

Appendix F –
Revised Environmental
Management Plan



**Gladstone Area
Water Board**



GLADSTONE – FITZROY
PIPELINE PROJECT
Environmental Impact Statement

Planning Environmental
Management Plan

Supplementary Report Revision



**Gladstone Area
Water Board**



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This information has been prepared by, or on behalf of, the Gladstone Area Water Board (GAWB) regarding the Gladstone-Fitzroy Pipeline Project. Care has been taken to ensure that the information is accurate and up to date at the time of publishing.





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20 Planning Environmental Management Plan

20.1 Introduction

This Planning Environmental Management Plan (EMP) has been developed in the planning phase of the Gladstone–Fitzroy Pipeline project (the project) and draws on the findings and recommendations of the project's EIS.

The Planning EMP forms the precursor to the Construction EMP, which will be developed by the construction contractor prior to commencing construction, and to the Operations EMP which will be developed by the Gladstone Area Water Board (GAWB – the proponent) at the start of the operational phase of the project. Figure 20.1 shows the relationship and information flow between these three EMPs and their stages of application.

Thus the Planning EMP contains actions relevant to both the construction and operational phases of the project. Environmental management measures related to commissioning of the project are included under construction, where relevant.

The scope of the Planning EMP includes the pipeline and associated infrastructure and works areas (which includes the right-of-way (ROW)), construction compounds, pipe lay down areas and access tracks.

The Planning EMP has been prepared with reference to the Australian Pipeline Industry Association Code of Environmental Practice for Onshore Pipelines (APIA 2005).

20.1.1 Purpose of an Environmental Management Plan (EMP)

An EMP is a tool to help meet the requirements of applicable environmental legislation, achieve best practice in environmental management, and to aid in achieving the environmental objectives of relevant authorities for the works. It is a written

description of proposed measures to be implemented to help achieve and maintain acceptable levels of environmental impact. An EMP is a site-specific plan developed with the aim that all contractors, sub-contractors, employees and site visitors comply with the environmental conditions of approval for the project, and that the environmental risks are properly managed for the life of the project.

An EMP contains clear commitments; framed in such a way to enable later assessment of the extent to which commitments have been met, i.e. the commitments must be auditable. It is structured to address the key elements of environmental management onsite and in proximity to the site for the construction and operation of the project. An EMP should be reviewed and periodically updated to reflect knowledge gained during the course of construction and operations.

20.1.2 Structure of the Planning Environment Management Plan (EMP)

This Planning EMP is divided into different sections corresponding to different chapters of the EIS (where applicable). Within each section there are one or more control plans to manage specific environmental aspects. The control plans contain the following information:

- The environmental aspect requiring management consideration
- The potential impacts or key issues (summarised from the EIS)
- Performance objectives
- Performance criteria
- Implementation actions
- Monitoring actions
- Reporting requirements
- Corrective actions.

The Planning EMP also includes the roles and responsibilities for implementation of the Planning EMP and reporting requirements.

The control plans are listed in Table 20.1.

Figure 20.1 The relationship between the Planning EMP, the Construction EMP and the Operations EMP

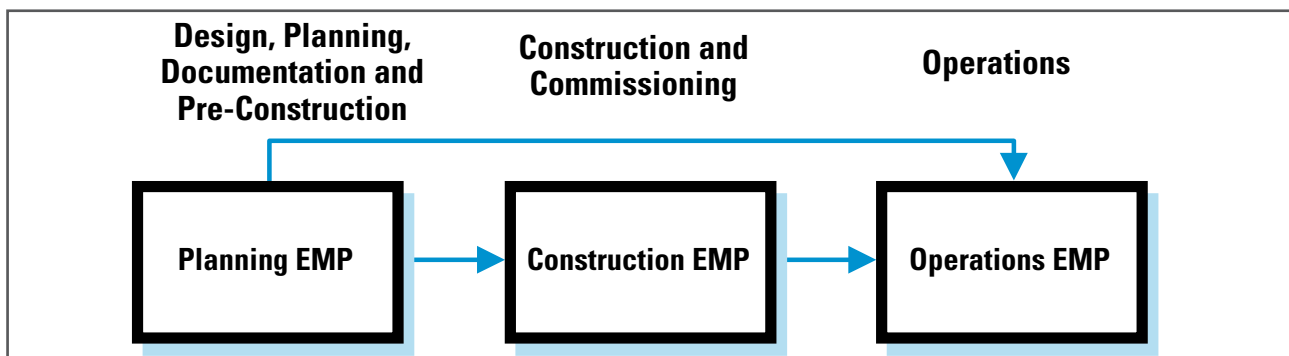


Table 20.1 Index of Control Plans

Section Number	Section Name	Table Number	Control Plans
20.3.1	Project Environment Management	Table 20.2	Project Environmental Management
20.3.2	Climate	Table 20.3	Climate Impacts
20.3.3	Land Use and Infrastructure	Table 20.4	Land Use and Infrastructure
20.3.4	Soils and Contaminated Land	Table 20.5	Erosion and Sedimentation
		Table 20.6	Contaminated Land
		Table 20.7	Acid Sulfate Soils
20.3.5	Flora and Fauna	Table 20.8	Vegetation Clearing
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		Table 20.10	Fauna Management and Protection
		Table 20.11	Weed Management
20.3.6	Water Resources and Water Quality	Table 20.12	Water Resources and Water Quality
20.3.7	Air Environment	Table 20.13	Air Environment
20.3.8	Waste	Table 20.14	Waste Management
		Table 20.15	Hydrotesting and Commissioning
20.3.9	Noise and Vibration	Table 20.16	Noise and Vibration Management
20.3.10	Transport and Access Arrangements	Table 20.17	Transport and Access
20.3.11	Cultural Heritage	Table 20.18	Cultural Heritage
20.3.12	Social and Economic Environment	Table 20.19	Social and Economic Environment – Complaints Procedure
20.3.13	Hazard and Risk	Table 20.20	Handling and Storage of Dangerous Goods
		Table 20.21	Health and Safety Management
		Table 20.22	Emergency Management
20.3.14	Landscape and Visual Assessment	Table 20.23	Landscape and Visual Amenity Management

20.2 Environmental Management Processes and Responsibilities

20.2.1 Definitions

This section defines the terms, responsibilities and general specification of requirements for the environmental management of the project. The parties responsible for the environmental management of the project are:

- **The proponent and operator** – GAWB and its agents in delivering the project and ongoing operation of the infrastructure
- **The construction contractor** – anyone engaged by GAWB to undertake any aspects of construction of the pipeline system including specialist sub consultants and GAWB staff.

All parties involved in the project are required to undertake their work in accordance with all relevant Acts, Policies and Regulations. In particular, all parties are referred to the *Environmental Protection Act's (1994 (Qld)) "General Environmental Duty"*, which states that individuals and organisations must take "all reasonable and practicable measures to prevent or minimise environmental harm". All personnel involved in the project have an obligation to show due diligence in all aspects of environmental management.

20.2.2 Responsibilities

20.2.2.1 Proponent

The primary responsibility for environmental performance and for implementing the Planning EMP for the project rests with the proponent, GAWB.

GAWB has an integrated Quality and Environmental Management System, which has been certified to AS/NZS ISO 9001:2000 and AS/NZS ISO 14001:2004 respectively. GAWB also has a Safety Management System certified to AS/NZS 4801:2001. GAWB's management system objectives are defined in its Corporate Environment, Safety and Quality Policy, which has been adopted to support the Total Management Plan (TMP).

The TMP is the management framework which encompasses all the key aspects to meet the legislative and regulatory requirements and aspects related to the supply of water to GAWB's customers.

The environmental impacts and mitigation measures identified in the EIS shall be included in GAWB's Environmental Risk Register and in a project specific risk register. Through GAWB's risk management process, approved operating procedures will be developed which include requirements for monitoring and reporting performance. All GAWB staff have responsibilities under GAWB's risk management system, with all responsible officers/managers completing an appropriate induction program and undertaking ongoing training.

GAWB's specific responsibilities with regard to environmental management include:

- Complying with the Planning EMP and any other conditions attached to EIS approval during the documentation and pre-construction stages.
- Review of the relevance of the Planning EMP and its effectiveness in helping meet the project's environmental responsibilities
- Minimisation of the potential environmental impacts associated with the project
- Management of tender documents and contracts for construction and operation/maintenance and incorporating the requirements for complying with this Planning EMP and subsequent EMPs
- Ensuring that a Construction EMP is developed by the construction contractor, which is in accordance with this Planning EMP
- Ensuring that an Operations EMP is developed which is in accordance with this Planning EMP and the Construction EMP, and that resources are available to implement the EMP
- Ensuring all relevant management plans and surveys are prepared and undertaken by the construction contractor and the operator.
- Preparing a Cultural Heritage Management Plan and overseeing its implementation
- Obtaining necessary approvals under relevant legislation, not including any approvals for construction activities unless specifically agreed with the construction contractor.
- Allocating resources and personnel to monitor compliance with the Construction EMP and the Operations EMP.

Figure 20.2 The application status of EMP sub-plans during construction and operation.

Construction * EMP Sub-plans	Operations EMP Sub-plans
<ul style="list-style-type: none"> • Acid Sulfate Soils Management Plan • DEEDI Approved Risk Management Plan • Blasting Operations Plan • Community and Stakeholder Engagement Plan • Constructions Plan • Construction Safety Plan • Cultural Heritage Management Plans (Indigenous and Historic) • Dangerous Goods Control Plan • Emergency Management Plan • Ground Water Management Plan • Site Specific Erosion and Sedimentation Control Plans • Skills Development Plan • Special Area Plans • Traffic Management Plans • Waste Management Plan • Weed Management Plan and weed specific surveys 	<ul style="list-style-type: none"> • Acid Sulfate Soils Management Plan • DEEDI Approved Risk Management Plan • Blasting Operations Plan • Community and Stakeholder Engagement Plan • Cultural Heritage Management Plan • Dangerous Goods Control Plan • Emergency Management Plan and Emergency Action Plan • Ground Water Management Plan • Maintenance and Improvement Plans • Operations Safety Plan • Site Specific Erosion and Sedimentation Control Plans • Special Area Plans • Waste Management Plan • Weed Management Plan and weed specific surveys
<p>This list may be updated during the preparation of the Construction EMP and/or Operations EMP.</p>	

20.2.2.2 The Construction Contractor

The construction contractor will be responsible for:

- Complying with this Planning EMP during pre-construction
- Developing, implementing and complying with a Construction EMP which is consistent with this Planning EMP
- Ensuring that all subcontractors comply with the Construction EMP
- Complying with all the environmental provisions of the Construction Contract
- Complying with all plans prepared by the proponent as part of its commitments under this EIS and EMP (including, for example, the Cultural Heritage Management Plan)
- Allocating resources and personnel to implement the requirements of the Construction EMP. This would include one or more environmental officers to implement and check the necessary environmental controls during construction as required by the EMP and to carry out inductions
- Obtaining any approvals under relevant legislation except those to be obtained by GAWB. In particular, the construction contractor will be responsible for applying for, obtaining and ensuring compliance with approvals relating to construction activities, with responsibility for reporting on such activities to GAWB.
- Along with compliance to the Construction EMP itself, the construction contractor is responsible for the preparation and/or implementation of construction related sub-plans (see Figure 20.2) and Special Area Plans. Special Area Plans are management plans where site-specific mitigation/measurement measures are required due to the nature or sensitivity of the area. Where these are required, they are described in their relevant control plan.

- Clean up and rehabilitation of construction sites

* Where applicable, “construction” also covers pre-construction activities such as the pre-construction cultural heritage survey.

20.2.2.3 The Operator

The term ‘Operator’ has been used to refer to the personnel responsible for the implementation of operational and maintenance works. This role will be resourced from within GAWB, and may or may not include contractor’s services.

The operator will be responsible for:

- Developing, implementing and complying with an Operations EMP consistent with the Planning and Construction EMPs
- Ensuring that all contractors and sub-contractors comply with the Operations EMP
- Allocation of resources and personnel to implement the requirements of the Operations EMP
- Allocation of resources to carry out Operations EMP inductions for all personnel on the project.
- Complying with all the environmental provisions of the Operation Contract if applicable
- Obtaining any and all licences and approvals under relevant legislation that are relevant to the operation of the project and have not already been obtained by GAWB or the construction contractor
- Along with the compliance to the Operations EMP itself, the operator is responsible for the preparation and implementation of operations related sub-plans (see Figure 20.2).

20.3 Control Plans

20.3.1 Project Environmental Management

This section relates to the overall project management of the project and the incorporation of environmental management measures into the design, construction and operational phases (Table 20.2).

Table 20.2 Project Environmental Management Control Plan

Element	Project Environmental Management
Performance Objectives	<ul style="list-style-type: none"> Minimise the impacts of the project on the environment Ensure that all relevant requirements identified in the EIS (including this Planning EMP) are accounted for in future project documentation.
Performance Criteria	<ul style="list-style-type: none"> Implementation of all the requirements of the EIS and relevant Construction or Operations EMPs Full justification is provided where the EMP and any other conditions attached to EIS approval are not implemented Consultative relationship established with landowners and other stakeholders, including the development of Special Area Plans to allow timely notifications of planned construction activities All complaints are responded to in a timely manner and in accordance with GAWB policy. See Section 20.3.12.
Implementation	<p>Design</p> <p>The design phase and EIS phase of the project have run concurrently and this has enabled the following measures to be implemented:</p> <ul style="list-style-type: none"> Consideration of environmental issues during project siting and design Collaboration between the design team and EIS team prior to finalisation of design to incorporate recommendations from the EIS Consideration in the EIS of design changes as they have occurred. <p>Construction</p> <ul style="list-style-type: none"> Measures outlined in this Planning EMP and conditions attached to EIS approval are to be incorporated into the Construction EMP All project staff to receive an induction on the requirements of the Construction EMP and be committed to its implementation Environmental officer(s) to be appointed for the construction phase to implement the requirements of the Construction EMP including checks and audits Construction personnel must always be mindful of the provisions of the Construction EMP to identify and notify non-conformances The construction contractor's environmental officer should undertake environmental site checks for all work areas during construction of the project Environmental audits should be undertaken by an external party (i.e. not part of the construction team) every six months or as determined by GAWB Checklists to be developed for the relevant construction tasks identified in this Planning EMP A Community and Stakeholder Engagement Plan to be implemented for informing landholders and other stakeholders of project planning, contact details and processes for queries or complaints (further details noted in Table 20.19) Special Area Plans are to be developed and implemented, as described and where required throughout this Planning EMP with provisions <ul style="list-style-type: none"> stating location-specific mitigation strategies identifying vegetation that is able to be retained via a reduction of the construction footprint. Otherwise, clearing will be restricted to the ROW. to avoid clearing of trees with hollows, or if this cannot be achieved, to construct and install new hollows showing the erosion controls that will be implemented detailing a rehabilitation plan for each sensitive area impacted during construction detailing a revegetation plan for each sensitive area that will experience clearing detailing ecologically sensitive weed management that will be undertaken.

Element	Project Environmental Management
	<p>Operation</p> <ul style="list-style-type: none"> • Measures outlined in this Planning EMP and conditions attached to EIS approval are to be incorporated into the Operations EMP (including the associated Maintenance and Improvement Plans) • All relevant operations staff to receive an induction on the Operations EMP and their specific role in its implementation • A member of the operational staff or existing GAWB staff is to be assigned responsibility for implementation and checking of the Operations EMP as part of their job role • Regular environmental site checks should be undertaken for the pipeline and associated infrastructure and particularly newly vegetated areas in the project area to check that the environmental management measures specified in the Operations EMP are implemented. This will form part of a ROW surveillance program which will be established and implemented during operations and will be the main environmental management activities during operation • Checklists to be developed for the relevant operations tasks identified in this Planning EMP • Special Area Plans are to be developed and implemented, as described throughout this Planning EMP • A Community and Stakeholder Engagement Plan to be implemented for informing landholders and other stakeholders of project planning, contact details and processes for queries or complaints (further details noted in Table 20.19) • The environmental impacts and mitigation measures identified in the EIS shall be included in GAWB's Environmental Risk Register and in a project specific risk register.
Monitoring	GAWB to include monitoring of project environmental outcomes during construction and operation of the project as part of their Environmental Management System.
Reporting	<ul style="list-style-type: none"> • Environmental file to be kept on site and made available to GAWB or external auditors upon request. This file will contain the following: <ul style="list-style-type: none"> • Completed environmental checklists/reports during the construction phase • Completed environmental checklists/reports during the operational phase • Reports of any environmental incidents or non-conformances with the Planning EMP • Internal and external environmental audit results. • During operations, a regular ROW surveillance program report will be developed and implemented. This details implementation of the Operations EMP along the ROW. This will include (though may not be limited to) reporting on the status of: <ul style="list-style-type: none"> – Erosion and sedimentation control measures – Scouring and hydraulic obstruction – Contaminated land – Vegetation rehabilitation areas – Introduced pests – Weeds – Unauthorised third party activities.
Corrective Action	Should any audits/checks undertaken during construction or operation of the project identify non-conformances with the relevant Construction or Operations, the constructor or operator will notify GAWB of any non-conformances and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by the constructor or operator and filed by both GAWB and the constructor or operator.
Timing	Throughout the construction and operational phases of the project.

20.3.2 Climate

This section relates to Chapter 3 of the EIS, Climate. This outlines the local climatic conditions in the project area and the possible effect of extreme climatic events.

Local climatic conditions (weather changes) and extreme climatic events cannot be prevented. Some of the risks to the environment, property or personnel from these events may include:

- Particularly windy conditions that may increase the amount of dust exported offsite to sensitive receptors such as residential properties
- Heavy rainfall which would result in increased sediment transport offsite without appropriate mitigation measures
- Electrical storms that may pose a safety risk to construction and operations personnel

- Heatwaves that may pose a health risk to construction and operations personnel
- Predicted flood events in the Fitzroy River (as a result of cyclonic activity or other reasons) which may affect access to construction sites at the Fitzroy River intake and/or Alton Downs Water Treatment Plan (WTP), or may temporarily disrupt pipeline construction.

These risks can be partially mitigated through the measures outlined in Table 20.3.

- Bushfires and Landslides as well as further mitigation for flooding are dealt with in Chapter 16 of the EIS, Hazard and Risk and Table 20.23 of this EMP.

Table 20.3 Climate Impacts Control Plan

Element	Climate Impacts
Performance Objectives	To minimise the risks to the environment, property and personnel arising from local climatic conditions and extreme climatic events.
Performance Criteria	<ul style="list-style-type: none"> • Planning and monitoring is undertaken during the construction phase to prepare for weather changes and climatic events • Zero lost time and zero injuries to personnel as a result of extreme climatic events.
Implementation	<p>Construction</p> <ul style="list-style-type: none"> • Taking into account seasonal conditions when scheduling work • Within the SGIC, construction at sensitive sites such as wetlands and areas adjacent to yellow chat breeding areas (this includes Gavial Creek and associated wetlands, Lagoon 2, Inkerman Creek, Twelve Mile Creek and Horrigan Creek) will be conducted during the dry season (May to September) as per the SGIC State Development Area Development Scheme • Preparation and implementation of an Emergency Management Plan for the project during construction • Short and long term weather forecasts to be checked on a regular basis to enable planning measures as outlined below: <ul style="list-style-type: none"> – Increased dampening of surfaces during windy conditions – Where wind speeds are excessive (approximately 10 m/s) and work is undertaken within 100 m of sensitive receptors, dust mitigation measures will be put in place to prevent dust nuisance. – Sediment control measures are periodically checked including after rainfall events – Works cease during electrical storms or extreme climatic events – Personnel are advised of health and safety procedures in the event of a heatwave during staff induction, and work hours modified where necessary to avoid the hottest time of day – Construction in flood prone areas ceases prior to a predicted flood event and any machinery or stored fuels are removed from the area. <p>Operation</p> <ul style="list-style-type: none"> • Any planned maintenance works requiring earthworks in wetlands or at creek crossings will be undertaken during dry periods unless there is no feasible and practical alternative. Works within the SGICSDA that are adjacent to yellow chat breeding areas or within a wetland (as defined in the supplementary report to the EIS) will only occur between May and September (this includes Gavial Creek and associated wetlands, Lagoon 2, Inkerman Creek, Twelve Mile Creek and Horrigan Creek). • After flooding or heavy rainfall (access permitting) the pipeline burial particularly at creek crossings will be monitored to check that erosion or scouring over the pipe has not occurred • In the event that material scouring has occurred, reasonable measures will be taken to return the bed of the waterway to its original profile • Preparation and implementation of an Emergency Management Plan for the project during operations.

Element	Climate Impacts
Monitoring	<ul style="list-style-type: none"> During construction, the contractor's environmental officer will undertake regular checks of weather forecasts and check that the necessary measures are in place as outlined above Environmental checklists will include mention of weather conditions at the time of checking Routine ROW surveillance will be undertaken during operations to check for erosion and scouring.
Reporting	<ul style="list-style-type: none"> Environmental checklists during construction and as required during operation Emergency Management Plans for construction and operations A ROW surveillance program report.
Corrective Action	<p>The constructor or operator (if not GAWB) will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by the constructor or operator and filed by both GAWB and the constructor or operator</p> <p>Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB.</p>
Timing	Throughout construction and operation.

20.3.3 Land Use and Infrastructure

This section of the Planning EMP relates to Chapter 4, Land Use and Infrastructure.

Land in the project footprint is largely freehold rural land that has been cleared for grazing. A number of road, rail and infrastructure crossings will be undertaken during project construction. Six farm dams have also been identified within the 30 m right-of-way (ROW). Farm pondage banks are also present along the ROW.

Table 20.4 provides measures to be implemented to minimise the impacts to land use and infrastructure that may arise during construction or operation of the project. This includes measures to reduce the possible impacts to recreational areas and extractive resources. Management measures for transport and access are included in Section 20.3.10 of this EMP.

Table 20.4 Land Use and Infrastructure Control Plan

Element	Land Use and Infrastructure
Performance Objectives	Minimise potential impacts on land use activities and local/regional infrastructure.
Performance Criteria	<ul style="list-style-type: none"> Minimal disruption to land uses Minimal disruption to local/regional infrastructure Consultative relationship established with landowners and other stakeholders Cooperative working relationship with other uses in the multi-use corridor (the SGIC).
Implementation	<p>Design</p> <ul style="list-style-type: none"> Infrastructure owners/authorities for road, rail, transmission lines and pipelines will be consulted prior to construction to determine requirements for crossing methods for infrastructure, safety protocols and obtain all relevant licenses and permits For any farm dams identified within the project corridor, GAWB will assess the impact upon any dams as well as the feasibility of realigning the pipeline (within the existing corridor). Report preparation will include consultation with landholders. More significant realignment within (or even outside) either of the State Development Areas would be subject to Department of Infrastructure and Planning agreement and requirements, but is considered unlikely. Alternatively, pipeline construction and dam reinstatement, reconstruction of dams, or removal of dams would be undertaken in consultation with DIP and the relevant landowners. Permission will also be sought from the Department of Environment and Resource Management (DERM) for new dam construction that would impact on overland flows The impact upon land use and infrastructure will be included as assessment criteria (amongst others) to determine the most suitable method of construction (e.g. thrust boring under major road crossings (Ridgeland, Capricorn, Mt Larcom, Mt Larcom Gladstone Roads and the Mt Larcom Gladstone Road and Calliope River Targinie Road intersection)).



Element	Land Use and Infrastructure
	<p>Construction</p> <ul style="list-style-type: none"> • Construction management processes will identify the location of third party infrastructure (e.g. on drawings, during pegging and site set-out, etc) and specify buffer/separation distances if applicable • The location of existing fences and gates impacted by construction will be determined and included on construction drawings and/or during pegging and site set-out • Temporary gates will be installed where required and in consultation with landowners, marrying locks where appropriate • Landholder line list to be maintained to include property specific information such as access protocols for each property on the alignment • Telephone and other contact details will be advised to all landowners and other stakeholders and community groups in the project area for receiving queries and complaints • Regular consultation and communication with landowners and relevant stakeholders, and development of plans to ensure timely notification of planned activities during construction will be undertaken to manage impacts to land • Regular consultation will inform landholders of project progress and also allow the identification any issues the landholders may have in relation to the project • Queries and complaints will be logged and responded to in a timely manner with due respect and consideration to all parties • All existing property gates will be left as found i.e. if found open will be left open • In consultation with the landholder, rehabilitation of the construction footprint is to occur promptly after construction to enable use of the land to resume • The minimum cover over the pipeline will be in accordance with negotiated easement agreements and licences, and is intended to permit existing land uses to be resumed following construction • Construction and operational activities will be undertaken to reduce or avoid impacts to land • Construction of the intake to be undertaken with consideration to SunWater's existing operations to prevent impacts to the functioning of their intake and pumps (i.e. in accordance with any agreement reached with SunWater) • Consultation to occur with relevant community groups in the project area (as a minimum, those who made submissions on the EIS) for development of Special Area Plans that will ensure timely notifications of planned construction activities • Consultation to occur with the management of the Pink Lily and Yarwun Key Resource Areas and any other Resource Areas in existence at the time of construction to inform them of construction plans and any specific requirements in relation to these areas during construction • Backfilled soils will be compacted to a level commensurate with the surrounding soils with the aim of preventing trench subsidence. During final re-profiling of the soil, mounding may be required to compensate for potential subsidence. <p>Operation</p> <ul style="list-style-type: none"> • Maintenance works that may have a material impact on third party infrastructure to be undertaken in consultation with the owner/authority • In consultation with the landholder, land that is materially disturbed during maintenance works to be promptly rehabilitated following completion of the maintenance • Landholder line list to be maintained to include property specific information such as access protocols for each property on the alignment • Regular consultation with directly affected landholders will occur to ensure cooperative use of land within the easement • Regular consultation and communication with directly affected landowners and development of plans to ensure timely notification of planned activities during operations will be undertaken to manage impacts to land • Telephone and other contact details will be advised to directly affected landowners and other stakeholders and community groups (as a minimum, those who made submissions on the EIS) in the project area for receiving queries and complaints.
Monitoring	<ul style="list-style-type: none"> • Routine monitoring during construction and operational phases as part of environmental checks • Regular ROW surveillance will check for unauthorised third party activity.

Element	Land Use and Infrastructure
Reporting	<ul style="list-style-type: none"> Completed environmental checklists during the construction and operations phases A ROW surveillance program report.
Corrective Action	<p>The constructor or operator (if not GAWB) will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by the constructor or operator and filed by both GAWB and the constructor or operator.</p> <p>Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB.</p>
Timing	Throughout the construction and operational phases of the project.

20.3.4 Soils and Contaminated Land

This section relates to Chapter 5, Soils and Contamination, of the EIS. Measures are provided below to mitigate the potential impacts that may arise during construction or operation of the project as a result of erosion and sedimentation, contaminated land and acid sulfate soils (ASS) (See Tables 20.5, 20.6 & 20.7).

As described in Chapter 5, Soils and Contamination, dispersive and erosive soils are present in the project area. At all creek crossings in the project area (Lion, Gavial, Inkerman, Twelve Mile, Marble, Horrigan, Raglan and Larcom Creeks) and in areas containing dispersive and erosive soils, particular attention is required to erosion and sediment control measures.

Several sites in the project area have been identified on the Environmental Management Register (EMR) maintained by DERM as having had a *notifiable activity* occur at the site. Also, due to the rural agricultural nature of the project area there is the potential for other contaminated sites such as old cattle or sheep dips, pesticide residues, or landfills to be disturbed during construction.

As described in the EIS, preliminary ASS investigations have identified actionable levels of acidity and/or the likelihood of ASS in numerous areas in the vicinity of Raglan. If the final design indicates more than 100 m³ of soil will be disturbed from below 5 m AHD, further investigation will be required.

Table 20.5 Erosion And Sediment Control Plan

Element	Erosion and Sediment
Performance Objectives	To minimise erosion and sedimentation during the project works.
Performance Criteria	<ul style="list-style-type: none"> • Erosion and sediment control measures are implemented and maintained where necessary throughout construction and operation • Minimisation of erosion or sedimentation occurring as a result of the construction or operational maintenance works • Areas of exposed soils during construction are minimised and promptly revegetated.
Implementation	<p>Construction</p> <ul style="list-style-type: none"> • Site-specific erosion and sediment control plans will be developed prior to the commencement of construction and will include specific and additional measures that will be employed if construction is occurring during the wet season • Surface disturbances will be limited to the area necessary to undertake the works • The construction area and access routes to be clearly delineated to prevent disturbance to areas outside the construction footprint • Construction team to be made aware that the majority of the project route has dispersive soils prone to erosion • Earthworks to be completed and protection placed over exposed soils where necessary, to avoid erosion • Temporary erosion and sediment control devices will be installed in accordance with the <i>Soil Erosion and Sediment Control – Engineering Guidelines for Queensland Construction Sites</i> (the Queensland Division of the Institution of Engineers, Australia 1996) • Temporary sediment barriers will be installed around any nearby stormwater inlets that may be affected, and along the base of any sediment fences situated along the banks of waterways • Sediment control devices to be checked regularly and emptied promptly after rainfall events • All necessary sediment and erosion control devices to be in place prior to the commencement of works at a site • During grading and trenching in the ROW topsoil and subsoil will be stockpiled separately and topsoil later reused for restoration of the ROW. Topsoil stripping, usually to a depth of 100mm, should occur • Soil stockpile heights will be appropriate to prevent excessive wind blow dust and will not be in close proximity to watercourses • Perimeter diversion drain or bund will be placed around any long-term stockpiles (i.e. reserved topsoil for revegetation) • Long-term stockpiles should be suitably stabilised with appropriate erosion preventative measures (e.g. covers) • Soils rated as having ‘moderate’ or worse erosion potential will require specific management during construction of the pipeline and should not be left exposed for any significant period of time without stabilisation • Where necessary a light application of agricultural lime will be applied to the surface of topsoils re-used following embedment of the pipeline to limit dispersion potential until grass cover can be reinstated. However, should potentially dispersive soils be retained for re-use on site, treatment with the addition of lime or gypsum at a rate of 2.5 kg/m³ is common. Topsoil of local origin used near waterways will be treated promptly if to be left exposed • Soils that have been lime treated for acid sulfates need not be further treated and would be considered non-dispersive • Prompt revegetation or covering/sealing of the backfilled trench, avoiding leaving excavations opened over weekend/extended breaks • Temporary drains or bunds, will be constructed where necessary to direct run-off and any overland flow from upslope of excavations, away from any nearby waterways • Backfill will be compacted to reduce the risk of surface erosion and trench subsidence and revegetated areas will be watered to promote reinstatement of grass cover during ‘dry spells’ • Erosion and sediment control devices to be maintained at any sites where there is exposed soil (i.e. after construction is completed and before rehabilitation measures are established and deemed to be effective) • Agricultural land disturbed due to the laying of the pipeline will be rehabilitated to its previous condition in consultation with the landholder. <p>Operation</p> <p>Erosion and sediment control devices to be maintained at the site of any maintenance works that require soil disturbance and where there is a risk of erosion occurring.</p>

Element	Erosion and Sediment
Monitoring	<ul style="list-style-type: none"> Erosion and sediment control devices to be checked regularly during construction and operation and promptly following heavy rainfall A ROW surveillance program will be established and implemented during operations that will include a check for areas of erosion and sedimentation.
Reporting	<ul style="list-style-type: none"> Site specific erosion and sediment control plans to be developed prior to construction Completed environmental checklists/reports during the construction phase Completed environmental checklists/reports during the operational phase, including a regular ROW surveillance report Routine operational reports on for landholder consultation.
Corrective Action	<p>The constructor or operator (if not GAWB) will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by the constructor or operator and filed by both GAWB and the constructor or operator.</p> <p>Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB.</p>
Timing	Throughout the construction and operational phases of the project.

Table 20.6 Contaminated Land Control Plan

Element	Contaminated Land
Performance Objectives	To minimise the impacts caused from existing contaminated land and prevent land contamination occurring as a result of the project.
Performance Criteria	Contaminated land or sites in the project area are identified and managed or removed prior to construction in those areas No contaminated land is created as a result of the project.
Implementation	<p>Pre-construction</p> <ul style="list-style-type: none"> Prior to construction, preliminary contamination investigations and if necessary detailed site investigations to be undertaken for the sites identified on the EMR that are within the project corridor Consultation to occur with directly affected landowners to identify any known contaminated sites in the ROW If an area within the ROW is suspected of being potentially contaminated, works in that area are not to begin until a site investigation can be completed and the contamination identified and managed. <p>Construction</p> <ul style="list-style-type: none"> Construction personnel to be made aware of the signs of contaminated land: <ul style="list-style-type: none"> Suspected buried waste material Discoloured/odorous soil Evidence of previous cattle or sheep dips Disposal approval is to be obtained from DERM if contaminated material is to be removed from the site In consultation with the property owner and at the discretion of DERM the site will be recorded on the EMR or CLR If an area within the ROW is suspected of being potentially contaminated, works in that area are to cease until a site investigation can be completed and the contamination identified and managed All hazardous materials to be handled and stored in accordance with the Handling and Storage of Dangerous Goods Control Plan (Section 20.3.13) Spills to be managed in accordance with the Handling and Storage of Dangerous Goods Control Plan and a spill kit is to be present in each construction area along the corridor.



Element	Contaminated Land
	<p>Operation</p> <ul style="list-style-type: none"> Any hazardous materials at the WTP or other storage sites to be handled and stored in accordance with the Handling and Storage of Dangerous Goods Control Plan (Section 20.3.13 of this EMP) Spills to be managed in accordance with the Handling and Storage of Dangerous Goods Control Plan and a spill kit is to be present at all pump stations, the water treatment plant and in any maintenance vehicles likely to transport fuels, oils or chemicals Vehicles and equipment used for maintenance are to be properly maintained to avoid leaks and spills.
Monitoring	<ul style="list-style-type: none"> Construction and operations personnel to maintain visual checks for signs of contamination Routine environmental checks will be undertaken to ensure hazardous materials are stored in accordance with the Handling and Storage of Dangerous Goods Control Plan (Section 20.3.13 of this EMP) and that spill kits are readily available and functional A ROW surveillance program will be established and implemented during operations which will include a visual checks for signs of contamination.
Reporting	<ul style="list-style-type: none"> Records of contaminated site locations and remediation to be maintained during construction and operation Records to be maintained of spill incidents and actions taken during construction and operation A regular ROW surveillance report.
Corrective Action	<p>The constructor or operator (if not GAWB) will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by the constructor or operator and filed by both GAWB and the constructor or operator.</p> <p>Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB.</p>
Timing	Throughout the construction and operational phases of the project.

Table 20.7 Acid Sulfate Soils Control Plan

Element	Acid Sulfate Soils (ASS)
Performance Objectives	To minimise the potential for environmental impacts arising from the inappropriate handling or management of ASS To take measures to prevent or minimise the effects of the project on nearby contaminated land and associated groundwater.
Performance Criteria	<ul style="list-style-type: none"> • Management of ASS in accordance with <i>SPP 2/02 Planning and Managing Development Involving Acid Sulfate Soils</i> • No release of acidic waters or leachate from the construction works.
Implementation	<p>Construction</p> <ul style="list-style-type: none"> • An ASS investigation will be undertaken prior to construction in accordance with <i>SPP 2/02 Planning and Managing Development Involving Acid Sulfate Soils</i> • A site-specific ASS management plan will be developed as a result of the ASS investigation • The results of the investigation and the management plan will be sent to DERM prior to finalisation • Construction staff will be made aware of the signs of ASS • Identified areas of ASS will be clearly shown on construction plans • At a minimum, mitigation measures in the ASS management plan will include: <ul style="list-style-type: none"> – As a general precaution, in areas where the base of the trench is below 5 m AHD (including where investigations are not undertaken), measures will be taken to manage the risk of infiltration passing through any disturbed acidic soils into the groundwater – Where ASS investigations have identified the need to lime treat spoil this should be carried out promptly at the designated rate and liming verification sampling and analysis be undertaken to confirm that adequate lime has been used – A designated bunded area will be used for lime treatment – Low levels of actual acidity identified in topsoil materials from some locations require to be neutralised by addition of small quantities of lime, however, lime verification testing may not be necessary. Where lime verification testing is not undertaken treated spoil should be returned to the trench as 'back fill' within 24 hrs of disturbance (and liming) – Surface run-off to be controlled through appropriate site management – The pH of any water pooled onsite (groundwater seepage and after rainfall events), that requires to be discharged off site for any reason, will be monitored and treated with hydrated lime if necessary. Bags of hydrated lime will be kept onsite in a dry state for this purpose, but used sparingly (i.e. add no more than about 50 to 100 g of lime to ponded water and mix well, then carefully monitor the change in pH before adding more if required). <p>Operation</p> <p>During any maintenance works that require excavations below 5 m AHD, mitigation measures will be undertaken in accordance with the ASS management plan.</p>
Monitoring	<ul style="list-style-type: none"> • Routine daily visual observance during construction and operational maintenance for signs of untreated ASS • Environmental site checks during construction and operational maintenance should include: <ul style="list-style-type: none"> – Checking of bunding around ASS treatment areas – pH checking in any retention ponds.
Reporting	<ul style="list-style-type: none"> • Environmental checklists during construction • ASS testing results and treatment measures during construction and, if required, operation.
Corrective Action	<p>The constructor or operator (if not GAWB) will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by the constructor or operator and filed by both GAWB and the constructor or operator.</p> <p>Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB.</p>
Timing	Throughout the construction phase of the project and during any maintenance works that required earthworks in areas below 5 m AHD.

20.3.5 Flora and Fauna

This section relates to Chapter 6, Terrestrial Flora, Chapter 7, Terrestrial Fauna; and Chapter 8, Aquatic Flora and Fauna, of the EIS. Tables 20.8, 20.9, 20.10 and 20.11 of this EMP provide control plans to address the potential impacts from the project that were identified in these chapters, including vegetation clearing, fauna habitat disturbance and weed and pest spread.

The majority of the project area has already been cleared and disturbed, and the project route has been selected to avoid areas of vegetation and important habitat where possible. In addition construction methods (particularly at creek crossings) have been chosen to minimise environmental impacts. However there are areas of vegetation along the pipeline ROW which have some habitat value, including areas of mapped remnant vegetation which is protected under the *Vegetation Management Act 1999*. The focus of the vegetation clearing control plan (Table 20.8) is to minimise vegetation clearing, to conserve remnant vegetation and minimise the loss of individual significant species (Threatened species and possibly old growth trees if encountered).

The project area also includes a number of perennial and ephemeral water bodies and wetlands with varying extents of riparian and in stream vegetation and habitat value that will be crossed during construction.

Preliminary investigations and fieldwork conducted for the EIS were undertaken with strict adherence to a Weed Management Plan including vehicle wash-down procedures. These measures were developed in consultation with landowners and the Local Governments. A number of weeds are known to occur along the corridor that should be given particular attention in the implementation of the Weed Management Plan (Table 20.11):

- Parthenium (*Parthenium hysterophorus*)
- Giant Rats-tail Grass (*Sporobolus spp.*)
- Rubber Vine (*Cryptostegia grandiflorus*)
- Fireweed (*Senecio madagascariensis*)
- Harrisia (*Harrisia spp.*)
- Prickly Pear (*Opuntia spp.*)
- Mother-of-Millions (*Bryophyllum spp.*)
- Lantana (*Lantana camara*)
- Leucaena (*Leucaena leucocephala*).

Table 20.8 Vegetation Clearing Control Plan

Element	Vegetation Clearing
Performance Objectives	<ul style="list-style-type: none"> • To minimise the impact on flora and fauna within the project area • Rehabilitate impacted areas to the state (within post-clearing ecological constraints such as changes to soil characteristics or microclimate) that was present prior to the project taking place
Performance Criteria	<ul style="list-style-type: none"> • Minimal disturbance to flora and fauna within the project area • Work program to be scheduled and managed to avoid damage to flora • All required permits obtained before the removal of any protected species or communities • All permit approval conditions are met during construction and operation • Remediation of disturbed areas to a condition consistent with the surrounding undisturbed environment • No clearing outside of the construction footprint area.

Element	Vegetation Clearing
Implementation	<p>Design</p> <p>Measures that have been undertaken during planning and design to minimise vegetation impacts include route and site selection to avoid vegetated areas, and selection of trenchless creek crossing methods in sensitive areas.</p> <p>Construction</p> <p>The following management strategies will be implemented during construction so that the performance criteria are achieved:</p> <ul style="list-style-type: none"> • The construction induction which all staff will receive will address impacts on flora and fauna within the project area and the management processes that have been implemented to mitigate the impacts • A trained ecologist will conduct a walkover of the ROW to identify areas where negative impacts on flora communities (in general) and Threatened species are possible. This will occur during pre-construction and this information will be documented in the Construction EMP • Vegetation clearing permit/s will be obtained from DERM as required under the <i>Vegetation Management Act 1999</i> • Where site specific mitigation measures have been listed in Table 6.12 and 6.13 (Residual Impact Severity on Vegetation Remnants Along the Corridor - Fitzroy to Bajool and Bajool to Gladstone sections) of the EIS, these will be adhered to and Special Area Plans will be developed and implemented • No vegetation removal shall occur until relevant clearing approvals have been obtained • Clearing boundaries will be clearly delineated to define the extent of authorised clearing, which will not exceed the construction area • Where areas of remnant or other significant vegetation have been avoided due to the modification of the construction methodology, these areas will be highlighted on all drawings and clearly marked in the field to ensure they do not get cleared • At creek crossings where microtunnelling is occurring, the microtunnelling pits will be placed outside of the riparian vegetation zone • The construction contractor's environmental officer will check that the vegetation to be removed does not consist of Threatened species • Where Threatened species are encountered during construction, arrangements will be made for the translocation of the plant(s) where allowed by law • Vegetation clearing and bank/bed disturbance will be reduced by: <ul style="list-style-type: none"> – Undertaking works along existing tracks where available (e.g. Inkerman Creek) – Reducing the corridor width in sensitive areas (e.g. Raglan Creek) – Appropriate management to contain disturbed sediments – Monitoring and controlling the encroachment of weeds in areas where vegetation has been removed – Where environmental conditions exist for replanting to be feasible, replanting vegetation after construction completion is to occur. This will be particularly beneficial to the long-term stability of stream banks. • Specific trees to be protected during construction will be clearly flagged to prevent accidental removal • Features such as fill stockpiles, access tracks and site facilities will be located in areas of existing disturbances where the area is available • Intended vehicle access tracks to construction areas will be identified on plans and delineated in the field prior to the commencement of construction to prevent duplication of tracks and unnecessary damage to vegetation • Construction equipment will stay within the ROW, designated storage areas and within designated access tracks • Cleared vegetation will be stockpiled so as not to impede wildlife, surface drainage and avoid damage to adjacent live vegetation • All mangrove material removed during works (for example from Raglan Creek) will be mulched and reused on site for revegetation purposes or disposed of offsite at an appropriate waste disposal facility • Trees will be lopped within the clearing zone in preference to completely removing them • Minor realignments within the specified ROW will be considered, to reduce impacts • Mature hollow bearing trees are to be retained and protected unless their removal is required to allow works to occur or to allow safe operation of plant and equipment. Where this cannot be achieved, hollow limbs and/or trunks should be left on the ground adjacent to the ROW (or relocated to within areas of remnant vegetation) to provide habitat for ground-dwelling fauna.



Element	Vegetation Clearing
	<ul style="list-style-type: none"> • The Construction EMP is to identify areas where grading is not necessary and vegetation slashing can occur. This is to help preserve the diversity of native plant species (and seed bank) • Cleared or trimmed vegetation shall be stockpiled separately from topsoil • Preference will be given to the respreading the cleared vegetation (however respreading will not occur where the material includes a major component of woody weed infestation) over prescribed burning. Prescribed burning will only be undertaken with fire authority approval. Consultation will occur with relevant landholders prior to burning • Rehabilitation will occur promptly after construction activities are completed • Native vegetation will be mulched and spread with topsoil in revegetation areas (including temporary access tracks that are on longer used) promptly after the completion of construction works. • Soil (including topsoil) and vegetation stripped from the ROW will be stored adjacent to the site where it originated. No soil or vegetation material is to be translocated for storage along the corridor • Where excess spoil is respread over the width of the ROW, the surface profile will be reinstated such that local surface drainage conditions are retained • A reseeded plan based on soil type and existing local ground layer vegetation characteristics (i.e. native or improved pastures) along the alignment will be implemented • Where the option exists, local provenance native plant seed will be used in preference to seed from other parts of Central Queensland for rehabilitation within any areas of remnant or remnant regrowth vegetation that supports a ground cover of native grasses • Native trees and shrubs removed from areas of regional ecosystem will be recorded and replaced in accordance with the requirements of the vegetation clearing permit (for example, recorded using a tally system and then replaced on a one-for-one basis using locally available species appropriate to the regional ecosystem) • When trenching across part of a wetland, topsoil will be stockpiled, and replaced after works to enable ground layer species to re-establish • Wetlands will be restored (within post clearing ecological constraints such as changes to soil characteristics or microclimate), particularly for Site 2 (Table 6.12 of the EIS). <p>Operation</p> <ul style="list-style-type: none"> • Vegetation clearing required during operation will be undertaken in accordance with the above measures applicable to construction where applicable (i.e. minimising area of disturbance, checking for Threatened species, obtaining relevant permits etc.).
Monitoring	<ul style="list-style-type: none"> • Routine daily visual observance by all construction personnel during works for conformance with the measures above • For works during construction or operations, inspections to be undertaken by the construction contractor's environmental officer prior to vegetation clearing to identify protected species and clearing boundaries • Environmental site checks undertaken by the construction contractor's environmental officer during construction should include the following: <ul style="list-style-type: none"> – Identification of non-conformances from the procedures outlined above – Monitoring of disturbed areas and identification of any areas that have been disturbed without approval – Integrity of vegetation clearing boundaries – Monitoring of establishment of vegetation in rehabilitated areas • External environmental audits by GAWB's environmental officer during construction to be carried out every six months or as determined by GAWB • As part of the ROW surveillance program during operations, additional checks of rehabilitation areas will be undertaken for the first two years after construction to check on the status of replanted species and weed status.
Reporting	<ul style="list-style-type: none"> • Environmental checklists during construction • External environmental audit reports during construction • Non-conformance reports during construction and operation • A regular ROW surveillance program report.

Element	Vegetation Clearing
Corrective Action	<p>The constructor or operator (if not GAWB) will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by the constructor or operator and filed by both GAWB and the constructor or operator.</p> <p>Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB.</p>
Timing	Throughout the construction and operation of the project.

Table 20.9 Introduced/Pest Fauna Control Plan

Element	Introduced/Pest Fauna
Performance Objectives	<ul style="list-style-type: none"> To minimise the impact of introduced/pest fauna species (hereafter referred to as pest fauna) To minimise the spread of pest fauna species as a result of the project, in particular the Red Imported Fire Ant (RIFA).
Performance Criteria	Target of no increase in pest fauna as a result of project activities.
Implementation	<p>Construction</p> <p><i>Vertebrate Fauna</i></p> <ul style="list-style-type: none"> The project will not deliberately introduce any invasive species Companion animals are to be banned from all pipeline construction activities Measures to protect rehabilitation efforts will be implemented as required on specialist advice. For example, measures may include design and implementation of an ongoing systematic monitoring program to detect the occurrence of feral animals and/or weeds A program for strict litter control will be implemented throughout the construction site. This will include: site-wide signage; an adequate number of litter bins (which by design exclude birds and vermin); bin clearance on a regular basis; daily maintenance of crib rooms to achieve cleanliness; and educational signage within crib rooms on the linkage between poor waste management practices, increases in pest animal populations, and subsequent impacts to native fauna. <p><i>Invertebrate Fauna</i></p> <p>The extreme southern extent of the project area is included within the area declared as the Yarwun Fire Ant Restricted Area (DPI&F 2007a). Regulations apply to commercial activities which involve moving high risk materials within and out of a fire ant restricted area (e.g. movement of high risk materials must be accompanied by a movement certificate or fire ant declaration form). To comply with these regulations, an Approved Risk Management Plan (ARMP) will be developed in consultation with the Department of Employment, Economic Development & Innovation (DEEDI). The ARMP will include, but not be limited to, the following strategies applying within the restricted area and for the movement of materials out of the area:</p> <ul style="list-style-type: none"> Where necessary a site inspection will be conducted by a DEEDI inspector or approved person prior to moving or disturbing any soil in the restricted area Vehicles, equipment and pipes will be inspected at depots before they are taken into the field to check they are not carrying live ants, and not carrying clods of earth that could conceivably contain ants Construction activities will not move fire ant infested material outside the restricted area without the approval of a DEEDI inspector and only to approved disposal sites within a restricted area. Infested soil may only be moved to a DEEDI approved disposal site All high risk materials (vegetation matter, soil etc) will be treated before being moved out of the restricted area Materials not infested with fire ants may be disposed within the restricted area using approved disposal sites only Where the ARMP is not applicable to sub-contractor activities, a Fire Ant Declaration (FAD) form to move high risk materials will be required All materials moved from within the restricted area will be accompanied by a movement certificate or FAD Form. <p>In addition all construction staff will be trained in the identification and management of fire ants (in consultation with DEEDI) during the induction process.</p> <p>The above measures will also help to prevent spread of other invasive invertebrate species such as the big headed ant (<i>Pheidole megacephala</i>) and black crazy ant (<i>Paratrechina longicornis</i>) known to occur in the region.</p>

Element	Introduced/Pest Fauna
	<p>Operation</p> <ul style="list-style-type: none"> Litter and waste control will be undertaken during the operational phase to prevent increases in pest animal populations as a result of the project Any movement of materials in the Yarwun Restricted Fire Ant area during operation will be undertaken in accordance with the measures outlined above Vehicles, equipment and maintenance materials will be inspected before they are taken into the field to check they are not carrying live ants or clods of earth that could conceivably contain ants.
Monitoring	<ul style="list-style-type: none"> Routine daily visual observance by all construction personnel during construction for conformance with the measures above Environmental site checks undertaken by the construction contractor's environmental officer during construction should include the following: <ul style="list-style-type: none"> Identification of non-conformances from the procedures outlined above Monitoring of pest animal species occurrence in the construction areas Compliance with the ARMP for the Yarwun Fire Ant Restricted Area (during construction activities in this area) Inspections for fire ants and crazy ants as required prior to the disturbance or movement of soil in the restricted area during construction and operation If a suspected Red Imported Fire Ant nest is discovered on site, DEEDI will be contacted immediately During operations, routine daily visual observance by all personnel for conformance with the measures above A ROW surveillance program will include monitoring for introduced pests.
Reporting	<ul style="list-style-type: none"> DEEDI Approved Risk Management Plan FAD forms Environmental checklists during construction External environmental audit reports during construction A regular ROW surveillance program report Non-conformance reports during construction and operation.
Corrective Action	<p>The constructor or operator (if not GAWB) will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by the constructor or operator and filed by both GAWB and the constructor or operator.</p> <p>Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB.</p>
Timing	Throughout the construction phase and as required during operation of the project.

Table 20.10 Fauna Management and Protection Control Plan

Element	Fauna Management and Protection
Performance Objectives	<ul style="list-style-type: none"> To minimise the impact of the project on fauna and habitat To rehabilitate impacted areas (within post-clearing ecological constraints such as changes to soil characteristics or microclimate) to the state that was present prior to the project taking place (although areas directly above the pipeline and other areas in the ROW will need to remain clear of trees to prevent root damage to the pipe and impediments to operational access).
Performance Criteria	<ul style="list-style-type: none"> Minimal fauna fatalities and disturbance to habitat areas Remediation of disturbed areas to a condition consistent with the surrounding environment.

Element	Fauna Management and Protection
Implementation	<p>Design</p> <ul style="list-style-type: none"> • Design measures to reduce the impact to aquatic flora and fauna include the selection of trenchless methods for creek crossings at sensitive sites • Measures that will be implemented to prevent bed scour and reduce the potential for macroinvertebrate and fish entrainment include: <ul style="list-style-type: none"> – Placing the intake at a depth that aims to prevent bed scour – Provision of an adequate distance between the pump and the intake screens to reduce the risk of fauna being impinged on the intake screens (i.e. reduced flow velocity) – Design of the intake will include scour protection by using suitable rock/grout construction.
	<p>Construction</p> <ul style="list-style-type: none"> • Within the SGIC, construction at sensitive sites such as wetlands and areas adjacent to yellow chat breeding areas (this includes Gavial Creek and associated wetlands, Lagoon 2, Inkerman Creek, Twelve Mile Creek and Horrigan Creek, as defined in the supplementary report to the EIS) will be conducted during the dry season (May to September) as per the SGIC State Development Area Development Scheme • Wildlife assessment/rescue services are to be engaged prior to vegetation clearing, to assess appropriate site clearing approaches • An experienced botanist/ecologist is to assist where necessary if any alignment refinements are proposed during final surveying of wetland or riparian crossings or areas of remnant vegetation • To reduce the impacts to vegetation and habitat areas at creek crossings, microtunnelling is to be employed at: <ul style="list-style-type: none"> – Eight Mile/Inkerman Creek – Raglan Creek – Horrigan Creek – Gavial Creek – Bob's Creek • Mature hollow bearing trees are to be retained and protected unless their removal is required to allow works to occur or to allow safe operation of plant and equipment. Where this cannot be achieved, hollow limbs and/or trunks should be left on the ground adjacent to the ROW (or relocated to within areas of remnant vegetation) to provide habitat for ground-dwelling fauna. • Fauna will not be fed and direct contact with fauna will be avoided • Logs and fallen vegetation will be replaced post-construction to provide habitat for native fauna (in agreement with landholders) • Trees adjacent to working areas are to be lopped in preference to complete-to-ground clearing except where this impinges on construction activities • Cleared vegetation will be stockpiled so as not to impede wildlife, surface drainage and avoid damage to adjacent live vegetation • For open trenches: <ul style="list-style-type: none"> – the ends of a trench left open will be ramped to a gentle incline (<50%) so as to allow any fauna to escape; – escape ramps and trench plugs (temporary barriers in the open trench) will be established for every 500 m of open trench; – additional methods may be adopted to create 'ladders' at regular intervals to assist small fauna to exit the trench (e.g. branches, ramped gangplanks, etc.); and/or – sawdust filled hessian bags (shelter sites) will be placed intermediate to the escape ramps • At the start of work hours and on a daily basis, construction personnel will inspect the entire open length of the trench. If required, wildlife handlers (spotter catchers) will be called to site to attend to fauna issues • Monitoring for fauna is to be undertaken throughout the entire length of the trench regardless of fauna habitat status (e.g. designated sensitive habitats or otherwise) • Wildlife handlers will remove wildlife from the trenches, identify, record data and release the captures into nearby vegetated areas. Personnel will be legally permitted, trained in appropriate handling protocols, and will possess the necessary Personal Protection Equipment (PPE) for the handling of animals.



Element	Fauna Management and Protection
	<ul style="list-style-type: none"> • Wildlife handlers must be licensed to euthanize badly injured fauna that are found within the trench. The Australian National Health and Medical Research Council's Australian Code of Practice for the Care and Use of Animals for Scientific Purposes (2004) are to be followed when dealing with injured fauna • A permit to interfere with wildlife from DERM will be required for the wildlife handling activities as will the appropriate Animal Ethics Permit from DEEDI • If the temporary isolation of pools results due to the construction works, and they become susceptible to drying or poor water quality, then any resident aquatic fauna (e.g. native fish) that are trapped will be relocated to areas away from impacts. In-stream works will comply with the requirements of the Waterways Barrier Permit • Any displaced fauna to be relocated to more suitable similar habitat within the surrounding area • Fauna exclusion fences will be established where necessary to prevent relocated fauna inadvertently re-entering construction areas. However, any temporary fencing necessary along the outer ROW boundary to contain construction works should allow passage of fauna from either side of such fencing. For new fencing, the construction should incorporate a 30 cm gap between ground level and the first rail or wire strand. A chain-wire fence should also incorporate a 30 cm gap between the bottom of the chain-wire and ground level and the overall height of a chain-wire fence should be limited to maximum of 1.5 m or less • Habitat enhancements to be placed in retained remnant habitat within or directly adjacent to the ROW (e.g. artificial roost boxes for microbats) • The use of barbed wire will be avoided and used only where essential to exclude stock from adjoining pastoral activities • Special Area Plans will be developed and implemented for Key locations as per Tables 7.11 and 7.12. in chapter 7, Terrestrial Fauna <p>Operation</p> <ul style="list-style-type: none"> • Maintenance works requiring trenching or vegetation clearing will be undertaken in accordance with the mitigation measures outlined above, where applicable • During operation, defined access routes along the pipeline will be used to prevent damage to any adjacent habitat areas.
Monitoring	<ul style="list-style-type: none"> • Routine daily visual observance by all personnel during construction or operational maintenance for conformance with the measures above • Environmental site checks undertaken by the environmental officer during construction should include the following: <ul style="list-style-type: none"> – Identification of non-conformances from the procedures outlined above – Monitoring of fauna presence in the project area (including the intake operation point) and noting of the number of fauna fatalities or required relocations • External environmental audits by GAWB's environmental officer during construction to be carried out every six months or as determined by GAWB.
Reporting	<ul style="list-style-type: none"> • Environmental checklists during construction • Environmental audit reports • Non-conformance reports.
Corrective Action	<p>The constructor or operator (if not GAWB) will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by the constructor or operator and filed by both GAWB and the constructor or operator.</p> <p>Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB.</p>
Timing	Throughout the construction and operation of the project.

Table 20.11 Weed Management Control Plan

Element	Weed Management
Performance Objectives	<ul style="list-style-type: none"> To minimise the impact of weeds in the project area and surrounding lands To minimise the spread of weeds during construction and operation of the project.
Performance Criteria	<ul style="list-style-type: none"> No introduction of new weed species to the area No major infestations as a result of the project Development of a weed management plan.
Implementation	<p>Construction</p> <ul style="list-style-type: none"> Prior to construction, weed specific surveys will be completed by the construction contractor's environmental officer in areas before construction teams enter and a detailed weed management plan developed that will address the following: <ul style="list-style-type: none"> Consultation with environmental officers from Gladstone and Rockhampton Regional Council areas Mapping of existing weed infestations Management prioritisation of weed species Landowner requirements for specific properties Strategies for preventing weed spread Weed removal strategies Weed monitoring protocols Follow-up weed management methods and protocols Education of staff with respect to weeds (e.g. colour photos, precautions, procedures, fact sheets) will be included as part of the environmental induction to be completed by all staff prior to commencement of work on the site Equipment and material introduced to the region, especially those from interstate, will be screened for weed species or items likely to contain weed seeds such as soil Access roads will be identified and adhered to during construction to prevent transport of weeds from or to other areas Infested areas not essential for access will be avoided. If infested areas need to be cleared, then appropriate weed management or containment measures will be implemented by the environmental officer in accordance with the weed management plan Vehicles and machinery will be subject to wash-down in accordance with the requirements of the Weed Management Plan, which may have requirements including wash-down off-site when departing from areas known to be infested with weed species. In such cases, wash-down facilities should be situated so as not to allow mud to adhere to vehicles and machinery on exit from key weed-affected sites All vehicles and machinery that have come from weed infested areas that require access to a construction site will be visually checked for soil/organic matter prior arrival on site Vehicles and machinery will be subject to wash-down before entering sites where a request for wash-down by the landholder is identified in the Weed Management Plan and associated documentation. Proof of washdown (e.g. washdown certificates) will kept in the vehicle once it has been washed down To the extent necessary to prevent the spread of weeds, clothing and footwear are to be free of mud and seeds before stepping in vehicles Chemical control of weeds will only be done by trained and/or qualified operators, approved by the construction contractor's environmental officer Only chemicals registered with the Australian Pesticides and Veterinary Medicines Authority for the target weed will be used, appropriate PPE will be used and Material Safety Data Sheets will be available from the operator Weed eradication programs will be implemented if required, to mitigate project impacts in consultation with landowners taking into account site-specific requirements such as organic farming practices and withholding periods Entry and exit points to construction areas at which weed hygiene protocols become effective will be identified and brought to the attention of relevant personnel Temporary weed wash-down bays will be established and maintained to reduce weed spread, in accordance with the Weed Management Plan.



Element	Weed Management
	<p>Operation</p> <ul style="list-style-type: none"> • A weed management plan will be developed for the operational phase (including maintenance) to detail the protocols for weed management. This will include (but not be limited to): <ul style="list-style-type: none"> – the status of weeds – consultation protocols with landholders – current landholder management of weeds – processes that can lead to weed spread – weed management strategies and – monitoring and reporting programs • GAWB staff and contractors will be informed of weed management protocols during induction • Access to the project area will only be undertaken by designated access tracks to prevent spread of weeds • Where access is required outside of access tracks, wash-down procedures will be undertaken where required by the weed management plan • Vehicles will be checked for weed seeds or plant material • Vehicles/machinery used during maintenance works will adhere to the weed management plan.
Monitoring	<ul style="list-style-type: none"> • A weed survey of the construction area prior to construction commencement • Routine daily visual observance by all construction personnel during construction to identify weed infestations • Environmental site checks undertaken by the environmental officer should include the following: <ul style="list-style-type: none"> – Identification of non-conformances from the procedures outlined above – Monitoring of weeds present in the project area and any instances of new infestations – Mapping (i.e. GIS locations) of weed infestation – A photographic record of weeds and weed management – Inspections of wash-down areas and procedures • External environmental audits by GAWB's environmental officer during construction to be carried out every six months or as determined by GAWB • Environmental checks undertaken during operation will include weed monitoring and control as required • Weed inspections of the entire project route will be undertaken by a suitably qualified person as required during operation to monitor the effectiveness of the weed management plan and to maintain a record of weed status in the project area • Weed monitoring will be undertaken as part of the regular ROW surveillance program.
Reporting	<ul style="list-style-type: none"> • Weed maintenance schedule and vehicle/machinery wash-down records during construction • Environmental checklists during construction • External environmental audit reports • Non-conformance reports • Records of weed management and weed status during operation • Regular ROW surveillance program reports.
Corrective Action	<p>The constructor or operator (if not GAWB) will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by the constructor or operator and filed by both GAWB and the constructor or operator.</p> <p>Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB.</p>
Timing	<p>Prior to and during construction and operation.</p>

20.3.6 Water Resources and Water Quality

This section of the Planning EMP relates to Chapter 9 of the EIS, Water Resources and Water Quality. The chapter describes the potential impacts that may occur from the project during construction and operation. The water bodies in the project area include the Fitzroy River and many waterways that will be crossed during pipeline construction, and are either ephemeral, tidal or perennial. Water quality data for these waterways indicates that several of the waterways are highly turbid with low dissolved oxygen and as such are less sensitive to potential water quality changes.

Chapter 9 of the EIS, Water Resources and Water Quality also describes the groundwater environment in the project area and possible impacts to this resource. It is noted in the chapter that the groundwater level in the project area is generally greater than 5 m below the surface, with pipeline depth to extend to 3 m.

Table 20.12 provides management measures to prevent or minimise the impacts to surface and groundwater that may arise as a result of the project.

Measures to control sediment transport during the project are also relevant to water resources. These measures are included the erosion and sediment control plan (Table 20.5).

Table 20.12 Water Resources and Water Quality Control Plan

Element	Water Resources and Water Quality
Performance Objectives	<ul style="list-style-type: none"> To minimise and manage adverse impacts to surface and groundwater during construction and operation of the project.
Performance Criteria	<ul style="list-style-type: none"> No long-term impacts to surface or groundwater quality as a result of the project The absence of visible signs of water quality deterioration as a result of the project Erosion and sediment control measures are implemented particularly at creek crossings Oils, fuels and other chemicals are stored and handled to prevent spillage Waterway beds and banks are rehabilitated promptly after construction ASS are managed to prevent acidification of waterways.
Implementation	<p>Design</p> <ul style="list-style-type: none"> As identified in Chapter 2 of the EIS, Project Description, creek crossing methods have been selected to minimise environmental impacts, with trenchless methods the chosen method for the following creeks: <ul style="list-style-type: none"> Eight Mile/Inkerman Creek Raglan Creek Horrigan Creek Detailed crossing plans will be developed for crossings prior to construction with significant environmental features identified Design and installation of protection structures will minimise bed and bank disturbance at the intake location Siting of infrastructure that is prone to damage from inundation is located outside of flood risk areas Use of water sensitive urban design principles at infrastructure sites.



Element	Water Resources and Water Quality
	<p>Construction</p> <ul style="list-style-type: none"> • Approvals and permits will be obtained prior to construction at creek crossings. This may include: <ul style="list-style-type: none"> – A marine plant permit for creeks where marine plants will be disturbed – A riverine protection permit for works requiring the destruction of vegetation, excavation or the placing of fill in a watercourse • Permits for water extraction from streams to be obtained from DERM where required • Trenched creek and wetland crossings will be undertaken during low or no flow periods • Trenched creek crossings will be planned so that vegetation clearing is limited to that required for construction • Special Area Plans will be developed and implemented for all waterway crossings • Location of trench entry/exit point away from sensitive locations with the cessation of drill operations, upon detection of any lubricant release. • When trenching through clay at creek crossings: <ul style="list-style-type: none"> – Cut-off walls along the pipeline alignment may be required to stop alluvium water seeping into the trench during construction – To maintain flow downstream, the extracted water may be pumped/conveyed downstream – At creek crossings, if trenching below the bottom of the clay layer occurs, proper backfilling will return the soil layers to the initial conditions by using the original material compacted to the initial density • During microtunnelling, if the reception pits are within alluvium, there is a potential for base-flow and surface water seepage into those pits during the construction phase. For this reason, installation of cut-off walls isolating alluvial (potentially higher permeability) deposits from being drained during construction, and careful backfilling of the pits upon completion may be required • At creek crossings, if microtunnelling below the clay layer occurs, proper grouting along the pipes and backfilling of the inception pits will occur following completion of the microtunnelling process • Rehabilitation of creeks will occur promptly after completion of the crossing • Erosion and sediment control measures will be implemented at creek crossings in accordance with Table 20.5 • No stockpiles will be kept within 3 m of watercourses and will be protected from overland flow • Earthworks in or near a waterway corridor will require additional water quality protection measures as well as water quality monitoring. These additional measures will be outlined in the Construction EMP and the Erosion and Sedimentation Control Plan • Where necessary, silt fences will be installed between stockpiles and waterways • In-stream works will comply with the requirements of the Waterways Barrier Permit • Following completion of construction, all imported fill from the earth bund coffer dam will be removed from the creek and the creek profile returned to pre-works conditions • Stream bed material will be replaced over the pipe trench following trenching and additional scour protection provided where necessary • Pre and post works surveys of the creek and vertical soil profiles will be undertaken to ensure the creek profile is restored • Backfilling of the trench will occur promptly following pipelaying • Water removed from the trench will be discharged along natural drainage paths to restore surface runoff flow • Where the ROW exists on sloped land, “gutters” will direct runoff from the ROW, preventing excessive erosion • Construction EMP to include measures for managing fuel and chemical handling, storage, distribution and spill response during construction • Natural Drainage patterns will be restored following construction • Where avoiding disturbance of ASS is not practicable, soils will be treated appropriately and the generation of acid run-off will be controlled as per the ASS Management Plan • Poned water at the construction sites will be disposed of appropriately • Onsite containment and treatment of water if required prior to release to avoid environmental harm • Construction site housekeeping will be adequate to prevent litter entering waterways, including the provision of waste bins, regular site inspections and staff training in waste disposal procedures • Storage of hazardous substances in banded areas of stormwater discharge from the WTP • Measures for the disposal of hydrotest water will be followed as outlined in Table 20.15 • Any water bodies or bores used for extraction of construction water will be monitored for water levels and water quality extraction will cease if unacceptable impacts are identified. • Off-site disposal of compound wastewater • A Groundwater Management Plan will be prepared. In addition to how groundwater will be managed under normal conditions, this Plan will identify how the construction method will change during periods where ground water levels may be higher than usual (e.g. after long and heavy rain events)

Element	Water Resources and Water Quality
	<p>Operation</p> <ul style="list-style-type: none"> • Maintenance works requiring earthworks or works at waterway crossings will be undertaken in accordance with the measures above • Operational access to the pipeline will be by defined routes to limit the impact on creeks beds and banks • Waterway crossings will be regularly checked for evidence of scouring over the pipe and any hydraulic obstruction • Stormwater and drainage design at the WTP site will include water sensitive urban design measures to prevent erosion or a reduction in water quality downstream of the site • Controls and procedures will be implemented to shut down the pipeline in the event of a rupture • The quantity of water discharged during the unlikely event of a pipe rupture will be reduced through the operation of isolation valves along the pipeline • Limitation of herbicide use near waterways • Implementation of a Weed Management Plan • In regards to the release of treated wastewater from WTP: <ul style="list-style-type: none"> – Water will be discharged at a rate that will avoid erosion or excessive turbidity – Erosion and sediment control measures will be implemented at the discharge point • When relevant, develop a decommissioning and rehabilitation plan in accordance with statutory requirements • A Groundwater Management Plan will be prepared.
Monitoring	<ul style="list-style-type: none"> • Routine daily visual observance by all personnel during construction and operations for conformance with the measures above • Regular ROW surveillance program will include a check for scouring or hydraulic obstruction as per above • External environmental audits by GAWB's environmental officer during construction to be carried out every six months or as determined by GAWB • Treated waste water during operations will be monitored to ensure conformance to the management methods above • The Weed Management Plan will be reviewed on a regular basis to provide management in line with the extent of the weed • Environmental site checks undertaken by the environmental officer during construction and operations should include identification of non-conformances from the procedures outlined above.
Reporting	<ul style="list-style-type: none"> • Environmental checklists during construction • External audit reports • ROW surveillance program reports.
Corrective Action	<p>The constructor or operator (if not GAWB) will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by the constructor or operator and filed by both GAWB and the constructor or operator.</p> <p>Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB.</p>
Timing	Throughout the construction phase and as required during operations.

20.3.7 Air Environment

This section of the Planning EMP relates to Chapter 10 of the EIS, Air Environment. There is the potential for dust generation during the construction of the project and there are residential receptors adjacent to the project area. As such air quality control measures will need to be implemented throughout the construction phase and at certain times during operation and maintenance.

The chapter also provides an assessment of the greenhouse gases likely to be produced during the construction and operation of the project. These emissions were assessed as negligible and as such no mitigation measures are proposed, however GAWB is investigating carbon offsets for its operations and it is likely that the emissions identified from this project would be included in GAWB's future offset plans.

The necessary environmental management measures relevant to the air environment are described in Table 20.13.

Table 20.13 Air Environment Control Plan

Element	Air Environment
Performance Objectives	To minimise the air quality impacts arising from the project during construction and operation.
Performance Criteria	<ul style="list-style-type: none"> • Dust generation during construction is reduced to a minimum • All complaints are responded to in a timely manner and in accordance with GAWB policy. See section 20.3.12.
Implementation	<p>Construction</p> <ul style="list-style-type: none"> • Directly affected landowners will be informed of potential temporary dust generation prior to the commencement of activities likely to generate dust • Vehicle and equipment maintenance will be undertaken regularly to reduce exhaust air emissions • Construction vehicles will be confined to designated access tracks in the project area • Access tracks will be dampened where necessary and particularly in windy conditions to reduce the generation of dust from construction traffic • Water sourced for dampening of roads will not be unduly saline, acidic or otherwise contaminated • Construction vehicles will be expected to travel at safe speeds suitable to the conditions with due care and attention, particularly on unsealed access tracks • Dusty materials will be stored, handled and transported appropriately • Where wind speeds are considered excessive (approximately 10 m/s) and work is undertaken within 100 m of sensitive receptors, dust mitigation measures will be put in place to reduce dust nuisance • To prevent mud and soil being transported onto hard-surfaced roads, rumble strips or similar method will be used at the entrance/exit of construction areas. Residual dust and mud on roads providing access to site compounds and work areas will be swept off on a daily basis • Hoarding and gates may be used to prevent dust breakout where appropriate • Hard-surfaced roads used for access to construction sites will be cleaned to remove dust, mud or other debris that could generate a dust nuisance • Trench spoil and top soil will not be stockpiled to heights greater than 3 m and long term stockpiles will be dampened or vegetated to reduce dust generation • Exposed ground surfaces will be revegetated promptly following construction activity • If dust suppression methods fail to adequately prevent or suppress nuisance dust resulting in unacceptable impacts, construction activities will be suspended until conditions generating dust have subsided. <p>Operation</p> <ul style="list-style-type: none"> • Operation or maintenance vehicles will be expected to travel at safe speeds suitable to the conditions with due care and attention, particularly on unsealed access tracks • Any maintenance works involving earthworks or other dust generating activities will be undertaken in accordance with the dust mitigation measures outlined above • Operation and maintenance vehicles will be maintained appropriately to prevent excessive air emissions • Residue from the treatment plant will be processed and transported in such a way as to prevent odour emissions. Where potential odour sources are identified in the detailed design for the construction phase, a treatment strategy will be developed.
Monitoring	<ul style="list-style-type: none"> • Routine daily visual observance by all construction and operations personnel to monitor dust generation and implement additional controls as required • Environmental site checks undertaken by the construction contractor's environmental officer during construction will include the following: <ul style="list-style-type: none"> – Identification of non-conformances from the implementation procedures outlined above – Monitoring of dust control measures implementation and effectiveness • External environmental audits by GAWB's environmental officer during construction to be carried out every six months or as determined by GAWB.

Element	Air Environment
Reporting	<ul style="list-style-type: none"> Any complaints relating to air quality impacts will be recorded and addressed in accordance with the complaints procedure (Section 20.3.12) Environmental checklists during construction Environmental audit reports Non-conformance reports.
Corrective action	<p>The constructor or operator (if not GAWB) will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by the constructor or operator and filed by both GAWB and the constructor or operator.</p> <p>Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB.</p>
Timing	Throughout the construction phase, and as required during operations.

20.3.8 Waste Management

This section relates to Chapter 11, Waste. During construction of the project there are likely to be a range of construction wastes generated. During operation, residue from the water treatment plant is likely to be the main waste generated.

Waste management relates to the minimisation of waste generated, the utilisation of recycled materials, the recycling of waste materials and the appropriate disposal of waste. Consideration of these issues as a hierarchy helps to minimise waste generation and the associated impacts of disposal.

Table 20.14 outlines measures to manage waste during construction and operation of the project.

Waste water will be generated during the hydrotesting of the pipeline prior to wet commissioning. Measures are provided in Table 20.15 to manage the potential impacts arising from the disposal of this test water.

Table 20.14 Waste Management Control Plan

Element	Waste Management
Performance Objectives	<ul style="list-style-type: none"> To reduce the amount of waste produced during the project and to maximise recycling and reuse To manage waste generated during construction and operation of the pipeline in a manner that minimises the risk of it negatively impacting on the surrounding environment.
Performance Criteria	<ul style="list-style-type: none"> Target of no adverse impacts on the surrounding environment or human health from the management of waste during the construction and operational phases Development and implementation of a waste management plan for the construction and operational phases of the project Utilisation of the waste management hierarchy as a guideline to managing waste through avoiding the generation of waste; maximising re-use and recycling of all materials, and treating and disposing all those materials that are unable to be re-used or recycled in accordance with relevant legislation and guidelines.
Implementation	<p>The following management strategies will be implemented to achieve the performance criteria:</p> <p>Design</p> <ul style="list-style-type: none"> The detailed design for construction will endeavour to find balance between cut and fill to prevent the need to stockpile excess soil, remove excess soil from the site or import fill material.
	<p>Construction</p> <ul style="list-style-type: none"> A waste management plan will be developed and implemented. The plan will outline activities to be undertaken to incorporate the waste management hierarchy, waste management procedures, training of relevant personnel and monitoring and reporting requirements All project staff will be made aware of the requirements of the waste management plan as part of their inductions, prior to commencing work A program for strict litter control will be implemented throughout the construction site. This will include: site-wide signage; an adequate number of litter bins (which by design exclude birds and vermin); bin clearance on a regular basis; daily maintenance of crib rooms to achieve cleanliness; and educational signage within crib rooms on the linkage between poor waste management practices, increases in pest animal populations, and subsequent impacts to native fauna Cleared vegetation will be stockpiled so as not to impede wildlife, surface drainage and avoid damage to adjacent live vegetation. It will then be mulched and respread on the ROW or disposed of offsite at an approved location in line with The Australian Pipeline Industry Association Code of Environmental Practice for Onshore Pipelines Suppliers will be encouraged to reduce and/or collect packaging Sorting, temporary stockpiling and containing recyclable wastes (such as oils, steel and plastic) will occur; and arrangement for the transfer of the wastes to the appropriate facility Any temporary waste storage areas will not be located within 50 m of a waterway and will be appropriately contained to prevent litter, soil contamination or attraction of vermin To avoid impacts arising from the release of wash-down waste water, equipment will be washed down in a suitable wash-down facility that is bunded and filtered, and at least 50 m from any waterways Sewage disposal will be managed through the use of mobile chemical treatment systems, approved septic systems or via connection with the municipal waste sewage infrastructure, depending on location of the site Water within the trenches is expected to be relatively benign and therefore disposed of onto the land with the use of pumps or allowed to evaporate. Measures will be taken to prevent erosion from this activity or to appropriately treat any water that does not conform to regulatory requirements All 'trackable wastes' under the <i>Environmental Protection (Waste Management) Regulation 2000 (Qld)</i> leaving the site will be traced Hazardous and regulated wastes will be controlled as per any local government or legislative requirements, stored in bunded containers and transported and disposed of by an appropriately licensed contractor Material Safety Data Sheets will be kept on site during construction Hydrocarbon wastes will be controlled as per any local government or legislative requirements, managed through the use of a spill kit, contained to avoid release and transported and disposed of by an appropriately licensed contractor Depending on the quality of the material excavated, it may be practical to utilise excess material from some work sites as fill for other work sites. Excess spoil will be disposed of at the nearest approved locations along the right-of-way (ROW), generally by agreement with landowners or local council.

Element	Waste Management
	<ul style="list-style-type: none"> • Excess spoil that cannot be disposed of in the vicinity it was created in will be hauled to approved disposal sites (including relevant landholders who may wish to use the excess spoil) and nominally disused borrow pits. Spoil disposal sites shall be located and managed according to the Construction EMP to reduce erosion, runoff into local waterways and to prevent the distribution of weeds • Upon completion of construction in each area along the corridor, all wastes will be removed • A spill kit will be kept at each construction area along the corridor. <p>Operation</p> <ul style="list-style-type: none"> • Development and implementation of a waste management plan • Development and implementation of a weed management plan. The induction, which all staff will receive, will include reference to the staff requirements within these management plans • General waste from operations personnel will be managed through appropriately placed litter bins and the sorting of waste, recycling and composting • Litter and waste control will be undertaken during the operational phase to prevent increases in pest animal populations as a result of the project • Regular monitoring of the storage areas and emergency stockpile areas will occur during and after heavy rainfall events to ensure that the residue does not enter the environment • The entire residue handling area, including the emergency residue stockpile area, will be bunded and run-off directed to a sediment basin to prevent the residue produced from entering the surrounding environment. • Residue from the water treatment plant will be disposed of at an approved location in accordance with local government and DERM requirements • Water from the testing and commissioning of the WTP that is not suitable to be passed through the pipe, will be returned to the front of the plant and re-treated • Any discharges of water through overflow pipes will be in line with regulatory requirements and measures will be incorporated in detailed design for construction that will control erosion.
Monitoring	<ul style="list-style-type: none"> • Routine daily visual observance by all personnel during construction and operations to monitor the site for litter or other waste issues • Environmental site checks undertaken by the construction contractor's environmental officer during construction will include the following: <ul style="list-style-type: none"> – Monitoring of waste management practices to identify non-conformances from the implementation procedures outlined above and possible improvements in waste management practices – Recording the amount of waste being re-used, recycled and disposed – Checking of waste storage areas • External environmental audits by GAWB's environmental officer during construction to be carried out every six months or as determined by GAWB • During operation, the WTP site will be inspected regularly by GAWB to ensure waste residue is being handled and disposed of appropriately.
Reporting	<ul style="list-style-type: none"> • Environmental checklists during construction – including quantities of wastes generated • External environmental audit reports to review waste management practices • Non-conformance reports.
Corrective Action	<p>The constructor or operator (if not GAWB) will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by the constructor or operator and filed by both GAWB and the constructor or operator.</p> <p>Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB.</p>
Timing	Throughout the construction and operational phases of the project.

Table 20.15 Hydrotesting and Commissioning Control Plan

Element	Hydrotesting and Commissioning
Performance Objectives	<ul style="list-style-type: none"> To minimise the potential impacts from hydrotesting and commissioning of the pipeline and WTP on the local environment, particularly waterways.
Performance Criteria	<ul style="list-style-type: none"> Relevant permits obtained prior to obtaining water from the Fitzroy River for construction or commissioning Water provided for hydrotesting or commissioning does not result in material depletion or degradation of any water resource Discharge of water used does not adversely impact the local environment.
Implementation	<p>Construction/commissioning</p> <p>The following management strategies will be implemented to achieve the performance criteria:</p> <ul style="list-style-type: none"> In preference to disposal, water used during testing and commissioning of the pipeline and reservoirs will be reused within the system or passed down the pipe (if of sufficient quality). Where this cannot be achieved, water will be disposed of onto land and into waterways and erosion control measures will be put in place to prevent erosion Water disposed during commissioning and disposed of to land or waterways will be in compliance with regulatory requirements Disposal of test water will not occur on areas of exposed soil in dry ephemeral creeks without appropriate erosion prevention measures such as a rock lined channel or into a grassed area The weed management plan will consider requirements for Hydrotesting and Commissioning Where water has been in the pipe for long periods (e.g. six months) and must be discharged from the pipeline, an assessment will be made of the need for aeration prior to discharge Chlorinated water will be tested and treated (if necessary) prior to disposal to ensure it is in line with regulatory requirements.
Monitoring	<ul style="list-style-type: none"> Inspection of the waterway where the test water is discharged to identify appropriate disposal site Monitoring of water quality and if necessary treatment prior to discharge of water.
Reporting	<ul style="list-style-type: none"> Records will be maintained of the water quality of test water prior to discharge and of the locations and quantities of discharge Non-conformance reporting will be undertaken if required.
Corrective Action	<p>The constructor or operator (if not GAWB) will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by the constructor or operator and filed by both GAWB and the constructor or operator.</p> <p>Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB.</p>
Timing	During hydrotesting and commissioning at the end of the construction phase.

20.3.9 Noise and Vibration

This section relates to Chapter 12 of the EIS, Noise and Vibration. The project area is largely rural in nature with the main existing noise sources including road and rail traffic on major as well as local transport routes. There is also some noise generated from air traffic near the Rockhampton Airport.

There is expected to be generation of noise during the construction phase of the project as a result of the use of construction machinery and equipment, and during blasting if this is required. During operation, some noise will be generated from

the Fitzroy River intake pump station, Alton Downs WTP and Pump Station. The noise impacts arising from these aspects of the project to nearby sensitive receptors (residential properties) have been assessed as within noise standards if appropriate mitigation measures are implemented.

Table 20.16 outlines procedures for management of noise generation that may arise during construction and operation of the project.

Table 20.16 Noise and Vibration Control Plan

Element	Noise and Vibration Management
Performance Objectives	<ul style="list-style-type: none"> To manage the construction and operation of the pipeline in a way that minimises the impact of noise on the local community To control noise generation from the project to within the relevant noise standards.
Performance Criteria	<ul style="list-style-type: none"> Noise generated from the project is maintained within relevant standards All complaints are responded to in a timely manner and in accordance with GAWB policy. See Section 20.3.12 of this EMP.
Implementation	<p>Design</p> <ul style="list-style-type: none"> Implementation of measures to reduce noise will be incorporated at the detailed design for construction phase of the project including housing the pump and equipment in a building that includes specific noise mitigation measures. Acoustic advice will be sought to check that the structure is providing the appropriate noise attenuation to the outside environment so that noise levels at the nearest sensitive receptors are within noise standards. <p>Construction</p> <p>Although there are no construction noise limits during the daytime periods, noise mitigation strategies should be implemented to reduce the chance of noise impacts and complaints.</p> <p><i>Examples of possible Source Noise Controls:</i></p> <ul style="list-style-type: none"> Selection of the quietest plant and equipment Keeping all equipment and plant regularly maintained Timing of equipment use to meet regulation requirements (i.e. construction activities managed to avoid audible noise to the nearest noise sensitive receiver) Placing heavy materials into dump trucks (i.e. not dropping) Restricted usage of horns and reversing alarms without compromising safety requirements Using non-tonal / broadband type reversing alarms Using stockpiled materials as “noise barriers” to shield sensitive receivers. <p><i>Work Practice Noise Control</i></p> <ul style="list-style-type: none"> The environmental induction for all personnel will include education on noise reduction measures through work practices Fitting diesel powered equipment (including, but not limited to excavators, front end loaders, dump trucks) with appropriate mufflers Restricted usage of exhaust brakes on site Set and regularly check target noise levels for equipment Loading/unloading will be performed with consideration to any nearby sensitive receptors such as residential properties Construction activities must be managed to prevent audible noise at the nearest noise sensitive receiver (i.e. residence): <ul style="list-style-type: none"> on a business day or Saturday before 6.30 a.m. or after 6.30 p.m.; or on any other day, at any time Monitoring of noise will be undertaken during construction activities that are expected to generate significant noise and/or vibration (e.g. blasting and work outside regulated work hours). <p><i>Community Liaison</i></p> <ul style="list-style-type: none"> Keeping residents informed about when they may be affected by works, and the duration of the works The 1800 number for the project will remain active throughout the construction phase so that residents always have an immediate point of contact when they have questions or concerns All complaints received will be handled in accordance with the complaints/incidents procedure (Section 20.3.12 of this Planning EMP) Where blasting is required (for example at Aldoga) a Blasting Operations Plan will be prepared and implemented to detail safety measures and other management measures Blasting program design shall comply with the <i>Environment Protection (Noise) Policy 2008</i> (Qld).



Element	Noise and Vibration Management
	<p>Operation</p> <p><i>Examples of possible Source Noise Controls:</i></p> <ul style="list-style-type: none"> • On-site work practices during maintenance works will manage occupational noise levels through the measures outlined above • The WTP will be designed appropriately to manage operational noise levels to within noise standards • Once the WTP is operational monitoring of noise levels will be undertaken to assist in reviewing the noise control measures that have been implemented.
Monitoring	<ul style="list-style-type: none"> • Routine daily visual observance by all construction personnel during construction to monitor construction noise levels and prevent excessive noise • Environmental site checks undertaken by the construction contractor's environmental officer will include the following: <ul style="list-style-type: none"> – Inspections of equipment maintenance records – Monitoring construction activities for non-conformances with the above procedures – Review of incidents/complaints register for noise related incidents • External environmental audits by GAWB's environmental officer during construction to be carried out every six months or as determined by GAWB • Monitoring of WTP noise levels and noise generated from on-site work practices during operation.
Reporting	<ul style="list-style-type: none"> • Environmental checklists during construction – including records of noise incidents and how they were addressed • External environmental audit reports to review noise practices and generation • Non-conformance reports.
Corrective Action	<p>The constructor or operator (if not GAWB) will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by the constructor or operator and filed by both GAWB and the constructor or operator.</p> <p>Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB.</p>
Timing	Throughout the construction and operational phases of the project.

20.3.10 Transport and Access Arrangements

This section of the Planning EMP relates to Chapter 13 of the EIS, Transport and Access Arrangements. The project area includes several nationally and regionally significant transport routes including the Bruce Highway, Capricorn Highway and North Coast Railway. These and many local roads will be crossed during pipeline construction and will be used as required for transport of personnel and materials during both construction and operation.

Table 20.17 describes the measures which are assessed as appropriate based on current planning, to be implemented to minimise the impacts to transport and access in the project area that may arise during construction and operation of the project. These measures will be further developed in site-specific traffic management plans to be completed prior to construction for each element of the project.

Table 20.17 Transport and Access Control Plan

Element	Transport and Access
Performance Objectives	To minimise the impacts on transport and access arising from the project.
Performance Criteria	<ul style="list-style-type: none"> Minimal transport or access related incidents arising as a result of the project All complaints are responded to in a timely manner and in accordance with GAWB policy. See section 20.3.12.
Implementation	<p>Construction</p> <ul style="list-style-type: none"> Traffic management plans will be developed prior to construction to address site specific details for each element of the project. The traffic management plans will be developed in negotiation with Rockhampton Regional Council and Gladstone Regional Council and the Department of Transport & Main Roads (DTMR) before the commencement of construction and will detail: <ul style="list-style-type: none"> The design of site accesses, including the provision of signage and traffic control during construction at site accesses and pipeline crossings Temporary speed reductions as required at site accesses or on unsealed roads in the vicinity of sensitive receptors Temporary traffic control measures Options for carpooling or use of buses by construction personnel to reduce traffic generation resulting from the project All permits and approvals required under the <i>Transport Infrastructure Act 1994</i> will be obtained including: <ul style="list-style-type: none"> Approval for works within a state controlled road corridor Approval for works within a railway corridor Access to and from construction areas will be via designated routes Road/intersection improvements will be undertaken at: Laurel Banks Road, Laurel Banks Road/Rockhampton Ridgeland Road intersection, and Rockhampton Ridgeland Road The crossing of major roads (Ridgeland, Capricorn, Mt Larcom, Mt Larcom Gladstone Roads and the Mt Larcom Gladstone Road and Calliope River Targinie Road intersection) and rail will be undertaken by trenchless methods to reduce traffic-related impacts Roads, particularly unsealed roads used during construction will be maintained by the contractor during construction: <ul style="list-style-type: none"> Possible road/intersection improvements required to enable safe access during construction of the project will be discussed with DTMR and undertaken where required Gravel hardstand areas and roadways will be laid within the stockpile sites to allow the movement of heavy equipment and to allow loading of trucks and trailers Adherence to the Australian Pipeline Industry Association Vehicle Safety Guidelines. <p>Operation</p> <ul style="list-style-type: none"> Transport during operation of the project will be by designated access routes. This includes: personnel vehicles; transportation of materials to the WTP, the Raglan Pump Station and Reservoir, and the Aldoga Reservoir; maintenance vehicles for these sites; and the transport of residue from the WTP Traffic management measures will be put in place for the transport of residue from the WTP Approval under the <i>Transport Infrastructure Act 1994</i> will be obtained for any maintenance works within state controlled road corridors or rail corridors.
Monitoring	<ul style="list-style-type: none"> Routine daily visual observance by all construction personnel during construction to monitor transport and access issues and identify non-conformances Environmental site checks undertaken by the construction contractor's environmental officer during construction will include the identification of non-conformances from the implementation procedures outlined above or from the relevant traffic management plan External environmental audits by GAWB's environmental officer during construction to review the construction contractor's compliance with traffic management plans Review of traffic management measures regularly during operation.
Reporting	<ul style="list-style-type: none"> Transport or access related incidents/complaints will be recorded in the incidents/complaints register (See Section 20.3.12 of this Planning EMP) Environmental checklists during construction Environmental audit reports Non-conformance reports.



Element	Transport and Access
Corrective Action	<p>The constructor or operator (if not GAWB) will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by the constructor or operator and filed by both GAWB and the constructor or operator.</p> <p>Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB.</p>
Timing	<ul style="list-style-type: none"> • Development of the traffic management plans must occur prior to the commencement of construction at each particular site • Other transport and access measures will be implemented throughout construction and as required during operation.

20.3.11 Cultural Heritage

This section relates to Chapter 14 of the EIS, Cultural Heritage, which describes the Indigenous and historic cultural heritage aspects of the project area and the possible impacts of the project on these aspects.

Almost the entire project corridor is within the external boundaries of two registered native title claims, namely the Darumbal People and the Port Curtis Coral Coast (PCCC) applications. As the project requires an EIS, section 87 of the *Aboriginal Cultural Heritage Act 2003* (hereafter the Act) states that the development of a Cultural Heritage Management Plan (CHMP) is the process required through which management of Aboriginal cultural heritage will occur. Consultation with the

two aboriginal groups in relation to the CHMP began during the planning phase for the project and is ongoing. The CHMP will be in place during pre-construction and construction activities. Some general measures to mitigate the impact of the project to items of Aboriginal cultural heritage have been included in Table 20.18 however the full suite of mitigation measures will be developed in the CHMP in consultation with the Traditional Owners (and may or may not include the measures below).

With regard to historic cultural heritage, a number of sites of historic cultural heritage were found to occur within the vicinity of the project area, however only two of these sites are expected to be impacted as a result of the project. These sites are the Woolwash-Frogmore Pipeline and Twelve Mile Road. Measures to reduce the impact to these sites are included in Table 20.18.

Table 20.18 Cultural Heritage Control Plan

Element	Cultural Heritage
Performance Objectives	To minimise the impact of the project on Aboriginal and historic cultural heritage.
Performance Criteria	<ul style="list-style-type: none"> • Compliance with the CHMP and the <i>Aboriginal Cultural Heritage Act 2003</i> • All incidental cultural heritage finds during construction are managed in accordance with the CHMP • The impact to known historical heritage items is minimised.
Implementation	<p>Pre-construction</p> <ul style="list-style-type: none"> • In the pre-construction period, a management plan will be required to provide directions on the management of historical sites that have been found.

Element	Cultural Heritage
Implementation cont.	<p>Construction</p> <ul style="list-style-type: none"> An approved CHMP with the PCCC and Darumbal groups will be finalised prior to construction commencing As part of the CHMP an Aboriginal cultural heritage survey of the project area will be undertaken by representatives of the PCCC and Darumbal People The CHMP will detail the measures to be taken in the event of an Aboriginal cultural heritage find during construction The environmental induction will include a basic level of training for all personnel with regard to their obligations under the CHMP and the measures to be taken in the event of an historic or Aboriginal cultural heritage find A survey of the Woolwash – Frogmore pipeline will be undertaken to determine the nature and extent of subsurface archaeological material within the project corridor at least three months prior to construction For both Woolwash – Frogmore Pipeline and Twelve Mile Road, a basic level of photographic recording, which captures the nature of the item and its context within the cultural environment and within the project area, will be undertaken at least three months prior to works commencing in the area In the event of incidental historic cultural heritage finds during construction, works will cease in the area until the nature of the site can be assessed, recorded and or retrieved by a cultural heritage specialist and in consultation with DERM. Any salvage recording of sites will be conducted with reference to the archival standards provided in the 'Guideline - Archival Recording of Heritage Listed places', and a report of the findings will be provided to DERM. <p>Operation</p> <ul style="list-style-type: none"> Any works undertaken during operation that require earthworks in previously undisturbed areas will be undertaken in accordance with the Duty of Care requirements under the <i>Aboriginal Cultural Heritage Act 2003</i> Works undertaken during operation that may have further impact to Woolwash – Frogmore Pipeline or Twelve Mile road will be avoided.
Monitoring	<ul style="list-style-type: none"> Routine daily visual observance by all personnel during construction (including earthworks during operations) for items of cultural heritage significance Cultural heritage survey will be undertaken as part of the CHMP Monitoring during earthworks by representatives of the Aboriginal parties.
Reporting	<ul style="list-style-type: none"> Environmental checklists during construction External environmental audit reports Reporting to DERM in the event of a cultural heritage find during construction Non-conformance reports.
Corrective Action	<p>The constructor or operator (if not GAWB) will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by the constructor or operator and filed by both GAWB and the constructor or operator.</p> <p>Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB.</p>
Timing	Prior to and throughout construction, during operation if earthworks are required.

20.3.12 Social and Economic Environment

This section relates to Chapter 15 of the EIS, Social and Economic Environment, which describes the positive economic contributions of the project to the local, regional and state economies and also the possible social or economic impacts.

Measures included in Section 20.3.3, Land Use and Infrastructure of this Planning EMP are also relevant in the mitigation of

impacts associated with the social and economic environment of the project area. These have not been repeated in this section. Table 20.19 outlines measures that will be adopted to engage the community during construction and operation whilst Table 20.20 outlines those measures designed to reduce the social and economic impacts upon the community.

Table 20.19 Community Engagement Plan

Element	Community Engagement Procedure
Performance Objectives	To appropriately engage with the stakeholders and the local and regional community to ensure the successful delivery and operation of the project
Performance Criteria	<ul style="list-style-type: none"> Compliance with the Queensland Government Local Industry Policy through the development of a Local Industry Participation Plan in consultation with DEEDI Complete key milestones and reach high levels of satisfaction in stakeholder and community engagement indices developed as part of the Community and Stakeholder Engagement Plan
Implementation	<p>Planning</p> <ul style="list-style-type: none"> To engage local industry, a Local Industry Participation Plan will be prepared in consultation with DEEDI. A Community and Stakeholder Engagement Plan will be developed and will include key actions, key activities, milestones, measures and indices. GAWB will liaise with local authorities to address potential issues with social and housing stress that may arise from the project <p>Construction</p> <ul style="list-style-type: none"> Information updates will be distributed to relevant stakeholders (e.g. adjacent properties) at regular intervals during construction and when disturbance is expected from a particular construction activity (e.g. blasting that may be required for the construction of Aldoga Reservoir) Regular updates to the online web material will be presented to the public The media and press will be engaged as mechanisms to communicate project activities and achievements Works will be scheduled to best advantage project and stakeholder needs: to avoid clashes with external projects, but to also achieve joint project outcomes and derivatives where appropriate <p>Operation</p> <ul style="list-style-type: none"> Seasonal or other operational changes to be communicated to key stakeholders e.g. the Rockhampton Waterski and Power Boat Club and SunWater Stakeholders to be informed of any maintenance works that may affect them Operational (and seasonal) changes that may affect the quality of water from the system to be communicated to the key customers
Monitoring	<ul style="list-style-type: none"> Stakeholder comments will be recorded and regularly reviewed to identify trends and inform future management decision making
Reporting	<ul style="list-style-type: none"> Actions and activities undertaken under this plan and the Community and Stakeholder Engagement Plan are to be included in monthly project reports The Community and Stakeholder Engagement Plan will be prepared and updated as the project progresses. This plan is to describe the community engagement methodology, report on measures that have been undertaken, and also assess the engagement methodology against the indices and milestones within the plan.
Corrective Action	<ul style="list-style-type: none"> The consultation methodology within the Community and Stakeholder Engagement Plan will be audited and examined for evidence of gaps and potential for improvement
Timing	<ul style="list-style-type: none"> Throughout the Early Works, Construction (including Commissioning) and Operation

Table 20.20 Social and Economic Environment Control Plan

Element	Social and Economic Impact Management
Performance Objectives	To minimise social and economic impacts upon the community that may arise as a result of construction or operation of the project.
Performance Criteria	<ul style="list-style-type: none"> Compliance with the Queensland Government Building and Construction Contracts Structured Training Policy (the 10 percent policy) Adherence to GAWB's and the contractor's Health and Safety Management System All complaints are responded to in a timely manner and in accordance with GAWB policy and corrective action to address any complaint is promptly taken
Implementation	<p>Planning</p> <ul style="list-style-type: none"> During the recruitment process for both the construction and operation phases of the project, GAWB and all contractors will advertise available positions via recruiting agencies and other media (e.g. newspapers), whilst also providing job information directly to Aboriginal community groups and organisations A project office will be established in Rockhampton that will potentially increase the opportunities for local and Indigenous residents in Rockhampton to gain employment on the project

Element	Social and Economic Impact Management
Implementation	<p>Construction</p> <ul style="list-style-type: none"> • The project's 1800 number will remain active throughout the construction of the project to provide stakeholders with a channel of communication to the project team • A Complaints Procedure Plan will be prepared prior to construction and will include an incidents/complaints register, which will be used to record the following information if a complaint is received or if stakeholders are affected by an incident: <ul style="list-style-type: none"> – Date, time and nature of the incident/complaint – Contact details of the complainant – where available – Whether it is a repeat complaint – Record of communication with the complainant – Corrective Action undertaken and date of action – The person responsible for investigating/addressing the complaint • Mitigation measures for addressing the accommodation impacts for the project include: <ul style="list-style-type: none"> – Utilising local labour and sub contractors – Scheduling the works to avoid concurrent operations where practicable – Where possible, securing rental properties to accommodate the workers for the duration of the construction phase of the project, particularly in Rockhampton. Given the low vacancy rates in the rental property sector (at the time of EIS preparation), and not wanting to add to the rental price inflation that can easily occur when 'out-bidding' for existing houses exists, rentals will be sought as far in advance of construction as possible – Where short-term contractors are accommodated in motels or caravan parks within the project area, pre-arrangements with these accommodation types would be undertaken to secure accommodation for the duration of the project, and given the low vacancy rates in these types of accommodation, would be actioned as far in advance of construction as possible – Camp accommodation may be used as necessary. <p>Operation</p> <ul style="list-style-type: none"> • An incidents/complaints register will be established for the operational phase including the same details outline above
Monitoring	<ul style="list-style-type: none"> • Routine daily visual observance by all construction personnel for possible incidents or disturbance that could be rectified prior to a complaint being received • Environmental site checks undertaken by the environmental officer during construction and operations will include a review of the complaints register, status of complaints or complaints requiring further action • External environmental audits will be undertaken by GAWB during construction will include a review of the complaints register • During operations, the incidents/complaints register will be monitored on a regular basis to identify trends and inform further management.
Reporting	<ul style="list-style-type: none"> • All complaints or incidents to be reported to the construction manager during construction including details of the action taken • Complaints/incidents register to be maintained throughout construction and operation • Environmental checklists during construction • External audit reports prepared by GAWB.
Corrective Action	<ul style="list-style-type: none"> • Corrective action to address complaints will be recorded in the complaints register • The constructor or operator (if not GAWB) will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by the constructor or operator and filed by both GAWB and the constructor or operator • Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB.
Timing	<ul style="list-style-type: none"> • Throughout construction and operation.

20.3.13 Hazard and Risk

This section relates to Chapter 16 of the EIS, Hazard and Risk which outlines the potential natural hazards in the project area, summarises the hazard and risk assessment that was undertaken for the project and documents the health and safety arrangements that are relevant to the project.

This section of the Planning EMP provides control plans for the following elements relevant to hazard and risk:

- Handling and storage of hazardous goods
- Health and safety
- Emergency response procedures.

Given the nature of the construction works it is not anticipated that large quantities of dangerous goods will be used or stored on site. The most likely source of any chemical spill during construction would be oil or diesel from plant and machinery or from small quantities stored at construction areas. Explosives may be required during the construction of Aldoga Reservoir and

are classified as Class 1 dangerous goods (in the Australian Code for the Transport of Dangerous Goods by Road and Rail).

During operation of the water treatment plant quantities of sodium hypochlorite will be transported and stored. This chemical is also classified as dangerous goods under the code.

Some general measures are included in Table 20.21 for the management of dangerous goods during construction and operation however depending on the type and quantities of dangerous goods other measures may be required to comply with the relevant legislation and standards during construction and operation.

Health and safety procedures and plans to be in place during the project have been described in Chapter 16 of the EIS, Hazard and Risk. Table 20.22 outlines measures to be taken to manage the health and safety of project personnel. In addition Table 20.23 outlines the Emergency Management Control Plan.

The environmental impacts and mitigation measures identified in the EIS shall be included in GAWB's Environmental Risk Register and in a project specific risk register.

Table 20.21 Handling and Storage of Dangerous Goods Control Plan

Element	Handling and Storage of Dangerous Goods
Performance Objectives	To manage the purchase, handling, storage and disposal of dangerous goods on site in a manner that does not cause harm to the environment, project personnel or the public.
Performance Criteria	<ul style="list-style-type: none"> • Target of no contamination of the environment and no injuries to personnel or the public from the storage or handling on dangerous goods • Compliance with relevant legislation Australian standards including the following: <ul style="list-style-type: none"> – The <i>Dangerous Goods Safety Management Act 2001</i> (Qld) – AS:1940 The Storage and Handling of Flammable and Combustible Liquids – The Australian Code for the Transport of Dangerous Goods by Road and Rail.
Implementation cont.	<p>Construction</p> <ul style="list-style-type: none"> • All site personnel will receive an induction prior to commencing work on the site in the handling and storage of dangerous goods and in spill containment procedures • A hazard identification and risk assessment process will be undertaken for the storage of dangerous goods in the construction corridor • The Material Safety Data Sheets (MSDS) for all dangerous goods will be kept on site • Licenses or permits will be obtained from the relevant local governments if required for flammable and combustible liquids • Risks posed by dangerous goods stored or handled during construction will be managed through: <ul style="list-style-type: none"> – Limiting quantities kept on site to that which is necessary for day to day operations – Compliance with MSDS instructions – Segregation of incompatible dangerous goods – Appropriate separation of dangerous goods storage areas from people and property – Storage of flammable or combustible dangerous goods away from ignition sources – Liquid dangerous goods will be stored in bunded containers with sufficient capacity to contain the potential spillage – Personal protective equipment will be provided to personnel required to work with dangerous goods – Spill kits will be available at all construction sites along the project area and any spills will be cleaned up immediately – Refuelling will not be undertaken within 30m of any watercourse, wetland or area of Remnant Ecosystem. Fuelling activities are to be supervised at all times and hoses are to be fitted with a stop-valve at the nozzle – Portable fire extinguishers will be available if required at the site – Dangerous goods waste will be transported by a licensed contractor to a designated site approved by the local authority – Explosives will be stored in accordance with AS:2187 for the storage, transport and use of explosives and will be handled by a licensed explosives expert.

Element	Handling and Storage of Dangerous Goods
Implementation	<p>Operations</p> <ul style="list-style-type: none"> Any dangerous goods such as sodium hypochlorite that is to be stored or handled at the water treatment plant site or other project site during operation will be stored in compliance with relevant legislation and policy as outlined above.
Monitoring	<ul style="list-style-type: none"> Routine daily visual observance by all personnel during construction and operations for possible incidents related to dangerous goods Environmental site checks undertaken by the environmental officer will include the following: <ul style="list-style-type: none"> An inspection of the dangerous goods storage area(s) A record of any spills occurring at the project site and corrective actions External environmental audits by GAWB during construction will include an inspection of the dangerous goods storage area(s) Regular monitoring of the signage at the intake point to ensure that it is clearly visible.
Reporting	<ul style="list-style-type: none"> Inventory of dangerous goods at the site during construction and operation including their storage requirements, locations and MSDS Environmental checklists during construction External audit reports Non-conformance reporting if required.
Corrective Action	<p>The constructor or operator (if not GAWB) will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by the constructor or operator and filed by both GAWB and the constructor or operator.</p> <p>Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB.</p> <p>The following corrective actions should be undertaken:</p> <ul style="list-style-type: none"> Immediately clean up the spill and dispose of any contaminated material Repair the containment facilities to reduce the risk of further spills occurring In addressing a major spill involving dangerous goods, DERM and local authorities will be contacted as required. <p>Non-compliance with the implementation measures above will be corrected immediately and a non-conformance report completed.</p>
Timing	Whenever dangerous goods are stored or handled during construction or operation.

Table 20.22 Health and Safety Management Control Plan

Element	Health and Safety
Performance Objectives	To manage the construction and operation of the project in a manner that prevents adverse effects to the health and safety of project personnel and the general public.
Performance Criteria	<ul style="list-style-type: none"> Compliance with relevant legislation, regulations, GAWB's Environment, Health and Safety Management System and the contractor's Health and Safety Management System Creation and implementation of a construction safety plan for the project and appropriate work method statements.
Implementation	<p>Construction</p> <ul style="list-style-type: none"> The construction safety plan developed and implemented for the project will be compliant with overarching health and safety management systems and will include the following: <ul style="list-style-type: none"> Induction training for all personnel with regard to their health and safety obligations on the project A hazard and risk assessment specific to the different construction sites and tasks Control measures to manage or remove the identified risk Work method statements for specific high risk tasks Responsibilities for health and safety management on the project including a nominated healthy and safety representative(s) A process for review and monitoring of health and safety systems, plans and work method statements Personal protective equipment will be provided by the construction contractor as required.

Element	Health and Safety
Implementation cont.	<p>Operation</p> <ul style="list-style-type: none"> An operations safety plan will be developed and implemented for the project that is compliant with GAWB's health and safety management system and includes the measures outlined above Appropriate warning signage will be placed at the intake point to prevent injury to water skiers or other members of the public A representative of the Rockhampton Water Skiing and Powerboat Club will be informed of intake operations A Special Area Plan is to be developed and implemented for the management of the Fitzroy River Intake Area.
Monitoring	<ul style="list-style-type: none"> Regular workplace health and safety inspections will be carried out by the health and safety representative during construction and operations Health and safety audits will be carried out by the contractor's management team during construction or by GAWB during operation.
Reporting	<ul style="list-style-type: none"> Reporting on health and safety issues will be the responsibility of the nominated health and safety representative for the construction and operational phases of the project The health and safety representative will report to the construction and operation manager in the project's respective phases An incident register will be in place prior to the commencement of construction and will be used to record the following information: <ul style="list-style-type: none"> Date and time incident occurred Date and time incident reported Type of the incident Level of incident Type of injury (if applicable) Injury classification (if applicable) Name of any person involved or person reporting incident Details of any equipment involved (if applicable) Brief description of incident The person responsible for investigating/addressing the incident Records of all incidents, audits and inspections will be kept and reviewed.
Corrective Action	<p>If an incident occurs GAWB should be notified and the following corrective actions should be carried out subject to approval by GAWB:</p> <ul style="list-style-type: none"> An investigation as to why the incident occurred and implement corrective actions to reduce the risk of a recurrence Review the health and safety information that is being provided to employees is relevant Ensure all personnel working or entering the site are informed of the health and safety policies and procedures in place and make improvements to training where deficiencies are identified Non-conformances with the relevant health and safety management system or safety plan will be rectified immediately.
Timing	Throughout the construction and operation of the project.

Table 20.23 Emergency Management Control Plan

Element	Emergency Management
Performance Objectives	<ul style="list-style-type: none"> To ensure that emergency situations during construction or operation of the project are managed efficiently To minimise the risk to personnel, property or the public that may arise from emergency situations.
Performance Criteria	<ul style="list-style-type: none"> Development of an emergency management plan for the construction of the project Adequate training for project personnel with respect to emergency management planning and procedures.

Element	Emergency Management
Implementation	<p>Construction</p> <p>The emergency management plan will be developed prior to the commencement of pre-construction. The plan will be implemented during pre-construction and construction and will include the following:</p> <ul style="list-style-type: none"> • Emergency response procedures to be followed in an accident situation - including chain of command and evacuation routes • Emergency contact details of local SES branches, Fire and Rescue Service and Police • Allocation of tasks and responsibilities including an Emergency Management Team • Training requirements • The role of the first aid provider • Emergency transportation arrangements • Location of first aid equipment and facilities at the workplace. • Site emergency response equipment locations • Monitoring and review procedures. <p>Operation</p> <ul style="list-style-type: none"> • An emergency action plan (EAP) will be developed by GAWB for implementation during operations and this will form one of a suite of subordinate Disaster Management Plans under GAWB's Disaster Management Plan – Master Plan. • A site specific emergency action plan will be developed for the operation of the project which will include working with the relevant local disaster management committee in disaster situations.
Monitoring	<ul style="list-style-type: none"> • The emergency incident and response process will be audited and tested on a regular basis • A record of all emergency incidents will be maintained and reviewed for possible procedural improvements.
Reporting	All emergency incidents will be reported to the construction or operations manager.
Corrective Action	<p>The constructor or operator (if not GAWB) will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by the constructor or operator and filed by both GAWB and the constructor or operator.</p> <p>Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB.</p> <p>The following corrective actions should be undertaken:</p> <ul style="list-style-type: none"> • Following an emergency incident an investigation will be undertaken as to the cause of the incident and corrective action undertaken to minimise the risk of a recurrence • Non-conformances with the emergency response procedure or EAP will be identified and rectified.
Timing	Throughout the construction and operation of the project.

20.3.14 Landscape and Visual Amenity

This section relates to Chapter 17 of the EIS, Landscape and Visual Impact Assessment, which outlines the potential landscape and visual amenity effects associated with the project.

Generally, the project will have a minor impact upon landscape character and visual amenity. Impacts vary according to local context, and construction and operations phases.

Project-wide mitigation measures that would reduce and/or manage adverse impacts of construction work and operation upon landscape and visual amenity are detailed in Table 20.24. Specific measures for key areas, including the WTP, Raglan pump station reservoir and the Aldoga Reservoir will be considered once detailed design for construction is completed and are likely to include the measures outlined below.

Table 20.24 Landscape and Visual Amenity Management Control Plan

Element	Landscape and Visual Amenity Management
Performance Objectives	To minimise visual modification impacts upon landscape and visual amenity that arise during construction and operation.
Performance Criteria	<ul style="list-style-type: none"> Protection and/or reasonable restoration of landscape and visual amenity.
Implementation	<p>Construction</p> <ul style="list-style-type: none"> The pipeline corridor will be inspected prior to construction to identify trees and vegetation that are required to be protected/retained The Construction EMP will identify vegetation at sensitive sites that can be retained for scenic amenity value Temporary hoardings, barriers, traffic management and signage will be removed when no longer required Lighting of compounds and works sites will be restricted low impact lighting for security purposes Where the option is available, temporary storage facilities will be located out of sight of residential areas Materials and machinery will be stored tidily during the works Dust and mud on roads providing access to site compounds and work areas will be swept off on a daily basis Upon completion of construction, all construction materials will be removed to a suitable location Screen planting and/or encouragement of natural vegetation regeneration at key locations outside the pipeline corridor, particularly where the alignment is in close proximity to residences and trees have been removed for construction (i.e. Viewpoint 8 and Viewpoint 9 described in Section 17.6.3) Consideration of the appearance of other features such as signs and fencing. <p>Operation</p> <ul style="list-style-type: none"> Optimise visual protection of residential properties and rural settlements To avoid loss or damage to landscape features, the trimming of trees will be undertaken in preference to total tree removal (except where total removal is absolutely necessary) Screen planting and encouragement of natural regeneration around the pipeline corridor, particularly where structures are above ground and where the pipeline corridor is in close proximity to residences Screen planting and/or encouragement of natural vegetation regeneration at key locations outside the pipeline corridor, particularly where the alignment is in close proximity to residences and trees have been removed for construction (i.e. Viewpoint 8 and Viewpoint 9 described in Section 17.6.3) Consideration of the appearance of other features such as signs and fencing Careful consideration of any lighting requirements and any potential increase in light pollution.
Monitoring	<ul style="list-style-type: none"> Routine monitoring during construction and operational phases as part of environmental checks.
Reporting	Environmental checklists during construction
Corrective Action	<p>The constructor or operator (if not GAWB) will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by the constructor or operator and filed by both GAWB and the constructor or operator.</p> <p>Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB.</p>
Timing	Throughout the construction and operation of the project.

20.4 References

Australian Pipeline Industry Association Ltd 2005 *Environmental Code of Practice – Onshore Pipelines*

Coordinator General 2006 *Stanwell - Gladstone Infrastructure Corridor Draft Development Scheme*

National Transport Commission 2007 *Australian Code for the Transport of Dangerous Goods by Road and Rail Seventh Edition*, Australian Transport Council

The Queensland Division of the Institution of Engineers, Australia and The Queensland Branch of the Australian Institute of Agriculture Scientists 1996. *Soil Erosion and Sediment Control, Engineering Guidelines for Queensland*