# 1 PIPELINE COMPONENT- ENVIRONMENTAL MANAGEMENT PLAN

This draft EMP has been prepared in accordance with the QCLNG Terms of Reference and contains the mitigation and management measures as presented in the draft EIS prepared for public consultation under the SDPWO Act EIS process. The content of this draft EMP will be revised as a result of stakeholder consultation, including comments from the Commonwealth Department of Environment, Water, Heritage and the Arts (DEWHA) and will be reissued in the application for the environmental authority for chapter 5 activities after the issue of the Coordinator General's conditions.

Under Section 310D of the *Environment Protection Act 1994* (Queensland):

*"The purpose of an environmental management plan is to propose environmental protection commitments to help the administering authority decide the conditions of the environmental authority (chapter 5A activities)."*

Furthermore, section 309Z(5) requires:

*"Despite subsections (1) to (4), if a relevant resource authority for the environmental authority is, or is included in, a significant project—*

*a. all conditions for the environmental authority stated in the Coordinator-General's report for the project (the Coordinator-General's conditions) must be imposed on the environmental authority; and*

*b. any other condition imposed on the environmental authority must not be inconsistent with the Coordinator-General's conditions."*

QGC will prepare detailed management procedures and performance criteria based on the final EMP to construction contractors to manage compliance of those parties operating on the Project Activities.

## 1.1.1 EMP Overview

This volume provides draft environmental management plans for construction and operation of the Pipeline Component of the Queensland Curtis LNG (QCLNG) Project. These draft EMPs have been prepared based on the Environmental Impact Statement (EIS) findings as outlined in *Volume 5* of this EIS.

QGC places a high value on social performance, which it supports by its Social Performance Policy, Standard and Guidelines. A social impact assessment has been carried out for the Project (refer *Volume 8*) and a separate Social Environmental Management Plan has been prepared to address social and community values and impacts.

The environmental management plans (EMPs) for the Pipeline Component of the Project have been prepared in consultation with BG Group's Environmental and Social Managers. These EMPs are consistent with

BG Group's Business Principles for the protection of environmental and social values across all the company's activities, operations and projects.

BG Group will require QGC, within two years of commencement of Project operations, to prepare and obtain ISO accreditation (ISO 14000) for an Environmental Management System. All Operations EMPs will be reviewed and amended as required to comply with requirements for ISO 14,000 accreditation.

These draft EMPs outline proposed management strategies in accordance with proposed performance criteria for specified acceptable levels of environmental performance. EMPs identify:

- potential impacts on environmental values
- mitigation strategies
- relevant monitoring
- appropriate indicators and performance criteria
- reporting requirements
- appropriate corrective actions should an undesirable impact or unforeseen level of impact occur.

The Activity phases of the Project comprise construction, operations and decommissioning. The structure of the EMP is outlined in *Table 10.1.1*.

***Table 10.1.1 EMP Structure***

| | |
|---|---|
| Element/issue | How elements of the Activity phases are to be managed (as it affects environmental and social values). |
| Policy objective | The Activity policy or management objective that applies to each element. |
| Performance criteria | Measurable performance criteria (outcomes) for each element of each Activity phase. |
| Implementation strategy | The strategies, tasks or action program (to nominated operational design standards) that will be implemented to achieve the performance criteria. |
| Monitoring | The monitoring requirements to measure actual performance (i.e. specified limits to pre-selected indicators of change). |
| Auditing | The auditing requirements to demonstrate implementation of agreed environmental management strategies and compliance with agreed performance criteria. |
| Reporting | Format, timing and responsibility for reporting and auditing of monitoring results. |
| Corrective action | The action (options) to be implemented in case a performance requirement is not reached and the person responsible for that action (including staff authority, responsibility and management structure). |

## 1.2 PURPOSE AND OBJECTIVES

EMPs have been prepared to cover activities associated with the Pipeline Component of the QCLNG Project. As stated in Section 1.1.1, the purpose of these EMPs is to outline appropriate management strategies and actions in order to meet acceptable levels of environmental performance. The Pipeline Component comprises:

- a 380 km gas transmission pipeline from QGC's production lease areas in southern Queensland to an LNG Facility in Gladstone (the Export Pipeline)
- a 150 km gas transmission pipeline, which will enable the connection of additional CSG fields to the main pipeline (the Lateral)
- a 200 km gas transmission pipeline linking QGC's various production areas and connecting to the Export Pipeline (the Collection Header).

The EMPs for the Pipeline Component have been developed to provide an overall framework for the management of environmental hazards, risks and impacts during the construction and operation of the Pipelines Component of the Project. The EMPs have been developed in accordance with the *Australian Pipeline Industry (APIA) Code of Environmental Practice* to ensure that the pipelines are constructed and operated in accordance with industry best practice.

The purpose of the EMPs is to function as the basis for an on-site environmental manual for staff, maintenance personnel, contractors and consultants with responsibilities for the Activity phases of the Project.

The objective of these EMPs is to provide:

- environmental management procedures and mitigation measures for control of impacts during the Activity phases of the Project to ensure that environmental requirements are specified and complied with
- environmental performance indicators, monitoring requirements and review procedures for the Project activities
- government authorities, stakeholders and proponents with a common focus for approvals and compliance with relevant policies, approvals, licences, agreements, legislation and other requirements
- the community with evidence that the environmental management of the Project is acceptable.

QGC will have ultimate responsibility for implementing the EMPs.

## 1.3 TRAINING AND COMMUNICATION

All relevant personnel with management and operational responsibilities for the Project will receive training and an induction into EMPs to ensure they are familiar with the relevant management systems and requirements, as

appropriate to their roles and responsibilities. The purpose of the training is to ensure all individuals are aware of their environmental responsibilities and have obtained the skills and competence to fulfil such responsibilities.

## 1.4 RESPONSIBILITIES

QGC will be responsible for carrying out the EMP.

All employees are responsible for the environmental performance of their activities and for complying with the General Environmental Duty as set out in *Section 319(1)* of the *Environment Protection Act 1994*, which states:

"A *person must not carry out any activity that causes, or is likely to cause, environmental harm unless the person takes all reasonable and practicable measures to minimise the harm."*

This section sets out the specific environmental responsibilities of key Project positions. These are preliminary and nominal position titles based on an assumed organisation chart for construction and for operations, but titles and accountabilities may alter as organisational structure are finalised closer to commencement of construction and operations. Revised and updated EMPs with finalised position titles and accountabilities will be prepared prior to commencement of construction (CEMP) and operations (OEMP).

### 1.4.1 *Construction Manager / Operations Manager*

The Construction or Operations Manager is ultimately responsible Construction / Operational activities, with support relating to environmental management from specialised personnel. It is the responsibility of the Construction / Operations Manager to ensure that the Project is adequately resourced to enable all personnel to carry out their duties in an environmentally responsible manner. Supervisors report to the Construction / Operations Manager.

### 1.4.2 *Construction / Operations Environmental Manager*

The Construction / Operations Environmental Manager is responsible for environmental aspects associated with construction activities and will direct work in a manner that complies with relevant environmental procedures, adheres to all legislative requirements and ensures that all environmental objectives associated with the Project are achieved. This includes implementation of the CEMP and the oversight of environmental compliance audits and monitoring programs.

The Construction / Operations Environmental Manager will be referred to as the "Environmental Manager" in the relevant sections discussing the CEMP and OEMP. Environmental Officers will report to the Environmental Manager.

### 1.4.3 Lands Officer

The Lands Officer is responsible for all land access requirements and communications with landholders.

## 1.5 OBJECTIVES AND PERFORMANCE CRITERIA

Environmental objectives and performance criteria for the construction and operation of the Pipelines are listed in *Table 10.1.2*. These objectives and targets will be met by the implementation of the management measures presented in *Sections 2.1* and *2.2* and will be assessed through the audit process detailed in *Section 1.6*.

*Table 10.1.2 Environmental Objectives and Performance Criteria*

| Aspect | Activity Phase | Objective | Performance Criteria |
|---|---|---|---|
| **Noise and Vibration** | Construction Operations | To construct and operate in a manner that minimises the impact of noise and vibrations on surrounding residences and industry. | No exceedence of Project derived noise criteria at sensitive receptors.<br>No noise-related complaints received from residents and landholders.<br>Consultation with potentially affected sensitive receptors. |
| **Traffic / Transport** | Construction Operations | To minimise as much as practicable potential impacts associated with traffic generated by the Project. | Minimal traffic-related complaints and incidents.<br>To minimize impacts on road pavements, or where this is not practicable, to negotiate appropriate contributions or upgrades to road pavement impacts with relevant authorities. |
| **Visual Amenity** | Construction Operations | To minimise impacts on visual amenity associated with the LNG Facility. | Respond to all complaints regarding visual amenity and, where feasible, implement mitigation measures.<br>Consultation with potentially affected sensitive receptors. |
| **Lighting** | Construction Operations | To reduce as much as practicable lighting impacts on sensitive receptors. | Respond to all complaints regarding lighting and, where feasible, implement mitigation measures.<br>Consultation with potentially affected sensitive receptors. |
| **Weeds and Pests** | Construction Operations | To prevent spread or introduction of pest and weed species as a results of Project activities. | No increase in abundance or distribution of weed and pest species as a result of Project activities. |
| **Air Quality and Dust** | Construction Operations | To construct and operate in a manner that minimizes impacts on ambient air quality. | No exceedence of Project derived air quality criteria at sensitive receptors.<br>Consultation with potentially affected sensitive receptors.<br>Respond to all complaints on air quality. |
| **Groundwater Quality** | Construction Operations | To protect the quality of the existing groundwater resources. | Groundwater quality not impacted by construction or operations activities. |
| **Surface Water Quality** | Construction Operations | To minimise the potential impacts associated with erosion and to prevent the release of contaminants that may adversely affect downstream surface-water quality | No release of contaminants to surface waters outside the boundary of Project infrastructure.<br>No failures of sediment and erosion control techniques leading to unacceptable sediment release. |
| **Soil Erosion and Sediment Control** | Construction Operations | To minimise environmental impacts caused by soil loss and erosion. | Erosion and sediment control techniques implemented onsite where necessary. |

| Aspect | Activity Phase | Objective | Performance Criteria |
|---|---|---|---|
| | | | No failures of sediment and erosion control techniques leading to unacceptable sediment release. |
| **Acid Sulfate Soils** | Construction Operations | To minimise environmental impact arising from disturbance of acid sulfate soils. | Develop and implement an approved acid sulfate soils management plan (ASSMP). |
| **Flora and Fauna** | Construction Operations | To minimise impacts on the abundance and distribution of flora and fauna as a result of Project activities.<br>Progressively rehabilitate disturbed areas where practicable. | Avoid, where practicable, of endangered, vulnerable and rare (EVR) flora species and the habitat of EVER fauna.<br>No unauthorized clearing of native vegetation.<br>Permits and approvals in place for any unavoidable disturbance of endangered, vulnerable and rare (EVR) flora and fauna species.<br>No introduction of declared pests as a result of Project activities.<br>Develop and implement an environmental offsets strategy.<br>Minimise impacts to native vegetation and on habitat fragmentation.<br>Progressive rehabilitation is consistent with the surrounding area and land use post restoration. |
| **Marine Ecology** | Construction Operations | To minimise impacts on abundance and distribution of marine flora and fauna as a result of Project activities. | No unauthorised disturbance to or removal of marine plants.<br>Minimise as much as practicable disturbance to marine fauna. |
| **Stock Access and Control** | Construction Operations | To minimise the impact on stock movements. | Where deemed necessary, stock access will be restricted from petroleum works sites.<br>No stock injured or killed due to Pipeline Activities.<br>No complaints from stock farmers |
| **Soil Contamination** | Construction Operations | No contamination of soils arising from Project activities.<br>To manage any pre-existing contaminated soils such that extent of contamination is not exacerbated by Project activities.<br>Minimise, where practicable, contamination of soils by Associated Water. | Project sites site not added to Queensland Contaminated Land Register (CLR).<br>No release of hazardous substance or dangerous goods to soil.<br>Identify all pre-existing contaminated soils likely to be impacted by Project activities.<br>Where pre-existing contaminated soils are identified, and disturbance by Project activities is unavoidable, develop and implement appropriate management strategies. |

| Aspect | Activity Phase | Objective | Performance Criteria |
|---|---|---|---|
| **Waste Management** | Construction Operations | To minimise waste generation and maximise reuse and recycling of construction waste products.<br><br>To dispose of waste in an appropriate manner. | No contamination of soil, air or water as a result of inappropriate waste management.<br>Develop and implement a plan for waste minimisation and management.<br>All waste disposal to be carried out by a licensed waste contractor.<br>Waste management practices to not result in loss of health to personnel or sensitive receptors. |
| **Mosquito and Biting Midge** | Construction Operations | To undertake Project activities such that potential health impacts on Project personnel and nearby sensitive receptors arising from mosquitoes and biting midges are minimised. | Minimise potential mosquito and biting midge breeding sites resulting from Project activities. |
| **Eastern Red Fire Ant** | Construction Operations | To prevent spread or introduction of Eastern Red Fire Ant as a result of Project activities. | No evidence of ERFA on Project sites. |
| **Incidents and Complaints** | Construction Operations | To have a process whereby all complaints can be lodged and responded to in an appropriate manner. | Record all complaints and responses in an incidents and complaints register.<br>Respond appropriately to all incidents and complaints. |
| **Environmental Induction and Training** | Construction Operations | To ensure that all Project personnel, including contractors, comply with the environmental requirements of all tasks. | All personnel undergo site inductions and, where necessary, additional training, that address environmental requirements of Project activities.<br>Full compliance with induction and training procedures. |
| **Emergency Response for Environmental Incidents** | Construction Operations | To ensure that Project personnel can respond effectively and efficiently in the event of an environmental incident to ensure no long-term adverse impacts on health, safety or the environment. | Any emergency response addressed in accordance with the QGC Emergency Management Plan.<br>Nil government notices. |
| **Fire Management** | Construction Operations | To prevent the initiation of bushfires as a result of Project Activities.<br>To protect Project personnel and key Project infrastructure from bushfire impacts. | Develop and implement and Emergency Response Plan that includes fire management.<br>No unplanned and uncontrolled fires caused by Project Activities.<br>Consultation with all relevant fire management authorities. |
| **Effluent Disposal** | Construction Operations | To release treated effluent and manage sewage sludge without causing environmental harm. | Treated effluent meets quality requirements of design parameters.<br>All sewage sludge is disposed off at an appropriate sewerage disposal facility. |
| **Climate Extremes and Climate Change** | Construction Operations | Existing climate extremes and future climate change do not adversely impact Project infrastructure. | Engineering design of Project infrastructure includes consideration of climate extremes and climate change. |

| Aspect | Activity Phase | Objective | Performance Criteria |
|---|---|---|---|
| **Landscape and Character Maintenance** | Construction Operations | To minimise the impact on environmental and community values from the location of infrastructure. | Respond to all complaints regarding impacts on environmental and community values and, where feasible, implement mitigation measures.<br>Consultation with potentially affected stakeholders.<br>Evidence that decision criteria for location of infrastructure includes consideration of environmental and community values. |
| **Topography Maintenance** | Construction Operations | To minimise impacts to topography. | Minimise sediment and erosion release from areas where topography is altered.<br>Consultation with stakeholders regarding topography following decommissioning.<br>Where practicable, sites are returned to their original profile upon decommissioning. |
| **Revegetation and Rehabilitation** | Construction Operations | To restore, as far as reasonably practicable, land to its pre-existing condition. | Monitoring of rehabilitation areas occurs at a frequency necessary to maximise rehabilitation success.<br>After a suitable period, revegetation occurs naturally and is similar to surrounding vegetation.<br>No weed species introduced.<br>Rehabilitation area stabilised with no significant erosion events.. |
| **Decommissioning** | Decommiss-ioning | To decommission Project facilities such that they do not present and ongoing environmental risk.<br>To plan for decommissioning in consultation with relevant stakeholders. | Develop and implement, in consultation with stakeholders, a detailed decommissioning plan for all facilities prior to the end of their useful life. |
| **Dangerous Goods and Hazardous Substances** | Construction Operations | To protect Project personnel, the public and the environment from harm due to the transport, storage or use of dangerous goods or hazardous substances. | No unplanned release of dangerous goods or hazardous substances.<br>All transport, storage and handling of dangerous goods or hazardous substances is performed in accordance with applicable legislation, guidelines and standards. |

## 1.6 CORRECTIVE ACTION

The BG Standard for reporting incidents, near misses and hazards will be followed for any potential or actual environmental harm, including concerns raised by the community, entered in the complaints register. Corrective actions will be documented and tracked within the Synergi incident reporting database. The Environmental Manager (depending on phase of Activity) will determine whether reporting to any external agency is required.

## 1.7 INCIDENT MANAGEMENT

An environmental incident will be regarded as any incident that harms or has the potential to harm environmental and social values. In the event that an environmental incident occurs, the following steps will be followed immediately:

- prevention of further pollution/environmental harm (including impacts on air, water quality, flora and fauna and noise environment)
- clean-up and/or control of polluting substance(s)
- implementation of mitigation measures to prevent recurrence of similar incident
- reporting and documenting of incident and instigation of incident investigation in accordance with BG Group Standards.

All incidents are to be reported to the relevant Environmental Manager. Incidents likely to cause off-site impacts or significant environmental harm will be reported by the Environmental Manager or Construction / Operations Manager to the Department of Environment and Resource Management (DERM) or appropriate authority immediately, in accordance with statutory requirements.

Incidents that impact EPBC listed species will be reported to DEWHA.

## 1.8 MONITORING

In order to fulfil the requirements of this EMP, all Activity phases will be monitored against this EMP and according to environmental-value-specific monitoring plans. All monitoring will be in accordance with the current DERM sampling manuals.

Results of monitoring will be recorded and reported internally and available for inspection as required by QGC's Environmental Management System (EMS). Any external audits conducted by the DERM or other government agencies and Auditors appointed by QGC for triennial reviews will also be recorded internally and available for inspection.

All monitoring results will be maintained on record for a minimum of five years.

## 1.9 EMP REVIEW, REPORTING AND UPDATING

The mitigation measures and environmental management procedures included in these EMPs have been designed with the ultimate goal of avoiding or managing identified potential impacts. As noted previously, the content of these draft EMPs will be revised as a result of stakeholder consultation and will be reissued in the application for the environmental after the issue of the Coordinator General's conditions.

Once EMPs are implemented, management will consider issues on an ongoing basis and conduct formal review of the EMPs, to be undertaken one month after commencement of each activity phase of the Project (Construction and Operations) and annually thereafter for the duration of the each activity phase.

EMP reviews will include a framework for a "corrective action loop", which will ensure that mechanisms are in place with clearly defined actions and responsibilities, to correct any unforeseen impacts or failure of mitigation or management measures to meet their objectives, should they become evident. Accordingly, any unforeseen impacts or any mitigation or management measures which do not achieve their objectives will be reported and an appropriate response action will be implemented and monitored.

Following review of the EMP, documented outcomes will include, as applicable:

- a summary of complaints and response actions to these complaints
- data on the scheme's performance in meeting EMP objectives and targets
- a brief description of the causes and effects of any failings, and actions taken to remedy them
- an overall assessment of the environmental performance of the scheme
- an assessment of opportunities to improve environmental performance
- suggested changes to the EMP to be made as a result of the review.

An annual performance report will be produced and made available to personnel with operational and management responsibilities, as well as to stakeholders and regulatory authorities. The annual performance report should:

- summarise environmental monitoring results over the preceding year against numerical guideline values, regulatory requirements or agreed commitments, and identify trends and any problems
- summarise any system failures and the action(s) taken to resolve them.

## 1.10 AUDITING

Environmental audits are intended to determine whether the requirements of the EMP are properly implemented and maintained. Accordingly, auditing is to

be undertaken to confirm that activities are carried out in line with the defined requirements, and are producing the required outcomes. The audits will cover the full spectrum, from compliance with strategic procedures to compliance with job-specific procedures. These audits will be initiated by the relevant Environmental Manager and performed by an internal or external auditor, as determined by the Environmental Manager or by QGC's Environmental Manager. Audits will be conduced annually or as otherwise required.

Audits are to be undertaken in accordance with the procedure below. Audit reports are to be retained and made available for management or regulatory review.

Based on a checklist format developed by the Auditor, the Audit procedure should be conducted as follows:

1. Review the scope, plan and schedule of the audit.

    a. Examine objective evidence (documented environmental records, direct observations of non-conformance/potential opportunities and personnel interviews) to verify conformance with EMP requirements.

    b. Give specific attention to continual improvement actions developed in response to previous audit findings.

    c. Post-audit communication to present audit findings, clarify any misunderstandings and summarise the audit findings.

2. The audit program should be reviewed annually and revised to reflect any improvements to the methodology, auditors or timeframe of audits.

3. An Audit Summary Report should be completed within three weeks of completing an audit and the results discussed at the next management meeting.

4. The Audit Summary Report shall list all continual improvement actions required to prevent a recurrence of any identified issues or to maximise opportunities for improvement.

A summary of the components of the Project which should be audited on an annual basis are set out in *Table 10.1.3.*

***Table 10.1.3 Audit Requirements***

| Element to be Audited | Area or Function to be Audited |
|---|---|
| **Application of EMP** | Audit to determine the extent of compliance with the various components of the EMP. |
| **Monitoring results and documentation** | • Audit monitoring results against relevant guidelines.<br>• Have results of all monitoring and inspection programs been documented?<br>• Have all environmental or health risks been documented and managed? |

| Element to be Audited | Area or Function to be Audited |
|---|---|
| **Incident documentation and emergency preparedness** | Reporting and managements of incidents.<br>• An audit to assess management, documentation and reporting of incidents/emergency situations. Are all incidents reported and documented?<br>• Are there options available for improvement and management of processes where incidents have occurred? |
| **Induction, training and awareness** | Induction and training registers should be audited periodically to ensure all personnel receive relevant inductions and training, as appropriate to their roles and responsibilities within the scheme. |
| **Management review** | Audit whether:<br>• information and environmental management strategies remain current<br>• opportunities for improvement have been identified<br>• requests or directions from relevant stakeholders have been considered<br>• changes in environmental management practices or pollution, contamination or legislation have been incorporated<br>• the EMP has been reviewed/updated to account for changes to the program. |

## *1.11 COMPLAINTS REGISTER*

The relevant Environmental Manager will maintain a record of any complaints received. The Construction / Operations Manager and Construction / Operations Environmental Manager (as applicable) shall review complaints and assess or direct response (as appropriate). Corrective actions and other recommendations including, where applicable, modifications to practices and procedures shall be made and closed out under the direction of the Environmental Manager.

# 2 ENVIRONMENTAL MANAGEMENT PLANS

## 2.1 CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLANS

### 2.1.1 Noise and Vibration

| Noise and Vibration Management Plan | |
|---|---|
| **Operational Policy** | To construct in a manner that minimises the impact of noise and vibrations on surrounding residences and industry. |
| **Performance Criteria** | • No exceedence of Project derived noise criteria at sensitive receptors.<br>• Responded to all noise-related complaints received from residents and landholders and implement mitigation measures.<br>• Consultation with potentially affected sensitive receptors. |
| **Implementation Strategy** | • High noise events such as blasting will be scheduled during times of least impact to the local community.<br>• Community to be given adequate notice of any scheduled atypical noise events.<br>• Any blasting to be carried out in accordance with relevant State legislation.<br>• A Plan will be prepared before blasting activities begin, giving consideration to potential air-blast pressure and vibration and including mitigation measures.<br>• Equipment will be fitted with noise-control devices.<br>• Campsites, offices and stockpile sites to be located a sufficient distance from residences to limit noise impacts. |
| **Monitoring and Auditing** | • Landholder complaints relating to noise and vibration will be recorded and closed out by the Environmental Manager or delegate.<br>• Noise surveys at relevant local residences will be undertaken at the request of the administering authority.<br>• The method of measurement and reporting will be conducted in accordance with the DERM Noise Measurement Manual and/or AS 1055. |
| **Reporting and Corrective Action** | • The owner and construction contractor will maintain records of all monitoring and auditing activities and report results to the Environmental Manager at agreed intervals.<br>• Recommendations and corrective actions arising from audits and reviews will be implemented.<br>• Routine work reports will be recorded and reviewed by each supervisor or manager.<br>• All incidents that deviate from normal operating conditions will be reported and action initiated (including reporting to relevant agencies where this is warranted/required) by the owner and construction contractor to prevent a recurrence of the incident.<br>• Non-compliance and incident reports will be reviewed and closed out by senior management. |

### 2.1.2 *Traffic / Transport*

| Traffic and Transport Management Plan | |
|---|---|
| **Policy** | To minimise as much as practicable potential impacts associated with traffic generated by the Project. |
| **Performance criteria** | • Minimal traffic-related complaints and incidents.<br>• To minimize impacts on road pavements, or where this is not practicable, to negotiate appropriate contributions or upgrades to road pavement impacts with relevant authorities. |
| **Implementation strategy** | • All vehicles travelling to, from and within the Pipelines area during all phases to follow relevant traffic management plans.<br>• Car pooling and bus services will be implemented where possible to minimise worker journeys.<br>• Truck deliveries will be take place during hours that present the least risk to road users.<br>• Dangerous goods will be transported along preferred routes in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail, and in accordance with the Queensland Transport Operations (Road Use Management – Dangerous Goods) Regulation 1998, the Transport Infrastructure Act 1994.<br>• The transport of oversize loads will be restricted to non-peak periods where possible.<br>• Clear signs and signals will be installed to guide traffic movement and increase traffic safety.<br>• Vehicles will observe Project traffic regulations (i.e. speed limits).<br>• Necessary approvals for traffic-related activities to be sought from relevant bodies.<br>• Prior to construction works, a traffic or access plan will be prepared in order to minimise the impact to landholders.<br>• Weed management measures (refer to *Section 2.1.4*) will be implemented to minimise the spread of weed. |
| **Monitoring and auditing** | • The number of incidents or complaints received in relation to project traffic will be monitored.<br>• Potential transport network shortcomings will be reported to the relevant authorities and appropriate action taken in agreement with those authorities.<br>• Road conditions will be monitored on a regular basis.<br>• Transport companies will be audited to ensure compliance with the Traffic Management Plan. |
| **Reporting and corrective action** | • The occurrence of any traffic incidents or complaints will be recorded by the Environmental Officer and reported to the HSSE Manager.<br>• All traffic incidents involving Project personnel will be thoroughly investigated.<br>• Non-compliance and reported incidents will be investigated and closed out. |

### 2.1.3 *Visual Amenity and Lighting*

| Visual Amenity and Lighting Management Plan | |
|---|---|
| **Policy** | To minimise impacts on visual amenity associated with the Pipeline.<br>To reduce as much as practicable lighting impacts on sensitive receptors. |
| **Performance criteria** | • Respond to all complaints regarding visual amenity and lighting and, where feasible, implement mitigation measures. |

| Visual Amenity and Lighting Management Plan | |
|---|---|
| | • Consultation with potentially affected sensitive receptors. |
| **Implementation strategy** | • Route selection that ensures watercourse crossings and camps are located at an appropriate distance from residents.<br>• Consultation with landowners and neighbouring occupiers in relation to the location of camps.<br>• Lighting will be installed with reference to AS 4282-1997 Control of obtrusive effects of outdoor lighting. |
| **Monitoring and auditing** | • Visual amenity will be monitored from potentially affected viewsheds.<br>• Landholder complaints relating to lighting will be recorded and closed out by the Environmental Manager or delegate. |
| **Reporting and corrective action** | • Complaints relating to visual amenity and lighting will be addressed promptly, with further investigations and reporting to the DERM if required.<br>• In response to DERM and or community concerns, appropriate remedies will be assessed in order to minimise potential impacts. |

### *2.1.4 Weeds and Pests*

| Weed and Pest Management Plan | |
|---|---|
| **Operational Policy** | To prevent spread or introduction of pest and weed species as a results of Project activities. |
| **Performance Criteria** | No increase in abundance or distribution of weed and pest species as a result of Project activities. |
| **Implementation Strategy** | • Qualified personnel to undertake weed surveys of the Project Area prior to construction to identify required wash-down locations.<br>• Liaison with government authorities and landholders in relation to any existing weed data sets and management strategies.<br>• Survey data to be forwarded to the GIS co-ordinator for inclusion in the GIS data set.<br>• Map and maintain weed-identification layer on Project GIS.<br>• Where weed infestation is identified, initiate appropriate action (e.g. notify the weed contractor to carry out the control program).<br>• Develop/revise the access control map as new information arises.<br>• Vehicles, plant and equipment must travel on approved access routes only (Approved Access Mapping).<br>• Plan construction activities to minimise the spread of weeds.<br>• Limit vehicle movements on vegetated areas that may contain weed material.<br>• Vehicles travelling from weed-affected areas must wash-down prior to leaving these areas or prior to re-entering the road network.<br>• All vehicles, plant and equipment (including hand tools such as shovels) will be inspected by nominated personnel before being certified clean for entry to the Project Area.<br>• All vehicles, plant and equipment will be kept visually clean (as practicable) and kept free of grass and other materials where possible.<br>• Equipment and vehicles will be cleaned in designated wash-down sites before leaving weed-infested areas or entering weed-free areas.<br>• Personal clothing, including boots, will be cleaned of mud and weed seeds nightly as well as whenever leaving weed-infested areas. Trouser pockets and cuffs are to be turned out to remove any seeds.<br>• Vehicles, plant and equipment that fail inspection must be washed down and re-inspected. |

| Weed and Pest Management Plan | |
|---|---|
| | • A log, to be completed for all wash-down activities, is to be maintained at the construction site office and made available to the Environmental Manager, auditors or regulators on request.<br>• Only identified wash-down facilities will be used (refer GIS maps).<br>• Wash-downs to be managed so as to not leave a weed seedbank.<br>• Ensure potential mosquito-breeding sites, including equipment and materials that pool water, are avoided or drained regularly. Any such equipment or debris no longer required for construction will be disposed of as soon as possible.<br>• Campsite and Office Supervisors and Construction Superintendents trained to recognise mosquito-breeding activity and the treatment of breeding sites.<br>• Periodic inspection of any ponded water to ensure no mosquito breeding occurring.<br>• Removal of any mosquito breeding site from Project related source. |
| **Monitoring and Auditing** | • During construction, the entire length of the RoW and associated work areas will be inspected monthly to assess the effectiveness of weed protection measures.<br>• Ongoing monitoring will be undertaken for a period of up to two years after construction is completed to assess the success of weed-control activities (Operations Management will continue this work during operations and into the future).<br>• Regular audits in accordance with *Section 1.10* of this EMP will be undertaken, and recommendations and corrective actions will be implemented. |
| **Reporting and Corrective Action** | • Non-Compliance and Incident Reporting will be reported to, and regulated by, senior management to ensure prompt rectification and change management as required.<br>• Landholder complaints will be recorded and appropriately acted upon by the Environmental Manager (see *Sections 2.1.17* and *2.2.17*)<br>• A survey of weed-prone areas to be conducted after early wet-season rainfall events and thereafter monthly during the first wet season, if access allows. |

### *2.1.5 Air Quality and Dust*

| Air Quality and Dust Management Plan | |
|---|---|
| **Operational Policy** | To construct and operate in a manner that minimizes impacts on ambient air quality. |
| **Performance Criteria** | • No exceedence of Project derived air quality criteria at sensitive receptors.<br>• Consultation with potentially affected sensitive receptors.<br>• Respond to all complaints on air quality. |
| **Implementation Strategy** | • Vehicles and machinery to be fitted with appropriate exhaust systems and devices. Such devices will be maintained in good working order.<br>• Drive on unsealed surfaces, adjacent to residences, at speeds to minimise dust generation.<br>• Watering of the RoW, access tracks and topsoil stockpiles on an as-required basis to minimise the potential for environmental nuisance due to dust.<br>• Watering frequency will be increased during periods of high risk (e.g. high winds).<br>• The potential for generation of bulldust will be reduced through management and control (e.g. watering, mulching cleared vegetation to provide a stable surface).<br>• Community to be notified and consulted about scheduled construction |

| Air Quality and Dust Management Plan | |
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| | activity likely to generate dust.<br>• Avoid smoke generation, with a strict no-burning policy.<br>• Fire control procedures in welding operations. |
| **Monitoring and Auditing** | • Visual checks of dust emissions, particularly during windy/dry periods.<br>• Water construction sites and access roads on an as-required basis (e.g. persistent dust emissions).<br>• Visual evidence of defective exhausts, and subsequent repair of relevant construction vehicle by contractor. |
| **Reporting and Corrective Action** | • The owner and construction contractor will maintain records of all monitoring and auditing activities and report results to the Environmental Manager at agreed intervals.<br>• Recommendations and corrective actions arising from audits and reviews will be implemented.<br>• Routine work reports will be recorded and reviewed by each supervisor or manager.<br>• All incidents that deviate from normal operating conditions will be reported and action initiated (including reporting to relevant agencies where this is warranted/required) by the owner and construction contractor to prevent a recurrence of the incident.<br>• Non-compliance and incident reports will be reviewed and closed out by senior management. |

### *2.1.6 Surface Water and Groundwater*

| Surface Water and Groundwater Management Plan | |
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| **Operational Policy** | To minimise the potential impacts associated with erosion and to prevent the release of contaminants that may adversely affect downstream surface-water quality.<br>To protect the quality of the existing groundwater resources. |
| **Performance Criteria** | No release of contaminants to surface waters outside the boundary of Project infrastructure.<br>No failures of sediment and erosion control techniques leading to unacceptable sediment release.<br>Groundwater quality not impacted by construction or operations activities. |
| **Implementation Strategy** | • Watercourse banks reinstated to prevent scouring.<br>• Watercourse flows and channel crossings not altered.<br>• Erosion- and sediment-control techniques implemented on-site where necessary.<br>• No direct or indirect release of contaminants to surface waters as a result of construction activities.<br>• No accelerated erosion as a result of construction activities.<br>• For wet crossings, water-quality characteristics measured to be within the limits set out in the EA.<br>• The crossings will typically be at right angles to the direction of water flow. This will minimise scour potential. This will include vehicular and maintenance tracks.<br>• Crossings will, where practicable, be undertaken in no- or low-flow conditions during drier month (e.g. April – October).<br>• Breakers will be installed in trenches close to flowing streams (or in periods of potential inundation) to limit the potential for streamflow into the trench.<br>• Berms will be installed downslope of trench breakers to divert seepage away from the RoW to stable ground. |

**Surface Water and Groundwater Management Plan**

- Vehicle crossings will be appropriately constructed (e.g. include rock and flume/s) to cater for existing or expected flow conditions.
- Watercourse banks will be reinstated as near as possible to their former profile and stabilised and revegetated as necessary to prevent scouring.
- Existing layers of cobbles and/or coarse gravel in the bed of the watercourse will be reinstated.
- Banks to be reinstated to a slope no steeper than existing site conditions and to a grade compatible with the strength of the site's soil type.
- Watercourses will be stabilised with, for example, gabions (rock mattresses) or jute matting as required.
- Drainage shall be reinstated.
- Crossings will be completed promptly.
- The disturbance corridor for the bed and bank of watercourses will be the narrowest practicable for safe construction. However, a wider RoW and work area will be required for watercourses with deep and steep banks in order to install the pipelines at the required depth.
- Where practicable, large trees, particularly hollow-bearing trees, will be retained. Root stock will, wherever practicable, be retained for stabilisation of the banks.
- Riparian vegetation clearing will be kept to the minimum practical for safe construction of the Pipeline and take into consideration other environmental constraints such as soil and felled vegetation stockpiling for rehabilitation.
- Sediment fences will be installed between the creek and the construction area when wet weather is expected and post - construction.
- The Construction Supervisor will be vigilant of flood warnings and, where necessary, action will be taken in accordance with the Emergency Response Plan.
- Any trench water will be pumped out to stable ground well away from any watercourse.
- Where trench de-watering is required at a watercourse, the water will be discharged through a settlement basin to minimise turbidity.

**Hydrotest Water**

- Hydrotest water is to be sourced only from authorised sources under permits issued by the regulatory authority.
- The source of hydrostatic test water shall be approved in advance by the Environmental Manager.
- If required, relevant permits to draw water from State Resources shall be obtained.
- Where water is to be transferred from one catchment to another in-line filters will be used.
- Pipeline sections crossing water bodies (trenchless crossings in particular) will be tested prior to installation.
- Inspection of all pipeline section welds or hydrotesting of pipeline sections before installation under water bodies will be performed in accordance with construction specifications/procedures.
- Disposal of hydrotest water will be in accordance with *Section 2.1.12*.

| Surface Water and Groundwater Management Plan | |
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| **Monitoring and Auditing** | • During construction, the entire length of the easement will be regularly inspected to assess the effectiveness of protection measures, with attention to management of watercourse environments.<br>• Water quality will be monitored upstream and downstream of the construction area where a discharge occurs<br>• Water-quality of discharges from any acid sulfate soil (ASS) stockpiles will be monitored<br>• Records will be maintained of all releases to waters including the location, frequency of discharge and monitoring results. |
| **Reporting and Corrective Action** | • Regular audits and reviews in accordance with *Section 1.10* of this EMP will be undertaken and recommendations and corrective actions implemented.<br>• Daily or weekly work reports (as appropriate) will be recorded and reviewed by each supervisor or manager.<br>• Non-Compliance and Incident Reporting will be closed out by the owner to ensure prompt rectification and change management as required.<br>• Landholder complaints will be recorded and appropriately acted upon by the Environmental Manager (see *Sections 2.1.17* and *2.2.17*)<br>• Construction Audits will include all watercourse crossings of medium-to-high sensitivity. |

### *2.1.7 Soil Erosion and Sediment Control*

| Soil Erosion and Sediment Control Management Plan | |
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| **Operational Policy** | To minimise environmental impacts caused by soil loss and erosion. |
| **Performance Criteria** | Erosion and sediment control techniques implemented onsite where necessary.<br>No failures of sediment and erosion control techniques leading to unacceptable sediment release. |
| **Implementation Strategy** | • Minimise the quantity and duration of soil exposure.<br>• Protect topsoil, root and seed stock by:<br>  – Topsoil – separation of topsoil stockpiles from subsoil; stockpile topsoil on the high side of the RoW on hill slopes; limiting the height of stockpiles to two m; grading away from watercourses; topsoil is not to be used as padding material; respreading topsoil after scarification; spreading of felled vegetation during rehabilitation.<br>  – Root – use of graders rather than bulldozers to avoid ripping out the root system; route selection to avoid areas of side slope, thus minimising root-stock loss.<br>  – Seed – separation and stockpiling of topsoil to preserve seed stock; spreading felled vegetation to protect the topsoil and provide additional seed stock; no burning of felled vegetation.<br>• Minimise the potential for bulldust creation in susceptible soils by:<br>  – Watering a drive strip immediately after grading to enable compaction and a firm crust to form.<br>  – Limiting vehicle movements to the watered strip.<br>  – Reducing permitted vehicle speeds.<br>  – Regular on-going watering.<br>  – Use of additive (e.g. Dustmag) to bind soil if necessary.<br>• In the event that bulldust occurs:<br>  – Implement a detour around the affected area.<br>  – Create additional temporary workspace.<br>  – Water to repair the area.<br>  – Rehabilitate as soon as possible. |

| Soil Erosion and Sediment Control Management Plan | |
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| | − Wait for natural rainfall to reset the surface then scarify and seed.<br>• Minimise work during wet weather, as it has limited production benefit and consequential rehabilitation costs.<br>• Protect critical areas during and after construction by reducing the velocity of water and redirecting run-off to stable ground.<br>• Install and maintain erosion-control structures (e.g. berms, contour banks, turn-off drains and silt fences).<br>• Install diversion banks at the crest of the stream approach- slope to divert sheet flow from backfilled trenches.<br>• Recontour landforms to their original condition as soon as practicable, including any erosion controls established prior to construction.<br>• Replace topsoil and seed stock to facilitate revegetation as soon as practicable following grading.<br>• Ensure RoW and access roads have properly constructed turn-off drains.<br>• Revegetate the easement as soon as practical after completion of backfilling (see also *Section 2.1.24*).<br>• Avoid vehicle movement on restored easement until vegetation re-established.<br>• Inspect the RoW and maintain erosion and sediment controls as necessary during and after construction, until stabilisation is achieved. |
| **Monitoring and Auditing** | • During construction, the entire length of the easement will be regularly inspected to assess the effectiveness of erosion-protection measures, with particular attention to sensitive locations.<br>• The inspection of sediment controls should focus on integrity of:<br>− Topsoil stockpiles<br>− Sediment fencing condition<br>− RoW diversions channels (ensure they are not being eroded or "washed out")<br>− Drainage channels and creeks.<br>• Additional inspections will be undertaken following high rainfall (i.e. >25 mm per day). |
| **Reporting and Corrective Action** | • Regular audits and reviews in accordance with *Section 1.10* of this EMP will be undertaken, and recommendations and corrective actions shall be implemented.<br>• Daily or weekly work reports (as appropriate) shall be recorded and reviewed by each supervisor or manager.<br>• Non-Compliance and Incident Reporting will be closed out by the owner to ensure prompt rectification and change management as required. |

### 2.1.8 *Acid Sulfate Soils*

| Acid Sulfate Soils Management Plan | |
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| **Operational Policy** | To minimise environmental impact arising from disturbance of acid sulfate soils. |
| **Performance Criteria** | • Develop and implement an approved acid sulfate soils management plan (ASSMP). |
| **Implementation Strategy** | • Geotechnical studies will include assessment for the presence of ASS for coastal lowland areas near Friend Point and on the western margin of Curtis Island.<br>• Prepare and implement an ASS Plan based on the findings of the geotechnical studies.<br>• Typically, ASS management strategies would include:<br>− Minimising the amount of time the excavated soils are stockpiled, thus reducing the potential time for oxidation of ASS and |

| Acid Sulfate Soils Management Plan | |
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| | subsequent run-off.<br>– Stockpiling excavated soil containing ASS within a bunded area and treating with lime. (Rate to be confirmed, but at least 50 kg per 10m3 of soil).<br>– Ensuring any ASS remains within original location of excavation to reduce the potential for spreading acidity.<br>• Compacting trench backfill to a level at least similar to that of the surrounding soil profile to ensure that the structure does not provide a permeable pathway for acid leachate migration, and that permanent lowering of the water table does not occur. |
| **Monitoring and Auditing** | • Monitor construction activities in the area of Targinnie Road through to The Narrows crossing and western fringe of Curtis Island. |
| **Reporting and Corrective Action** | • If ASS located, the Environmental Manager will report to DERM. |

### 2.1.9 *Flora and Fauna*

| Flora and Fauna Protection Management Plan | |
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| **Operational Policy** | To minimise impacts on the abundance and distribution of flora and fauna as a result of Project activities.<br>Progressively rehabilitate disturbed areas where practicable. |
| **Performance Criteria** | • Avoid, where practicable, of endangered, vulnerable and rare (EVR) flora species and the habitat of EVR fauna.<br>• No unauthorized clearing of native vegetation.<br>• Permits and approvals in place for any unavoidable disturbance of EVR flora and fauna species.<br>• No introduction of declared pests as a result of Project activities.<br>• Develop and implement an environmental offsets strategy.<br>• Minimise impacts to native vegetation and on habitat fragmentation.<br>• Progressive rehabilitation is consistent with the surrounding area and land use post restoration. |
| **Implementation Strategy** | • Ensure DERM Forestry Products have been consulted in relation to extraction of Millable timber.<br>• Ensure detailed field investigations have been completed for final alignment.<br>• Ensure all clearing widths are clearly marked in the field.<br>• Flag individual significant plant species (including habitat trees) within the easement that must be avoided during construction.<br>• Avoid areas of remnant brigalow and bluegrass communities where practicable.<br>• Avoid all Semi-evergreen Vine Thicket (SEVT) areas.<br>• If clearing in wetland areas impact monitoring is to be implemented.<br>• Avoid, where practicable, the destruction of mature riparian trees.<br>• Clearing boundaries within all REs will be marked on design drawings and flagged in the field.<br>• No clearing of remnant vegetation for construction camps, additional work areas or vehicle access tracks.<br>• No disturbance of protected species without relevant permit.<br>• Construction of physical barriers around significant vegetation areas in order to restrict access and avoid disturbance.<br>• No burning of felled vegetation. Rather, the felled vegetation should be stick raked into piles and left to provide animal habitat and to assist in revegetation and erosion control. This will further encourage regrowth within these communities, as well as minimise weed infestations. |

| Flora and Fauna Protection Management Plan | |
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| | • Respread felled native vegetation and timber over the RoW.<br>• Implement a re-seeding plan based on soil type and existing local ground layer vegetation characteristics (i.e. native or improved pastures) along the route.<br>• Use of quick-growing and (preferably) native species and/or those that are compatible with the adjacent grazing uses during rehabilitation.<br>• Areas where natural regeneration has not been successful (i.e. has not achieved 50 per cent of the desirable species cover on adjoining undisturbed areas within 24 months) will be seeded with native groundcover species (or with existing dominant surrounding pasture species).<br>• Whilst construction will be year round, where construction occurs outside of the driest months, additional trench surveillance will be undertaken, when reptiles and amphibians are least active and conditions are most favourable for minimising mortality in the trench.<br>• Qualified fauna handlers will be used to survey, record and relocate wildlife immediately during trenching activities.<br>• Trenching to occur progressively to minimise the period of time trenches are open, as well as their length.<br>• Install fauna escape ramps or ladders in all open-trench areas along pipelines.<br>• Maintain contact details for qualified veterinarian staff who can assess, treat or euthanase (as necessary) any large native vertebrates.<br>• Notify Department of Environment, Water, Heritage and the Arts (DEWHA) of any important population of Commonwealth-protected species located in association with the route and agree strategy.<br>• Ensure no permanent barrier to fish movement at any stage of the Project.<br>• Strict no-weapons and no-pets policy for workforce.<br>• All vehicles to remain on designated access roads and tracks and within defined pipeline construction area and associated work/camp sites.<br>• Vehicle movements to be restricted at night as far as practicable.<br>• Vehicles to travel along the RoW at appropriate speeds that minimise environmental risks.<br>• Existing roads and tracks will be utilised for access where practicable.<br>• Where possible, native shrubs will be allowed to regenerate to enhance fauna movement, especially for small ground-dwelling animals.<br>• Spreading of logs, hollows and dead timber across the disturbed areas within woodland fauna habitats will be carried out to facilitate small ground-fauna movement.<br>• Bare vehicle tracks will be minimised following the rehabilitation of the corridor post-construction.<br>• Environmental Offset Initiatives will be implemented in accordance with the Project Environmental Offsets Strategy.<br>• EPBC listed flora and fauna will be avoided wherever possible. If, in exceptional circumstances, EPBC listed flora cannot be avoided, offset initiatives are proposed. |
| **Monitoring and Auditing** | • During construction, the entire length of the RoW and associated work areas will be regularly inspected to assess the effectiveness of protection measures with particular attention to flora and fauna protection and management.<br>• Throughout construction, the entire length of the open trench will be |

| Flora and Fauna Protection Management Plan | |
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| | inspected by approved fauna handlers.<br>• Environmental Offset initiatives will be audited against objectives established in the Project Environmental Offsets Strategy. |
| **Reporting and Corrective Action** | • The owner and construction contractor will maintain records of all monitoring and auditing activities and report results to the Environmental Manager at agreed intervals.<br>• Information gathered on the number and varieties of fauna removed from trenches will be presented to the relevant authorities in the State (e.g. Queensland Museum).<br>• Offset Audits will be reported annually. Actions to address failed objectives will be developed, implemented and reviewed as part of the annual audit process.<br>• Recommendations and corrective actions arising from audits and reviews will be implemented.<br>• Routine work reports will be recorded and reviewed by each supervisor or manager<br>• All incidents that deviate from normal operating conditions will be reported to the Environmental Manager and corrective action initiated by the owner and construction contractor to prevent a recurrence of the incident<br>• Reporting to the relevant agencies where this is warranted/required will be carried out by the Environmental Manager.<br>• Non-compliance and incident reports will be reviewed and closed out by the owner. |

### 2.1.10 *Marine Ecology*

| Marine Ecology Management Plan | |
|---|---|
| **Operational policy** | To minimise impacts on abundance and distribution of marine flora and fauna as a result of Project activities. |
| **Performance criteria** | No unauthorised disturbance to or removal of marine plants.<br>Minimise as much as practicable disturbance to marine fauna. |
| **Implementation strategy** | The following strategies will be implemented to minimise potential impacts on marine ecology:<br>• Design infrastructure and apply construction methods to minimise direct footprint on marine habitat as much as practicable<br>• All Project vessels will abide by Port of Gladstone vessel speed restrictions and exclusion zones<br>• Construction activities in marine areas (for example, trenching, HDD) will be undertaken in as short a time frame as practicable to minimise disturbance.<br>• External lighting will be located as necessary to comply with occupational health and safety (OHS) requirements while minimising where practicable light spill into marine environment<br>• Solid wastes will be controlled on site and removed for disposal by a licenced contractor<br>• Project vessels will have a Ship Board Oil Pollution Emergency Plan (SOPEP) (or equivalent) and carry an oil pollution kit<br>• During activities involving disturbance to the seabed, monitoring of turbidity and total suspended solids will be carried out, with appropriate contingency measures if required. These could include:<br>• Suspending or relocating works until tidal/winds conditions are more favourable<br>• Where practicable, installation of silt curtains or similar measures that help reduce turbidity. |

| Marine Ecology Management Plan | |
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| | • Food scraps and other putrescible wastes from vessels will be disposed of in accordance with MARPOL 73/78 Annex V (International Convention for the Prevention of Pollution From Ships, [Garbage]).<br>• EPBC listed flora and fauna will be avoided wherever possible. If EPBC listed flora cannot be avoided, offset initiatives are proposed.<br>• Oily water separators on all vessels will collect cooking oils and greases for on-shore disposal. |
| **Monitoring and auditing** | • Regular inspections will be carried out for general leaks and spills on all vessels, plant and equipment and corrective action taken.<br>• A comprehensive regional ecosystem and marine plant offset strategy will be developed, addressing mangroves disturbed as a result of Project construction activities. |
| **Reporting and Corrective Action** | • Non-compliance and Incident Reporting will be investigated and closed out.<br>• The EPC contractor will maintain records of all complaints received and corrective actions undertaken to prevent reoccurrence. |

### 2.1.11 *Stock Access and Control*

| Stock Access and Control Management Plan | |
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| **Policy** | To minimise the impact on stock movements. |
| **Performance criteria** | • Where deemed necessary, stock access will be restricted from Activity sites.<br>• No stock injured or killed due to Gas Field Activities.<br>• No complaints from stock farmers. |
| **Implementation strategy** | • Where there is a risk to stock safety or Pipeline infrastructure, stock may be restricted from accessing certain areas.<br>• Landholders will be consulted to determine stock movement requirements.<br>• Agreements reached with landholders to restrict access during Activities so that stock is not unduly disrupted.<br>• Landholder requirements communicated to all relevant QGC personnel.<br>• Upon decommissioning, sites will be rehabilitated to ensure there is no impediment or potential to cause harm to stock. If infrastructure is to remain, it should exclude stock access with permanent fencing. |
| **Monitoring and auditing** | • All stock injuries or deaths attributable to the Project will be recorded and investigated.<br>• Field Operators will be aware of landholder requirements and will communicate any breaches (e.g. fences in need of repair). |
| **Reporting and corrective action** | • Complaints addressed promptly and recorded in the incident reporting database if non-compliance with landholder requirements identified.<br>• Corrective action will be taken to prevent any repeat of stock injuries or deaths attributable to the Project. |

### 2.1.12 *Waste Management*

| Waste Management Plan | |
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| **Operational Policy** | To minimise waste generation and maximise reuse and recycling of construction waste products.<br>To dispose of waste in an appropriate manner. |
| **Performance** | • No contamination of soil, air or water as a result of inappropriate |

| Waste Management Plan | |
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| **Criteria** | waste management.<br>• Develop and implement a plan for waste minimisation and management.<br>• All waste disposal to be carried out by a licensed waste contractor.<br>• Waste management practices to not result in loss of health to personnel or sensitive receptors. |
| **Implementation Strategy** | **General**<br>• Develop strategies for specific waste streams prior to construction commencing.<br>• Develop waste-disposal strategy prior to construction commencing, including the identification of suitable disposal locations, in consultation with local communities were applicable.<br>• Stockpile and salvage reusable and recyclable waste, such as timber skids, pallets, drums and scrap metals.<br>• Store hazardous wastes in lined, bunded area at least 100 m from watercourses or flood plains.<br>• Collect and remove (via a licensed contractor) waste oil, solvents and other toxic materials from the site for recycling, reuse or disposal at a facility licensed to accept such wastes.<br>• Waste oil and chemical storage areas must be bunded in accordance with DERM requirements.<br>• The RoW, drilling sites, storage areas, camp sites and work areas to be cleared of all debris.<br>• There will be no on-site burial of waste material.<br>• Dispose of vehicle wash-down water in accordance with the Weed Management Plan (*Section 2.1.4*).<br>• Collect chemical wastes (e.g. spent pipeline, X-ray film, developer chemicals) in 200 litre drums (or similar sealed container), appropriately labelled, for safe transport to an approved chemical waste depot or for collection by a liquid waste treatment service.<br>• All bonding material and dunnage from transport vehicles and unloading areas is to be collected and transported off the RoW to designated disposal areas. The Construction Superintendent will advise designated disposal areas for each section of the RoW.<br>• All general refuse and food wastes (taking into account health and hygiene issues where practicable) to be collected and transported to State Government and/or local government approved disposal sites.<br>• Refuse containers will be located at each worksite.<br>• All personnel shall be instructed in project waste- management practices as a component of the environmental induction process.<br>**Sewage Effluent**<br>Refer to *Section 2.1.13.*<br>**Hydrotest Water**<br>• The Environmental Manager will check and approve detailed hydrostatic test water discharge procedures.<br>• Hydrotest water is not to be discharged directly to waters (EA-#).<br>• Where biocides are added, ensure that discharge water is aerated.<br>• Prior to discharge of hydrotest water, the Environmental Manager shall be consulted about requirements for water-quality testing. Where the water source and water quality is known, and no chemicals have been added, water-quality testing may not be required.<br>• Discharge hydrotest water to land, and in such a way as to ensure no environmental harm including preventing run-off into any watercourse or drainage lines, flooding or erosion (e.g. against a splash plate or other dispersive device in order to aerate, slow and disperse the flow).<br>• All solid waste (e.g. mill scale, construction debris) is to be captured and disposed of through the waste management system.<br>• Discharge of hydrotest water shall be in compliance with all regulatory |

| Waste Management Plan | |
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| | and landholder requirements and shall not cause environmental harm.<br>• The treatment and disposal of hydrotest water containing biocides shall be done in accordance with the recommendations made in the CSIRO Manufacturing and Infrastructure Technology report (2005). |
| **Monitoring and Auditing** | • During construction, the entire length of the RoW and associated access areas will be regularly inspected to assess the effectiveness of Waste Management Practices.<br>• Housekeeping checks will ensure waste is being stored correctly and there is no littering.<br>• Regular audits in accordance with *Section 1.10* of this EMP will be undertaken, and recommendations and corrective actions shall be implemented.<br>• Review of old campsite area after relocation.<br>• Review of waste-management procedures, and quantity of regulated wastes generated. |
| **Reporting and Corrective Action** | • Non-Compliance and Incident Reporting will be reported to, and regulated by, senior management to ensure prompt rectification and change management as required.<br>• Landholder complaints will be recorded and appropriately acted upon by the Environmental Manager (see *Sections 2.1.17* and *2.2.17*) |

### *2.1.13 Effluent Disposal*

| Effluent Disposal Management Plan | |
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| **Policy** | To release treated effluent and manage sewage sludge without causing environmental harm. |
| **Performance criteria** | • Treated effluent meets quality requirements of design parameters.<br>• All sewage sludge is disposed off at an appropriate sewerage disposal facility. |
| **Implementation strategy** | • Sewage treatment plants will be subject to a site- based management plan, also detailing the irrigation of treated effluent.<br>• All regulated waste must be recorded and tracked in accordance with the EP regulations, which includes keeping records of the pickup date, waste description, quantity, origin and destination.<br>• Sewage will be treated to Class A Effluent standard<br>• Raw sewage will be gravity-fed into a pump well and balance tank(s) and will then flow through treatment units composed of a number of components including:<br>− a primary tank which undertakes sedimentation, digestion and storage of solid matter<br>− balance tank for flow equalisation<br>− aeration tank to reduce organic matter<br>− clarifier for further removal of residual suspended solids<br>− final effluent tank for disinfection and storage of treated water<br>− filter feed tank, gravity-fed from the final effluent tank<br>− ultra filtration membrane<br>− chlorine dosing<br>− final treated effluent tank with three days wet-weather storage.<br>• Sanitary bio-solids or sludge from camp sewage treatment operations will be disposed at commercially licensed offsite facilities as necessary.<br>• Sludge from the onsite wastewater treatment facilities will be pumped out periodically and transported to the nearest licensed wastewater treatment works.<br>• The effluent disposal system will consist of a fenced (sediment fencing and bund). |

| Effluent Disposal Management Plan | |
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| | • The final treatment method will be selected in consultation with the relevant Council and DERM. |
| **Monitoring and auditing** | • Significant sewage treatment plants with irrigation mechanisms will be tested every six months and be subject to daily, weekly and monthly checks.<br>• Daily treated effluent discharge limits to be reviewed monthly.<br>• The annual audit will encompass effluent waste tracking.<br>• The waste transfer station will record all wastes that it manages on-site.<br>• Soil and water quality in and around irrigation areas will be tested on a regular basis.<br>• The quality of treated effluent discharged to land will be monitored in accordance with the Project derived quality requirements. |
| **Reporting and corrective action** | • The waste transfer station will use an on-site EHS and EMS program to manage all wastes.<br>• Any non-compliance with sewage management plans will be followed up and corrective actions taken<br>• Irrigation regimes will be amended depending on the results of soils and water quality monitoring. |

### *2.1.14 Soil Contamination*

| Soil Contamination Management Plan | |
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| **Operational Policy** | No contamination of soils arising from Project activities.<br>To manage any pre-existing contaminated soils such that extent of contamination is not exacerbated by Project activities. |
| **Performance Criteria** | • Project sites site not added to Queensland Contaminated Land Register (CLR).<br>• No release of hazardous substance or dangerous goods to soil.<br>• Identify all pre-existing contaminated soils likely to be impacted by Project activities.<br>• Where pre-existing contaminated soils are identified, and disturbance by Project activities is unavoidable, develop and implement appropriate management strategies. |
| **Implementation Strategy** | • Trenching Supervisor will be instructed in process for handling previously unidentified contaminated areas (e.g. dip, waste pit) or acid sulfate soil in the event that any such areas are uncovered during trenching. These will include:<br>− Cessation of trenching at the location.<br>− Relocation and recommencement of trenching 50m ahead.<br>− Advise Environment Manager.<br>− Have site assessed in accordance with the relevant DERM Guidelines – Draft Guideline for the Assessment and Management of Contaminated Land in Queensland, Department of Environment, May 1998 or Instructions for the Treatment and Management of Acid Sulfate Soils, Qld EPA, 2001.<br>− Initiate appropriate remedial action based on the assessment. This may include deviating around the site.<br>• Storage of all fuels and chemicals will comply with relevant legislation governing the storage and handling of materials that may adversely impact the environment if released (i.e. Queensland Dangerous Goods Safety Management Regulations, 2001).<br>• Appropriate spill-containment facilities for all chemicals and fuel storage areas will be established in accordance with AS 1940 and |

| Soil Contamination Management Plan | |
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| | AS 3780.<br>• A hazardous materials register detailing the location and quantities of hazardous substances will be established and maintained, including details of storage, use and disposal.<br>• Personnel will be inducted and trained in safe work practices to minimise the risk of spillage.<br>• If an area of contamination is reported, the cause will be identified and the area of contamination contained. The impact may be contained by isolating the source or implementing controls around the affected site.<br>• Remediation of contaminated land will use the most appropriate available method to achieve required commercial/industrial guideline validation results.<br>• Validation sampling of any remediated area will be used to establish the site as "clean" in line with the relevant DERM Contaminated Land and National Environment Protection Measure (NEPM) Guidelines.<br>• Wastes will be classified, transported and disposed of in accordance with Queensland Environmental Protection (Waste Management) Policy 2000 and Environmental Protection (Waste Management) Regulation 2000. |
| **Monitoring and Auditing** | • The integrity of storage facilities for hazardous materials and wastes and bunded areas will be routinely inspected. |
| **Reporting and Corrective Action** | • Regular audits and reviews in accordance with *Section 1.10* of this EMP will be undertaken and recommendations and corrective actions implemented.<br>• Daily or weekly work reports (as appropriate) shall be recorded and reviewed by each supervisor or manager.<br>• Non-Compliance and Incident Reporting will be closed out by senior management to ensure prompt rectification and change management as required.<br>• The owner and construction contractor will maintain records of all monitoring and auditing activities and report results to the Environmental Manager at agreed intervals. |

### 2.1.15 *Mosquito and Biting Midge Management*

| Mosquito and Biting Midge Management Plan | |
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| **Policy** | To undertake Project activities such that potential health impacts on Project personnel and nearby sensitive receptors arising from mosquitoes and biting midges are minimised. |
| **Performance criteria** | Minimise potential mosquito and biting midge breeding sites resulting from Project activities. |
| **Implementation strategy** | • An assessment of work areas will be undertaken prior to works and on an ongoing informal basis to identify potential breeding sites.<br>• Potential breeding sites created by construction activities, such as potholes, depressions and wheel ruts, to be filled as soon as practicable to prevent ponding.<br>• The creation of sandy inter-tidal beach habitats will be avoided as these are suitable habitats for biting midges. Other designs such as rock walls or pebble beaches will be considered, if required.<br>• Drainage systems for stormwater, irrigation and sewage effluent will be designed to minimise mosquito and midge breeding.<br>• Construction camp facilities will be fitted with protective barriers, such |

| Mosquito and Biting Midge Management Plan | |
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| | as fly screens and air-conditioning.<br>• Insect repellent will be made available to site personnel as required.<br>• Any required specific area control plans based on assessment of potential breeding sites will conform to the Environmental Protection Agency Mosquito Management Code of Practice for Queensland. |
| **Monitoring and auditing** | • Areas of ponding and pooled water that cannot be easily removed or backfilled will be inspected regularly for presence of larvae by the environmental representative.<br>• Inspections of potential breeding grounds will be undertaken following rain.<br>• The Mosquito and Biting Midge Management plan will be reviewed periodically to ensure continuous improvement of the program. |
| **Reporting and corrective action** | • Records of any medical treatment of Project personnel required arising from mosquito borne disease or biting midge activity will be maintained by the Construction Environmental Manager.<br>• Where breeding sites are identified, the following corrective action will be taken:<br>− investigate reasons behind the increase<br>− employees will be re-trained in mitigation measures<br>− work policies and procedures will be reviewed to improve the management system. |

### 2.1.16 *Eastern Red Fire Ant Management*

| Eastern Red Fire Ant Management Plan | |
|---|---|
| **Policy** | To prevent spread or introduction of Eastern Red Fire Ant (ERFA) as a result of Project activities. |
| **Performance criteria** | • No evidence of ERFA on Project sites |
| **Implementation strategy** | • Imported fill and landscaping materials sourced from the vicinity of Fire Ant Restricted Areas will be accompanied by a movement certificate / declaration form provided by the EPC Contractor or their sub-contractor(s).<br>• Movements of vehicles from a restricted area will follow Department of Employment, Economic Development and Innovation (DEEDI) requirements, such as inspection and wash-down.<br>• Construction site personnel will be briefed on fire ant identification and management through site environmental or toolbox meeting. |
| **Monitoring and auditing** | • Construction site personnel will be briefed on fire ant identification and management through site environmental or toolbox meeting. |
| **Reporting and corrective action** | • The Construction Environmental Manager will be responsible for maintaining all records and liaising with the Construction Manager and DEEDI as required.<br>• Any fire ants identified on site will be reported to DEEDI.<br>• Should fire ants be identified on site, or non-compliance with DEEDI requirements occur, the following actions will be undertaken:<br>− An investigation will be undertaken to identify the reasons behind any non-compliance<br>− Employees will be re-trained as appropriate.<br>− Work policies and procedures will be reviewed to improve the system. |

### 2.1.17 *Incidents and Complaints*

All environmental incidents, near-misses and hazards will be reported via the Synergi incident reporting system in accordance with the BG Group Standard for incident reporting. Complaints will be handled by the Land Access and Communications teams in the first instance, who will liaise with the complainant(s), the Environment Team and the Environment Manager for an effective resolution. The Environment Manager has responsibility to ensure that all complaints are addressed and appropriately closed off.

| **Incidents and Complaints Management Plan** | |
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| **Operational Policy** | To have a process whereby all complaints can be lodged and responded to in an appropriate manner. |
| **Performance Criteria** | • Record all complaints and responses in an incidents and complaints register.<br>• Respond appropriately to all incidents and complaints. |
| **Implementation Strategy** | • All environmental incidents will be recorded in the Synergi database, with corrective actions assigned and followed up by the responsible person for a particular incident.<br>• The complaints form will document at least the following information:<br>− Time, date and nature of complaint.<br>− Type of communication (telephone, letter, email, visit).<br>− Name, contact address and contact number (if provided).<br>− Response and investigation undertaken as a result of the complaint.<br>− Action taken and signature of person investigating complaint.<br>• Each complaint will be investigated as soon as practicable and, where appropriate, action taken to remedy the cause of the complaint. If DERM advises alleged nuisance, it will be investigated and DERM advised of any action proposed or undertaken, and records will be kept of all complaints. |
| **Monitoring and Auditing** | • The Environmental Officer will maintain the complaints register and ensure all complaints are resolved. The complaint form will be checked by the Environmental Officer within two weeks of complaint receipt to ensure follow-up action has been taken to resolve the issue.<br>• Where required, the relevant authorities will be informed of complaints. |
| **Reporting and Corrective Action** | • All complaints and incidents are to be reported to the Environmental Officer, who will report to the relevant Manager.<br>• Should further incidents occur or complaints be received in relation to previous occurrences, an appropriate selection of the following corrective actions will be undertaken:<br>− Additional environmental awareness training of the workforce with respect to the procedures to be followed for environmental incidents or complaints.<br>− Investigation into why the incident/complaint was not addressed within the specified timeframe.<br>− Incident/complaint follow-up according to the results of the investigation.<br>− Where required, work place practices will be reviewed. |

### 2.1.18 *Environmental Induction and Training*

| Environmental Induction and Training Plan | |
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| **Operational Policy** | To ensure that all Project personnel, including contractors, comply with the environmental requirements of all tasks. |
| **Performance Criteria** | • All personnel undergo site inductions and, where necessary, additional training, that address environmental requirements of Project activities.<br>• Full compliance with induction and training procedures. |
| **Implementation Strategy** | • Training programs will be conducted as required.<br>• All site staff to be made aware of the Project EMP, EA conditions, environmentally sensitive areas and environmental responsibilities.<br>• Identify the skills required to effectively implement the Project; and the EMP and its procedures or sub plans. Ensure the skills of relevant contractors working on the site are also included.<br>• As a minimum, everyone will have basic environmental training and be familiar with the EMP, their roles and responsibilities detailed in it and what it requires in their job.<br>• Develop an induction training plan that explains environmental obligations, the purpose of the EMP and any issues new starters, whether permanent or contractors, must be aware of.<br>• Identify and describe how specific operations' skills training will occur, when and with which staff. Ensure all site/facility staff are aware of their responsibilities in implementing work instructions or procedures contained in the EMP.<br>• Ensure a document exists that clearly lists who will require training, the frequency of training and the procedure to document training activities. Identify to what basic level or standard training will be targeted. |
| **Monitoring and Auditing** | • The success of the training programs will be assessed and documented.<br>• Non-compliance with training will be recorded |
| **Reporting and Corrective Action** | • In the event of a staff member not being adequately trained or inducted, training activities will be undertaken as necessary.<br>• The training or induction programme will be revised accordingly. |

### 2.1.19 *Emergency Response for Environmental Incidents*

| Emergency Response for Environmental Incidents Management Plan | |
|---|---|
| **Policy** | To ensure that Project personnel can respond effectively and efficiently in the event of an environmental incident to ensure no long-term adverse impacts on health, safety or the environment. |
| **Performance criteria** | • Any emergency response addressed in accordance with the QGC Emergency Management Plan.<br>• Nil government notices. |
| **Implementation strategy** | • A detailed Crisis and Emergency Management Plan will be prepared and will include the following:<br>− Response procedures in the event of a fire, chemical release, spill, leak, explosion, equipment failure, bomb threat, natural disaster (including severe storm and flood events) or any other likely emergency.<br>− Communication arrangements and contact details.<br>− Roles and responsibilities of relevant personnel.<br>− Emergency controls and alarms.<br>− Evacuation procedures. |

| Emergency Response for Environmental Incidents Management Plan | |
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| | − Emergency response equipment.<br>− Leak detection and control points.<br>− Training requirements.<br>− Site access and security.<br>− Notify and report to DERM.<br>− Develop callout response plan.<br>− Spill-containment procedure.<br>− Safely recover spillage.<br>− Clean-up and rehabilitation.<br>− Incident investigation.<br>− ER training (refer *Section 2.1.18*).<br>− Monitoring and detection systems.<br>− Callout contact lists.<br>− Measures to halt spill [i.e. control pumps, etc.<br>− Requirements for remediation or disposal of contaminated soil (refer *Section 2.1.14*).<br>− Personnel responsibilities.<br>− Equipment requirements.<br>− Location, storage, maintenance and transport of equipment to site.<br>− Communications and logistics. |
| **Monitoring and auditing** | • The effectiveness of the emergency response plan will be tested at least annually and audited. |
| **Reporting and corrective action** | • The Corporate HSSE Manager will be responsible for compiling the results of testing and auditing programs. These results will be reported to the relevant Manager.<br>• The following constitute incidents or failure to comply:<br>1. Emergency response plan is not prepared or implemented.<br>2. Emergency response equipment is not provided.<br>3. Emergency response training is not undertaken.<br>4. Emergency response procedures not followed in the event of an incident.<br>• In the event of an incident or failure to comply, a selection of the following actions will be undertaken, as appropriate:<br>1. Prepare or implement the emergency response plan.<br>2. Provide the necessary equipment or training.<br>3. Investigate why the emergency response procedures were not followed and implement mitigating measures. |

### *2.1.20 Fire Management*

| Fire Management and Prevention Plan | |
|---|---|
| **Operational Policy** | To minimise the potential for vegetation to catch fire from construction activities and to be prepared to manage wildfires or vegetation control by landholders and third parties. |
| **Performance Criteria** | • Develop and implement and Emergency Response Plan that includes fire management.<br>• No unplanned and uncontrolled fires caused by Project Activities.<br>• Consultation with all relevant fire management authorities. |
| **Implementation Strategy** | • No uncontrolled fires along the RoW.<br>• No build-up of flammable material near hot-work areas.<br>• Emergency Response Plan implemented.<br>• Safety Management Plan implemented.<br>• Permits and approvals sought as required for measures to minimise |

| Fire Management and Prevention Plan | |
|---|---|
| | fire risks.<br>• Open fires, including barbecues, billy fires and vegetation burning, will be banned on the Project.<br>• Vegetation and other flammable material to be stockpiled well clear of hot-work activities to prevent unnecessary build-up of flammable material in working areas.<br>• Burning of felled timber and vegetation stockpiles not permitted (re-spreading is preferred). If burning should be required (e.g. heavy wooded weed infestation), permits must be obtained from the relevant authorities prior to any such activity.<br>• Vehicle and machinery exhaust systems will be inspected regularly for leaks and accumulated vegetation debris. Fuel systems will be inspected for leaks.<br>• Water trucks (used for project road maintenance) will be available for use as fire trucks as required.<br>• All personnel to be made aware of the risks and management procedures in the event of bushfire (see Safety Management Plan).<br>• All vehicles equipped with portable fire extinguishers.<br>• Precautions will be taken to minimise the risk of fire during welding. Fire extinguishers and a water cart will be available to welding crew. All appropriate crew members will be trained in the use of firefighting equipment.<br>• The Emergency Response Plan shall include details on local contacts for fire fighting assistance.<br>• The Construction Manager will ensure that all relevant laws with regard to Fire Management are adhered to.<br>• The Construction Manager will ensure procedures are in place for monitoring fire activity in the area.<br>• In the even of fire, the Construction Manager will immediately notify the relevant authorities. |
| **Monitoring and Auditing** | • During construction, the entire length of the RoW and associated access areas will be regularly inspected to assess the effectiveness of Fire Management and Prevention practices.<br>• Inspection of work areas for flammable material.<br>• Regular audits, in accordance with *Section 1.10* of this EMP, will be undertaken, and recommendations and corrective actions implemented. |
| **Reporting and Corrective Action** | • Non-Compliance and Incident Reporting will be reported to, and regulated by, senior management to ensure prompt rectification and change management as required.<br>• Landholder complaints will be recorded and appropriately acted upon by the Environmental Manager (see *Sections 2.1.17* and *2.2.17*) |

### *2.1.21 Climate Extremes and Climate Change*

| Climate Change Mitigation Management Plan | |
|---|---|
| **Policy** | Climate extremes and future climate change do not adversely impact Project infrastructure. |
| **Performance criteria** | Engineering design of Project infrastructure includes consideration of climate extremes and climate change. |
| **Implementation strategy** | • Pipelines will be buried deep enough and adequately weighted down to prevent exposure during flood events or damage as a result of surface erosion from flooding. |

| Climate Change Mitigation Management Plan | |
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| | • Pipeline routes will be subject to a visual inspection following significant rainfall or floods to ensure that the pipeline cover and any associated infrastructure is intact and has not been damaged.<br>• Revegetation strategies will include the selection of drought-tolerant grass species for stabilisation purposes.<br>• Strategies to mitigate impacts from extreme climate events and climate change include:<br>− providing wet weather access to all construction sites<br>− reduction, where appropriate, of construction activities during wet weather<br>− sediment and erosion controls will be designed and implemented to cope with high rainfall events<br>− ensuring adequate dust, sediment and erosion management (refer *Section 2.1.7*)<br>− monitoring short- and longer-term weather predictions<br>− ensuring pipelines are buried deep enough to not be affected during flooding events<br>− developing and implementing emergency response plans for extreme events including fires and flooding<br>− ensuring that all personnel are aware of and have rehearsed emergency response measures in the event of flooding, fire and cyclones<br>− consideration of trenchless techniques, such as directional drilling, at major river crossings to avoid risks associated with flood waters and to maintain stability of crossing area. |
| **Monitoring and auditing** | • Engineering designs of Project infrastructure include considerations of climate extremes and climate change.<br>• Audit of construction methods in accordance with engineering design that includes consideration of climatic extremes and climate change.<br>• Record all instances of failure of Project infrastructure caused by climatic extremes. |
| **Reporting and corrective action** | • All Activities impacted by extreme weather will need to be re-assessed in light of any failures resulting in environmental impacts.<br>• All damage to pipeline infrastructure will be recorded and any actions to remediate sites will be recorded. |

### *2.1.22 Landscape and Character Maintenance*

| Landscape and Character Maintenance Management Plan | |
|---|---|
| **Policy** | To minimise the impact on environmental and community values from the location and construction of infrastructure. |
| **Performance criteria** | • Respond to all complaints regarding impacts on environmental and community values and, where feasible, implement mitigation measures.<br>• Consultation with potentially affected stakeholders.<br>• Evidence that decision criteria for location of infrastructure includes consideration of environmental and community values. |
| **Implementation strategy** | • QGC will aim to minimise the impact on rural lifestyle values through:<br>− appropriate siting of Pipeline infrastructure<br>− progressive rehabilitation of disturbed areas<br>− direct liaison with potentially affected stakeholders.<br>• Mitigation measures to reduce impacts on landscape character, land use and existing infrastructure include:<br>− ensuring appropriate buffers are maintained between the Pipeline and existing and planned development, or where this is not practicable, ensuring pipeline design meets the safety requirements for developed areas |

| Landscape and Character Maintenance Management Plan | |
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| | − ensuring appropriate discussions with landholders and occupants in relation to the provision of access for pipeline construction and ongoing maintenance during operation<br>− liaising with mining permit, claim or lease holders to determine the most appropriate alignment based on current and future needs and ensuring that existing legislation has been considered<br>− consultation with infrastructure providers (e.g. regional councils for water pipelines, telecommunications providers for fibre optic cables) and "Dial Before You Dig" queries to identify other underground infrastructure<br>− minimising impacts on Good Quality Agricultural Land (GQAL) by following fence lines where practicable and/or minimising construction and camps in areas designated as Class A agricultural land or land used for cropping<br>− ensuring that associated work areas are minimised in environmentally sensitive areas, state forest, and riparian zones<br>− ensuring minimal impact on major transport corridors by boring under all sealed State controlled roads and railway lines<br>− ensuring that the Pipeline is appropriately signposted<br>− ensuring appropriate notification and management of noisy and dusty activities particularly in proximity to residential areas, roads and schools. All gathering lines will be appropriately signposted<br>• Identify all public and private infrastructure within the Gas Field prior to construction.<br>• Seek broad consent from all Native Title claimaints for all current and future acts required to develop and operate the Gas Field.<br>• Where commercially viable quantities of millable timber are identified with DERM QGC will provide sufficient lead time for DERM to arrange for salvage of this timber.<br>• Pipeline infrastructure will not be established, without prior consultation with potentially impacted parties, in areas where quarrying activities occur.<br>• All precautions will be taken to minimise damage to farm infrastructure.<br>• Individual access and entry protocols will be agreed and documented through close consultation with all landholders. Care will be taken to minimise disruption to existing lifestyles of landholders.<br>• The RoW will be progressively rehabilitated as discussed in *Section 2.1.24*. |
| **Monitoring and auditing** | • A record of all instances of non-compliance with this plan will be maintained.<br>• Location and design of infrastructure will be subject to a rigorous selection process where potential conflicts with existing land use and landscape character are identified.<br>• Actual development sites will be inspected to determine compliance with site selection and design requirements. |
| **Reporting and corrective action** | • All complaints about impacts on land use and landscape character will be followed up and corrective actions taken. |

### 2.1.23 *Topography Maintenance*

| Topography Maintenance Management Plan | |
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| **Policy** | To minimise impacts to topography. |
| **Performance criteria** | • Minimise sediment and erosion release from areas where topography is altered.<br>• Consultation with stakeholders regarding topography following |

| Topography Maintenance Management Plan | |
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| | decommissioning.<br>• Where practicable, sites are returned to their original profile upon decommissioning. |
| **Implementation strategy** | • The Activity area will be returned to original or stable contours, re-establishing surface drainage lines and other land features.<br>• Where areas of significant topographic restriction cannot be avoided:<br>− Limit access of specialist heavy machinery.<br>− Careful excavation.<br>− Adopt special measures to build access tracks with appropriate grade.<br>− Development sites with significant topographic restrictions will be subject to a detailed site development plan. |
| **Monitoring and auditing** | • Development sites will be inspected to ensure compliance with site development plans. |
| **Reporting and corrective action** | • Instances of non-compliance will be investigated an corrective actions taken. |

### *2.1.24 Revegetation and Rehabilitation*

| Revegetation and Rehabilitation Management Plan | |
|---|---|
| **Operational Policy** | To restore, as far as reasonably practicable, land to its pre-existing condition. |
| **Performance Criteria** | • Monitoring of rehabilitation areas occurs at a frequency necessary to maximise rehabilitation success.<br>• After a suitable period, revegetation occurs naturally and is similar to surrounding vegetation.<br>• No weed species introduced.<br>• Rehabilitation area stabilised with no significant erosion events.. |
| **Implementation Strategy** | • No weed species introduced.<br>• Weed Management Plan implemented.<br>• No impediment to revegetation from compacted ground.<br>• Revegetation occurring naturally and in line with surrounding vegetation within 24 months.<br>• No areas left in an unstable condition.<br>• No unplanned change in drainage pattern leading to soil erosion.<br>• Drainage patterns reinstated correctly.<br>• Re-spread and compact subsoil over the trench, with crown development, and use subsoil for the construction of contour banks on steep slopes and above banks at water crossings.<br>• The RoW, all work areas, temporary access tracks and other areas that have been compacted by construction activities to be ripped or scarified to relieve compaction and to trap water and seed. Particular attention will be paid to areas subject to regular watering and high traffic.<br>• Compaction relief to be carried out along the contours (parallel) to minimise rilling.<br>• The construction area to be re-profiled to its original contours (or to new, stable contours).<br>• Topsoil from stockpiles to be spread over the entire RoW on completion of compaction-relief work.<br>• Drainage lines to be restored as appropriate.<br>• Any wheel ruts to be graded and erosion-control measures installed (see *Section 2.1.7*). |

| Revegetation and Rehabilitation Management Plan | |
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| | • Temporary access roads not required for operations or to be retained by the landowner to be closed and reinstated to a condition compatible with the surrounding land use.<br>• Where access routes are to be retained, but are not public (i.e. existing tracks), the entry to be blocked and disguised (e.g. by dog-legging or felled vegetation spreading).<br>• Access tracks in existence prior to construction are not to be blocked in anyway.<br>• New access tracks to be retained at the request of the landowner must be documented by agreement and confirmed with the Environmental Manager before departure.<br>• Flagging used to identify clearing boundaries and sensitive features to be removed.<br>• Felled native vegetation to be re-spread over the RoW (not burnt) to assist in the distribution of seed stock and provide shelter for fauna.<br>• Distribution of felled vegetation to be controlled to ensure that any erosion or subsidence will be apparent during subsequent monitoring inspections.<br>• When re-spreading on slopes, tree trunks should be along the line of the contour. The root ball for large trees should be left lying to the outer edge of the RoW.<br>• Felled vegetation should be re-spread in "filter strips" NOT distributed across the entire RoW so that access is prevented during operations.<br>• Permanent erosion and sediment control measures are to be installed where necessary. Existing soil-erosion measures will be reinstated to a condition at least equal to the pre-existing state (refer also to *Section 2.1.7*).<br>• Above-ground infrastructure (e.g. valves and pigging stations) to be fenced to discourage third-party, stock and wildlife entry.<br>• Permanent pipeline warning signs to be erected along the RoW in accordance with AS2885.<br>• All waste materials and equipment to be removed from the pipeline construction area once backfilling and tie-ins are completed (refer to *Section 2.1.12*).<br>• Where revegetation of the RoW has not commenced by the end of construction, stabilisation of areas at risk of erosion (e.g. watercourse banks and approaches) will be carried out (e.g. placement of rock, timber or jute matting) as instructed by the Environmental Manager – Constructor and/or person suitably qualified in soil-erosion controls.<br>• Use quick-growing and (preferably) native species and/or those that are compatible with the adjacent grazing uses to provide cover in highly erodible areas.<br>• If in the unlikely event imported topsoil (of an appropriate quality and weed free) is required for construction-corridor repairs, this will only be used with landholder approval.<br>• The area will be left to naturally revegetate in the first season. Where revegetation does not meet the expected rates, active measures such as re-seeding will be implemented. |
| **Monitoring and Auditing** | • Until regrowth is established, significant areas, such as riparian zones, and any seeded areas will be monitored regularly. If necessary, appropriate re-seeding will be carried out.<br>• The success of restoration will be assessed by comparing the percentage of cover and species diversity on the RoW with that of adjoining land. Re-seeding will be carried out where results are unsatisfactory.<br>• Monitoring will also include an assessment of the effectiveness of weed-control measures. Any sites not displaying stability (after 12 months) and natural revegetation (after 24 months) will be rehabilitated using a method |

| Revegetation and Rehabilitation Management Plan | |
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| | approved by the relevant authority.<br>• The process of monitoring and rehabilitation will conclude only once the site becomes stable.<br>• Regular audits in accordance with *Section 1.10* of this EMP will be undertaken, and recommendations and corrective actions implemented. |
| **Reporting and Corrective Action** | • Non-Compliance and Incident Reporting will be reported to, and regulated by, senior management to ensure prompt rectification and change management as required.<br>• Landholder complaints will be recorded and appropriately acted upon by the Environmental Manager (see *Sections 2.1.17* and *2.2.17*) |

### 2.1.25 *Dangerous Goods and Hazardous Substances*

| Dangerous Goods and Hazardous Substances Management Plan | |
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| **Management Policy** | To protect Project personnel, the public and the environment from harm due to the transport, storage or use of dangerous goods or hazardous substances. |
| **Performance Objectives** | • No unplanned release of dangerous goods or hazardous substances.<br>• All transport, storage and handling of dangerous goods or hazardous substances is performed in accordance with applicable legislation, guidelines and standards. |
| **Implementation Strategy** | • Compliance with license requirements for chemical and fuel storage.<br>• Compliance with appropriate Australian Standards and regulations covering the use of the chemicals on-site.<br>• All relevant Material Safety Data Sheets (MSDS) on-site.<br>• No incidents resulting in surface or groundwater contamination.<br>• No release of contaminated water from RoW or above-ground facilities.<br>• No spills.<br>• No refuelling of vehicles and machinery within 100 m of a watercourse; when possible, all refuelling will be off-site at dedicated facilities.<br>• Provide training for all personnel in handling hazardous materials.<br>• Provide and maintain materials and equipment for responding to hazardous spill incidents.<br>• Fuels, oils and chemicals will be contained within on-site containment systems and stored in accordance with relevant Australian Standards (including AS 1940) and Fire Safety regulations.<br>• MSDSs for each chemical used will be kept in a location that is easily accessible, 24 hours per day.<br>• Maintain inventory of all hazardous materials storage volumes and locations. |
| **Monitoring and Auditing** | • Monitoring of storage, refuelling and worksite areas.<br>• Regular facility and RoW inspections.<br>• Spills Register (for spills greater than 5 litres). |
| **Reporting and Corrective Action** | • Incident report to be issued for all spills greater than 5 litres.<br>• All spills of chemicals or hydrocarbons on-site, regardless of amount or nature of the spill, reported to Construction Supervisor. Environmental Manager will advise DERM if further action required.<br>• Spills to be remediated depending on nature of product (consult with Environmental Manager/DERM):<br>− Small Hydrocarbon Spill. Apply absorbent material. Rip ground and mix with fertiliser. Turn soil three-monthly until no evidence of spill.<br>− Large hydrocarbon spill. Consult DERM.<br>− Chemical Spill. Application of appropriate absorbent material. Remove effected soil if required.<br>• Repair and replace faulty equipment as soon as possible. |

### 2.1.26 *Decommissioning Plan*

When required, QGC shall decommission any pipeline and associated infrastructure in accordance with the regulatory requirements and accepted environmental best practice of the day (e.g. APIA, AS2885). Prior to abandonment of a pipeline service and the facilities, an investigation into the associated potential environmental issues and impacts will be undertaken in accordance with AS2885.3.

| **Decommissioning Plan** | |
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| **Policy** | To decommission Project facilities such that they do not present and ongoing environmental risk.<br>To plan for decommissioning in consultation with relevant stakeholders. |
| **Performance criteria** | Develop and implement, in consultation with stakeholders, a detailed decommissioning plan for all facilities prior to the end of their useful life. |
| **Implementation strategy** | • A decommissioning and rehabilitation plan will be prepared prior to the Project ramp down, utilising information acquired during progressive rehabilitation.<br>• Decommissioning of the Pipeline is expected to be completed in three phases:<br>− dismantling and removal of the above-ground facilities<br>− destruction and removal of hardstand areas<br>− restoration and rehabilitation of land in accordance with DERM requirements or as agreed with landholders.<br>• General decommissioning principles for different infrastructure types are as follows:<br>− Inactive, buried pipelines will be decommissioned in situ consistent with the requirements of the AS 2885.<br>− The removal of below-ground structures (e.g. pipes) may cause unnecessary environmental disturbance. It is therefore expected that the pipe will be left in the ground. The abandoned pipe shall be purged of gas, filled with an inert substance and cathodic protection devices and associated utility structures left intact. This will prevent ground subsidence associated with the corrosion of the pipe, which may result in surface-water diversion, ponding and erosion. Below-ground facilities will be cut off and blinded below ground level. All sites shall be rehabilitated following completion of termination.<br>− All above-ground structures, such as compressor stations, scraper stations, valves, meter stations, sales taps and dedicated communication systems, will be removed.<br>− If buildings are removed, the ground will be ripped and rehabilitated.<br>− Access tracks will be decommissioned should they not be required by the landholder.<br>− Consideration will be given to alternate use of buildings as circumstances allow, and the sites restored accordingly.<br>− Accommodation camps, administration buildings and warehouses will be removed from the site, unless a landholder requests to retain aspects of this infrastructure.<br>• All sites shall be left clean and safe. |
| **Monitoring and auditing** | • Compliance with the Decommissioning Plan will be audited during the decommissioning phase<br>• All instances of non-compliance with the Decommissioning Plan will be recorded. |

| Decommissioning Plan | |
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| | • Decommissioning and rehabilitation success will be monitored for a period agreed with the relevant authorities. |
| **Reporting and corrective action** | • Any instances of non-compliance with the Decommissioning Plan will be investigated and corrective action taken. |

## 2.2 OPERATIONAL ENVIRONMENTAL MANAGEMENT PLANS

### 2.2.1 Noise and Vibration

| Noise and Vibration Management Plan | |
|---|---|
| **Management Policy** | To operate in a manner that minimises the impact of noise and vibrations on surrounding residences and industry. |
| **Performance Objectives** | • No exceedence of Project derived noise criteria at sensitive receptors.<br>• Responded to all noise-related complaints received from residents and landholders and implement mitigation measures.<br>• Consultation with potentially affected sensitive receptors. |
| **Implementation strategy** | **Compressor Station**<br>• Placement of infrastructure in locations least likely to impact sensitive receptors.<br>• Purchase of equipment with, as far as reasonably practical, the lowest sound power levels<br>• Where necessary equipment will be fitted with noise control devices<br>• Implement noise monitoring and ensure that all noise complaints are recorded and addressed.<br>**Pipeline**<br>• Notify adjacent landholders of timing and duration prior to any maintenance activities creating excess noise along RoW.<br>• Ensure noise-attenuation devices are maintained.<br>• Schedule, where possible, unavoidable loud noise activities (e.g. planned venting, pipeline blowdown) at times to minimise nuisance to surrounding landholders.<br>• Notify landholders in advance of unavoidable loud noise activities where practicable.<br>• Notify local residents, landholders and affected industries of any planned venting. |
| **Monitoring** | • Landholder complaints relating to noise and vibration will be recorded and closed out by the Environmental Manager or delegate.<br>• Noise surveys at relevant local residences will be undertaken at the request of the administering authority.<br>• The method of measurement and reporting will be conducted in accordance with the DERM Noise Measurement Manual and/or AS 1055. |
| **Reporting and Corrective Action** | • Complaints relating to noise will be addressed promptly, with further investigations and reporting to the DERM if required.<br>• Routine work reports with maintenance records will be recorded and reviewed by each supervisor or manager.<br>• All works that deviate from normal operating conditions will be reported and action initiated (including reporting to relevant agencies where this is warranted/required) to prevent a recurrence of the incident. |

| Noise and Vibration Management Plan | |
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| | • Non-compliance and incident reports will be reviewed and closed out by senior management.<br>• Regular reviews, recommendations and corrective actions shall be implemented. |

### 2.2.2 *Traffic and Transport*

There will be limited traffic movement during the operations phase of the Pipeline. Any traffic movements will comply with the Traffic and Transport Management Plan for construction, as per *Section 2.1.2*.

### 2.2.3 *Visual Amenity and Lighting*

There will be limited and minor impacts from lighting and on visual amenity during the operations phase of the Pipeline. Any impacts will be management in accordance with the Visual Amenity and Lighting Management Plan for construction, as per *Section 2.1.3*.

### 2.2.4 *Weeds and Pests*

| Weed and Pest Management Plan | |
|---|---|
| **Operational Policy** | To prevent spread or introduction of pest and weed species as a results of Project activities. |
| **Performance Criteria** | No increase in abundance or distribution of weed and pest species as a result of Project activities. |
| **Implementation Strategy** | • Qualified personnel to undertake weed surveys of the Project Area prior to construction to identify required wash-down locations.<br>• Liaison with government authorities and landholders in relation to any existing weed data sets and management strategies.<br>• Survey data to be forwarded to the GIS co-ordinator for inclusion in the GIS data set.<br>• Map and maintain weed-identification layer on Project GIS.<br>• Where weed infestation is identified, initiate appropriate action (e.g. notify the weed contractor to carry out the control program).<br>• Develop/revise the access control map as new information arises.<br>• Vehicles, plant and equipment must travel on approved access routes only (Approved Access Mapping).<br>• Plan construction activities to minimise the spread of weeds.<br>• Limit vehicle movements on vegetated areas that may contain weed material.<br>• Vehicles travelling from weed-affected areas must wash-down prior to leaving these areas or prior to re-entering the road network.<br>• All vehicles, plant and equipment (including hand tools such as shovels) will be inspected by nominated personnel before being certified clean for entry to the Project Area.<br>• All vehicles, plant and equipment will be kept visually clean (as practicable) and kept free of grass and other materials where possible. |

| Weed and Pest Management Plan | |
|---|---|
| | • Equipment and vehicles will be cleaned in designated wash-down sites before leaving weed-infested areas or entering weed-free areas.<br>• Personal clothing, including boots, will be cleaned of mud and weed seeds nightly as well as whenever leaving weed-infested areas. Trouser pockets and cuffs are to be turned out to remove any seeds.<br>• Vehicles, plant and equipment that fail inspection must be washed down and re-inspected.<br>• A log, to be completed for all wash-down activities, is to be maintained at the construction site office and made available to the Environmental Manager, auditors or regulators on request.<br>• Only identified wash-down facilities will be used (refer GIS maps).<br>• Wash-downs to be managed so as to not leave a weed seedbank.<br>• Ensure potential mosquito-breeding sites, including equipment and materials that pool water, are avoided or drained regularly. Any such equipment or debris no longer required for construction will be disposed of as soon as possible.<br>• Campsite and Office Supervisors and Construction Superintendents trained to recognise mosquito-breeding activity and the treatment of breeding sites.<br>• Periodic inspection of any ponded water to ensure no mosquito breeding occurring.<br>• Removal of any mosquito breeding site from Project related source. |
| **Monitoring and Auditing** | • During construction, the entire length of the RoW and associated work areas will be inspected monthly to assess the effectiveness of weed protection measures.<br>• Ongoing monitoring will be undertaken for a period of up to two years after construction is completed to assess the success of weed-control activities (Operations Management will continue this work during operations and into the future).<br>• Regular audits in accordance with *Section 1.10* of this EMP will be undertaken, and recommendations and corrective actions will be implemented. |
| **Reporting and Corrective Action** | • Non-Compliance and Incident Reporting will be reported to, and regulated by the owner to ensure prompt rectification and change management as required.<br>• Landholder complaints will be recorded and appropriately acted upon by the Environmental Manager (see *Sections 2.1.17* and *2.2.17*)<br>• A survey of weed-prone areas to be conducted after early wet-season rainfall events and thereafter monthly during the first wet season, if access allows. |

### 2.2.5 *Air Quality*

| Air Quality Management Plan | |
|---|---|
| **Management Policy** | To operate the pipeline and associated facilities in a manner that maintains ambient air quality of the area. |
| **Performance Objectives** | • No exceedence of Project derived air quality criteria at sensitive receptors.<br>• Consultation with potentially affected sensitive receptors.<br>• Respond to all complaints on air quality. |

| Air Quality Management Plan | |
|---|---|
| **Implementation strategy** | **Compressor Station**<br>• No complaints from neighbouring residences and industry relating to air quality.<br>• Modelled emissions from compressor emissions do not to exceed Project derived limits for NOx, CO, ozone and hydrocarbons.<br>• Vehicles and equipment will be maintained to keep exhaust systems and emissions within the limit of relevant standards.<br>• Design stack heights and discharge velocities to maximise dispersal of pollutants into the atmosphere and ensure that ambient air levels under the most adverse weather conditions meet all statutory requirements.<br>• Review available options so equipment is of optimal design.<br>• Use suitable materials, gaskets and sealing.<br>**Pipeline**<br>• Minimise maintenance activities requiring purging of gas, and conduct under favourable weather conditions to facilitate rapid atmospheric dispersion.<br>• Undertake leakage detection surveys at flanges at regular intervals to detect fugitive gas emissions.<br>• Repair any detected leaks as a high priority.<br>• Ensure vehicles and machinery exhaust systems are maintained in good working order.<br>• Water sites and access roads for large excavation, construction or clearing works, as required.<br>• Venting, for commissioning or emergency situations, will be at appropriately located valves. |
| **Monitoring** | • Gas will be metered prior to entering the Pipeline using proven metering systems.<br>• Monitoring of compressor station air emissions through manual sample points within six months of commissioning and every two years of operation.<br>• Leak-detection surveys at flanges.<br>• Monitoring of pipeline pressure.<br>• Estimate and record volume of any gas vented. |
| **Reporting and Corrective Action** | • Landholder complaints will be recorded and action taken.<br>• Non-Compliance and Incident Reporting (refer to *Section 2.2.17)* will be undertaken by Operations Management to ensure prompt rectification and, if required, initiation of changes to system. |

### *2.2.6 Surface Water and Groundwater*

| Surface Water and Groundwater Management Plan | |
|---|---|
| **Management Policy** | To minimise the potential impacts associated with erosion and to prevent the release of contaminants that may adversely affect downstream surface-water quality.<br>To protect the quality of the existing groundwater resources. |
| **Performance Objectives** | • No release of contaminants to surface waters outside the boundary of Project infrastructure.<br>• No failures of sediment and erosion control techniques leading to unacceptable sediment release.<br>• Groundwater quality not impacted by construction or operations activities. |

| Surface Water and Groundwater Management Plan | |
|---|---|
| **Implementation strategy** | **Compressor Station**<br>• Drain stormwater falling outside bunded areas away from process areas and systems for managing contaminated stormwater into natural drainage points around the site.<br>• Grade and slope site to ensure stormwater drains away from process equipment.<br>• Fit bunded areas with drains normally closed so that stormwater can be drained to the on-site evaporation pond.<br>• Direct bunded drains into an interceptor pit.<br>• Remove unnecessary water traps to prevent mosquito-breeding areas.<br>• Maintenance and cleaning of vehicles to be completed at off-site facilities where possible. If completed on-site, activities will be at locations where the potential for the release of contaminants to waters or stormwater systems is minimised.<br>**Pipeline**<br>• No visible evidence of:<br>− Significant erosion following high rainfall.<br>− Damage or failure of stormwater control devices or systems.<br>− Collapse/subsidence of banks at nearby watercourse crossings or notable increases in flow levels or flooding associated with local waterways.<br>− Subsidence or exposure of pipeline.<br>• Ensure run-off is distributed to the greatest extent possible, particularly in critical areas (e.g. adjacent to watercourses, highly erosive soils) to stable ground by the use of turn-off drains, contour banks, etc.<br>• Ensure ground stabilisation, either by vegetation cover or compaction, to all unsealed areas within the boundary fence at above-ground facilities.<br>• Monitor and maintain stormwater run-off control devices (e.g. spoon drains, diffusers, berms) at above-ground facilities. |
| **Monitoring** | • Periodic inspections to visually assess presence and effectiveness of run-off control structures. |
| **Reporting and Corrective Action** | • Rectify faulty run-off control structures. |

### 2.2.7 *Flora and Fauna*

| Flora and Fauna Management Plan | |
|---|---|
| **Management Policy** | To minimise impacts on the abundance and distribution of flora and fauna as a result of Project activities.<br>Progressively rehabilitate disturbed areas where practicable. |
| **Performance Objectives** | • Avoid, where practicable, of endangered, vulnerable and rare (EVR) flora species and the habitat of EVR fauna.<br>• No unauthorised clearing of native vegetation.<br>• Permits and approvals in place for any unavoidable disturbance of EVR flora and fauna species.<br>• No introduction of declared pests as a result of Project activities.<br>• Minimise impacts to native vegetation and on habitat fragmentation.<br>• Progressive rehabilitation is consistent with the surrounding area and land use post restoration. |

| Flora and Fauna Management Plan | |
|---|---|
| **Implementation strategy** | • Inspect condition of revegetation on RoW during regular surveys and patrols.<br>• Implement and maintain weed management strategy (see *Section 2.1.10*).<br>• Restrict clearing of vegetation to large vegetation regrowth occurring within the three metres of the pipeline centreline.<br>• Stockpile topsoil where excavation is to be undertaken, to maintain grass seed stock and re-spread once the pipeline trench has been filled in.<br>• Re-establish grasses, where soil is exposed during pipeline excavation works, using varieties native to the area.<br>• Maintain records of properties where pest-control infrastructure is in place.<br>• Ensure all vermin or dingo fencing is re-established and gates are closed.<br>• Use biodegradable chemicals/herbicides, where practicable, for the treatment of weed species.<br>• Re-establish the RoW with native grass species to minimise fragmentation and prevent impacts on natural ecosystem functioning and fauna movement.<br>• Limit vehicle speed along RoW to reduce dust, and reduce fauna fatalities.<br>• Ensure any activities that require excavation works are carried out in accordance with the requirements of *Section 2.1.6*. |
| **Monitoring** | • Ongoing monitoring (pipeline and above-ground facilities) will be undertaken to assess the success and integrity of revegetation and to ensure appropriate follow-up measures are implemented.<br>• Regular audits and reviews will be undertaken and recommendations and corrective actions shall be implemented. |
| **Reporting and Corrective Action** | • Non-Compliance and Incident Reporting (refer to *Section 2.2.17*) will be actioned by Operations Management to ensure prompt rectification and, where required, initiated changes to systems.<br>• Landholder complaints will be recorded and actioned. |

### *2.2.8 Soil Erosion and Sediment Control*

| Soil Erosion and Sediment Control Management Plan | |
|---|---|
| **Policy** | To minimise environmental impacts caused by soil loss and erosion. |
| **Performance Objectives** | Erosion and sediment control techniques implemented onsite where necessary.<br>No failures of sediment and erosion control techniques leading to unacceptable sediment release. |
| **Implementation strategy** | No visible evidence of:<br>– Significant erosion during operations (i.e. significantly above that of adjacent lands).<br>– Significant erosion following excavation or extreme rainfall.<br>– Significant changes to ground level, drainage patterns, etc. which may indicate soil erosion and sedimentation.<br>– Damage or failure of erosion/sediment control devices.<br>– Collapse/subsidence of banks at nearby watercourse crossings.<br>– Subsidence or exposure of pipeline.<br>• Install, maintain and monitor erosion and sediment control devices (e.g. berms, silt fences, jute matting) so that ground is stable and vegetation cover is maintained.<br>• Carry out tie-ins and dig-ups in accordance with the provisions of |

| Soil Erosion and Sediment Control Management Plan | |
|---|---|
| | *Section 2.1.7*.<br>• Gravel permanent access roads to above-ground facilities.<br>• Ensure ground stabilisation, either by vegetation cover or compaction, to all unsealed areas within the boundary fence at above-ground facilities.<br>• Install sediment fencing around active erosion adjacent to watercourses, as needed, to keep areas stable.<br>• Monitor and maintain storm water run-off control devices (e.g. spoon drains, diffusers, berms) at above-ground facilities. |
| **Monitoring and Auditing** | • Visual assessment of presence and effectiveness of erosion, sediment and run-off control structures during periodic inspections.<br>• Inspection of watercourse crossings after major rainfall events (e.g. >25 mm per day).<br>• Re-instate or repair defective erosion, sediment and run-off control devices.<br>• Review stormwater management techniques as required. |
| **Reporting and Corrective Actions** | • Install additional erosion, sediment or run-off control measures where necessary.<br>• Utilise latest techniques as they become known. |

### 2.2.9 *Acid Sulfate Soils*

Any ASS encountered during Pipeline operations will be managed in accordance with the ASS Management Plan described in *Section 2.1.8*.

### 2.2.10 *Soil Contamination*

| Soil Contamination Management Plan | |
|---|---|
| **Operational Policy** | No contamination of soils arising from Project activities.<br>To manage any pre-existing contaminated soils such that extent of contamination is not exacerbated by Project activities.<br>Minimise, where practicable, contamination of soils by Associated Water. |
| **Performance Criteria** | • Project sites site not added to Queensland Contaminated Land Register (CLR).<br>• No release of hazardous substance or dangerous goods to soil.<br>• Identify all pre-existing contaminated soils likely to be impacted by Project activities.<br>• Where pre-existing contaminated soils are identified, and disturbance by Project activities is unavoidable, develop and implement appropriate management strategies. |
| **Implementation Strategy** | • Storage of all fuels and chemicals will comply with relevant legislation governing the storage and handling of materials that may adversely impact the environment if released (i.e. *Queensland Dangerous Goods Safety Management Regulations, 2001*)<br>• Appropriate spill-containment facilities for all chemicals and fuel storage areas will be established (in accordance with AS 1940 and AS 3780).<br>• A hazardous materials register detailing the location and quantities of hazardous substances will be established and maintained, including details of storage, use and disposal.<br>• Personnel will be inducted and trained in safe work practices to minimise the risk of spillage.<br>• If an area of contamination is reported, the cause will be identified and the area of contamination contained. The impact may be |

| Soil Contamination Management Plan | |
|---|---|
| | contained by isolating the source or implementing controls around the affected site.<br>• Remediation of contaminated land will use the most appropriate available method to achieve required commercial/industrial guideline validation results.<br>• Validation sampling of any remediated area will be used to establish the site as "clean" as per the relevant DERM Contaminated Land and National Environment Protection Measure (NEPM) Guidelines.<br>• Wastes will be classified, transported and disposed of in accordance with *Queensland Environmental Protection (Waste Management) Policy 2000* and *Environmental Protection (Waste Management) Regulation 2000*. |
| **Monitoring and Auditing** | • Regular monitoring of groundwater and surface water to ensure any releases are identified and remediated as soon as practicable.<br>• The integrity of storage facilities for hazardous materials and wastes and bunded areas will be routinely inspected. |
| **Reporting and Corrective Action** | • Regular audits and reviews in accordance with *Section 1.10* of this EMP will be undertaken and recommendations and corrective actions implemented.<br>• Daily or weekly monitoring reports (as appropriate) shall be recorded and reviewed by each supervisor or manager.<br>• Non-Compliance and Incident Reporting will be closed out by senior management to ensure prompt rectification and change management as required.<br>• The Environmental Manager will maintain records of all monitoring and auditing activities and report results to the Environmental Manager at agreed intervals. |

### 2.2.11 *Stock Access and Control*

Stock movements will be managed as per the Stock Access and Control Management Plan for the construction phase as described in *Section 2.1.11*.

### 2.2.12 *Marine Ecolog*

In the unlikely event of impacts to Marine Ecology during operations, impacts will be managed in accordance with the Marine Ecology Management Plan described in *Section 2.1.10*.

### 2.2.13 *Waste Management*

| Waste Management Plan | |
|---|---|
| **Management Policy** | To minimise waste generation and maximise reuse and recycling of construction waste products.<br>To dispose of waste in an appropriate manner. |
| **Performance Objectives** | • No contamination of soil, air or water as a result of inappropriate waste management.<br>• Develop and implement a plan for waste minimisation and management.<br>• All waste disposal to be carried out by a licensed waste contractor.<br>• Waste management practices to not result in loss of health to personnel or sensitive receptors. |

| Waste Management Plan | |
|---|---|
| **Implementation strategy** | • Locate refuse containers at above-ground facilities.<br>• Where practical, segregated and reuse/recycle wastes (e.g. scrap metal).<br>• Dispose of all litter and general waste at a local municipal waste station using an approved waste contractor.<br>• Instruct all personnel in waste-management practices as a component of the induction process.<br>• Transport and dispose of all hazardous wastes (i.e. DERM Regulated Wastes, such as oils, semi-fluid lubricants and ethylene glycol) by a licensed contractor to an approved facility.<br>• Waste fuels, oils and chemicals will be contained within on-site systems and stored in accordance with relevant Australian Standards (including AS 1940) and Fire Safety regulations.<br>• Store and handle all oils and chemical wastes (bunding as per regulatory guidelines) in accordance with the relevant Australian Standards and Fire Safety regulations.<br>• Maintain records of all regulated wastes stored (and removed) from site.<br>• Provide safety and response training for all personnel.<br>• Provide and maintain materials and equipment for responding to hazardous spill incidents. |
| **Monitoring and Auditing** | • Six-monthly operations inspections and regular RoW patrols and surveys.<br>• Waste spill observations to be included in reports from pipeline and facility inspections, ground patrols and any operational audit undertaken.<br>• The Proponent and/or contractor(s) to retrieve and dispose of worksite waste within 24 hours of notification. |
| **Reporting and Corrective Action** | • Report hazardous waste spills to the Environmental Manager.<br>• Water quality analysis of the wastewater discharge to the evaporation pond on an annual basis in accordance with the EA. |

### *2.2.14 Effluent Disposal*

During Pipeline operations there will not be any camps requiring management of effluent.

### *2.2.15 Mosquito and Biting Midge Management*

During operations mosquitos and biting midge will managed in accordance with the Mosquito and Biting Midge Management Plan described in *Section 2.1.15.*

### *2.2.16 Eastern Red Fire Ant Management*

During operations ERFAs will managed in accordance with the ERFA Management Plan described in *Section 2.1.16.*

### 2.2.17 *Incidents and Complaints*

All environmental incidents, near-misses and hazards will be reported via the Synergi incident reporting system in accordance with the BG Group Standard for incident reporting. Complaints will be handled by the Land Access and Communications teams in the first instance, who will liaise with the complainant(s), the Environment Team and the Environment Manager for an effective resolution. The Environment Manager has responsibility to ensure that all complaints are addressed and appropriately closed off.

| **Incidents and Complaints Management Plan** | |
|---|---|
| **Operational Policy** | To have a process whereby all complaints can be lodged and responded to in an appropriate manner. |
| **Performance Criteria** | • Record all complaints and responses in an incidents and complaints register.<br>• Respond appropriately to all incidents and complaints. |
| **Implementation Strategy** | All incidents and complaints will be documented in an incidents/complaints register. As a minimum the complaints form will document:<br>• Time, date and nature of complaint<br>• Type of communication (telephone, letter, email, visit)<br>• Name, contact address and contact number (if provided)<br>• Response and investigation undertaken as a result of the complaint<br>• Action taken and signature of person investigating complaint<br>Each complaint will be investigated as soon as practicable and, where appropriate, corrective action taken to remedy the cause of the complaint and prevent reoccurrence of the event. |
| **Monitoring and Auditing** | The complaints register will be maintained to ensure all complaints are resolved. The complaint form will be checked within two weeks of complaint receipt to ensure follow-up action has been taken to resolve the issue. |
| **Reporting and Corrective Action** | All complaints and incidents are to be reported. Should further incidents occur or complaints be received in relation to previous occurrences, an appropriate selection of the following corrective actions will be undertaken:<br>• Additional environmental awareness training of the workforce with respect to the procedures to be followed for environmental incidents or complaints.<br>• Investigation into why the incident/complaint was not addressed within the specified time frame.<br>• Incident/complaint follow-up according to the results of the investigation.<br>• Where required, work place practices will be reviewed. |

### 2.2.18 *Environmental Induction and Training*

| **Environmental Induction and Training Plan** | |
|---|---|
| **Operational Policy** | To ensure that all Project personnel, including contractors, comply with the environmental requirements of all tasks. |
| **Performance Criteria** | • All personnel undergo site inductions and, where necessary, additional training, that address environmental requirements of Project activities. |

| Environmental Induction and Training Plan | |
|---|---|
| | • Full compliance with induction and training procedures. |
| **Implementation Strategy** | • Training programs will be conducted as required<br>• As a minimum everyone must have basic environmental training and be familiar with the EMP, their roles and responsibilities detailed in it and what it requires of their job. All site staff will be made aware of environmentally sensitive areas, erosion management measures and weed hygiene practices.<br>• The skills required to effectively implement the project the EMP and its procedures or sub plans will be identified, including the skills of relevant contractors working on the site.<br>• An induction training plan will be developed to explain environmental obligations, the purpose of the EMP and any issues to new starters, whether permanent or contractors, need to be aware of.<br>• Identify and describe how specific operations skills training will occur, when and with which staff. Ensure all site/facility staff are aware of their responsibilities in implementing work instructions or procedures contained in the EMP.<br>• A document will be developed that clearly lists who will require training, the frequency of training, and what procedures will document training activities. It will also identify to what basic level or standard training will be targeted. |
| **Monitoring and Auditing** | The effectiveness of the training programs will be assessed and documented. The training program will be continually evaluated. |
| **Reporting and Corrective Action** | In the event of a staff member not being adequately trained or inducted, training activities will be undertaken as necessary. |

### *2.2.19 Emergency Response for Environmental Incidents*

Refer to *Section 2.1.19*.

### *2.2.20 Fire Management*

Refer to *Section 2.1.20*.

### *2.2.21 Climate Extremes and Climate Change*

Refer to *Section 2.1.21.*

### *2.2.22 Landscape and Character Maintenance*

Refer to *Section 2.1.22*

### 2.2.23 Topography Maintenance

Pipeline operations will not impact topography.

### 2.2.24 Revegetation and Rehabilitation

Revegetation and rehabilitation will take place following construction of the Pipelines. Any further disturbance during operations will be managed in accordance with the Revegetation and Rehabilitation Plan described in *Section 2.1.24*.

### 2.2.25 Dangerous Goods and Hazardous Substances

| Dangerous Goods and Hazardous Substances Management Plan | |
|---|---|
| **Management Policy** | To protect Project personnel, the public and the environment from harm due to the transport, storage or use of dangerous goods or hazardous substances. |
| **Performance Objectives** | • No unplanned release of dangerous goods or hazardous substances.<br>• All transport, storage and handling of dangerous goods or hazardous substances is performed in accordance with applicable legislation, guidelines and standards. |
| **Implementation strategy** | **General**<br>• Compliance with legal requirements for chemical and fuel storage.<br>• Compliance with appropriate Australian Standards and regulations covering the use of chemicals on-site.<br>• All relevant Material Safety Data Sheets (MSDS) on-site.<br>• No incidents resulting in surface or ground-water contamination.<br>• Effective management of stormwater run-off at above-ground facilities to avoid contamination of clean run-off.<br>• No release of contaminated water from RoW, compressor station site or other above-ground facilities.<br>• No refuelling of vehicles and machinery within 100 m of a watercourse. When possible, all refuelling will be off-site at appropriate facilities.<br>• Provide training for all personnel in handling hazardous materials.<br>• Provide and maintain materials and equipment for responding to hazardous spill incidents.<br>• Fuels, oils and chemicals will be contained within on-site containment systems and stored in accordance with relevant Australian Standards (including AS 1940) and Fire Safety regulations.<br>• MSDSs for each chemical used will be kept in a location that is easily accessible 24 hours per day.<br>• Maintain inventory of all hazardous materials volumes and storage locations.<br>**Compressor Station**<br>• Any large oil volume plant to be bunded.<br>• Divert all potentially contaminated water to the oil separator vessel. |
| **Monitoring and Auditing** | • Monitoring of storage, refuelling and worksite areas.<br>• Regular facility and RoW inspections.<br>• Spill Register (for spills greater than 5 litres). |
| **Reporting and Corrective Action** | • Incident report to be issued for all spills greater than 5 litres.<br>• All spills of chemicals or hydrocarbons on-site, regardless of |

| Dangerous Goods and Hazardous Substances Management Plan | |
|---|---|
| | amount or nature of the spill, are to be reported to the DERM. DERM will advise if further action is required.<br>• Observations to be included in reports from pipeline and facility inspections, ground patrols and any operational audit undertaken.<br>• Spills to be remediated depending on nature of the product (consult with Environmental Officer/DERM):<br>  − Small Hydrocarbon Spill: Apply absorbent material. Rip ground and mix with fertiliser. Turn soil every three months until no evidence of spill.<br>  − Large Hydrocarbon Spill: Consult with DERM.<br>  − Chemical Spill: Application of appropriate absorbent material. Remove effected soil if required.<br>• Repair and replace faulty equipment as soon as possible. |

### *2.2.26 Decommissioning*

The Decommissioning Plan is described in *Section 2.1.26*.