1 GAS FIELD COMPONENT - ENVIRONMENTAL MANAGEMENT PLAN

Draft Environmental Management Plans (EMP) for construction and operation of the Gas Field were provided as *Volume 9* of the draft EIS. The content of these EMPs will continue to be revised as a result of stakeholder consultation, as well as ongoing refinement of Project construction planning and detailed design, for eventual issue of the final EMPs as part of an application for an Environmental Authority to conduct *Chapter 5* activities following the issue of Project Approval Conditions set by the Coordinator General.

The following Management Plans that have been updated with additional management and mitigation measures developed for the sEIS:

- Noise and Vibration
- Traffic and Transport
- Visual Amenity and Lighting
- Weeds and Pests
- Air Quality and Dust
- Groundwater Monitoring
- Associated Water Storage
- Associated Water Management
- Flora and Fauna
- Soil Contamination
- Effluent Disposal
- Fire Management
- Landscape and Character Maintenance
- Decommissioning.

These Management Plans, with amendments, are presented in full below. All other EMPs developed for the draft EIS are unchanged. EMPs submitted with the draft EIS and sEIS will continue to be developed and refined prior to finalisation before commencement of Gas Field construction activity.

2 ENVIRONMENTAL MANAGEMENT PLANS

There is no clear demarcation of a construction phase and an operations phase for the Gas Field development, draft environmental management plans, specific to identified environmental values consider construction, operations and decommissioning activities. These are described below.

2.1 NOISE AND VIBRATION

Noise and Vibration Management Plan	
Policy	To construct and operate 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. • Respond to all noise-related complaints received from residents and landholders and implement mitigation measures. • Consultation with potentially affected sensitive receptors. • Respond to all complaints.
Implementation strategy	• Project derived noise criteria determined in accordance with relevant legislation and guidelines. • Undertake noise modeling for infrastructure. • Conduct site selection procedures to identify any potentially affected sensitive receptors and any potential topographic influences on noise modeling. • Identify sensitive receptors and record outcomes from consultation. • Placement of infrastructure in locations least likely to impact sensitive receptors. • Purchase of equipment with, as far as reasonably practical, the lowest sound power levels. • Where necessary equipment will be fitted with noise control devices. • Construct and maintain noise barriers and enclosures around noisy equipment or along the noise-transmission paths. • Conduct majority of construction activities 7 days per week for 12 hours per day, (e.g. 6.30am-6.30pm), except in emergencies or where system operational constraints dictate otherwise. • Construction will be limited in duration at any one site. • Implement a noise management plan for construction noise, where necessary. • Implement noise monitoring and ensure all noise complaints are recorded and addressed. • All machinery and equipment are well maintained.
Monitoring and auditing	• Landholder complaints relating to noise and vibration will be recorded and closed out by the Environmental Manager or delegate. • Noise surveys at relevant local residences will be undertaken at the request of the administering authority. • The method of measurement and reporting will be conducted in accordance with the DERM Noise Measurement Manual and/or AS 1055.

Noise and Vibration Management Plan	
Reporting and corrective action	• Complaints relating to noise will be addressed promptly, with further investigations and reporting to the DERM if required. • Routine work reports with maintenance records will be recorded and reviewed by each supervisor or manager. • 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. • Non-compliance and incident reports will be reviewed and closed out by senior management. • Regular reviews, recommendations and corrective actions shall be implemented.

2.2 TRAFFIC AND TRANSPORT

Traffic and Transport Management Plans	
Policy	To minimise as much as practicable potential impacts associated with traffic generated by the Project.
Performance criteria	• Minimal traffic-related complaints and incidents. • To minimise 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	• Communities will be consulted about proposed changes to traffic conditions. • All vehicles travelling to, from and within the Gas Field during all phases to follow relevant traffic management plans. • Car pooling and bus services will be implemented where possible to minimise worker journeys. • Personnel movements will be, where practical, be staggered to minimise the number of vehicle movements during peak periods. • Truck deliveries will be restricted to periods of least risk to other road users where possible. • 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 and the Transport Infrastructure Act 1994. • The transport of oversize loads will be restricted to non-peak periods where possible. • Clear signs and signals will be installed on-site to guide traffic movement and increase traffic safety. • Vehicles will observe site traffic regulations. (i.e. speed limits). • Necessary approvals for traffic-related activities from relevant authorities will be sought. • Prior to minor construction works, a traffic or access plan will be prepared in order to minimise the impact to landholders, as well as weed spread. • Dust management measures will be implemented. • Impacts on road pavements will be negotiated with the relevant authorities. • A transport safety review will be conducted.

Traffic and Transport Management Plans	
	• Where necessary, and in consultation with the relevant authorities, road sections (e.g. intersections) may be upgraded. • Construction in road reserves will be planned to minimise disruption and maximise safety of road users. • Roads: The pipe will be buried to a minimum 1.8 m below the natural surface, or 1.5 m below the bottom of a table drain, for the full width of the road reserve. • Rail: The pipe will be buried to a minimum of two metres below the rail and 1.2 m below the rail corridor for the full width of the rail corridor. • All bore holes associated with road or rail crossings will be outside the road or rail reserve. • All water pipeline will be contained within an enveloper. • Rail will be used, where feasible.
Monitoring and auditing	• The number of incidents or complaints received in relation to project traffic will be monitored. • Potential transport network shortcomings will be reported to the relevant authorities and appropriate action taken in agreement with those authorities. • Project traffic volumes will be monitored. • Road conditions will be monitored on a regular basis. • Transport companies will be audited to ensure compliance with company standards.
Reporting and corrective action	• The occurrence of any traffic incidents or complaints will be recorded by the relevant Environmental Officer and reported to the Environmental Manager. • All traffic incidents involving Project personnel will be thoroughly investigated. • In the event of a complaint/incident or failure to comply with requirements, relevant corrective action will be taken.

2.3 VISUAL AMENITY AND LIGHTING

Visual Amenity and Lighting Management Plan	
Policy	To minimise impacts on visual amenity associated with the Gas Field. 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. • Consultation with potentially affected sensitive receptors.
Implementation strategy	• Consultation with landowners and neighbouring occupiers in relation to the location of permanent infrastructure. • Infrastructure will be located in areas where views to the surrounding landscape already contain impacts to visual amenity, where possible. • The site layout and location will allow for a landscape buffer to be installed to the perimeter. • Reduce clearing, especially at right angles to roads. • Where it is necessary for a wide easement (> 30 m) to cross roads, long lengths of clearance may be limited by locating a curve at either side of roads to limit long views along the cleared easement.

Visual Amenity and Lighting Management Plan	
	• Site infrastructure behind existing vegetation or, where there is limited existing vegetation, establish landscape buffers between the easement and roads. • Use curved access roads or which are orientated towards an area which does not contain visible infrastructure. • All lighting installed at permanent sites will have guards to direct light downwards. • 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. • Lighting will be monitored to ensure that it meets the aim of reducing excessive leakage.
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. • In response to DERM and or community concerns, appropriate remedies will be assessed in order to minimise potential impacts.

2.4 WEEDS AND PESTS

Weed and Pest Management Plan	
Policy	To prevent the 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	• The Weed and Pest Management Plan will be prepared in accordance with the Land Protection (Pest and Stock Route Management) Act 2002 and Local Government Area Pest Management plans. This Plan will cover terrestrial and aquatic species. • Potential pest species and their potential distributions will be identified. • Ecosystems at the greatest risk of pest invasion will be identified. • No sightings or evidence of further spread of weed and pest species. • Control weed and pest species already present, using acceptable methods. • Weed data on GIS will accurately reflect the on-site species and distribution. • All approved weed washdown facilities will be marked on the maps. • All approved access routes will be identified on the maps. • Chemical controls will be used in accordance with AS 2507 and applied by appropriately licensed personnel. • All vehicles that enter into the Gas Field area will be inspected by qualified weed hygiene personnel and pass through a wash-down facility before entering environmentally sensitive areas or agricultural land. • The locations of wash down areas will be sited to minimise impacts on local government authority assets. • Waste will not be disposed of in a manner that attracts feral animals. • A survey of proposed work areas will be undertaken before work starts, to evaluate the presence of weed and pest species.

Weed and Pest Management Plan	
	• The Traffic Management Plan will be followed in order to minimise weed spread. • Vehicle movements may be restricted through those areas identified with weeds and pests (or stricter controls may be required before transiting these areas). • All personnel will be trained in the required practices for pest management through the Environmental Induction Program. • Local landholders will be engaged in coordinating a response to pest management. • Following decommissioning, weed survey and control will be incorporated into the monitoring plan.
Monitoring and auditing	• Regular surveys, through visual inspections or other means, of potential weeds and pest species will be conducted by qualified personnel. • Monitor disturbed areas for signs of pest invasions. • Regular inspections and weed hygiene logs will be maintained for vehicles and machinery.
Reporting and corrective action	• The Environmental Manager will be responsible for enforcing all procedures and policies relating to Weeds and Pests, as well as maintaining all records. • If weed or pest species are identified in areas previously without the species, control measures will be undertaken in order to remedy and control.

2.5 AIR QUALITY AND DUST

Air Quality and Dust Management Plan	
Policy	To construct and operate in a manner that minimises impacts on ambient air quality.
Performance criteria	• No exceedence of Project derived air quality criteria at sensitive receptors. • Consultation with potentially affected sensitive receptors. • Respond to all complaints on air quality.
Implementation strategy	• Model predicted emissions of air pollutants. • Vehicles and equipment will be maintained to keep exhaust systems and emissions within the limit of air quality criteria. • Design stack heights and discharge velocities to maximise dispersal of pollutants into the atmosphere and ensure that ambient air quality levels meet statutory requirements. • Include air quality criteria in the choice of infrastructure purchase and design. • Use suitable materials, gaskets and sealing. • Offensive odours, dust and particulate matter (PM10) releases are managed so that they do not cause environmental nuisance to sensitive or commercial areas. • Consult with and advise any residents or landholders who may be impacted by temporary dust emissions before activities start. • Activity sites and access roads will be watered as required to minimise the potential for environmental nuisance due to dust. Watering frequency will be increased during periods of high risk (e.g. high winds). • Vehicle access routes will be clearly defined and located to avoid areas of dust, as far as is possible.

Air Quality and Dust Management Plan	
	• The potential for generation of dust will be reduced through management and control (e.g. watering, mulching cleared vegetation to provide a stable surface and the retention of tree buffer zones). • The extent and period of exposure of bare surfaces will be minimised. • A "no burning" policy will be implemented. • All activities causing dust directly upwind of sensitive areas during certain times (wind velocity >5 m/s) will cease until wind velocity drops (<5 m/s) and direction changes (wind rose diagrams show a regular wind shift from northerly to southerly from morning to afternoon). • Ensure, through training and induction, that all personnel are aware of greenhouse gases, their role in global warming, and potential sources of emission and management strategies to reduce emissions. • Where required, catalytic reduction will be incorporated into engines.
Monitoring and auditing	• Regularly inspect all valves and fittings. • Record all air quality related complaints from neighbouring residential areas. • Visual checks by facility inspectors of defective exhausts. • Monitor air emissions to ensure conformity with Project derived emissions criteria. • Regular inspections during construction activities to review air and dust issues and watering frequency altered as required. • Monitoring of compressor station air emissions through manual sample points within six months of commissioning, and annually thereafter.
Reporting and corrective action	• Records of all monitoring and auditing activities will be kept, with results reported to the Environmental Manager at agreed intervals. • Recommendations and corrective actions arising from audits, inspections and reviews will be implemented. • All activities that deviate from normal operating conditions will be reported and corrective action initiated (including reporting to relevant agencies where this is warranted/required) to prevent a recurrence of the incident. • Complaints relating to air and dust emissions will be addressed promptly, with further investigations carried out and reporting to the DERM, if required. • Non-compliance and incident reports will be reviewed and closed out by the Environmental Manager.

2.6 GROUNDWATER MONITORING

Groundwater Monitoring Management Plan	
Policy	To protect the quality of the existing groundwater resources and not extract groundwater to the detriment of other groundwater users and biodiversity dependent on groundwater supplies.
Performance criteria	• Groundwater quality not impacted by activities. • Develop trigger levels for the point at which changes to groundwater quality and levels may result in the implementation of groundwater management plans.

Groundwater Monitoring Management Plan	
Implementation strategy	• Prepare a Gas Field groundwater monitoring plan based on EIS findings, relevant legislation and the Field Development Plan. • Establish baseline groundwater conditions. • Develop a conservative initial trigger value for a percentage reduction in the available drawdown, designed to provide an early warning of potential drawdown impacts before they occur. • Develop a conservative initial trigger value for physical or chemical parameter concentrations relative to baseline values, designed to provide an early warning of potential water quality impacts before they occur. • Develop a final trigger value for the percentage drawdown level at which some form of remedial or compensatory action is required for the affected bore owners. • Develop a final trigger value for the compliance criteria at which some form of compensatory or remedial action is required to mitigate the risks posed by the changes to water quality. • Besides routine monitoring of water levels and water quality, monitoring will include an assessment of methane, both presence and concentration at the bore head works.
Monitoring and auditing	• Strategically located and correctly installed boreholes/monitoring wells will be routinely monitored for water level and contaminants. • Groundwater bore levels will be monitored in accordance with the Gas Field Groundwater Monitoring Plan, to be updated every two years.
Reporting and corrective action	If monitoring indicates trigger levels have been exceeded compared to baseline groundwater data, appropriate remedial or compensatory actions will be undertaken and reporting to the DERM may be required.

2.7 ASSOCIATED WATER STORAGE

Associated Water Storage Plan	
Policy	To minimise the environmental impacts related to the storage of Associated Water.
Performance criteria	• Ponds and water storage facilities will be managed in accordance with a Ponds Operational Plan Guide (POP Guide), Pond Operational Plans (POPs) and the Standard Pond Operating Procedures (SPOPs). • Ponds will be designed and constructed to suitable engineering standards. • No significant unplanned releases of Associated Water.
Implementation strategy	• All ponds will be lined with either geosynthetic materials or clay. Appropriate monitoring and leak detection will be installed where required. • QGC will conduct geotechnical and hydrogeological (to the degree considered necessary) investigations of all proposed pond sites to determine the appropriate liner required. • QGC propose to use geosynthetic materials (e.g. HDPE) to line all infield and regional storage ponds. • Ponds will, as far as reasonably practicable, not be sited: − on soils with high permeability − above shallow alluvial aquifers − adjacent to major watercourses − below the 1:100 year flood level − in areas where endangered species could be at risk from potential contamination

Associated Water Storage Plan

- Where ponds are sited below the 1:100 year flood level the four sided pond embankments will be designed to retain structural integrity in the event of a flood.
- Each pond will be subject to a risk analysis and hydrogeological evaluation to determine the potential for seepage.
- Where required, monitoring wells around ponds will include aquifer monitoring wells and shallow monitoring wells.
- Where there is potential for contamination of surface waters from pond seepage, water monitoring sites will be located downstream and upstream of the pond to monitor any changes in the downstream water quality from baseline conditions.
- Ponds will be designed so that, under modeled storm events, spill events are unlikely to occur during the operating life of the storages.
- Ponds constructed with greater than 10 ML capacity and which will store Associated Water with a salinity measured as electrical conductivity greater than 4,000 µS/cm will be regulated storages and will be constructed in accordance with Environmental Authority requirements and with guidelines set out in the "The Manual for Assessing Hazard Categories and Hydraulic Performance of Dams" (2009).
- All ponds that meet the criteria of 'referable dams' will be designed to the required standard to reduce the risk of pond failure to as low as reasonably practicable.
- A composite liner system for brine ponds will be preferred.
- Brine ponds and brine evaporation basins will have appropriate leak detection and monitoring systems, which would include under liner drainage systems.
- Ponds will be designed to cope with a 1:100 annual exceedence probability (AEP) rainfall event, with a 10 per cent allowance for climate change.
- The POP Guide will contain the following:
    1. An outline of QGC commitments to pond management and the community.
    2. Operational responsibilities for compliance.
    3. A description of the pond categories.
    4. Figures with the location and area of all ponds.
    5. Critical water levels (maximum operating and mandatory reporting levels) for each pond.
    6. Pond monitoring frequencies by category of pond.
    7. A register of all ponds.
- POPs will be prepared for each pond. Each POP will consist of the following documents to assist with the management of each pond:
    1. A brief outline of pond functionality and legislative requirements.
    2. An outline of QGC responsibilities.
    3. A key emergency contact list.
    4. Access and Location Plan for ponds.
    5. A contact list.
    6. Monitoring requirements.
    7. Constructed drawings to required engineering standards.
    8. Pond Log Book.
- The Pond Log Book (PLB) will be maintained at the nearest site office and will contain:
    a. Data recording sheet for various monitoring activities.
    b. A list of conditions to note and definitions.

Associated Water Storage Plan	
	• The SPOP is a single document that describes the following standard operating procedures (SOP) applicable to all regulated ponds: 1. Organisational responsibilities. 2. Emergency procedures. 3. Emergency contacts. 4. Incident reporting. 5. Normal operating conditions. 6. Repairs and maintenance. 7. Surveillance and monitoring requirements. 8. Pond standard operating criteria. 9. Review and audit requirements. • The SPOP will be maintained at all site and head offices.
Monitoring and auditing	• Monitoring and inspection of ponds will take place in accordance with QGC's Standard Ponds Operating Procedures[1], Ponds Operational Plan Guide[2] and individual ponds operating plans and monitoring procedures. • Monitoring and control systems will be constructed for each pond to provide information about water levels and volumes and presence of seepage in collection systems. • Monitoring will include pond water levels, groundwater quality in surrounding shallow aquifers and pond water quality for a range of analytes. • Pond integrity will be monitored in accordance with POPs. • Annual pond inspections will be conducted by a certified engineer and reported to DERM in accordance with EA conditions.
Reporting and corrective action	• Breaches of any pond operational document or beneficial reuse plan will be recorded as an incident. • Accidental Releases of Associated Water will be reported. • If mandatory reporting levels are reached, the Environmental Manager will contact the administering authority. • Recommendations and corrective actions arising from audits, inspections and reviews will be implemented.

2.8 ASSOCIATED WATER MANAGEMENT

Associated Water Management Plan	
Policy	To minimise the environmental impacts related to the transfer, treatment, release or beneficial use of Associated Water.
Performance criteria	• No significant unplanned releases of Associated Water or saline brine produced from treating water. • No contamination of soils and water outside the footprint of brine evaporation ponds or salt disposal facilities. • Associated Water quality meets Project derived criteria specific to each beneficial use. • Volume and timing of Associated Water utilised for any beneficial use will be in accordance with Project derived guidelines.

1 Standard Ponds Operating Procedures, PRO-W-PCR-001, Rev [1], September 2009

2 Ponds Operational Plan Guide, PRO-T-PLN-004, Rev 1, February 2009

Associated Water Management Plan	
Implementation strategy	• Each beneficial use or release of Associated Water will be subject to a site-specific plan, which will detail as a minimum: − the receiving environment − daily limits − quality of the water − duration of use − monitoring requirements − landholder details and requirements − any regulatory approvals specific to the proposed use. • Water quality criteria for each beneficial use will be determined in consultation with relevant stakeholders. • Water transfer and treatment facilities will be designed to minimise the potential for accidental release of Associated Water. • Water treatment plants will produce water of the quality required for specific beneficial uses. A Hazard and Operability (HAZOP) study and detailed risk analysis of WTPs will be conducted to identify potential unplanned releases of untreated and treated Associated Water and methods to reduce the impact of all unplanned releases, to as low as reasonably practicable. • WTPs will not be constructed within the 1:100 year floodplain unless bunded to the appropriate level. Each WTP is likely to be composed of multiple modular water treatment units customised for variable water quality and quantity. Concrete slabs will be raised from the ground and bunded to protect them from flooding. • Water treatment chemicals will be stored in appropriately designed and bunded storage tanks in accordance relevant standards and guidelines for dangerous goods. • A detailed hazard identification and risk assessment will be conducted to determine the probability and modes of water pipeline failure and identify methods to mitigate impacts. • All water drained from LPDSs or from workover wells will be tested for salinity prior to being drained. Water with total dissolved salts less than 500mg/L will be released to land, captured for use in dust suppression if between 500 to 2,000 mg/L, or if above 2,000 mg/L removed to untreated water storage ponds. • The volume of saline brine waste will be minimised through brine concentration and brine evaporation. • A landfill site for the purposes of salt storage will be selected on the basis of having all, or the majority of, the following characteristics: − an elevated site in the landscape with no sensitive receptors located nearby − low permeability in situ clayey soil, that would ideally cover the landfill site to a depth of at least 500mm below the finished floor level − no geological faults or shear zones under or within 20 m of a landfill − at an appropriate separation distance from the long term regional groundwater elevation that will minimise the risk of groundwater interfering with the integrity of the landfill sealing liner and the associated risk of salt leaching from the landfill into groundwater − the landfill will not be located on a surface watercourse or intersect a buried streambed − topography will be conducive to construction with minimum earthworks − the site will have stable geology and landscape morphology − the landfill will not be located on good quality agricultural land and will be accessible via all-weather roads − the landfill will be located as close as possible to the water treatment facilities.

Associated Water Management Plan	
	• Nominally, the design of the salt landfill would comprise: − A monofill landfill (i.e. salt only) − a base composite liner comprised of a compacted clay liner, of appropriate thickness and permeability, with a geomembrane liner over the top and underdrainage − a base liner with a drainage layer over the top of the liner system that would be sloped to a number of sumps − sumps in the low points of the landfill base where leachate may accumulate over time and be appropriately lined − a capping design for a landfill based on observed hydrological and vegetation conditions at a site and ongoing investigations and research − a liner system for the cap using a composite liner of suitable thickness, compacted clay overlain by a geomembrane, or an alternative equivalent liner system − a capillary break layer on the underside of the composite liner − a capping with overlying fill which includes a topsoil layer for the promotion of vegetation on the surface − a surface cap shaped to shed rainfall runoff − cells, so that each cell can be filled and capped over a short period. • Any accumulated leachate from the landfill would be batch extracted from sumps by suitable mechanical equipment. The collected leachate would be stored in polymeric tanks and then be placed in a small evaporation sump during the dry weather months to remove moisture from the leachate before returning crystallised salt to the landfill. • A site based management plan (SBMP) will be developed for the operational phase of the salt landfill. • A closure plan and a post closure plan will be developed for the salt landfill. • The landfill will be constructed as a waste management facility and be engineered to applicable Australian and DERM standards. • QGC will develop a remediation strategy for any unplanned releases of Associated water. • QGC will comply will all requirements of a potential listing of brine ponds or salt landfill on the EMR or CLR.
Monitoring and auditing	• Associated Water quality will be monitored at the well head, storage ponds, water treatment facilities and beneficial user. • The volume of Associated Water produced will be monitored. • Water treatment facilities will be audited on an annual basis to ensure compliance with operating requirements. • QGC will install and maintain appropriate monitoring systems, such as groundwater sampling bores, at the brine evaporation ponds and salt disposal landfill sites. This information will provide early indications of any leak developing from the sites.
Reporting and corrective action	• All unplanned releases of Associated Water or saline brine will be investigated and corrective actions taken. • QGC will develop a remediation strategy for any unplanned releases of Associated water. • Any contamination of soils or water from seepage from brine evaporation ponds or salt disposal facilities will be investigated and corrective actions taken. • Any exceedences of water quality guidelines for a particular beneficial use will be investigated and corrective actions taken. • Any exceedences of water volumes to be supplied to a particular beneficial use will be investigated and corrective actions taken.

2.9 FLORA AND FAUNA

Flora and Fauna Management Plan	
Policy	To minimise impacts on the abundance and distribution of flora and fauna as a result of Project activities. Progressively rehabilitate disturbed areas where practicable.
Performance criteria	• Avoid, where practicable, endangered, vulnerable and rare (EVR) flora species and the habitat of EVR fauna. • No unauthorised clearing of native vegetation. • Permits and approvals in place for any unavoidable disturbance of EVR flora and fauna species. • No introduction of declared pests as a result of Project activities. • Develop and implement an environmental offsets strategy. • Minimise impacts to native vegetation and on habitat fragmentation. • Progressive rehabilitation is consistent with the surrounding area and land use post restoration.
Implementation strategy	• Minimise the area to be cleared during Activity phases. • Prepare a formal application to remove vegetation on sites where relevant. • The total area to be cleared for Activity phases will be restricted to the minimal area required. • The area to be cleared will be marked prior to any works commencing. • Any clearing within or close to watercourse or wetland vegetation communities will employ adequate erosion and sedimentation mitigation measures to ensure that aquatic ecosystems are not impacted and vegetation is not affected. • Cleared vegetation will be either stick raked or chipped and stored for use as mulch during site rehabilitation works and/or in surrounding vegetated areas susceptible to erosion. • A Site Rehabilitation Plan that covers all areas disturbed during Activity phases, but not covered by built structures and infrastructure, will be prepared and implemented. The plan will include the control of introduced weed species, which can colonise disturbed areas, and the use of local native plant species to the fullest extent possible. • Access of personnel to areas outside the disturbed areas only with the approval of the Environment Officer. • Access to the sites will be restricted to prohibit unauthorised entry to the surrounding undisturbed areas. Access restrictions will be implemented to prevent unauthorised clearing, recreational driving, uncontrolled bushfires and the spread of introduced weed species. • A weed control program will be implemented over the Activity sites, which will include: 1. effective management methods to control spread of declared weed species 2. routine monitoring of the Activity sites to identify any new incidence of weed infestation 3. provision of information for personnel on the identification of declared weeds 4. wash-down protocols for any vehicles 5. procedures for weed eradication and disposal. • Stockpile areas and haul roads required during Activity phases will be clearly defined, so that weed establishment and the potential spread of plant diseases may be contained. Stockpiles will be developed in previously cleared areas, with adequate open-spaces buffers, where possible. • An appropriate fire-management regime will be implemented over the sites, consisting of periodic (as appropriate) inspections of fuel load and moisture content in vegetated areas.

Flora and Fauna Management Plan

- Stockpile vegetation so as not to impede vehicles, stock or wildlife for >2 days.
- No clearing within 50 m of watercourses or their high banks or within 100 m of wetlands or springs.
- Minimise significant disturbance at any time and provide ground cover, leave mature trees and avoid soil compacting in order to promote regrowth.
- Individual site pre-clearance surveys will be undertaken for each proposed road, well pad and pipeline (and other infrastructure), as is currently the practice, to enable detection and avoidance of flora and fauna values whenever possible, but should be expanded to include:
  - recording of the presence or absence of EPBC and VMA listed communities and species
  - confirmation of the results of EVR flora field clearance searches and fauna microhabitat features
  - identification of permitting requirements
  - noting the presence or absence of declared weed species in order to develop site-specific weed management options (control, vehicle and machinery washdowns).

Ecological Constraints Zones

- For each activity site, ground truth the ecological constraints in accordance with the ecological constraints mapping developed for the draft EIS.

Zone 1 Minimal Ecological Constraints

- Final rehabilitation requirements for sites in this zone will be negotiated with the landholder. In most cases, they will provide for the return of areas to productive agricultural land.

Zone 2 Medium Ecological Constraints

- Vegetative waste as a result of clearing will be mulched or distributed across adjacent areas where it may provide refuge for terrestrial species. Felled vegetation will not be burnt.
- Infrastructure and access lines should be located along existing easements where possible.
- Individual site pre-clearance surveys should be undertaken for each proposed road, bore pad and pipeline (and other infrastructure), as is currently the practice, to enable detection and avoidance of flora and fauna values whenever possible, and should be expanded to include them.
- A record of the results of the EVR flora field clearance searches and fauna microhabitat features will be maintained.

Zone 3 High Ecological Constraints

Zone 3 (High Ecological Constraints) areas include all State Forests (excluding Gurulmundi State Forest). For these areas, the following recommendations are made:

- Site access will only be along existing cleared tracks, fire trails and easements. Where this is not possible, access is to be negotiated with DERM state forest management staff.
- DERM and/or independent flora and fauna consultants will be involved in detailed pre-clearance surveys as part of early planning for infrastructure locations.
- In order to minimise fragmentation effects, well pads for gas extraction will be of a minimum safe area and placed against the edge of existing easements where possible.

Flora and Fauna Management Plan

- "Best Available Technology" will be used to minimise clearing requirements.
- Access tracks will be incorporated into well pad clearance areas where possible to minimise total clearing requirements.
- Extraction methodologies that minimise the density of well pads in these areas (e.g. horizontal drilling) will be investigated and used where practicable.
- Vehicles and machinery will require washdown before entering state forests, if they have come from Zone 1 areas or known weed areas. The control of buffel grass is a key consideration in this zone.
- Access tracks will be regularly inspected for weeds and control measures employed where serious environmental or declared weeds are identified. It is recognised that some weed species may have been established in areas prior to the Project's commencement, and so less emphasis will be placed on these. The primary objective of this recommendation is to control spread of weeds that may occur as a direct result of the Gas Field development.

Zone 4a and 4b Very High Ecological Constraints

- Zone 4a and 4b areas have the highest ecological values and have the potential to be significantly impacted by Gas Field activities. It is therefore recommended that all non-linear Gas Field infrastructure be excluded from these areas. The construction of gathering systems and access tracks should follow the criteria in Zone 3 throughout the areas, with avoidance of new disturbance being the primary objective.
- Zone 4a areas are considered to have higher conservation values than Zone 4b. They are distinguished from each other only for the purpose of enabling planning for linear infrastructure to avoid Zone 4a areas in preference to Zone 4b areas in locations where such areas are unavoidable.

Areas within Zone 4a include:

- Gurulmundi and Cherwondah State Forests and the Environmentally Sensitive Area immediately north west of Gurulmundi State Forest. The location of linear infrastructure (e.g. pipelines and access tracks) through this area will be determined by ecologist field studies at the detailed design stage to follow existing tracks and previously disturbed areas where possible and to avoid or minimise disturbance of highest value areas (e.g. EVR plant populations, high quality fauna habitats, steep terrain). QGC will not undertake drilling or development of non-linear infrastructure in this area prior to government endorsement of detailed development plans showing proposed production techniques and infrastructure locations. Such a plan would be based on detailed ecological investigations within this area and would aim at ensuring that any such development would be undertaken in an ecologically sustainable and acceptable manner.
- EPBC Act listed Ecological Communities.
- DERM defined Category B Environmentally Sensitive Areas which, in the Gas Field, include:
  - VM Act Endangered REs
  - additional REs classified as Endangered under DERM's Biodiversity Status.

Flora and Fauna Management Plan

Areas within Zone 4b include:

- RE 11.3.27 (ephemeral wetlands)
- Buffer zones adjacent to watercourses in accordance with the Environmental Authority conditions for QGC's existing operations, namely:
  - 50 m from Stream Order 1 and 2 watercourses
  - 100 m from Stream Order 3 and 4 watercourses
  - 200 m from Stream Order 5-8 watercourses.

It is recognised that in a small number of instances linear infrastructure (e.g. collection lines, pipelines and access tracks) will be unable to avoid transecting linear remnants and watercourses of very high ecological value (i.e. Zone 4 a and b areas). Provided such unavoidable impacts are minimised and compensated for by offset initiatives the proposed activities will not have a significant impact on the conservation values of these areas.

Rehabilitation:

- Rehabilitation will be negotiated with the landholder, where applicable. Unless roads and well pads are to be retained for QGC and/or landholder uses, areas will be ripped and allowed to naturally revegetate. Hardened road surfaces will be removed or regraded to restore the original land surface as much as possible.
- A re-seeding plan will be developed based on soil types, existing local vegetation characteristics and landholder preferences along the alignment. In areas of native vegetation, revegetation will be allowed to occur naturally without re-seeding.
- Where re-seeding is considered necessary to avoid erosion of other environmental damage, local provenance native seed will be used for regeneration, if available. If local provenance seed cannot be collected or purchased, native seed from other parts of central Queensland should be acquired from commercial operators and re-spread in these locations.
- Monitoring and control of weeds will be conducted on an ongoing basis during the life of the Project. A Weed Management Plan that addresses the construction, rehabilitation and operation phases of the Project will be prepared prior to construction. This Plan will include hygiene protocols to minimise the likelihood of introduction and spread of environmental, agricultural and declared weeds.
- Vegetative waste as a result of clearing will be mulched or distributed across adjacent areas where it may provide refuge for terrestrial species. Such wastes will not be burnt.
- Rehabilitation will be monitored on a monthly basis for six months after works are completed and then biannually for two years.
- In areas zoned as High Constraint, rehabilitation will occur in close liaison with DERM staff and restoration will aim to restore or maintain biological processes and natural systems.

Environmental Offsets

An environmental offsets strategy will be developed prior to the commencement of the Project. That strategy will identify the environmental offset activities which will be established to compensate for the unavoidable clearing of ecologically significant areas (e.g. Endangered/Of Concern REs, wetland areas, EVR flora/fauna habitat and fauna movement corridors). It is envisaged that there will be opportunities to undertake most offset activities within or in close proximity to the Gas Field (as opposed to removed locations).

Flora and Fauna Management Plan	
	Fauna • Bushland and habitat surrounding Activity areas will be managed to prohibit any unauthorised disturbance so as to maintain the areas habitat values. • Access of workers to areas outside the designated Activity sites will be permitted only with the approval of the relevant Manager. • Where possible, dead trees, stags and hollow branches will be salvaged from the areas to be cleared and relocated to the surrounding undisturbed areas to create compensatory shelter. • Where possible, the timing of clearing operations will be selected to minimise impacts on breeding species. • Gaps will be provided in pipeline corridors for the movement of fauna. • Prevent entrapment of fauna in pipes (through night caps) or trenches (not leaving trenches open for >2 days). • Provide escape ramps in trenches for fauna. • Where fencing is required, the used of barbed wire fences will be negotiated with the landholder and avoided wherever possible, particularly within areas where gliders and larger bats are likely to occur. • Check trenches for trapped fauna before backfilling. • Identify potential microhabitats for fauna (e.g. hollow-bearing trees) and fauna habitats, with fauna handlers required to be present at the clearing. • In all areas, particularly riparian areas, where vegetation is required to be cleared, large trees that provide habitat for fauna will be avoided and retained wherever possible.Hollow-bearing trees will be felled in a manner that reduces potential for fauna death. Felled trees will be inspected after felling and fauna will be relocated or receive assistance if injured. After felling, hollow-bearing trees will be left unmoved overnight to allow animals to move of their own volition. • Plans will be developed to monitor and control populations of vertebrate feral pests (refer *Section 2.4*). • Linear features such as roads and pipelines will be built to allow for their intended purpose but should allow revegetation as much as possible to minimise impact on terrestrial fauna movements. • Fauna handlers will be present to survey for, and as necessary relocate, wildlife immediately prior to and during clearing activities in all locations identified as containing suitable fauna habitat during the pre-clearance surveys. • Road kills will be monitored in areas of high conservation and response strategies (e.g. reduced speed zones) will be developed where required. • In the event a specific location is identified as posing a significant fauna mortality risk, the construction of glider poles or Koala walkways will be considered.
Monitoring and auditing	• Detailed monitoring programs will be developed and form part of monitoring plan for the Gas Fields. • Routine inspections of undisturbed areas by the Environmental Officers to identify any evidence of vegetation disturbance, weed infestation and fire management issues. • Monitoring sites will be established as benchmarks to be used in monitoring environmental management and the progress of revegetation and rehabilitation. The sites will be selected to represent the major natural ecosystems affected by the project and will be sufficiently removed to be unaffected by the project's activities. • Inspections of planned disturbances to ensure that they comply with

Flora and Fauna Management Plan	
	Flora Management Plan requirements. • Areas planted with offsets areas will be monitored to determine the success of offsets plantings. • Records will be maintained of fauna casualties. • Routine inspections of undisturbed areas by the Environmental Officer to identify any evidence of habitat disturbance or feral pests. • Rehabilitation areas will be monitored on a monthly basis for six months and then bi-annually for the following two years. • During Activity, the Environmental Officer will monitor site clearing to ensure that: 1. vegetation areas and flora species to be cleared are well defined 2. there is no unauthorised disturbance of the surrounding habitat area 3. compensatory shelter is established where necessary 4. an animal retrieval program is implemented where necessary.
Reporting and corrective action	• The Environmental Officer will report any incidents of disturbance or weed infestation or feral pests to the Environmental Manager as necessary • The following constitute an incident or failure to comply: − unauthorised disturbance of vegetation outside the defined Activity areas − evidence of weed infestation − evidence of feral pests − fauna road kills − no Fire Management Program prepared or implemented − no Site Rehabilitation Plan prepared or implemented − unauthorised Activity within a particular ecological constraints zone − animal retrieval program not implemented during clean-up − hollow-bearing trees not felled appropriately − failure to obtain a necessary permit. • In the event of a failure to comply, investigations will be undertaken into the cause of the incident or failure to comply, and the appropriate actions taken to overcome the problem and prevent recurrence. • The offset strategy will guide the effective establishment of offset plantings.

2.10 SOIL CONTAMINATION

Soil Contamination Management Plan	
Policy	No contamination of soils arising from Project activities. To manage any pre-existing contaminated soils such that extent of contamination is not exacerbated by Project activities. Minimise, where practicable, contamination of soils by Associated Water.
Performance criteria	• No release of hazardous substance or dangerous goods to soil. • Identify all pre-existing contaminated soils likely to be impacted by Project activities. • Where pre-existing contaminated soils are identified, and disturbance by Project activities is unavoidable, develop and implement appropriate management strategies. • No contamination of soils and water outside the footprint of water management infrastructure.

Soil Contamination Management Plan	
Implementation strategy	• Strategies for the prevention of potential land contamination will include: 1. Construction of appropriate spill-containment facilities for all chemicals and fuel storage areas (in accordance with AS 1940 and AS 3780). 2. Establishing and maintaining a hazardous material register detailing the location and quantities of hazardous substances including their storage, use and disposal. 3. Induction and training of personnel and implementation of safe work practices for minimising the risk of spillage. • Remediation of contaminated land will use the most appropriate available method to achieve required commercial or industrial guidelines. • 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. • Bunds are required for all liquids with the potential to cause material or serious environmental harm. Storage of volumes of less than 1000 L without bunding will be permitted only if the recovery of spillage is easy, stored containers are undercover, they have an impervious base or drums are on or within containment pallets. • A refuelling procedure will be developed for all mobile equipment and Job Safety and Environmental Analysis (JSEA) completed for selection of on-site refuelling locations. • Store liquids >50 m from water bodies. • Bunded collection sumps will be on a graded floor with no connection to sewer or water bodies. • Bunds will minimise rainwater collection (temporary or permanent roof). • Water quality checks will be conducted before water is discharged. • Oil-Water Separators will only be used in vehicle areas where capture sumps are not tainted by biological contaminants from green or putrescible wastes. • All drilling sumps will be remediated by turning over and air drying. • Lined sumps used for radioactive tracer waste will be isolated, by fencing off and safety sign posting, to warn that the site is off limits for 1 year in order to ensure that the tracer beads are completely inert. • Any surfactants used in the fracing fluids will be returned to surface via the annulus and will be piped to a lined sump where exposure to air and sunlight will enhance degradation. These sumps will be retained for future use and the remaining soil will be monitored to ensure that any residual chemicals are within acceptable levels before burial otherwise the material will be removed to an approved waste disposal facility. • The following mitigation measures will be utilised to prevent or minimise the impacts from chemicals for weed management. − Spraying will not to occur on days where the wind speed exceeds 10 km/h. − Landholders will be consulted about the types and application rates of chemicals that are to be used. − Cattle should remain out of the area to which chemicals have been applied for at least 10 days. − The Material Safety Data Sheet of each chemical will be consulted to determine whether the chemical can be used near riparian areas. • Bunds' discharge pipes will be above ground and be constructed over the bund walls. Pumps will be operational when the bund is full.

Soil Contamination Management Plan	
	• Bunds will not have leaks. • DERM will be notified as soon as reasonably possible of any contamination causing or threatening significant environmental harm from spills. • Spill-absorbent materials (not sand) will be on hand for use on minor spills. • All contaminated absorbent materials will be removed according to the Waste Management Plan. • As soon as reasonably possible after contaminant release, it will be stopped, rectified, remedied and recurrence prevented. • Any existing contaminated sites that may be encountered will be reburied and any Gas Field infrastructure will be relocated. • If contaminated sites are encountered during well pad establishment or trenching for pipeline laying, contaminated material will appropriately managed. • All chemicals and oils will be managed in accordance with the DGSM Act with respect to Flammable and Combustible liquids, and spill-containment facilities built in accordance with AS1940 and AS3780. • Potential contaminated lands and lands upon which notifiable activities have been carried out will be listed on the DERM Environmental Management Register (EMR). • Contaminated land assessments to be undertaken at sites with a reasonable chance of contamination, those areas where notifiable activities have been undertaken and at properties listed on the EMR/Contaminated Land Register. • Site-based management plans will be prepared to ensure ongoing environmental management post-decommissioning is appropriately dealt with in accordance with the regulatory requirements and best practice at that time. • Rehabilitation activities associated with the disposal of saline residues and ponds will involve a physical and chemical investigation of soils and ground waters to determine: − area extent of saline contamination − undisturbed land form characteristics − landholder requirements (e.g. preferred vegetation type). • Waste management has been addressed in *Section 2.14*. • Associated Water management has been addressed in *Section 2.8*. • Effluent management has been addressed in *Section 2.11*. • A salinity management plan will be developed that aims to prevent secondary salinity from occurring or, where it has occurred, identifies methods to rehabilitate affected areas. • Associated Water used for dust suppression will not have a TDS of greater than 2,000 mg/L. • Hardstands and roads will be constructed to minimise salinity impacts through a site assessment for salinity prior to designing and constructing infrastructure and hardstands roads in high risk landscapes.
Monitoring and auditing	• The integrity of storage facilities for hazardous materials and wastes and bunded areas will be routinely inspected. • Regular equipment inspections and maintenance will be performed. • The EMS will incorporate the review of the current EP Act and determine the contaminated land status of current activities. • Spills will be monitored post clean-up to ensure the site has been remediated. • All incidents of contamination will be recorded and followed up.

Soil Contamination Management Plan	
Reporting and corrective action	• If an area of contamination is reported, the cause will be identified and the area of contamination contained. This may involve isolating the source or implementing controls around the affected site. • The Environmental Officer will keep records of routine visual inspections and will report any contamination incidents to the relevant Manager. • The following will be classified as an incident or failure to comply in relation to soil contamination management: 1. Breach in integrity of bunds. 2. Release of contaminants. 3. Failure to notify relevant authorities on encountering pre-existing contaminated land. 4. Non-compliance with AS 1940 and AS 3780. 5. Should an incident/failure to comply occur in relation to soil contamination management, a selection of the following corrective actions will be considered where relevant: 1. Rectify storage/handling non-compliance. 2. Contain and remediate or dispose of contaminated material/contaminants. 3. Investigate and implement measures to prevent recurrence.

2.11 EFFLUENT DISPOSAL

Effluent Disposal Management Plan	
Policy	To release treated effluent and manage sewage sludge without causing environmental harm.
Performance criteria	• Treated effluent meets quality requirements of design parameters. • All sewage sludge is disposed off at an appropriate sewerage disposal facility.
Implementation strategy	• Each camp will have a treatment system capable of treating the maximum amount of effluent generated from the camp kitchen and accommodation. • Sewage treatment plants (STP) will be subject to a site- based management plan, also detailing the irrigation of treated effluent. • 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. • Sewage will be treated to Class A Effluent standard • 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: − a primary tank which undertakes sedimentation, digestion and storage of solid matter − balance tank for flow equalisation − aeration tank to reduce organic matter − clarifier for further removal of residual suspended solids − final effluent tank for disinfection and storage of treated water − filter feed tank, gravity-fed from the final effluent tank − ultra filtration membrane − chlorine dosing − final treated effluent tank with three days wet-weather storage. Sanitary bio-solids or sludge from camp sewage treatment operations will be disposed at commercially licensed offsite facilities as necessary.

Effluent Disposal Management Plan	
	• Sludge from the onsite wastewater treatment facilities will be pumped out periodically and transported to the nearest licensed wastewater treatment works. • Treated effluent will be irrigated to suitable areas. • The treated effluent disposal site will be fenced. • The final treatment method will be selected in consultation with the relevant Council and DERM. • The STP will treat the any chemicals used in cleaning by breaking down the effluent composition using microorganisms in the plant. Most chemicals will be removed through the sedimentation phase by attaching themselves to sediment in the process and settling to the bottom. They will then be removed in the de-sludging process as biosolids.
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. • Daily treated effluent discharge limits will be reviewed monthly. • The annual audit will encompass effluent waste tracking and a review of the STP. • The waste transfer station will record all wastes that it manages on-site. • Soil and water quality in and around irrigation areas will be tested on a regular basis. • 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 EMS program to manage all wastes. • Any non-compliance with sewage management plans will be followed up and corrective actions taken. • Irrigation regimes will be amended depending on the results of soils and water quality monitoring.

2.12 *FIRE MANAGEMENT*

Fire Management Plan	
Policy	To prevent the initiation of bushfires as a result of Project Activities. To protect Project personnel and key Project infrastructure from bushfire impacts.
Performance criteria	• Develop and implement and Emergency Response Plan that includes fire management. • No unplanned and uncontrolled fires caused by Project Activities. • Consultation with all relevant fire management authorities.
Implementation strategy	• Minimise fire risk through evaluation processes and management of those risks (i.e. fire prevention). • Restrict high-risk activities in accordance with local fire bans or in times of high fire danger. • Maintain a plan for rapid and co-ordinated response to the outbreak of fire through an established Fire Response Plan in conjunction with the local metropolitan and rural fire brigades. • Implement evacuation procedures and hazard reduction. • Implement and maintain building fire detection and alarm systems, emergency lighting, fire hydrants, fire hose reels, fire extinguishers and service checks to relevant specifications as per Australian Standards.

Fire Management Plan	
	• Undertake Fire Safety Awareness Training as part of site inductions. • Conduct regular fire drills and record exercises and actions generated. • Conduct periodic fire equipment audits. • Develop a Fire Management Plan. • Lliaise with rural fire brigades to assess the fire risks posed by Gas Field infrastructure, the methods to control any fires at Gas Field infrastructure and appropriate and safe procedures for QGC personnel to undertake for the protection of rural communities. • The following controls are proposed to minimise to, as low as reasonably practicable, the potential to cause bushfires from flaring at wells: − To inform detailed design, a risk assessment will be conducted that includes thermal radiation modelling from flares. − Based on thermal radiation modelling, a sterile radius will be constructed and maintained around wells. − The sterile radius will be cleared of all vegetation so that no ignition sources are present. − The sterile radius will be fenced to prevent access. − Flares will be elevated at a height of between 2 and 6 m. − The flare will only ignite in a flaring event, and will not be continuously lit. − Except for flaring from pilot wells, flaring occurs infrequently and for short durations (minutes to days). • The following additional controls are proposed for pilot well flaring. − The flaring well will be visited by a Production Operator at least once every 3 days. The Operator will check the well site and its immediate environment to ensure that the flaring operation can continue safely. • The following controls are proposed to minimise to, as low as reasonably practicable, the potential impacts from a bushfire on QGC's infrastructure. − A detailed risk assessment (hazard and operability assessment) will be conducted for all facilities types and will include the scenario of bushfire. − The well pad will be cleared of all vegetation so that a bushfire does not have fuel up to the well pad equipment. − In an emergency, the choke valve on the wellhead at free flowing wells or the hydraulic downhole pump at pumping wells will be shut by an operator in the control room. − The separator vessel has a fire pressure relief valve which vents to atmosphere to prevent vessel overpressure and rupture.
Monitoring and auditing	• Fire equipment inspections to be carried out as advised by Management. • Fire management plans to be reviewed at least annually or following a fire event. • Fire drills conducted at least annually.
Reporting and corrective action	• Extinguish fire if safe to do so. • Report all fire events to Project Manager. • Notify fire brigade and implement evacuation procedure if appropriate. • Review fire management plans following fire events.

2.13 LANDSCAPE AND CHARACTER MAINTENANCE

Landscape and Character Maintenance Management Plan	
Policy	To minimise the impact on environmental and community values from the location of infrastructure.
Performance criteria	• Respond to all complaints regarding impacts on environmental and community values and, where feasible, implement mitigation measures. • Consultation with potentially affected stakeholders. • 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: − appropriate siting of Gas Field infrastructure − use of technology that creates the least disturbance − progressive rehabilitation of disturbed areas − direct liaison with potentially affected stakeholders. • Mitigation measures to reduce impacts on landscape character, land use and existing infrastructure include: − ensuring appropriate buffers are maintained between Gas Field infrastructure and existing and planned development, or where this is not practicable, ensuring Gas Field infrastructure design meets the safety requirements for developed areas − appropriate consultation with landholders and occupants in relation to the provision of access for Gas Field construction and ongoing maintenance during operation − liaison with mining permit, claim or lease holders to consider overlapping tenure issues and ensure that existing legislation has been considered − minimising impacts on GQAL through appropriate construction techniques and/or minimising construction and camps in areas designated as GQAL − ensuring that the construction footprint and associated work areas are minimised in environmentally sensitive areas such as state forests and watercourse crossings and approaches. • All gathering lines will be appropriately signposted. • Appropriate notification and management of noisy and dusty activities particularly in proximity to residential areas, roads and schools. • Identify all public and private infrastructure within the Gas Field prior to construction. • Seek broad consent from all Native Title claimants for all current and future acts required to develop and operate the Gas Field. • Where commercially viable quantities of millable timber are identified with DERM, QGC will provide compensation or sufficient lead time for DERM to arrange for the salvage of this timber. • Gas Field infrastructure will not be established, without prior consultation with potentially impacted parties, in areas where quarrying activities occur. • Gas Field operations will not be conducted within areas that cause disturbance to animals at intensive animal-rearing operations. • All precautions will be taken to minimise damage to farm infrastructure. • Gas Field development will not be conducted in existing urban, residential and recreational areas, as defined under local planning schemes.

Landscape and Character Maintenance Management Plan	
	• 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. • The following separation distances will be maintained between any steel pipelines and power lines: − 50 m from 132 kV above ground power lines − 20 m from 33 kV above ground power lines − 4.7 m from 33 kV underground power lines • To mitigate against potential rises and faults where power lines run parallel to pipelines for long runs, surge diverters in conjunction with earthing ribbon at the ends of the pipeline runs will be installed. **High Value Cropping Land** • As far as possible, drill sites and associated infrastructure will be located along paddock boundaries, access areas, etc, and not within areas of cultivation. • Where the only option is placement within a cultivation area, the wellheads will be positioned, in consultation with the landholder, to cause the least obstruction to the normal working patterns and to the overland flow of stormwater within the paddock. • Where possible, and with landholder consultation, access tracks will be located along internal headlands or contour banks. • Disturbance to existing erosion-control measures will be avoided as far as possible. Where disturbance is necessary, the duration of disturbance will be minimised and restoration promptly completed. • Well establishment areas will be progressively rehabilitated, although a final well pad area of 5,000 m^2 is expected.
Monitoring and auditing	• A record of all instances of non-compliance with this plan will be maintained. • 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. • 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.

2.14 DECOMMISSIONING

When infrastructure is no longer in use (operating as part of the CSG production process), QGC will decommission any part of the Gas Field in accordance with the regulatory requirements and accepted Best Management Environmental Practice of the day. Such infrastructure would include well heads, compression stations, ponds, water treatment facilities and any above ground pipeline infrastructure.

Prior to final decommissioning of Gas Field facilities, QGC will investigate potential environmental issues and impacts associated with the abandonment in accordance with Guidelines for the Assessment and Management of Contaminated Land and rehabilitation requirements set out in the current Environmental Authorities for Petroleum Activities.

Decommissioning Plan	
Policy	To decommission Project facilities such that they do not present and ongoing environmental risk. 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. • Decommissioning of the Gas Field facilities is expected to be completed in three phases: − dismantling and removal of the above-ground facilities − destruction and removal of hardstand areas − restoration and rehabilitation of land in accordance with DERM requirements or as agreed with landholders. • QGC will develop a Pond Decommissioning Plan for all ponds. • Where monitoring during the life of the pond indicates the potential for soils and aquifer contamination post decommissioning, an ongoing monitoring plan will be implemented. There is the potential that any shallow monitoring wells, that existed prior to decommissioning, will be removed during the decommissioning process. However these will be replaced by a network of shallow monitoring wells in surficial soils around the site of the decommissioned pond. Deep monitoring bores will not be removed during decommissioning and will continue to provide data on aquifer water quality following decommissioning. • All decommissioned ponds will be subject to routine monitoring of erosion and vegetation around the pond, including vegetation established during the decommissioning process, for any evidence of vegetation scalding or die off due to migration of salts. • QGC will continue monitoring shallow bores, deep bores, soils and vegetation surrounding ponds for a period agreed with regulatory authorities or until there is no evidence of seepage of saline materials. • General decommissioning principles for different infrastructure types are as follows: − Well site equipment will be removed from the site. Wells will be decommissioned by plugging and sealing. − Inactive, buried gas and water-gathering pipelines will be decommissioned in situ consistent with the requirements of the AS 2885. − 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. − Access tracks will be decommissioned should they not be required by the landholder. − Field Compression Stations (FCS), Central Processing Plants (CPP) and associated infrastructure, such as interceptor pits, triethylene glycol (TEG) units, and high-density polyethylene (HDPE) liners for ponds, will be removed from the site.

Decommissioning Plan	
	− Items such as compressors and driver engines will be recycled or salvaged for potential reuse by a third party where possible. − Hardstand areas will be removed where not required by the landholder, with footings buried in a suitable location, preferably a decommissioned pond footprint. Compacted material will be deep ripped or removed from the site depending on the final land use requirements. − Flares will be removed from the site. − Ponds and water storage facilities may remain at the request of a landholder only if they do not contain hazardous substances; have been subject to a contaminated land assessment and possess structural integrity suitable for the future purpose. − Ponds will be rehabilitated as described in *Section 2.25.* − Water treatment facilities will be wholly removed from the site. Treatment units, or components thereof, will be recycled or salvaged for potential reuse by a third party where possible. − Accommodation camps, administration buildings and warehouses will be removed from the site, unless a landholder requests to retain aspects of this infrastructure. − Energy infrastructure may remain if a further appropriate use can be foreseen. Otherwise it will be dismantled for recycling, scrap metals or transported to a waste disposal facility. − Waste transfer facilities will be decommissioned by the removal of all waste materials off site to an appropriate disposal location. To support the decommissioning and rehabilitation plan, waste facilities will be scheduled for decommissioning subsequent to the aforementioned items. • All sites shall be left clean and safe.
Monitoring and auditing	• Compliance with the Decommissioning Plan will be audited during the decommissioning phase. • All instances of non-compliance with the Decommissioning Plan will be recorded. • 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.