-23) in order to reduce noise impacts, construction will generally occur during daylight hours on weekdays; (4-24) pump stations will be acoustically rated to mitigate noise impacts; and (4-22) where possible, pump stations will be located at least 100 metres from residences.

The EIS lists results of investigations undertaken by Heggies Australia P/L regarding noise quality impacts that may be generated by the project and indicates controls that can be applied to minimise the effects of noise. Noise monitoring was undertaken along the pipeline route including at sections where the pump stations are to be located (Appendix G, EIS).

It was confirmed that the most significant noise source during construction will be caused by mechanical plant operation, blasting and other rock breaking activities. The EIS lists that in order to avoid noise and other disturbances, construction hours will be mostly limited to between 7.00 am to 6.00 pm, Monday to Friday and 8.00 am to 1.00 pm, Saturday, except in the very few instances where safety dictates that after hours work will be required. A set of generic noise limits has been developed based on EPA guidelines and the proponent undertakes that these will be applied where construction works are to extend beyond normal hours (Appendix G, EIS).

Section 5.7 'Noise and Vibration' of the EMP details comprehensive strategies for noise minimisation and management. These include notifying residents of construction dates and times, ensuring plant equipment is properly attenuated to muffle noise where possible, directing noise away from residents where possible and scheduling works so that noisy equipment is used separately rather than concurrently.

The only expected operational noise impacts will arise from the four pump stations. As detailed within the EIS, studies undertaken in accordance with the Environmental Protection Agency's Ecoaccess guideline, *Planning for Noise Control*, the standard against which the project will be assessed, showed that

within the context of worse case scenarios, all four pump stations would exceed identified noise criteria levels (Table 4.20, EIS).

The EIS indicates that in order to mitigate this, all pump stations will be acoustically rated to prevent excessive noise impacts on surrounding land uses. Pump station design will typically include 100mm reinforced concrete walls and roof and lined with insulation that has high acoustical absorption properties. The EIS further indicates that vegetated bunds will also be incorporated into designs to buffer acoustics. SRWP Co. has advised that appropriately designed buildings will ensure compliance with the Ecoaccess criteria and operate within acceptable sound limits.

### Blasting

Blasting will occur when hard rock is encountered and the EIS indicates this will be only for a small number of fronts along the project's length. The EMP indicates that a Blast Management Plan is being developed for the SRWP and a draft Blasting Monitoring Program is provided at Appendix F of the EIS. The proponent, following consultation with EPA, is to establish target goals for noise and vibration levels to guide construction planning and management. This will be conditional for the obtaining of relevant approvals under the *Environmental Protection Act 1994* and Regulation.

The proponent indicates that residents located nearby to blasting activities will be contacted prior to activities and wherever possible, the blasts will be conducted at the same time of day.

While blasting criteria is described within the *EPP (Noise) Environment Protection Amendment Regulation 1999* and associated guideline, 'Noise and Vibration from Blasting' and approvals for these activities will be afforded by the Environmental Protection Agency within the *Environmental Protection Act 1994* and Regulation, it is expected that adherence to the guideline's specifications on appropriate blasting days and times (i.e. no blasting to occur after hours, on Sundays or public holidays) would be guaranteed.

The EIS confirms that there will be vibration associated with blasting and the EMP details measures to mitigate the effects, measure and monitor vibration levels, and methods that will ensure blasting vibrations remain within acceptable criteria for nearby residents and the environment.

While blasting vibration will only occur during the day and be for short periods, it is an important issue for sensitive receptors such as schools, businesses and sensitive fauna. It is proposed to minimise blasting noise and vibration impacts through a blast planning process which involves community consultation to determine the time of day activities will occur, to provide advance notification and tailoring the blast design to minimise vibration levels.

#### *Conclusions and recommendations*

I believe that SRWP Co. has demonstrated a commitment to minimising the impacts of noise and vibration from construction and operation activities and I would expect compliance with relevant statements on the matter as made within the EIS and SREIS.

While some disturbance will be experienced by residents, stock and fauna for particular work methods this will be temporary and of short duration and impacts will be reduced by restricting working hours. It is my opinion that by consulting with all impacted residents prior to construction work, any special needs of residents, such as allowing time for the securing of animals prior to blasting works, are able to be noted by the proponent.

While the SREIS's EMP indicates a noise performance criteria of 'no noise complaints from nearby residents', I support the undertaking of 5.7 of the EMP that in the event of complaints being made regarding noise, steps will be taken to quickly assess the complaint and remedial action taken wherever possible.

#### Condition 8: Noise Management

A Construction Noise Management Plan must be prepared in consultation with the Environmental Protection Agency (EPA).

The plan must address such items as selection of plant and equipment, hours of operation, liaison with residents (including informing affected residents in advance of scheduled noise events), and monitoring noise and vibration at sensitive receptors along the site.

The Plan must be included within the final EMP.

#### Condition 9: Blasting

A Blast Management Plan must be prepared in consultation with the EPA.

The Plan must establish acceptable target goals for blasting noise and vibration levels to guide construction planning and management. The Plan must address at a minimum, safety measures, community consultation, management of misfires, and monitoring of noise and vibration from blasting.

The Plan must be included within the final EMP.

## **9. CULTURAL HERITAGE**

### **9.1 NATIVE TITLE**

The EIS indicates that the following groups have native title claims within the project area:

- Jagera People No. 2
- Turrbal People; and
- Jinibara People.

The proponent indicates that there are no registered native title claims for the Gold Coast City area. However, the Eastern Yugambah group and the Ngerangwal group are interested parties for the area.

### **9.2 ABORIGINAL CULTURAL HERITAGE**

As described in the EIS and SREIS, SRWP Co. has initiated a comprehensive program of cultural heritage management to identify the locations of culturally sensitive sites likely to be impacted by construction of the pipeline and associated facilities and to develop acceptable strategies to sensitively address maintaining the integrity of areas found to contain cultural heritage artifacts.

The EIS indicates that works on this front have included: searches of all relevant cultural heritage registers; inclusion of an Environmental Work Method (5.8) within the EMP on the management of cultural heritage in the field; an undertaking that consultation will occur with Native Title claimant groups along the pipeline route in relation to indigenous cultural heritage investigations; and the conducting of indigenous cultural heritage surveys within a corridor along the proposed pipeline alignment. A detailed map (Figure 4.9, EIS) and description of the features of potential Indigenous cultural heritage significance and their location relative to areas of the proposed works, along with a table of sites, has also been produced (EIS, Appendix E).



The proponent has committed to incorporate the management of potential impacts of the project as identified by the cultural heritage surveys into the Cultural Heritage Management Plans (CHMP) (Commitment No. 1-3, EIS). SRWP Co. is jointly developing multiple Cultural Heritage Management Plans (CHMPs) for various sections of the entire pipeline length with Traditional Owners. Details of proposed measures to mitigate impacts on indigenous cultural places and values which would be discussed in negotiations with Traditional Owners and interested Aboriginal groups, are set out in Appendix E of the EIS.

The EIS findings indicate that based on the review of existing information and an assessment of the landforms that the project will be passing through, the potential exists for impact on cultural heritage sites. These potential impacts are being mitigated in two key ways:

- the selection of a route that avoids most known items, while still utilising existing easements. A benefit of this is that with these easements having already been surveyed, potential impacts are minimised in these areas
- the development of cultural heritage management plans. Through collaboration with Aboriginal parties and continuing field investigations, areas of greatest potential for cultural heritage are being identified and management measures to protect any items found will be designed.

#### Condition 10: Aboriginal Cultural Heritage

A Cultural Heritage Management Plan (CHMP) under the *Aboriginal Cultural Heritage Act 2003* must be developed and approved, prior to any excavation, construction or other activity that may cause harm to Aboriginal cultural heritage.

I nominate the Department of Natural Resources, Mines and Water as the concurrence agency for this condition.

### 9.3 NON-INDIGENOUS CULTURAL HERITAGE

An advisory agency raised concerns within a submission that the EIS provided insufficient information to determine if the project is likely to impact on areas of non-indigenous cultural heritage and to discuss how impacts of material environmental harm to such sites due to project activities would be managed.

The SREIS indicates that the SRWP Co. has appointed an archaeologist to identify significant cultural heritage issues within the proposed pipeline corridor and to

determine how to best minimise impacts on any areas of significant heritage. Findings have identified two areas of significant historical non-Aboriginal cultural heritage, being at the Gold Coast, relating to an historical public house; and landscapes at Swanbank associated with early mining activities that may need to be considered for their historical significance.

#### *Conclusions/recommendations*

I commend the proponent's key performance criteria for the management of cultural heritage impact mitigation for both indigenous and non-indigenous areas of significance: that there shall be no destruction of cultural heritage sites or artifacts of high conservation value (EMP, SREIS).

#### Condition 11: Non-Indigenous Cultural Heritage

A study of the significance of non-Indigenous cultural heritage sites (the Gold Coast site that relates to an historic public house; and landscapes at Swanbank associated with early mining activities) identified as being potentially impacted by the project's route must be undertaken and submitted to Environmental Protection Agency (EPA).

This study must include:

- a detailed map and description of the features of potential non-Indigenous cultural heritage significance and their location relative to areas of the proposed works
- an assessment of the features of significance, including a determination on whether the features are considered to be of State Significance using criteria included within the *Queensland Heritage Act 1992*
- a description of potential impacts from the proposed works; and
- proposed management measures to mitigate unacceptable impacts, including, if appropriate, the size and nature of buffer areas around these features.

SRWP Co. is to consult with EPA in the undertaking of the study. Should heritage listed places be impacted on, compliance with the provisions of the *Queensland Heritage Act 1992* will be required, with EPA to be the concurrence agency.

## 10. TRANSPORT

Submissions were received from Queensland Transport and the Department of Main Roads that raised concerns with potential impacts on road and rail networks due to the project's planned route, construction haulage and construction techniques, across or in the vicinity of roads and railway lines.

I acknowledge that the SRWP project carries a high level of complexity in ensuring that impacts on transport infrastructure are minimised wherever possible, given the pipeline's construction will involve proximity to, and construction across, the spectrum of road infrastructure — from major arterials to cul-de-sacs. Some disruptions to traffic will occur and these must be managed according to best practice and in close consultation with Queensland Transport, the Department of Main Roads, Queensland Rail and all relevant Local Authorities. This is an issue that is critical for safety reasons as well as to ensure project progress and interagency affinities.

### 10.1 TRANSPORT INFRASTRUCTURE IMPACTS: PROJECT VEHICLE ROAD USE

The EIS and SREIS confirm that the SRWP project will potentially impact on transport infrastructure through either direct impact from extra transport requirements on existing road networks during the construction phase and/or disruption to transport corridors related to construction activities at locations where the pipeline crosses, or is adjacent to, these corridors. The EIS notes that impacts will need to be negotiated and managed with the relevant local and state authorities.

SRWP Co. has not finalised the location of site offices or transport options for materials and equipment during the construction phase of the project. The latter issue will in part will be dependent on the source of pipe and componentry once a preferred supplier has been determined and SRWP Co. have undertaken to liaise with the Department of Main Roads (DMR) as specific detail is determined.

The SREIS indicates that a report is being prepared that will examine the effects on the state road network due to construction activities such as haulage of pipeline materials. In line with advice received from DMR, it will consider relevant state legislation and policy, including the *Guidelines for the Assessment of Road Impacts from Development (2006)*. In accordance with the Guidelines, where the construction of the pipeline will increase traffic volumes and/or pavement loading in excess of 5 percent of existing volumes and the anticipated pavement lifespan,

it is appropriate that the proponent negotiate with DMR and/or Local Authorities on the payment of compensation for impacts to roads.

SRWP Co. envisages that transport requirements for the project's operation phase will be minor and mostly limited to monthly (or as required) checks of the Right of Way; and rehabilitation and revegetation works, undertaken by staff traveling in a four wheel drive.

#### Condition 12: Road Impact Assessment

A Road Impact Assessment based on the impacts from haulage of pipe and other activities associated with the construction and operation stages of the project must be prepared in accordance with Department of Main Roads (DMR)'s *Guidelines for the Assessment of Road Impacts from Development 2006*.

I nominate DMR as the concurrence agency for this recommendation.

#### 10.2 CONSTRUCTION TECHNIQUES INVOLVING MAJOR ARTERIAL ROADS AND RAIL CROSSINGS

The SREIS confirms that for all nine major arterial roads to be traversed by the pipeline the preferred construction method is trenchless, using microtunnelling beneath the road's surface (Table 3.1, SREIS). Appendix D of the EIS provides a comprehensive analysis of potential effects on all roads and associated construction techniques.

The EIS stated that there may be a need to negotiate for the reduction of speed zones and subsequent loss of road capacity in the vicinity of 10-20 percent on some highways, in order to ensure the safety of work crews located in road shoulders. However, in response to subsequent advice from DMR on the matter, the SREIS reflects that SRWP Co. have amended the construction procedures for such locations to remove activity from the road shoulders. Consequently, SRWP Co. undertakes that there will be no loss of capacity in the traffic lanes of these thoroughfares.

The EIS affirms that construction of the SRWP will have no impact upon rail traffic, with microtunnelling below railway lines to be undertaken in accordance with the principles of Australian Standard 4799 'Installation of underground utility services within railway boundaries'. Where the SRWP crosses existing rail lines, approvals

will be obtained from Queensland Rail in accordance with the requirements of the *Transport Infrastructure Act 1994*. Section 3.2.1 of the SREIS provides detail to address Queensland Transport's request for information on construction methods involving rail crossings.

In discussion with a Queensland Transport (QT) representative subsequent to the release of the SREIS, QT sought acknowledgement that while the project will traverse the currently unused historical Bethania to Beaudesert railway corridor, the pipeline must be constructed at this section in such a way that is consistent with the likelihood of it being used as a rail or other transit route in the future.

Condition 13: Queensland Rail Bethania to Beaudesert railway corridor

Pipeline construction designs relating to the project's proposed crossing of the historical Bethania to Beaudesert railway corridor must incorporate design specifications prepared on the assumption that the rail corridor may be used as a rail or other transit route in the future.

The construction design relating to this location is subject to agreement with Queensland Rail.

On the issue of pipe being installed longitudinally within some road reserves along the project route, SRWP Co. has committed to consult with the Department of Main Roads (DMR) as detailed design and planning for proposed pipeline crossings of all State-controlled road reserves is ascertained on a site-by-site basis, to secure compliance with the agency's relevant standards and codes of practice and to ensure synergies with future intended uses of road reserves.

### 10.3 CONSTRUCTION WITHIN FUTURE ROAD CORRIDORS

The SREIS confirms that there will be no conflicts with major road projects listed on DMR's Road Implementation Program (RIP).

Subsequent to the release of the SREIS, information has been provided by DMR that indicates that two projects listed within the RIP (located at the Mt Lindesay Highway and Beenleigh-Beaudesert Road), present an overlap with the pipeline's intended route and will therefore require SRWP Co. to provide detailed design drawings to DMR prior to construction works commencing. SRWP Co. has provided

to contact the relevant regional districts to discuss detailed design requirements for these locations.

In discussion with a QT representative subsequent to the SREIS, the representative sought confirmation that an issue raised within the submission that was not addressed within the SREIS be the subject of subsequent discussion between QT's Integrated Transport Planning Branch and SRWP Co. as the pipeline's detailed design work progresses. The issue relates to the pipeline crossing the intended QT Springfield to Ipswich Public Transport Corridor in its Springfield to Redbank Plains section, as cited in the *South East Queensland Infrastructure Plan and Program 2006-2026*.

QT is keen to engage with SRWP on this tranche of the alignment to avoid potential conflicts between the two agencies' projects and ensure synergies can be progressed.

Condition 14: Springfield to Ipswich Public Transport Corridor

Detailed design plans for intended pipeline construction that may occur within the planned Springfield to Ipswich Public Transport Corridor must be provided to Queensland Transport prior to commencement of construction activities.

I nominate Queensland Transport as the concurrence agency for this recommendation.

#### 10.4 TRANSPORT INFRASTRUCTURE IMPACTS: CROSS-ROAD CONSTRUCTION

It is acknowledged that construction of the project will result in some disruption to local roads due to pipeline installation. SRWP Co. will liaise with Local Authorities, DMR and affected residents regarding the schedule of activities when the pipeline needs to cross so as to minimise disruption. SRWP Co. undertakes that local roads will be left in a condition at least equivalent to the condition that they were in prior to construction.

For all non-major arterial roads the pipeline will cross, the preferred construction method is trenching. Appendix D, EIS, indicates results of a comprehensive analysis by TTM Consulting on roads that will be affected by the project and indicative methods to manage road works and mitigate impacts on road users. Many roads will require temporary part-closures or detours established to ensure

safety and swift completion of works. The EIS confirms that public notification prior to works will be undertaken, and anticipates that traffic delays will not extend beyond 2 minutes in the most extreme of cases, with much of the works in question to occur during day off-peak traffic times to minimise disruptions.

The EIS confirms that construction hours including on roads will be limited to between 7.00 am to 6.00 pm, Monday to Friday and 8.00 am to 1.00 pm, Saturday, wherever possible. At this stage, after hours works are only indicated for areas within Rea Road, Blackheath Road, and Mount Lindsay Highway Service Road (Appendix D, EIS). This is in order to ensure safety on narrow roads where no detours are possible. The proponent states that the timing of such works will be established in advance and well advertised to residents.

SRWP Co. indicates in the SREIS that a Traffic Management Plan is being prepared for the construction phase to ensure appropriate traffic safety measures are applied.

Site-specific Traffic Control Plans (TCP) will be designed for each location where the project's construction will impact a road and will be subject to approval of the Local Authority of the area. Each TCP must take into account minimum criteria as specified in DMR's *Manual of Uniform Traffic Control Devices*.

Subsequent to the release of the SREIS, Queensland Transport sought comfort on the proponent's commitment to ensuring safety for non-driver road users such as pedestrians and cyclists that will be affected by construction activities. SRWP Co. have confirmed that TCPs will contain indications of how access at roads that are impacted by works will be maintained, and a commitment that access to nearby public transport stops will not be disrupted.

SRWP Co. has confirmed that safety considerations will underpin the development of Traffic Control Plans. The EMP's EM 4.1-Road diversions and closures, also confirms that traffic control devices will be used to warn, guide and instruct drivers and pedestrians at sites. The EIS acknowledges in Section 3.0: Legislative Provisions, that the matter of road user safety is also an issue that must be complied with under the *Workplace Health and Safety Act 1995*. I note that Section 5.4 of the EMP states that the SRWP Co.'s Safety Officer will monitor traffic management and ensure that Traffic Control Plans are being implemented.

I am satisfied that SRWP Co. can continue to work with the relevant authorities to develop strategies to mitigate impacts on traffic flow, ensure safety and minimise possible damage to road pavement integrity while seeking necessary permits and approvals.

*Conclusions and recommendations*

I believe the EIS and SREIS consider and analyses potential road impacts of the project and indicates the proponent's intention to work with local and state government authorities and the general public to mitigate effects. I note that effects on roads and road users will be temporary and based on assessment of the strategies indicated in the EIS and SREIS, are able to be managed to minimise disruptions while ensuring safety of construction crews and users of the road network.

Condition 15: Traffic Management Plan

The Proponent must prepare and implement a Traffic Management Plan, in consultation with the Department of Main Roads (South Coast Hinterland and metropolitan districts) and all relevant local government authorities.

The Traffic Management Plan will contain:

- Mitigation strategies designed to minimise any traffic impacts attributable to the project
- Indication of public notification and/or consultation strategies to broadcast road works information
- Confirmation that Traffic Control Plans, required within the Traffic Management Plan, will include indications of how pedestrian and cyclist access at roads will be maintained, including consideration of level surfaces being provided e.g. for the traverse of pedestrians using mobility aids; and a commitment that access to nearby public transport stops will not be removed as a result of construction works.

I nominate the Department of Main Roads and relevant Councils as the concurrence agencies for this condition.



## **11. CONSTRUCTION CAMPS**

The proponent indicates that due to the pipeline's close proximity to urban centres and given the likelihood that the workforce will be drawn largely from South East Queensland, no construction camps will be required for the project.

Small, temporary site offices will be established to house day-to-day workforce activities and will provide catering, washroom and toilet facilities.

## **12. HAZARD, RISK AND SAFETY**

### **12.1 HAZARD AND RISK**

The draft EIS and SREIS outline the hazards that may be associated with the construction and operation of the project while acknowledging that traditionally, pipelines and their ancillary works are recognized as being relatively safe and low-risk pieces of infrastructure.

The EIS and SREIS quantify the risks of occurrence of associated hazards and details the appropriate disaster planning and management measures that will be undertaken. The proponent states that construction risks such as corrosion, flooding, bushfire and tampering will be assessed in accordance with Australian Standard AS 4360: Risk Management.

Pipeline operation risks are mostly associated with pipeline failure and also include erosion, habitat fragmentation and the introduction of pest species, issues of risk that I believe the proponent has addressed to my satisfaction within the EIS and SREIS and as discussed previously of this report. The occurrence and potential impact of extreme events such as cyclones and seismic events have also been considered in the recognition of hazardous events.

### **12.2 SAFETY**

In a submission on the EIS, the Department of Emergency Services (DES) raised concerns with the development of an Emergency Management Plan and sought confirmation that it would be provided to DES prior to construction.

SRWP Co. confirmed in the SREIS that a Crisis Management Plan (the equivalent of an Emergency Management Plan) will be created. It will include an Emergency Response Plan which will be referenced in the EMP and build on procedures indicated in the EMP's EM 11.3-Emergency evacuation route.

The EIS indicates that a Safety Officer will be employed during construction and will carry out regular audits of health and safety matters. The Construction Manager will also be charged with regular monitoring of these issues.

On specific issues that require attention to minimise harm, EM 10.2—Work near overhead services (SREIS) indicates that an issue-specific Safety Plan and training will be undertaken for staff working near powerlines. Chemicals will be stored in accordance with EM11.1 Safety—storage compound. Explosives will be handled in accordance with AS 2187.2-1993: Explosives—Storage, transport and use. The proponent undertakes that the provisions of the *Dangerous Goods Safety Management Act 2001* will be adhered to and the *Workplace Health and Safety Act 1995* will be complied with across all aspects of works. The EIS states that site inductions for all personnel will include both safety and environmental aspects of all activities being undertaken on site.

#### *Conclusions and recommendations*

Hazard identification, planning and management matters associated with the proposed project are adequately addressed in the EIS and SREIS. It is considered that issues raised in submissions such as those relating to safety planning and regulatory compliance are adequately addressed in the draft EIS and SREIS.

It is recommended that the following recommendation apply to the proponent:

#### Condition 16: Emergency Management Plan

An Emergency Management Plan must be developed to the satisfaction of the Department of Emergency Services (DES) and submitted to DES prior to the commencement of construction activities.

#### Condition 17: Safety Plan

A Safety Plan must be developed to address all safety and emergency issues identified in the EIS and SREIS and in accordance with the principles of the *Workplace Health and Safety Act 1995*.

### 13. WASTE MANAGEMENT

The EIS indicates that construction of the pipeline is likely to generate domestic waste (drink and food packaging) and construction waste such as cleared vegetation, wash water, waste concrete, and packaging.

Section 5.9 of the EMP (SREIS) indicates a commitment to addressing waste and comprehensive management strategies for the minimising, handling and disposal of waste as contained within the following EMs:

- EM 2.4—Water disposal
- EM 9.1—Waste minimisation
- EM 9.2—Offsite disposal
- EM 9.3—Disposal bin
- EM 9.4—Drainage pit/channel
- EM 9.5—Hazardous materials.

Waste generated during operation of the pipeline will be water and chemicals used in pigging (pipe cleaning) water and in small amounts, low-level contaminated soil and/or gravel from chemicals or compressor oil. Pigging will occur on commission of the pipeline and during operation, when individual pipe sections require repair or replacement.

EM 2.4—Water disposal (SREIS) describes comprehensive behaviours for the treatment and release of waste water generated from pigging activities. The pipeline will be disinfected using a sodium hypochlorite solution and this will be pumped into the pipeline after it has been filled with water.

The proponent affirms that the pipeline will be chlorinated according to Water Industry Technical Standards Specification No: 95-092.1 'Chlorination of water mains' which describes best practice pipeline disinfection methods. EM 2.5—Sensitive land/aquatic area includes the instruction that water quality should not be decreased in the vicinity of sensitive areas and pollutants managed so as to not be released into the environment. Commitment 4-8 (EIS) indicates that the release of chlorinated water will only occur when measured concentrations of chlorine are at an acceptable standard (<1 mg/L).

I believe the proponent has demonstrated positive and workable strategies within the EMP on waste management.

## **14. EMPLOYMENT & TRAINING**

The peak pipeline construction workforce is expected to number around 150 personnel. As the project is located within a capital city, the proponent anticipates that the workforce will be drawn largely from South East Queensland.

The Queensland State Government's 10 percent Training Policy is designed to maximise the potential of government capital works projects to address skill shortages, and to create additional employment opportunities for apprentices, trainees and cadets in the building and construction industries.

I acknowledge that the EIS states that the proponent will adhere to the intent of the policy on a voluntary basis. I require the proponent to formalise its commitment to the 10 percent Training Policy with the Department of Employment and Training.

### Condition 18: Employment and Training Plan

An Employment and Training Plan (ETP) must be provided to the Department of Employment and Training for its consideration in relation to the Government's 10% Training Program, at least four weeks prior to the commencement of construction works.

The ETP must include details of performance objectives, management strategies, performance indicators, monitoring and reporting requirements.

I nominate the Department of Employment and Training as the concurrence agency for this recommendation.

## **15. ENVIRONMENTAL MANAGEMENT PLANS**

As discussed in the SREIS, an EMP is a performance-based management tool used primarily to assist in minimising impacts of the project on the environment. The EMP is by necessity a living document that must be regularly updated to incorporate changes in environmental management procedures. In this way, the EMP serves to be a more responsive instrument that provides for ongoing review of environmental performance and compliance monitoring.

Changes to the EMP must be made to reflect new knowledge that emerges, for example, during the conducting of detailed preparations prior to construction; and within monitoring activities and associated required consultations with relevant authorities undertaken during the construction and post-construction phases. The SREIS indicates that implementation of the EMP will ensure that concepts and commitments given in the EIS are applied so that the potential impacts of the proposed infrastructure on the environment are minimised. It is noted that SRWP Co. have made responsive changes to the draft EMP in response to suggestions received during the EIS consultation phase.

I acknowledge that the SRWP Co. will appoint a full-time Environmental Officer during construction with the intent that this officer will be independent of those with direct responsibility for works being performed. This officer will have the necessary authority and responsibility to ensure compliance with the EMP and monitor performance requirements for each of the pre-construction and construction phases of the project.

Where contractual agreements are entered into for work associated with this project, SRWP will:

- include the EMP in contract documents for all work to be undertaken by the contractors; and
- ensure that all contractors comply with the requirements of the EMP and nominate Environmental Site Representatives with the necessary authority.

These practices provide for personnel associated with the project to abide by the procedures and ethos of the EMP, and I require SRWP Co. to comply with these.

#### Condition 19: Environmental Management Plan: Construction

The draft construction Environmental Management Plan (EMP) as contained within the SREIS, must be finalised in accordance with conditions and requirements indicated within this report. The draft EMP must be submitted to the Environmental Protection Agency (EPA) for comment one month prior to the commencement of construction activities. Any comments from the EPA received within 21 days of the draft EMP being received, must be included in the final EMP.

I nominate the EPA as the concurrence agency for this condition.

I acknowledge the EIS's statement that an EMP for operation of the pipeline will be produced in the latter stages of construction. I am comfortable with the current EMP's focus on construction activities due to the weight of potential impacts of the project being heavily focused on this phase of the project.

As discussed within the EIS and SREIS and in this report, the potential impacts of the project during operation are anticipated to be relatively small due to the nature of the infrastructure involved. However, it is my expectation that robust and comprehensive strategies and procedures for environmental management of at least the standard and scope of the SRWP project's construction EMP would need to be finalised at least two months prior to the operation of the SRWP.

It is recommended that the following requirements apply to the proponent in the development of an Operations EMP for the project.

Condition 20: Operation Environmental Management Plan

Prior to the commencement of the use of the pipeline and associated infrastructure an Operation Environmental Management Plan (OEMP) must be prepared in consultation with, at a minimum, the Environmental Protection Agency, Queensland Health, the Department of Primary Industries and the Department of Natural Resources, Mines and Water.

The Operation Environmental Management Plan must be submitted to the Environmental Protection Agency prior to the completion of construction activities.

I nominate the Environmental Protection Agency as the compliance agency for this requirement.

## **16. ASSESSMENT OF THE RELEVANT IMPACTS OF THE PROJECT ON MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE**

### 16.1 INTRODUCTION

This section addresses the requirements as expressed in Part 5 of the *State Development and Public Works Organisation Regulation 1999* (SDPWO Regulation). In part, the SDPWO Regulation determines specifications for the Coordinator-General's Report for project proposals that are:

- Declared as a significant project for which an EIS is required; and
- For which the Commonwealth has accredited assessment of the relevant impacts pursuant to the *State Development and Public Works Organisation Act 1971* (SDPWO Act).

### 16.2 THE PROJECT

The proponent for development of the Southern Regional Water Pipeline (SRWP) project is the purpose-created Southern Regional Water Pipeline Company (SRWP Co.), a wholly government-owned company established under the *Corporations Act 2001*. Shareholders of the company include SEQWater (51 percent), Ipswich City Council (13 percent), Logan City Council (13 percent), Gold Coast City Council (13 percent) Brisbane City Council (5 percent) and Beaudesert Shire Council (5 percent).

SRWP Co. is proposing to build, own and operate approximately 90 kilometres of high pressure potable water transmission pipe intended to service areas across the South East Queensland region. In addition to the pipeline, four pump stations (at Bundamba, Swanbank, Chambers Flat and Coomera) and two balance tanks (at North Beaudesert and Stapylton) are proposed.

The SRWP project will provide an interrelatedness of South East Queensland's water supply by providing linkages between existing and intended water infrastructure assets. The project has recently been designated by the Queensland State Government as a Drought Contingency Project that will enable potable resources from multiple storages to be distributed across the region to areas of identified need.

The steel pipeline will be buried with a minimum cover of approximately 750mm for most of its length. The pipe will range in diameter from 750mm-1050mm.

The pipe will transport up to 130 ML/day of potable (drinking) water per day and will be operated at a maximum allowable operating pressure of 1.6 MPa.

### 16.3 PLACES AFFECTED BY THE PROJECT

Located in South East Queensland, the initial phase of the pipeline will span 90kms from the Cameron's Hill Reservoir at Mt Crosby, south via Swanbank Power Station and south-east through North Beaudesert and Chambers Flat, then southwards through Ormeau to connect to the existing Helensvale to Molendinar network, operated by Gold Coast Water.

The project crosses the boundaries of four local authorities: Gold Coast, Beaudesert, Ipswich and Brisbane. Attachment C provides a map of the project's intended route. While the traverse of the pipeline will largely be located within existing easements and road reserves, approximately 220 freehold properties are directly affected by the proposed alignment and for the majority of cases, easements will need to be required across affected properties.

Detailed design and feasibility planning is currently underway to see the pipeline's scope increased by an additional 10kms to connect it from the existing Molendinar network to the proposed SEQ (Gold Coast) Desalination Plant at Tugun, with a projected completion date of July 2008 to coincide with the plant's construction end-date. While this part of the SRWP project is included in the project's definition as a designated Significant Project under the SDPWO Act, its scope is not included within the project's EIS or therefore, this Report. A separate environmental impact assessment process will be commenced as design and planning works are further progressed. This component of the project will also be referred to the Commonwealth Department of the Environment and Heritage for consideration under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

### 16.4 CONTROLLING PROVISIONS OF THE PROJECT

On 24 February 2006 the Commonwealth Minister for the Environment and Heritage determined that the SRWP project [EPBC: 2006/2593] constituted a "controlled action" likely to affect matters of national environmental significance under Section 75 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).



The controlling provisions of Part 3, Division 1, Sections 18 and 18A (Listed threatened species and communities) and Section 20 and 20A (listed migratory species) of the EPBC Act, apply.

While 36 ecological communities are listed as 'threatened' under the EPBC Act, none of these listed ecological communities occurs within, or adjacent to, the project area.

The following nationally significant species were identified within the Terms of Reference for the EIS as required to be addressed within environmental assessments as potentially impacted by the proposed project:

Sections 18 and 18A – listed threatened species and communities

#### Endangered

- Swift Parrot (*Lathamus discolor*)
- Coxen's Fig-Parrot (*Cyclopsitta diophthalma coxeni*)
- Regent Honeyeater (*Xanthomyza phrygia*)
- Southern Barred Frog (*Mixophyes iterates*)
- Native Jute (*Corchorus cunninghamii*)
- *Plectranthus habrophyllus*
- Shiny-leaved Condoe (*Pouteria eerwah*)

#### Vulnerable

- Lungfish (*Neoceratodus forsteri*)
- Collared Delma (*Delma torquata*)
- Three-toed Snake-tooth Skink (*Coeranoscincus reticulatus*)
- Floyd's Walnut (*Endiandra floydii*)
- Spiny Gardenia (*Randia moorei*)
- Fontainea venosa
- Macadamia Nut (*Macadamia integrifolia*)
- Lloyd's Olive (*Notelaea lloydii*)
- Hairy-joint Grass (*Arthraxon hispidus*)
- Miniature Moss-orchid (*Bulbophyllum globuliforme*)
- Frogbit (*Hydrocharis dubia*)

Sections 20 and 20A – listed migratory species

- Swift Parrot (*Lathamus discolor*)
- Coxen's Fig-Parrot (*Cyclopsitta diophthalma coxeni*)

In undertaking desktop surveys on listed species, the EIS indicates that 33 significant species listed under the EPBC Act were recorded within a 500 metre corridor of the project. These include:

- 33 species of birds (25 migratory),
- six mammals,
- three reptiles,
- three frogs,
- two fish and
- one insect.

Discussion herein focuses on the effects on the environmental and the ability of these to be mitigated within the construction phase. The characteristics of this project are such that the environmental impacts of the project will be concentrated on construction and the time thereafter it takes for revegetation of affected clearings to take hold. The project in its operation phase will be an ambient aspect of the environment (subterranean pipe; unmanned balance tanks and pump stations) that will present very a small risk of adversely impacting either flora or fauna species.

#### 16.5 THREATENED FLORA AND FAUNA SPECIES RELATING TO THE PROJECT AREA

For the purpose of assessing the impacts of the proposed project on matters of National Environmental Significance (NES), this section describes the relevant impacts as identified by section 82 of the EPBC Act: being those the project has, will have, or is likely to have, on the controlling provisions.

Within impact assessment studies on the ecosystems, ecology, flora and fauna present within the project's footprint, the proponent undertook an assessment of the regional ecosystem types likely to occur on the proposed pipeline alignment (EIS, Table 4.3) within a 500 metre buffer distance of the proposed alignment. The field survey methods are presented in Appendix H of the EIS. The results of these studies are included at section 4 of the EIS.

Following advice received from the Commonwealth Department for the Environment and Heritage (DEH), the assessment was revised to further indicate species of significance (i.e. rare, vulnerable or endangered) that may be associated with regional ecosystem types found along the pipeline alignment. This detail is included in Table 2.2 of the SREIS.

While desktop studies indicated 48 Commonwealth-listed fauna species may be found in the project area, field investigations included observance of a total of 9 of the 48 listed species, being:

Birds (8 – all migratory)

- Magpie Goose
- Cattle Egret
- White Bellied Sea Eagle
- Latham's Snipe
- the Satin Fly-catcher
- Rufous Fantail
- White Throated Needletail and
- Rainbow Bee-Eater

Mammal (1)

- Grey-headed Flying Fox.

On the matter of Commonwealth-listed threatened flora species, desktop studies showed 44 plant species may be located within the project's footprint (Table C.1, EIS). The proponent acknowledges the potential for additional species and communities being identified during the construction phase of the project.

In preparing this report, a representative from the Environmental Assessment Branch, Department of the Environment and Heritage, has indicated particular concern with minimising risk for the following listed threatened plant species in the vicinity of the pipeline's traverse:

- Lloyd's Olive (*Notelaea lloydii*)
- Brush Sophora (*Sophora fraseri*)
- *Fontainea venosa*
- Floyd's Walnut (*Endiandra floydii*)
- Native Jute (*Corchorus cunninghamii*)
- Macadamia Nut (*Macadamia integrifolia*)
- Shiny-leaved Coondoo (*Pouteria eerwah*)
- Spiny Gardenia (*Randia moorei*)
- Marbled Baloghia (*Baloghia marmorata*)
- Native Coleus (*Plectranthus habrophyllus*) and
- Slender Milkvine (*Marsdenia coronata*).

This has been addressed in a condition imposed on the project that will be discussed in the subsequent section.

The proponent has undertaken that two migratory bird species of national conservation significance identified within a submission on the EIS, the Swift Parrot and the Regent Honeyeater, will not be significantly impacted by the project.

The SREIS indicates that while woodland habitat suitable for the species may be present along the alignment, sightings of the species in the Brisbane area are rare. Records from Birds Australia indicate only one sighting of a Swift Parrot from 2,814 surveys across the total project area. However, the EIS and SREIS states that impacts on habitat that may support these species will be kept to a minimum wherever possible, and constrained corridors utilised in these areas during construction.

#### 16.6 SUMMARY OF RELEVANT IMPACTS AND PROPOSED MITIGATION MEASURES

In order to mitigate potential impacts on threatened species, SRWP Co. has stated that it will:

- build on existing desktop and preliminary field data collected by ground-truthing the final pipeline alignment to search for listed threatened plant species and refinement of the alignment to avoid any plant species detected, wherever possible
- re-plant any species that cannot be avoided using appropriate propagation methods
- revegetate with appropriate (like for like) species.

The environmental impacts of this project can be demonstrated within a range of strategies presented within the EIS, SREIS to be very small and where unavoidable, are able to be mitigated with workable strategies and procedures proposed within the EMP as discussed in this report.

While it is noted that some permanent clearing will be undertaken for the two balance tanks and four pump stations where they are located in sites that are not already cleared, I note the degree of care the proponent has shown to ensure that none of these sites are located within significant ecosystems. Revegetation of remnant communities will be carried out in accordance with the proponent's

Vegetation Management Plan, with assessment and monitoring of these actions performed by the Queensland Department of Natural Resources, Mines and Water.

The proponent states the following commitments, as detailed in the EIS at Appendix I and included in this report at Appendix 2, Schedule 1, that relate to strategies to be undertaken that will reduce potential harm to significant species:

- Construction of the SRWP will not adversely affect species of national significance (Commitment 4-13)
- Species-specific studies may be conducted prior to construction of the SRWP in order to develop suitable mitigation plans (4-14)
- Hollow-bearing roadside and habitat trees will be avoided where possible (4-15)
- SRWP Co. maintains a policy for leaving a positive environmental legacy post-construction (4-16)
- All cleared sites will be revegetated with appropriate species following construction (4-17)
- Work methods suitable for reducing impacts on the aquatic and riparian environment will be implemented through the EMP (4-18).

The proponent's strategy of placing the majority of the pipeline's proposed route within existing cleared areas will significantly minimise impacts on flora and fauna in the vicinity. Additionally, the proponent has demonstrated regard for minimising impacts by redirecting the pipeline's initial route as the existence of known species has been identified – for example, the SREIS indicated changes to the route in the Chamber's Flat area removed the corridor from potential impacts on known communities of the Spotted-tail Quoll (*Dasyurus maculatus maculatus*) and the Commonwealth-listed Wallum Froglet.

Significant reptile species such as the Three-toed Snake-tooth Skink (*Coeranoscincus reticulatus*) and the Collared Delma (*Delma torquata*) have been recorded in the vicinity of the pipeline. In the case of the Collared Delma, previously recorded in the Mt Crosby area, while no sightings of the species were indicated during field investigations, the proponent has accommodated for the possibility of impacts on the species by diverting the preliminary route away from the area's rocky slopes and sloughing rocks which are a preferred habitat of the lizard.

Since the publication of the draft EIS, the proponent has allocated \$5,000 to support an existing research program into the Spotted-tail Quoll populations in the North Beaudesert area. This is commended, and I advocate the proponent's support for region-specific fauna studies, particularly with regard to species categorised as being of concern and/or threatened.

The Queensland Department of Main Roads (DMR) raised specific concerns in a submission regarding possible impacts of the project on a recently discovered and soon to be listed community of threatened flora, Cooneana olive trees, in the vicinity of the Cunningham Highway. There are three small groups of the trees in the area, with the largest cluster situated adjacent to the highway.

Subsequent to the SREIS, SRWP Co. met with local botanists and district representatives of DMR to define the location of the trees in relation to the pipeline. A map using GIS data has been produced by the proponent and supplied to DMR, confirming that the pipeline route will, at its closest traverse to the communities, not travel within approximately 250 metres of the three clusters. The DMR representative has confirmed satisfaction that the project will not adversely impact the Cooneana trees.

Potential impacts associated with construction of the pipeline on threatened species include the loss or fragmentation of habitat, suitable shelter or breeding sites; presenting a physical barrier to fauna movement; indirect impacts from soil compaction and root damage and edge effects on habitat; and the potential for fauna to become trapped in open pipeline trenches.

In order to mitigate these potential impacts, SRWP Co. has committed to avoiding the preferred habitat of threatened species, including tree hollows, and fallen ground cover wherever practicable and to implementing specific management practices during construction. The EMP indicates that a detailed Fauna Management Plan is also being developed for use during construction.

Section 3.1.12 of the SREIS details specific measures to mitigate potential impacts to terrestrial fauna, including that vegetation will be checked prior to clearing for fauna inhabitants and a professional spotter will be used to catch and relocate animals. The proponent has undertaken to contact the Queensland Parks and Wildlife Service should sick or injured animals be located during construction

activities. Additionally, where trees with hollows cannot be saved, appropriately designed habitat boxes will be added to the area.

I am satisfied with the EMP's strategies for avoiding and/or reducing possible impacts on fauna due to open trenches. EM 5.6 'Trenching and excavations', details maximum trench open times and strategies for discouraging fauna entry to the trenches, shading of trapped fauna and removal strategies, and the inclusion of fauna-navigable exits should they enter unattended trenches. I believe the SREIS has satisfactorily addressed a concern on this matter raised by an advisory agency in a submission on the EIS.

I support the proponent's assertion that in relation to Commonwealth-listed bird species recorded on or adjacent to the alignment, the clearing of small areas of vegetation to permit construction of the pipeline is unlikely to result in significant long-term impacts.

I concur that the amount of vegetation clearance likely to be required for the construction of the pipeline is unlikely to adversely affect habitat critical for the species through reduction in area or fragmentation. This is mainly as the SRWP Co. undertakes that vegetation clearing would most often be limited to within existing easements or on roadside verges and reserves. The proponent states that research indicates all nine of the nationally significant species identified from the field investigation will either utilise these types of habitats (cleared easements, etc.) or, at least, will not be adversely affected by the creation of these habitats until post-construction revegetation takes hold.

Subsequent to release of the SREIS, a representative from DEH has requested that the revised location of the Stapylton Balance Tank (SBT) also be considered a 'sensitive environmental area' and construction works afforded due consideration and care to mitigate impacts. As discussed within this report, the SBT site was revised from that stated in the EIS due to a submission received on the proposed location.

The SREIS indicates that the revised SBT site is located in an area with two remnant vegetation communities (12.11.3) nearby. Both are listed as 'not of concern', however, there are numerous significant species indicated via desktop surveys as being possibly present, including the Shiny-leaved Condoe (*Pouteria eerwah*), the Macadamia Nut, (*Macadamia integrifolia*) and Floyd's Walnut

(*Endiandra floydii*). The two communities will not be affected by clearing required for the balance tank, however the pipeline will bisect one of the 'not of concern' communities.

In consultation with the proponent on this matter, SRWP Co. have affirmed that the company will maintain its commitment to ensuring minimal environmental harm and will apply this approach to this area. Clearing in this location and subsequent revegetation of the remnant community through which a constrained corridor will be cleared will be undertaken in accordance with the proponent's Vegetation Management Plan, with the Department of Natural Resources, Mines and Water as the compliance manager for these actions. I have included within a subsequent recommendation measures for ensuring impacts at this location will be best managed.

In considering the strategies cited in the EIS and the SREIS, I am of the opinion that the effects of the project on associated significant fauna species will be minimal and able to be managed through best practice strategies included in the project's finalised EMP.

On the matter of threatened migratory species, desktop studies have augmented the on-ground findings indicated in the EIS and SREIS of significant migratory species that may be encountered along the proposed route, with the proponent indicating that 25 migratory species of bird likely to be found in the project area (Table C.1, EIS).

While the proponent's good strategies for minimising impacts on habitats the project will traverse will significantly lessen impacts on listed migratory species, the proponent has undertaken that in particular, two migratory bird species of national conservation significance identified within a submission on the EIS, the Swift Parrot and the Regent Honeyeater, will not be significantly impacted by the project. The SREIS indicates that while woodland habitat suitable for the species may be present along the alignment, sightings of the species in the Brisbane area are rare. Records from Birds Australia indicate only one sighting of a Swift Parrot from 2,814 surveys across the total project area. However, the EIS and SREIS states that impacts on habitat that may support these species will be kept to a minimum wherever possible, and constrained corridors utilised in these areas during construction.



## Summary

The draft EIS and SREIS state that, with appropriate management strategies in place the project will not have a significant impact on the species identified during the field investigations or those that may be subsequently found in the affected areas.

The reports suggest that the project will not have a significant impact on the matters of environmental significance under the EPBC Act for the following reasons:

- the alignment has been selected to avoid environmentally sensitive areas
- the majority of the alignment is located in existing easements and road reserves
- significant regional ecosystems that may be inhabited by listed species and migratory species will not be directly impacted by the project
- for other ecosystems that may provide habitat, only small amounts of habitat relative to the existing communities will be cleared
- constrained corridors (12-15 metres) are able to be used in sensitive areas
- where habitat is to be affected, strategic site rehabilitation and revegetation will be undertaken to assist with the re-establishment of habitat.

Procedures detailed in the Environmental Management Plan (EMP) (Appendix B, SREIS) that will be undertaken on construction sites to minimise effects on species of significance include:

Environmental work method (EM) 1.9—Sensitive land/aquatic area: erosion control

EM2.5—Sensitive land/aquatic areas: managing water/stormwater quality

EM5.1—Sensitive species (refers mitigation strategies – fencing off sensitive areas; divert stormwater; consult with relevant state agencies; locate works away from sensitive area if possible)

EM6.1—Minimising pests and weeds (refers construction equipment wash-down prior to entering site to avoid introducing seeds).

In addition, the EMP lists comprehensive strategies for minimising harm to all vegetation during construction works:

EM 5.2—Material handling (avoid soil compaction in tree drip zones; keep materials, access tracks and parked machinery out of drip zones; use tree guards to prevent injury)

EM5.3—Vegetation removal (fence off/delineate not-to-be-cleared areas; remove tree dwelling animals prior to clearing; avoid clearing native trees; workers to be briefed on approved clearing process)

EM5.4—Activities around vegetation (use only designated access tracks; any surface sealing near tree roots is to allow aeration; avoid damage to tree roots)

EM 5.5—Revegetation (species selection/density appropriate; native species to be used; fencing turfed areas; post planting care until plants are self-maintaining).

Following careful consideration of the EIS and SRIES, I represent that the reports have demonstrated a comprehensive range of strategies and workable approaches that will avoid, minimise or remediate effects on NES species. Apart from the significant measures identified above, indirect environmental management on the following matters that will also minimise environmental impacts on significant species have also been addressed within the EIS and SRIES:

- ensuring the integrity of water quality is maintained
- responsive waste disposal methods
- construction trench navigable structures to be used, to prevent injury to animals and reptiles
- proper spoil handling in Fire Ant areas
- preventing erosion and sedimentation; and
- using trenchless construction techniques on all major water crossings.

## 16.7 PROJECT ALTERNATIVES

The proponent considered a number of options in section 2.2.6 of the EIS that that were capable of achieving sharing of water resources across South East Queensland. These included a range of demand management strategies such as rainwater tanks and water efficiency measures; supply diversification and alternate supplies of water such as recycled water, desalination and stormwater harvesting; new dams, and increased groundwater harvesting.

While these alternatives were considered in the initial stages of the project's feasibility studies, most are currently being implemented or investigated as ways to meet current and projected future demand. Crucially, being largely 'stand alone'

assets they would benefit limited users and/or would depend on limited spare capacity within existing potable pipe infrastructure. This has impacts with regard to network efficiency, reduced distribution relative to the SRWP's projected abilities, and significantly increased costs to consumers in order to augment the spare capacity and repair the network due to a necessarily increased maintenance regime.

Alternative pipeline routes were also considered in the optimisation of the pipeline alignment. The 'Kuraby option' proposed that water be delivered from Camerons Hill Reservoir to Kuraby via the existing Brisbane Water network and then a new pipeline from Kuraby Reservoir to the Gold Coast (the future Helensvale Reservoir off-take). A separate pipeline from Camerons Hill Reservoir through Ipswich to Springfield was proposed to service the future growth in the western corridor and Beaudesert regions. A new pipeline that directly connected Camerons Hill to the Gold Coast was preferred over the Kuraby option on the basis of results of preliminary engineering, economic and environmental assessments.

Further refinement of the preferred pipeline alignment has occurred in order to minimise its effects in consideration of a range of social and environmental objectives. A key strength of the project has been the proponent's strategy to align the pipeline for the majority of its traverse in existing easements and road reserves – a feature that will greatly minimise its impacts.

Certainly, a "no project" alternative would have fewer environmental and social impacts than those described within the EIS and SREIS; however, the significant social and economic opportunities that the region would forego if the project did not proceed would far outweigh the impacts that may occur as a result of the project proceeding.

The project is a critical link for existing water infrastructure to allow substantial amounts of water to be transferred across the region to areas of need; and, as extra infrastructure comes on line (for example, Wyaralong Dam; Cedar Grove Weir and the SEQ (Gold Coast) Desalination Plant) the project will be an essential distribution component during periods of drought.

Apart from the short-term imperative for the project to proceed, should the project not go ahead, it is reasonable to consider that in the mid-to long-term, the general economic prospects of South East Queensland will be greatly constrained,

given that the prospects of the region are critically dependent on the provision of additional water supply.

With accelerated population growth and climatic change presenting challenges to the ability to meet projected water supply requirements, the Southern Regional Water Pipeline is a key contingency measure critical in order to meet both long-term and short-term needs.

#### 16.8 PROJECT APPROVALS

Apart from approval under section 133 of the EPBC Act to undertake a controlled action, other key statutory approvals necessary for development of the project are:

- The proponent has requested that the required *Integrated Planning Act 1997* (IPA) approvals be obtained by means of a Community Infrastructure Designation in accordance with the process detailed in Chapter 2, Part 6 of IPA
- A permit to clear vegetation, under the *Vegetation Management Act 1999*
- Riverine Protection Permits under the *Water Act 2000* for any disturbance of the riparian banks or riparian vegetation of designated watercourses
- Approval under the *Environmental Protection Act 1994*, to enable for temporary Environmentally Relevant Activities associated with the construction of the proposed pipeline
- Cultural Heritage Management Plans or agreements under the *Aboriginal Cultural Heritage Act 2003*
- For the Brisbane River pipeline crossing point: a permit for crossing a tidal section of a river under the *Coastal Protection and Management Act 1995* and *Coastal Protection and Management Regulation 2003*
- Other water crossings that involve any disturbances to in-stream plants: approvals under the *Fisheries Act 1994*
- Permits, under the *Transport Infrastructure Act 1994*, to work in, or interfere with, a state-controlled road as well as approval for closure and diversion of sections of multiple roads.

## 16.9 PROPOSED CONDITIONS TO ADDRESS IMPACTS TO MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

In order to address potential impacts on Commonwealth-listed flora species, I have imposed the following recommendation:

### Recommendation: Significant flora species: Investigation and remediation

On the matter of the following species as being possibly present at the indicated areas:

- Lloyd's Olive (*Notelaea lloydii*) (may be located at Cameron's Hill/Mount Crosby, Swanbank, Springfield, Greenbank);
- Brush Sophora (*Sophora fraseri*) (Cameron's Hill/Mount Crosby, Hotham Creek/Ormeau, Yaun Creek);
- *Fontainea venosa* (Cameron's Hill/Mount Crosby);
- Floyd's Walnut (*Endiandra floydii*) (Hotham Creek/Ormeau, Staplyton);
- Native Jute (*Corchorus cunninghamii*) (Hotham Creek/Ormeau);
- Macadamia Nut (*Macadamia integrifolia*) (Stubbin Street/Randle Road, Staplyton, Hotham Creek/Ormeau, Yaun Creek);
- Shiny-leaved Coondoo (*Pouteria eerwah*) (Stubbin Street/Randle Road, Staplyton, Ormeau);
- Spiny Gardenia (*Randia moorei*) (Staplyton);
- Marbled Baloghia (*Baloghia marmorata*) (Staplyton);
- Native Coleus (*Plectranthus habrophyllus*) (Oxley Creek, Woogaroo Creek, Opossum Creek, Greenbank, Springfield, Staplyton, Ormeau); and
- Slender Milkvine (*Marsdenia coronata*) (Woogaroo Creek, Opossum Creek, Hotham Creek/Ormeau).

SRWP Co. is required to undertake on-ground studies at the locations above, prior to construction to determine if the significant flora species are present.

The study methodology is to be of at least the same degree, and utilise the same methods, of those already undertaken for other sensitive sites within the project area as described within the EIS (Appendix I).

Should the species be confirmed, the area should be regarded as a sensitive environmental area and the following approach is to be undertaken:

A Sensitive Area Plan (SAP) for each identified sensitive area is to be created and included in the EMP.

Each SAP will describe, but not be limited to, the following location-specific mitigation strategies, including:

- confirmation that a constrained corridor of no greater than 15 metres, as detailed in Figure 2.2 of the SREIS, will be used in these locations
- mitigation strategies as listed in EM 1.9-Sediment and erosion: Sensitive land/aquatic area; EM 2.5-Water and stormwater management: Sensitive land/aquatic area; EM 5.1-Flora and fauna: Sensitive species; EM 5.2-Material handling; EM 5.3-Vegetation removal; EM 5.4-Activities around vegetation; EM 6.1-Minimising weed and pest invasion (and other EMs as appropriate)
- the provision that no unnecessary clearing of significant flora species will be undertaken
- confirmation that wherever possible, construction activities in the vicinity will be limited to existing clearings
- a rehabilitation plan for each sensitive area impacted during construction that adheres to the performance criteria in section 5.5-'Flora and Fauna' of the EMP: 'successful rehabilitation will be as measured against pre-construction assessment'
- a revegetation plan for each sensitive area that will experience clearing, with revegetation strategies as indicated, but not limited, to EM 5.5-Revegetation, and confirmation that species-specific seed or tubestock to be sourced wherever possible to ensure 'like for like' revegetation
- that wherever possible, damage to the edges of remnant communities will be minimised and erosion controls implemented
- that ecologically sensitive weed management will be undertaken, as per sections 5.6 and 9.5 of the EMP.

On the matter of threatened fauna and migratory birds, I am confident that the proponent's comprehensive environmental impact mitigation strategies, discussed within Section 16 of this Report and as enshrined within the project's EMP and various conditions summarised at Attachment A, are manageable procedures that will result in minimal impacts on these species.

## 17. CONCLUSIONS AND RECOMMENDATIONS

Development of the Southern Regional Water Pipeline is in line with key government strategic commitments as described in the Queensland Water Plan 2005-2010 (2005) and the South East Queensland Regional Water Supply Strategy: Stage 2 Interim Report (2006). Once completed, the project will underpin optimised distribution of water supplies for the region to address current and anticipated future constraints on water supply.

The project is aligned with key strategies of the South East Queensland Regional Plan including the need for adaptive planning and infrastructure to support a robust economy while not adversely impacting on the region's environment. The SRWP will be a key asset to ensuring Queensland's economic growth is supported by sustainable and smart water resource management.

While the idea of the SRWP project is supported by all levels of government, in order to proceed, the project needed to be designed and implemented according to best practice principles that seek to avoid and/or reduce adverse environmental and social impacts wherever possible. I believe that SRWP Co. have achieved the intent of this ethos within information provided that has informed my evaluation. The proponent has demonstrated flexibility and responsiveness to reducing impacts, from route refinements to the various mitigation methods and harm-minimising procedures enshrined within the EIS, SREIS and EMP.

Having regard to the documentation and information provided during the EIS process for the proposed Southern Regional Water Project, I am satisfied that the requirements of the Queensland Government for impact assessment in accordance with the provisions of Part 4 of the *State Development and Public Works Organisation Act 1971* (SDPWO Act) and Part 5 of the SDPWO Regulation 1999 have been met.

I am satisfied that the EIS process has provided sufficient information to all stakeholders to allow for a considered evaluation of the potential environmental impacts that could be attributed to the project. It is my opinion that there are no insurmountable issues that would prevent the project from proceeding.

I consider that the impacts as described in the EIS are able to be mitigated and managed effectively through implementation of the Environmental Management

Plans presented in the Supplementary Report to the EIS and application of conditions set out in this Report.

Having regard to the number and type of conditions that I have set out in this Report, and in order to provide consistent application of these conditions in a timely manner, I further recommend that reports on the implementation of the above mentioned conditions will be prepared and submitted to me on a quarterly basis, or as I from time to time may require (Condition 21).

It is therefore **recommended** that the proposed development of the Southern Regional Water Pipeline proceed and I **recommend** the conditions as summarised in Attachment A apply to the project.

These conditions may be applied in accordance with the following provisions of the SDPWO Act:

- Section 39, 'Application of Coordinator-General's report to IDAS'
- Section 43, 'Application of Coordinator-General's report to Designation'
- Section 52, 'Application of Coordinator-General's report to other approval process'
- Section 54B, 'Report may impose conditions'.

This report will now be provided to the Commonwealth Minister for the Environment and Heritage, pursuant to section 17(2) of the SDPWO Regulation, to enable a decision on approval of the controlled action for this Project pursuant to section 133 of the Environment Protection and Biodiversity Conservation Act 1999.

A copy of this report will be provided to the proponent, Brisbane City Council, Ipswich City Council, Logan City Council, Gold Coast City Council, Beaudesert Shire Council and all Advisory Agencies, and will also be made publicly available on the Coordinator-General's website, at [www.coordinatorgeneral.qld.gov.au](http://www.coordinatorgeneral.qld.gov.au).

Ross Rolfe

**Coordinator-General**

**Director-General**

/ August / 2006



## ATTACHMENT A: CONDITIONS TO APPLY TO THE PROJECT

The following conditions should be included in any decision to approve the project.

### Condition 1: Sensitive Area Plans (SAP)

A Sensitive Area Plan must be created for the ecological communities at the following locations, and included in the EMP:

6. Regional ecosystems that contain *Eucalyptus tereticornis* (RE 12.3.3)  
Location 1A: Camerons Creek, at Mt Crosby  
Location 1B: Creek crossing adjacent to Chambers Flat Road
7. Regional ecosystem that contains *Eucalyptus tereticornis*,  
*Eucalyptus siderophloia*, *C. intermedia* (RE 12.3.11)  
Location: Chambers Flat Road, Chambers Flat
8. Regional ecosystem that contains Notophyll vine forest (RE 12.3.1)  
Location: Yuan Creek
9. Regional ecosystems that contain *Corymbia citriodora*, *Eucalyptus crebra*  
*Eucalyptus moluccana* (RE 12.8.24)  
Location 4A: Swanbank  
Location 4B: West of Woogaroo Creek, Springfield
10. Regional ecosystems that contain  
*Eucalyptus seeana*, *Corymbia intermedia*, *Angophora leiocarpa*  
(RE 12.9-10.12)  
Location 5A: Wirrabara Drive  
Location 5B: South-east of Greenbank Substation  
Location 5C: Powerlink easement, Greenbank 'Ch 400000-42000'  
Location 5D: Cnr Old Pub Land/Teviot Road
6. The area affected by the Stapylton Balance Tank and associated pipeline section that bisects the RE 12.11.3.

Each SAP must include, but not be limited to, the following:

- location-specific mitigation strategies, as described in the SREIS's Section 3.1.10

- confirmation that a constrained corridor of no greater than 15 metres, as detailed in Figure 2.2 of the SREIS, will be used in these locations
- the provision that no unnecessary clearing will be undertaken
- confirmation that, wherever possible, construction activities will be limited to existing clearings
- that established sensitive flora species will not be cleared wherever possible
- that wherever possible, trees with hollows will not be cleared, or new constructed hollows installed
- that, wherever possible, damage to the edges of remnant communities will be minimised and erosion controls implemented
- mitigation strategies as listed in EM 1.9-Sediment and erosion: Sensitive land/aquatic area; EM 2.5-Water and stormwater management: Sensitive land/aquatic area; EM 5.1-Flora and fauna: Sensitive species; EM 5.2-Material handling; EM 5.3-Vegetation removal; EM 5.4-Activities around vegetation; EM 6.1-Minimising weed and pest invasion (and others as appropriate)
- a rehabilitation plan for each sensitive area impacted during construction that adheres to the performance criteria in section 5.5-'Flora and Fauna' of the EMP: successful rehabilitation will be as measured against pre-construction assessment
- a revegetation plan for each sensitive area that will experience clearing with revegetation strategies as indicated, but not limited, to EM 5.5-Revegetation
- that ecologically sensitive weed management will be undertaken, as per sections 5.6 and 9.5 of the EMP.

A map is to be created that clearly indicates each sensitive environmental area along the pipeline's route.

The SAP must be prepared in consultation with the Environmental Protection Agency.

## Condition 2: Significant flora species: Investigation and remediation

On-ground studies at the following locations must be undertaken prior to construction to determine if the following significant flora species are present.

- Lloyd's Olive (*Notelaea lloydii*) (may be located at Cameron's Hill/Mount Crosby, Swanbank, Springfield, Greenbank);
- Brush Sophora (*Sophora fraseri*) (Cameron's Hill/Mount Crosby, Hotham Creek/Ormeau, Yaun Creek);
- *Fontainea venosa* (Cameron's Hill/Mount Crosby);
- Floyd's Walnut (*Endiandra floydii*) (Hotham Creek/Ormeau, Staplyton);
- Native Jute (*Corchorus cunninghamii*) (Hotham Creek/Ormeau);
- Macadamia Nut (*Macadamia integrifolia*) (Stubbin Street/Randle Road, Staplyton, Hotham Creek/Ormeau, Yaun Creek);
- Shiny-leaved Coondoo (*Pouteria eerwah*) (Stubbin Street/Randle Road, Staplyton, Ormeau);
- Spiny Gardenia (*Randia moorei*) (Staplyton);
- Marbled Baloghia (*Baloghia marmorata*) (Staplyton);
- Native Coleus (*Plectranthus habrophyllus*) (Oxley Creek, Woogaroo Creek, Opossum Creek, Greenbank, Springfield, Staplyton, Ormeau); and
- Slender Milkvine (*Marsdenia coronata*) (Woogaroo Creek, Opossum Creek, Hotham Creek/Ormeau).

The study methodology is to be of at least the same degree, and utilise the same methods, of those already undertaken for other sensitive sites within the project area.

Should the species be confirmed, a Sensitive Area Plan (SAP) for each such location is to be created and included in the EMP.

Each SAP will include, but not be limited to, the following:

- location-specific mitigation strategies
- confirmation that a constrained corridor of no greater than 15 metres, as detailed in Figure 2.2 of the SREIS, will be used in these locations
- mitigation strategies as listed in EM 1.9-Sediment and erosion: Sensitive land/aquatic area; EM 2.5-Water and stormwater management: Sensitive land/aquatic area; EM 5.1-Flora and fauna: Sensitive species; EM 5.2-Material handling; EM 5.3-Vegetation removal; EM 5.4-Activities around

vegetation; EM 6.1-Minimising weed and pest invasion (and others as appropriate)

- the provision that no unnecessary clearing of significant flora species will be undertaken
- confirmation that wherever possible, construction activities in the vicinity will be limited to existing clearings
- that wherever possible, trees with hollows will not be cleared, or new constructed hollows installed
- a rehabilitation plan for each sensitive area impacted during construction that adheres to the performance criteria in section 5.5-'Flora and Fauna' of the EMP: 'successful rehabilitation will be as measured against pre-construction assessment'
- a revegetation plan for each sensitive area that will experience clearing, with revegetation strategies as indicated, but not limited, to EM 5.5-Revegetation, and confirmation that species-specific seed or tubestock to be sourced wherever possible to ensure 'like for like' revegetation
- that wherever possible, damage to the edges of remnant communities will be minimised and erosion controls implemented
- that ecologically sensitive weed management will be undertaken, as per sections 5.6 and 9.5 of the EMP.

Should the location above coincide with a sensitive area for which a SAP is to be created in accordance with Condition 1, the original SAP may be augmented to include provisions relevant to this Condition. The requirement as listed above on 'like for like' revegetation must however be included and complied with.

The SAP must be prepared in consultation with the Environmental Protection Agency and the Commonwealth Department of the Environment and Heritage. A report on implementation of this condition is to be submitted to DEH at quarterly intervals, or as otherwise requested by DEH.

**Condition 3: possible impacts: RE 12.11.14/12.9-10.7 at Mt Crosby Road**

A Sensitive Area Plan (SAP) in accordance with the specifications indicated in Condition 1 is to be created and included in the EMP should the 'of concern' Regional Ecosystem indicated in the vicinity of the Mt Crosby Road works (RE 12.11.14/12.9-10.7) be impacted by construction works.

The SAP must be prepared in consultation with the Environmental Protection Agency.

**Condition 4: Land acquisition policy**

A land acquisition policy must be provided to affected landholders.

The policy must, at a minimum, include:

- a clear process statement that will be adhered to by the proponent in all dealings with affected landholders
- a freecall telephone number to enable affected landholders to contact the proponent for the purpose of land acquisition negotiations.

Steps must be undertaken to obtain voluntary agreement on acquisition using normal commercial negotiations.

**Condition 5: Rehabilitation Plan**

A site Rehabilitation Plan must be included in the EMP which specifies, at a minimum, the intentions as described in the EIS, SREIS, including:

- Topsoil cover to be re-established and all land and waterways disturbed by the project are returned to a stable condition as soon as possible after construction
- Land to be returned as close as possible to its previous level of productivity
- Stable landforms are re-established to original topographic contours
- Natural drainage patterns are reinstated
- Erosion control measures to be installed in erosion prone areas
- The pre-construction environment to be reinstated and disturbed habitats rehabilitated.

Rehabilitation of disturbed areas must take place progressively as works are staged.

The Plan must be prepared in consultation with the Environmental Protection Agency.

**Condition 6: Contaminated Land**

Where the pipeline traverses land as designated on the Environmental Management Register or Contaminated Land Register, the Contaminated Land Unit, Environmental Protection Agency, must be notified prior to construction.

I nominate the Environmental Protection Agency as concurrence agency under the provisions of the *Environmental Protection Act 1994* for this condition.

**Condition 7: Acid Sulphate Soils Management Plan**

An Acid Sulphate Soils Management Plan must be included within the EMP.

The Plan must be developed in accordance with the State Planning Policy 2/02: Planning and Managing Development Involving Acid Sulphate Soils and the SPP 2/02 Guideline: Acid Sulphate Soil and with reference to the *Guidelines for Sampling and Analysis of Lowland Acid Sulphate Soils in Queensland 1998*.

I nominate the Department of Natural Resources, Mines and Water as the concurrence agency for this activity.

**Condition 8: Noise Management**

A Construction Noise Management Plan must be prepared in consultation with the Environmental Protection Agency (EPA).

The plan must address such items as selection of plant and equipment, hours of operation, liaison with residents (including informing affected residents in advance of scheduled noise events), and monitoring noise and vibration at sensitive receptors along the site.

The Plan must be included within the final EMP.

### **Condition 9: Blasting**

A Blast Management Plan must be prepared in consultation with the EPA.

The Plan must establish acceptable target goals for blasting noise and vibration levels to guide construction planning and management. The Plan must address at a minimum, safety measures, community consultation, management of misfires, and monitoring of noise and vibration from blasting.

The Plan must be included within the final EMP.

### **Condition 10: Aboriginal Cultural Heritage**

A Cultural Heritage Management Plan (CHMP) under the *Aboriginal Cultural Heritage Act 2003* must be developed and approved, prior to any excavation, construction or other activity that may cause harm to Aboriginal cultural heritage.

I nominate the Department of Natural Resources, Mines and Water as the concurrence agency for this condition.

### **Condition 11: Non-Indigenous Cultural Heritage**

A study of the significance of non-Indigenous cultural heritage sites (the Gold Coast site that relates to an historic public house; and landscapes at Swanbank associated with early mining activities) identified as being potentially impacted by the project's route must be undertaken and submitted to Environmental Protection Agency (EPA).

This study must include:

- a detailed map and description of the features of potential non-Indigenous cultural heritage significance and their location relative to areas of the proposed works
- an assessment of the features of significance, including a determination on whether the features are considered to be of State Significance using criteria included within the *Queensland Heritage Act 1992*
- a description of potential impacts from the proposed works; and
- proposed management measures to mitigate unacceptable impacts, including, if appropriate, the size and nature of buffer areas around these features.

SRWP Co. is to consult with EPA in the undertaking of the study. Should heritage listed places be impacted on, compliance with the provisions of the Queensland Heritage Act 1992 will be required, with EPA to be the concurrence agency.

**Condition 12: Road Impact Assessment**

A Road Impact Assessment based on the impacts from haulage of pipe and other activities associated with the construction and operation stages of the project must be prepared in accordance with Department of Main Roads (DMR)s' *Guidelines for the Assessment of Road Impacts from Development 2006*.

I nominate DMR as the concurrence agency for this recommendation.

**Condition 13: Queensland Rail Bethania to Beaudesert railway corridor**

Pipeline construction designs relating to the project's proposed crossing of the historical Bethania to Beaudesert railway corridor must incorporate design specifications prepared on the assumption that the rail corridor may be used as a rail or other transit route in the future.

The construction design relating to this location is subject to agreement with Queensland Rail.

**Condition 14: Springfield to Ipswich Public Transport Corridor**

Detailed design plans for intended pipeline construction that may occur within the planned Springfield to Ipswich Public Transport Corridor must be provided to Queensland Transport prior to commencement of construction activities.

I nominate Queensland Transport as the concurrence agency for this recommendation.

**Condition 15: Traffic Management Plan**

The Proponent must prepare and implement a Traffic Management Plan, in consultation with the Department of Main Roads (South Coast Hinterland and metropolitan districts) and all relevant local government authorities.

The Traffic Management Plan will contain:

- Mitigation strategies designed to minimise any traffic impacts attributable to the project



- Indication of public notification and/or consultation strategies to broadcast road works information
- Confirmation that Traffic Control Plans, required within the Traffic Management Plan, will include indications of how pedestrian and cyclist access at roads will be maintained, including consideration of level surfaces being provided e.g. for the traverse of pedestrians using mobility aids; and a commitment that access to nearby public transport stops will not be removed as a result of construction works.

I nominate the Department of Main Roads and relevant Councils as the concurrence agencies for this condition.

**Condition 16: Emergency Management Plan**

An Emergency Plan must be developed to the satisfaction of the Department of Emergency Services (DES) and submitted to DES prior to the commencement of construction activities.

**Condition 17: Safety Plan**

A Safety Plan must be developed to address all safety and emergency issues identified in the EIS and SREIS and in accordance with the principles of the *Workplace Health and Safety Act 1995*.

**Condition 18: Employment and Training Plan**

An Employment and Training Plan (ETP) must be provided to the Department of Employment and Training for its consideration in relation to the Government's 10% Training Program, at least four weeks prior to the commencement of construction works.

The ETP must include details of performance objectives, management strategies, performance indicators, monitoring and reporting requirements.

I nominate the Department of Employment and Training as the concurrence agency for this recommendation.

**Condition 19: Environmental Management Plan: Construction**

The draft construction Environmental Management Plan (EMP) as contained within the SREIS, must be finalised in accordance with conditions and requirements indicated within this report. The draft EMP must be submitted to the Environmental Protection Agency (EPA) for comment one month prior to the commencement of construction activities. Any comments from the EPA received within 21 days of the draft EMP being received, must be included in the final EMP.

The Construction Environmental Management Plan must be submitted to the Environmental Protection Agency prior to the commencement of construction activities.

**Condition 20: Operation Environmental Management Plan**

Prior to the commencement of the use of the pipeline and associated infrastructure an Operation Environmental Management Plan (OEMP) must be prepared in consultation with, at a minimum, the Environmental Protection Agency, Queensland Health, the Department of Primary Industries and the Department of Natural Resources, Mines and Water.

The Operation Environmental Management Plan must be submitted to the Environmental Protection Agency prior to the completion of construction activities.

**Condition 21: Implementation of Conditions Report**

A report on the implementation of the above mentioned conditions will be prepared and submitted to the Coordinator-General on a quarterly basis or as otherwise required by the Coordinator-General.

## ATTACHMENT B: PROPONENT'S COMMITMENTS

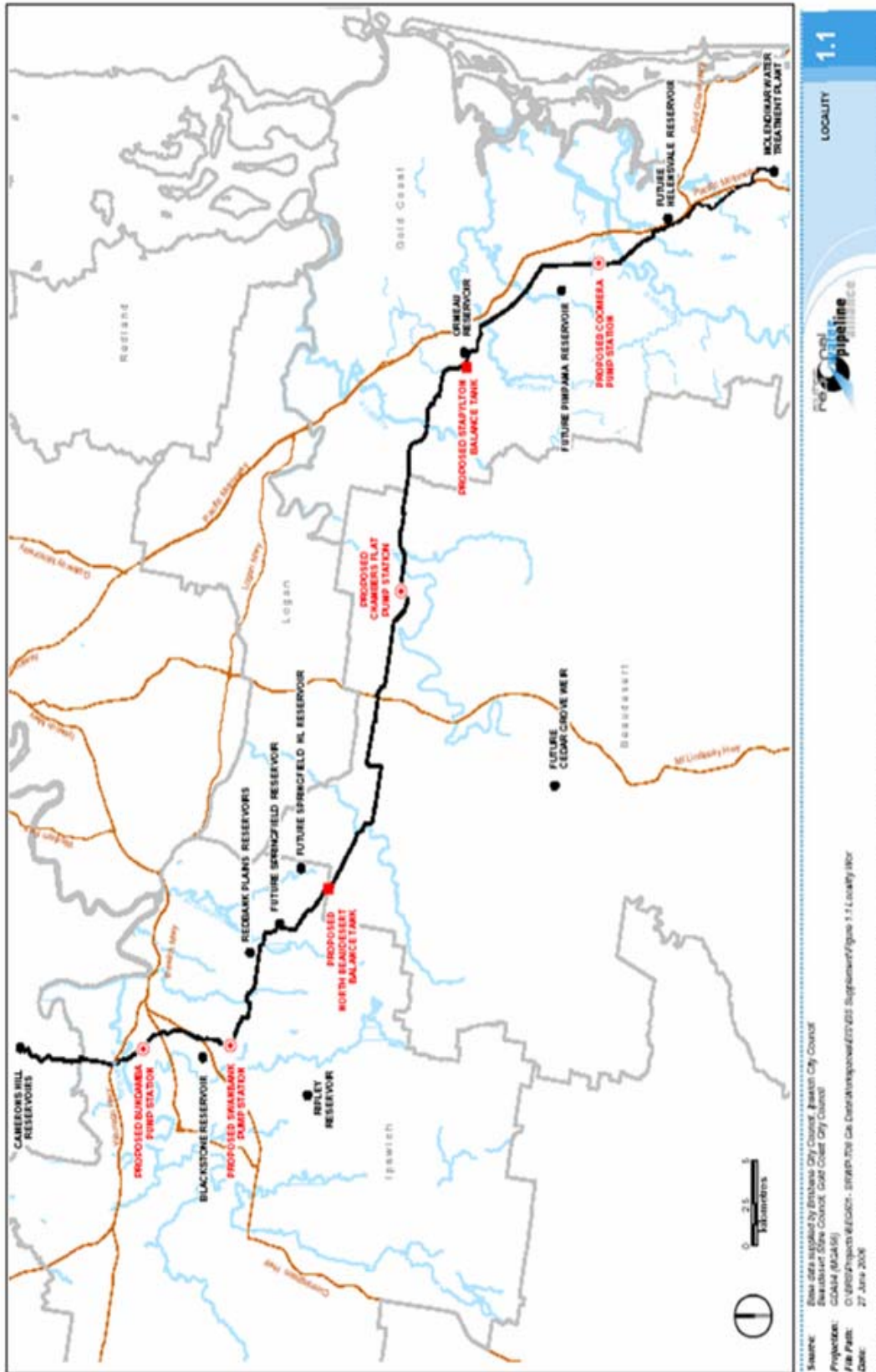
The following list of commitments has been provided by the proponent within the EIS.

| Item | Section     | Commitment   |
|------|-------------|--|
| 1-1  | 1.1         | SRWP Co proposes to build, own and operate a bulk water network between Mt Crosby and Helensvale to service population growth areas and provide interconnectivity between current and proposed water resources |
| 1-2  | 1.5         | SRWP Co will respond to public comments received on this EIS   |
| 1-3  | 1.7         | SRWP Co will produce a Cultural Heritage Management Plan for the Project   |
| 2-1  | 2.1         | The SRWP will have a positive impact on regional water users through sharing water resources and provision of an equitable distribution network  |
| 2-2  | 2.1         | The SRWP will remain consistent with the context of regional and infrastructure planning for south-east Queensland   |
| 3-1  | 3.2         | The proposed route was defined based on engineering, environmental and economic considerations   |
| 3-2  | 3.2         | The pipeline will be approximately 90 km in length and buried for most of its traverse   |
| 3-3  | 3.3 and 3.4 | Where possible during construction, trenchless technologies will be employed for major waterway and road crossings   |
| 3-4  | 3.3         | Construction will be guided by conditions of the Environmental Management Plan (EMP)   |
| 3-5  | 3.3         | The construction EMP includes work methods of mitigate significant negative impacts on native fauna and flora  |
| 3-6  | 3.3         | Works in the South-West Fire Ant Restricted Area will be in accordance with an approved risk management plan   |
| 3-7  | 3.3         | Site rehabilitation will occur as a final stage of construction  |
| 3-8  | 3.5         | Operation of the SRWP will require regular maintenance checks  |
| 4-1  | 4.1         | Where required, clearing will be restricted to within a 30 m wide corridor. Clearing of mapped native vegetation will require a permit   |
| 4-2  | 4.2         | No residents will be displaced during construction of the SRWP   |
| 4-3  | 4.2         | Relevant state agencies and Departments will be consulted in regards to any major road or rail crossings   |
| 4-4  | 4.3         | An Acid Sulfate Soils Management Plan will be produced for the EMP   |
| 4-5  | 4.4         | All on-site impacts associated with contaminated   |

| Item | Section | Commitment  |
|------|---------|---|
|      |         | lands will be managed through the EMP   |
| 4-6  | 4.5     | In conjunction with government initiatives, SRWP will link with social assets to maximize future water demands that may result from climate change                |
| 4-7  | 4.6     | Construction planning will mitigate the potential for erosion and sedimentation impacts on water quality  |
| 4-8  | 4.6     | Release of chlorinated water will only occur when measured concentrations of chlorine are at an acceptable standard (<1 mg/L)                                     |
| 4-9  | 4.6     | Alternative methods for release, reuse or storage of commissioning waters will be considered and developed in the EMP   |
| 4-10 | 4.7     | During detailed design, hydraulic studies will be completed for piled crossings to ascertain potential impacts on flooding processes                              |
| 4-11 | 4.8     | Geotechnical investigations will be conducted to investigate any potential impacts from Cainozoic alluvium on the SRWP  |
| 4-12 | 4.7     | SRWP Co is committed to reducing and/or avoiding impacts on 'endangered' and 'of concern' regional ecosystems   |
| 4-13 | 4.7     | Construction of the SRWP will not adversely affect species of national significance   |
| 4-14 | 4.7     | Species specific studies may be conducted prior to construction of the SRWP in order to develop suitable mitigation plans   |
| 4-15 | 4.7     | Hollow-bearing roadside and habitat trees will be avoided where possible  |
| 4-16 | 4.7     | SRWP Co maintains a policy for leaving a positive environmental legacy post-construction  |
| 4-17 | 4.7     | All cleared sites will be revegetated with appropriate species following construction   |
| 4-18 | 4.8     | Work methods suitable for reducing impacts on the aquatic and riparian environment will be implemented through the EMP  |
| 4-19 | 4.10    | The workforce required for SRWP largely will be from south-east Queensland and will impose little demand on community services and facilities                     |
| 4-20 | 4.10    | SRWP Co will maintain cross-cultural awareness within the Project team and dealings with the public   |
| 4-21 | 4.11    | In order to reduce visual impacts, pump stations and balance tanks are designed with a low profile, shape and colour to maximize blending with local surroundings |
| 4-22 | 4.12    | Where possible, pump stations will be located at least 100 m from residences  |

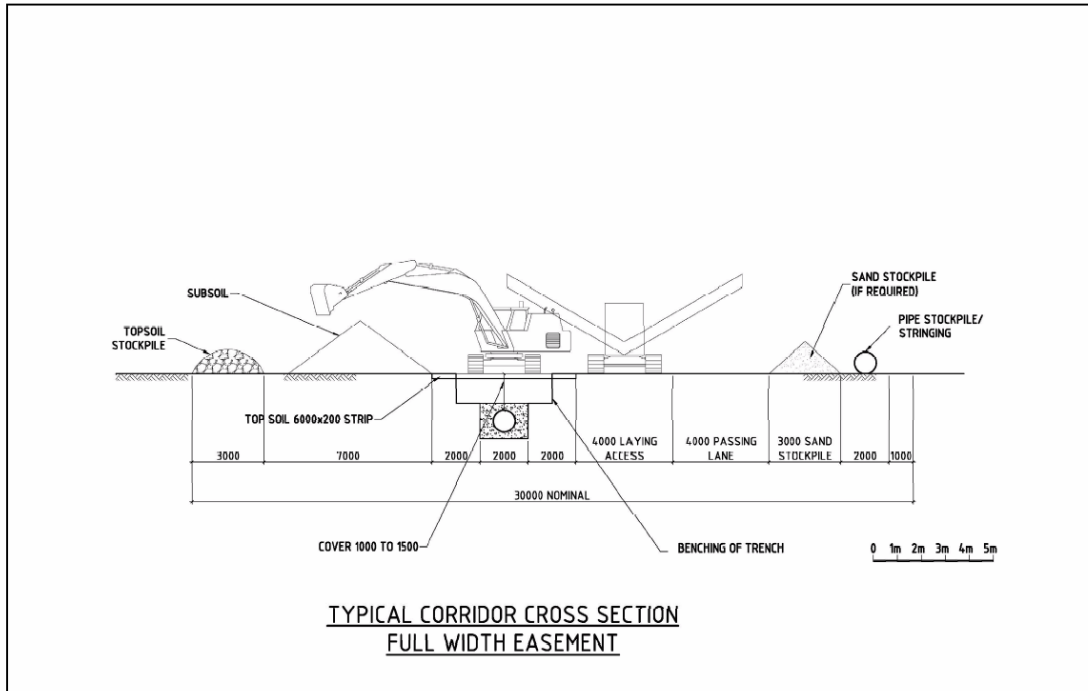
| Item | Section | Commitment  |
|------|---------|---|
| 4-23 | 4.12    | In order to reduce noise impacts, construction will generally occur during daylight hours on weekdays   |
| 4-24 | 4.12    | Pump stations will be acoustically rated to mitigate noise impacts  |
| 4-25 | 4.12    | Comprehensive air quality management strategies will be developed in the EMP  |
| 4-26 | 4.12    | Blasting management strategies will be implemented through the EMP  |
| 4-27 | 4.13    | Waste management strategies will be implemented through the EMP   |
| 4-28 | 4.14    | A detailed Traffic Management Plan will be developed prior to construction and following detailed design. The Plan will be implemented in the EMP |
| 4-29 | 4.15    | Risks associated with the SRWP will be assessed in accordance with AS 4360 Risk Management and relevant safety and emergency plans produced       |
| 5-1  | 5.1     | The EMP will include achievable objectives based on realistic methodologies and the key findings of the EIS                                       |
| 5-2  | 5.1     | The EMP is compatible with best practice approaches to environmental management and conforms to accepted principles for impact mitigation         |
| 5-3  | 5.1     | The EMP will be developed in conjunction with detailed design   |
| 5-4  | 5.1     | An EMP for operation of the SRWP will be developed in the later phases of construction  |

ATTACHMENT C: PROJECT LOCALITY MAP



Source: Data supplied by Brisbane City Council, Ipswich City Council, Redbank Plains Council, Gold Coast City Council  
 Prepared by: GWA (GWA/16)  
 File Path: C:\GWA\Projects\160201 - SRWP 2016 Data\Workpackages\160201 Supplement\Figure 1.1 Locality Map  
 Date: 27 June 2016

# ATTACHMENT D: CONSTRUCTION SCHEMA

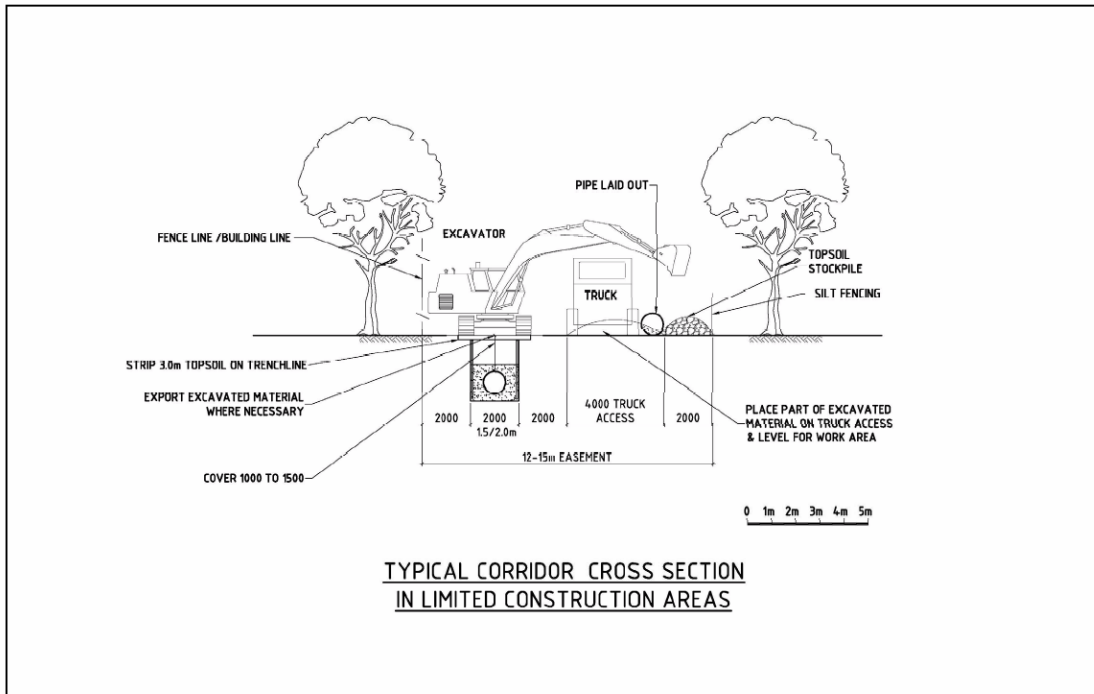


Source:  
 Projection: GDAS4 (MGA56)  
 File Path: O:\BPS\Projects\BEG\BEG001-SRMP\T08 GIS Data\Workspace\ESRS Supplement\Figure 2.1 Construction Techniques Full Width Easement.Wor  
 Date: 28 June 2006



CONSTRUCTION TECHNIQUES  
 FULL WIDTH EASEMENT

2.1



Source:  
 Projection: GDAS4 (MGA56)  
 File Path: O:\BPS\Projects\BEG\BEG001-SRMP\T08 GIS Data\Workspace\ESRS Supplement\Figure 2.2 Construction Techniques Limited Construction Area.Wor  
 Date: 28 June 2006



CONSTRUCTION TECHNIQUES  
 LIMITED CONSTRUCTION AREAS

2.2

## ATTACHMENT E: ABBREVIATIONS

|           |  |
|-----------|--|
| ASS       | Acid Sulphate Soils  |
| CHMP      | Cultural Heritage Management Plan                                    |
| CG        | Coordinator-General  |
| CMA       | Coastal Management Area  |
| DES       | Department of Emergency Services                                     |
| DEH       | Commonwealth Department of the Environment and Heritage              |
| DET       | Department of Employment and Training                                |
| DLGP      | Department of Local Government and Planning                          |
| DMR       | Department of Main Roads   |
| DOH       | Department of Housing  |
| DPIF      | Department of Primary Industries and Fisheries                       |
| DSD       | Department of State Development                                      |
| EA        | Environment Australia  |
| EIS       | Environmental Impact Statement                                       |
| EM        | Environmental work method  |
| EMP       | Environmental Management Plan  |
| EPA       | Environmental Protection Agency                                      |
| EP Act    | <i>Environmental Protection Act 1994</i>                             |
| EPBC Act  | <i>Environment Protection and Biodiversity Conservation Act 1999</i> |
| ERA       | Environmentally Relevant Activity                                    |
| IAS       | Initial Advice Statement   |
| IPA       | <i>Integrated Planning Act 1997</i>                                  |
| ML/day    | megalitre/s per day  |
| ML/year   | megalitre/s per year   |
| NRM&W     | Department of Natural Resources and Mines                            |
| PASS      | Potential Acid Sulphate Soils  |
| QH        | Queensland Health  |
| QT        | Queensland Transport   |
| ROW       | Right of Way   |
| SAP       | Sensitive Area Plans   |
| SDPWO Act | <i>State Development and Public Works Organisation Act 1971</i>      |
| SREIS     | Supplementary Report to the Environmental Impact Statement           |
| TMP       | Traffic Management Plan  |
| ToR       | Terms of Reference   |
| WMP       | Weed Management Plan   |