



# Kogan North Central Gas Processing Facility



## Environmental Management Plan

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# 1 Introduction

## 1.1 Background

The Kogan North Central Gas Processing Facility (KNCGPF) is 100% owned by Kogan North Asset Pty Limited, the holder of Petroleum Pipeline Licence (PPL120) and corresponding Environmental Authority (PEN100100007, formerly EA150383) for the KNCGPF. Formally, this facility and operating authorities were owned by APT Petroleum Pipelines Holdings Pty Ltd. APT Management Services Pty Ltd (part of the APA Group (APA)) operates and manages the KNCGPF on behalf of the owners under a long term contractual arrangement.

The KNCGPF is located between the towns of Dalby and Kogan approximately 300 km west of Brisbane and approximately 35 km west of Dalby as indicated in Figure 1. The facility supplies natural gas to the Roma to Brisbane Pipeline (RBP) DN 400 pipeline at Mile Point (MP) 114.6 (Kilometre Point (KP) 184.4) approximately 35 km west of Dalby on the Condamine Highway. The licence area lies within Block 2676, sub-block B on the Queensland Block Identification Map (BIM) Series.

The KNCGPF is designed to process raw low pressure, water saturated coal seam gas from the Kogan North coal seam gas field gathering system and discharge the cleaned and pressurised gas into the RBP at the required sales gas specification. Chapter 2 provides a basic overview of the plant and the interactions between the individual components. A detailed description of the process can be found in APA O&MG 4-49 KNCGPF Plant Overview.

The basis of this Environmental Management Plan (EMP) is to provide an environmental management framework and procedures to minimise potential environmental impacts resulting from the operation and maintenance of the KNCGPF.

This EMP has been prepared in accordance with the relevant pipeline licence requirements and Environmental Authority for the assets of the KNCGPF.

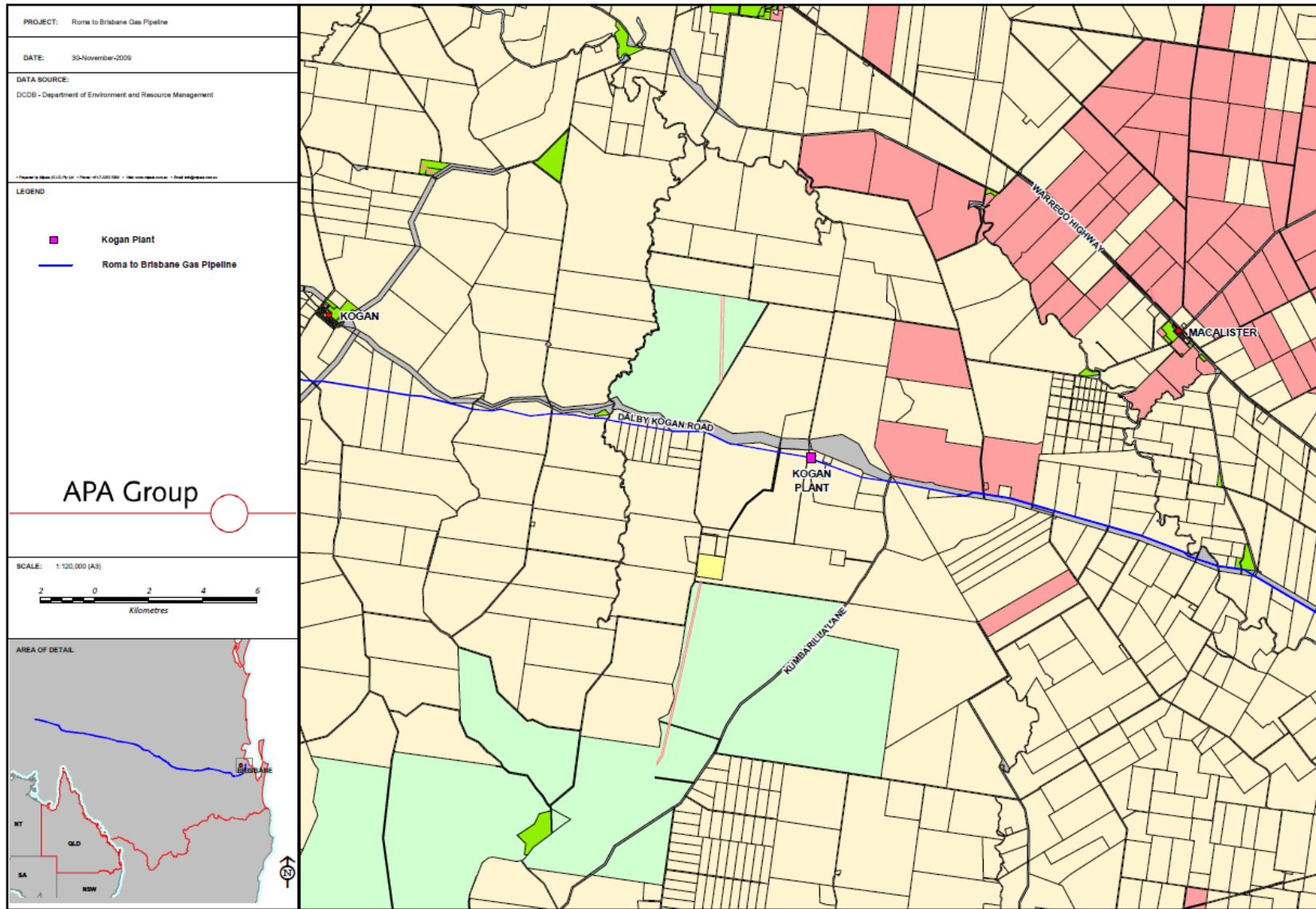


Figure 1: Location of the Kogan North Central Gas Processing Facility

## 1.2 Purpose and Structure of this EMP

The purpose of this Environmental Management Plan (EMP) is to outline a strategy to manage potential environmental impacts that may occur as a result of operational and maintenance activities associated with the KNCGPF. The key objectives are to ensure that:

- The processing and delivery of coal seam gas into the RBP is undertaken in a safe, efficient and environmentally responsible manner;
- All operational aspects are conducted in a manner that minimises adverse impacts to the physical, biological, cultural and social environment;
- All employees and contractors are aware of their environmental responsibilities, have the training to fulfil such responsibilities and are proactive in their approach to environmental management; and
- There is compliance with appropriate legislative and licence requirements for the KNCGPF.

This EMP has been prepared in accordance with the relevant pipeline licence requirements for the KNCGPF, as well as with the objectives and provisions of:

- APA's Health, Safety and Environment Policy;
- AS/NZS ISO 14001;
- QLD Department of Environment and Resource Management Guidelines for Preparing EMPs;
- Australian Pipeline Industry Association Code of Environmental Practice – Onshore Pipelines 2009 (APIA Code);
- Australian Standard 2885; and
- *Petroleum and Gas (Production and Safety) Act and Regulation 2004.*

The general structure of the EMP includes:

- A description of the main components of the KNCGPF (**Section 2**);
- A description of APA's environmental management framework including objectives, systems, roles and responsibilities and control procedures (**Section 3**);
- A description of APA's emergency response procedures (**Section 3.6**);
- A brief overview of the key legislative requirements applicable to the KNCGPF including licence requirements (**Section 4**);
- The environmental management strategies that are to be employed throughout operations to minimise and mitigate against environmental impacts (**Section 5**);
- A description of monitoring, measurement and evaluation processes including incident reporting and notification (**Section 6**); and
- A contact directory and abbreviations (**Section 7** and **Section 8** respectively).



## 2 Description of the KNCGPF

### 2.1 General Overview

The KNCGPF consists of:

- A gathering system protected by a back-pressure control valve;
- Inlet de-watering system;
- A produced water handling plant;
- Three Universal compressor packages;
- A 406 mm OD compressor lube oil filter coalescer separator unit;
- A Sivalls Triethylene Glycol (TEG) Dehydration Unit;
- A 406 mm OD TEG filter coalescer separator Unit;
- A custody transfer metering skid;
- A 40.5 m DN200 lateral pipeline interconnecting with the DN400 RBP; and
- Grid mains power as the primary power.

The KNCGPF is designed to operate on a continuous basis and produce approximately 12.05 TJ/day of gas. The above ground facilities have a design life of 15 years with an expected end in December 2020. The facility is expected to continue operation at reduced gas rates for at least another 2 years after this date. Below ground facilities have a design life of 40 years, to September 2046.

The processing facility and pipeline are currently operated in accordance with AS 2885.3: 2001.

The facility is controlled locally and monitored from the Brisbane Control Centre located in Mt Gravatt. The Brisbane Control Centre has an uninterrupted power supply that has sufficient capacity to ensure continuous operation during a power outage.



**Plate 1: Kogan North Central Gas Processing Facility**

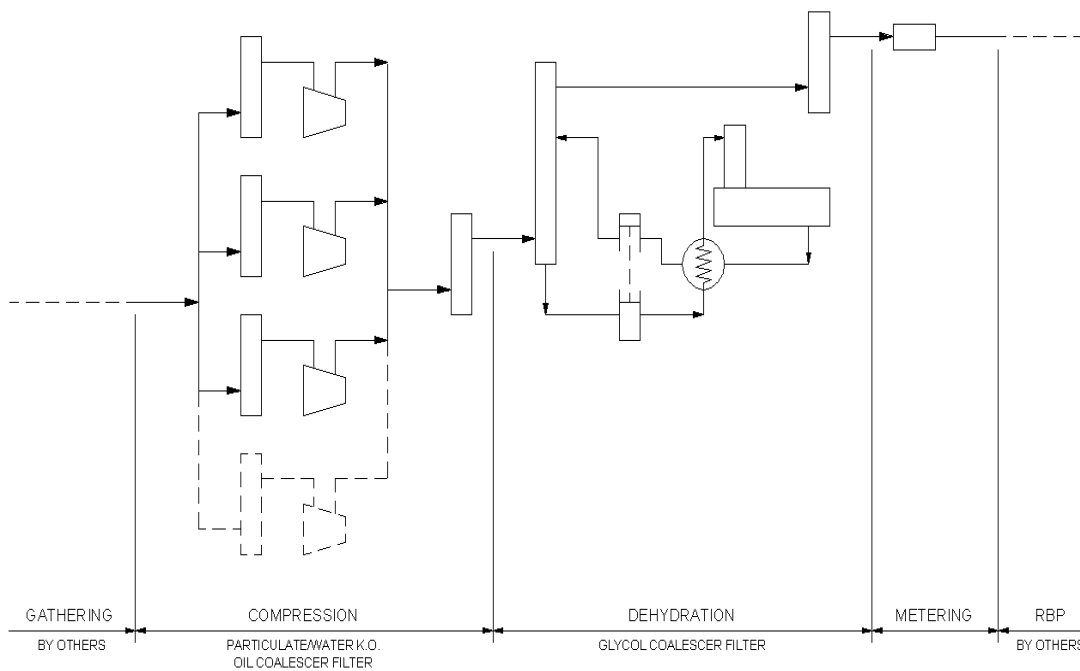
## 2.2 Process Description

The processing facility was designed for the delivery of gas into the RBP at a pressure up to but not exceeding 9.6 MPa, as per the sales gas contract and the MAOP of the RBP.

The well gas arriving at the KNCGPF is normally saturated with water. Low point drains in the field gathering system ensure proper dewatering. This removes the need for provision of slug catching at the inlet to the KNCGPF and pigging facilities in the well gas supply line.

As shown in Figure 2, the processing facility has two principle processes:

- Compression which occurs in three parallel trains to remove basic particulate and water; and
- Dehydration which occurs in a single train and includes lube oil coalescer filtration, glycol coalescing filtration and meters.

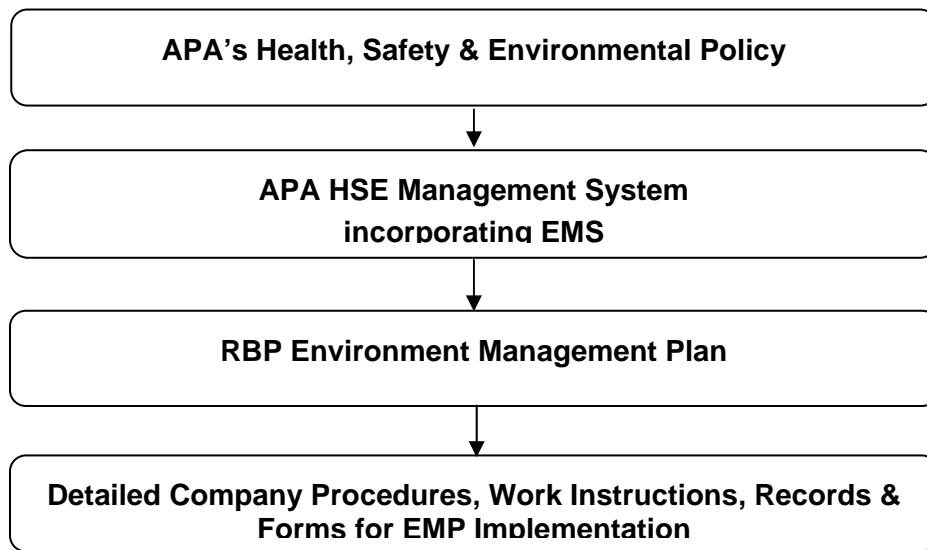


**Figure 2: Schematic of the Kogan North Central Gas Processing Facility**

### 3 Environmental Management Framework

#### 3.1 APA Environmental Management System

The APA Health, Safety & Environment (HSE) Policy governs the development of APA's HSE Management System and is contained in Appendix B. The policy and management system are key tools used to manage environmental responsibilities, issues and risks. The system drives the development and implementation of comprehensive, documented management plans within APA's Business Units. The relationships and linkages between this EMP and the APA environmental management system framework are represented in Figure 3.

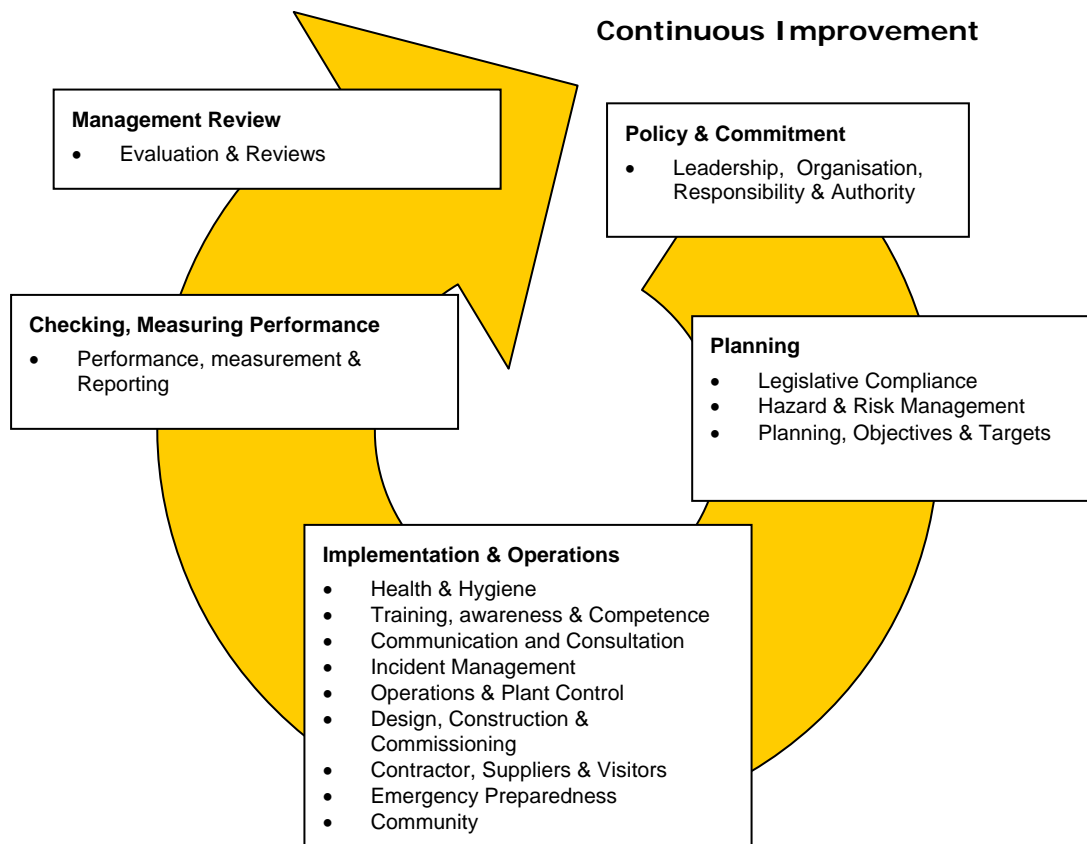


**Figure 3: Linkage between RBP EMP and APA HSE Management System**

The environmental standards and processes within the HSE Management System are aligned with the international standard AS/NZS ISO14001:2004. The HSE Management System has been established to ensure that environmental issues have been identified and managed throughout each construction and operation project.

Specifically, the HSE Management System Standards are comprised of 15 Standards:

- |   |  |
|---|--|
| <ol style="list-style-type: none"> <li>1. Leadership, organisation responsibility &amp; authority</li> <li>2. Legislation compliance</li> <li>3. Hazard &amp; risk management</li> <li>4. Planning, goals &amp; targets</li> <li>5. Health &amp; hygiene</li> <li>6. Training, awareness &amp; competence</li> <li>7. Communication &amp; consultation</li> <li>8. Incident management</li> <li>9. Maintenance, Repair and Integrity</li> </ol> | <ol style="list-style-type: none"> <li>Control</li> <li>10. Design, construction &amp; commissioning</li> <li>11. Contractors, suppliers &amp; visitors</li> <li>12. Emergency preparedness</li> <li>13. Community</li> <li>14. Performance, measurement &amp; reporting</li> <li>15. Evaluation &amp; Review</li> </ol> |
|---|--|



**Figure 4: APA HSE Environmental Management System Standards**

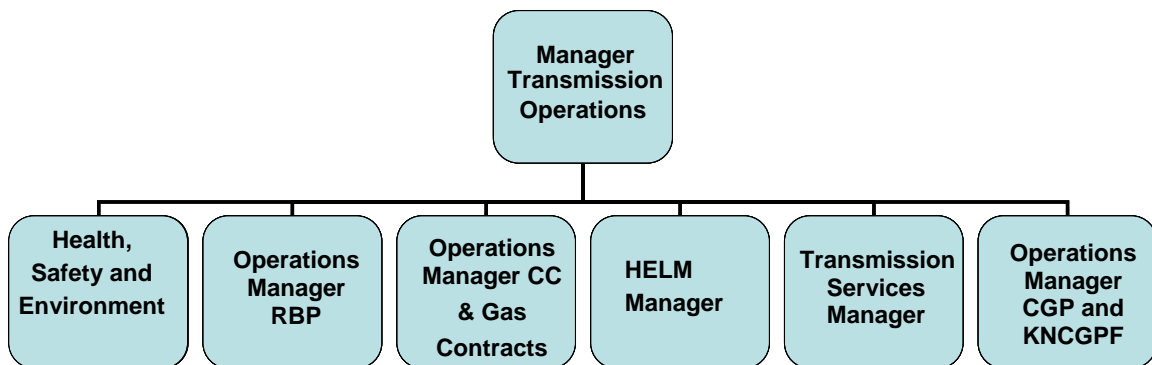
These principles are implemented and managed by a series of corporate and operational documents including: corporate policies, project planning strategies, environmental performance indicators, management plans, procedures and guidelines, and project specific documentation. Key documents and policies relevant to environmental management of the KNCGPF are referred to and summarised below. This OEMP forms part of APA's environmental management framework and is in accordance with APA's values and commitments

In many cases, the detailed information on how site issues are managed is included in specific APA procedures, guidelines and work instruction. These may include, but are not limited to:

- Roma Brisbane Pipeline Licence 2 (SAOP Common POL 1-33);
- Peat Lateral Licence 74 (SAOP Common POL 1-33);
- KNCGPF Licence 120 (SAOP Common POL 1-33);
- Queensland Operating Policy and Management Plan (POL 1-22);
- Excavation of Pipeline with Machinery (O&M 8-01);
- Easement Maintenance Procedure (MGT 6-11);
- Permit to Work Procedure (O&M 1-04);
- Guidelines for Encroachment (MGT 6-12);
- Guidelines for Work (MGT 6-02);
- Incident / Near Miss Reporting and Investigation (MGT 1-01);
- Queensland Gas Pipelines Emergency Plan (POL 1-07);
- Integrated Environmental Management System Abrasive Blasting - Integrated Authority No. WT0451 (POL 1-25);
- Abrasive Blast Cleaning (O&MG 3-18);
- Control of Hazardous Substances (O&M 1-05);
- Hazardous Materials Procedure (MGT 1-21);
- Noise Management Plan (O&MG 1-17);
- Noise Minimisation – Planned Maintenance or Commissioning Works (O&MG 1-15);
- RBP – Easement Patrols (O&MG 2-1 to 15);
- HASIF Reporting (MGT 1-02);
- Manual HASIF Reporting (MGT 1-03); and
- APA’s Incident Notification, Reporting and Investigation Standard (the Standard).

### 3.2 KNCGPF Organisational Structure

The KNCGPF organisational structure is shown in Figure 5. For more detailed information about the organisation structure and key responsibilities, refer to the Safety and Operating Plan for all QLD Facilities.



**Figure 5: Transmission Qld Organisational Structure**

### 3.3 Environmental Responsibilities

APA is responsible for the environmental management of the ongoing operation of the KNCGPF. However, all personnel and contractors are accountable through conditions of employment or contracts. Each individual is responsible for ensuring that their work complies with the stated procedures and obligations of this EMP and APA’s HSE Management System. Specific environmental responsibilities are assigned to particular positions as outlined in Table 1.

**Table 1: Environmental Responsibilities for the KNCGPF**

Position Title	Environmental Responsibilities
Operations Manager KNCGPF	<ul style="list-style-type: none"> <li>▪ Implement the KNCGPF EMPs including inspections, work order follow-up actions and sign-offs.</li> <li>▪ Ensure environmental procedures for maintenance of the ROW are followed and actions are completed as per the Works Program.</li> <li>▪ Report environmental non-compliances with EMP and legislation to Manager Transmission Operations Qld.</li> <li>▪ Management and upkeep of the KNCGPF Training and Competency Register for KNCGPF field employees under their control.</li> <li>▪ Timely training of all KNCGPF employees under their control on environmental matters relating to this EMP.</li> <li>▪ Ensure environmental incidents are reported to the DERM and input to the Work Wise system.</li> <li>▪ Maintain liaison with Fire Authorities / Police and Emergency Services as required.</li> <li>▪ Participate in Environmental Training and Emergency Response Exercises and Environmental Risk Assessments.</li> <li>▪ Raise work orders for preventative and corrective maintenance following environmental inspection into KNCGPF Work Order Management System.</li> <li>▪ Raise work orders for preventative and corrective maintenance on environmental issues from aerial surveillance patrols and ROW inspections into the KNCGPF Work Order Management System.</li> <li>▪ Report on progress of environmental work orders to Manager Transmission Operations Qld with regard to meeting environmental obligations.</li> <li>▪ Ensure annual completion of environmental works in the Works Program.</li> <li>▪ Report significant environmental non-compliances with EMP and legislation to Manager Transmission Operations Qld and Operations and Technical Services Engineer.</li> <li>▪ Induct new employees in environmental matters.</li> </ul>

Position Title	Environmental Responsibilities
Management Review Committee	<ul style="list-style-type: none"> <li>▪ Ensure HSE Management System standards are maintained across the Company.</li> <li>▪ Review external environmental audit results and apply to the HSE Management System.</li> <li>▪ Review significant non-conformances, underlying issues and monitor completion of corrective and preventative actions as they impact on the HSE Management System.</li> <li>▪ Review compliance to legislation, licences, standards and codes of practice.</li> </ul>
Manager Transmission Operations Qld	<ul style="list-style-type: none"> <li>▪ Implement APA's Health, Safety &amp; Environment Policy.</li> <li>▪ Ensure responsibilities are adequately resourced.</li> <li>▪ Liaise with government agencies regarding environmental issues at a working level.</li> <li>▪ Reporting non-compliance to regulatory authorities in accordance with legislative requirements.</li> </ul>
Transmission Services Manager	<ul style="list-style-type: none"> <li>▪ Assist the Operations Manager to develop and integrate the Company's Emergency Response Plan.</li> <li>▪ Co-ordinate externally provided emergency training and exercises.</li> </ul>
Operations and Technical Services Engineer	<ul style="list-style-type: none"> <li>▪ Identification of all environmental legislative requirements and changes.</li> <li>▪ Liaison with government regulatory authorities at a senior level regarding proposed updates of the EMP.</li> <li>▪ Review and update of KNCGPF EMPs in accordance with Pipeline Licence conditions and maintaining consistency in environmental practices between transmission pipelines.</li> <li>▪ Reporting to National Pollutant Inventory.</li> <li>▪ Maintain Obligations Register.</li> <li>▪ Review and update of KNCGPF Environmental Aspects &amp; Impacts Register in accordance with the APA's HSE Management System.</li> <li>▪ Monitor the compliance of operational activities with regulatory requirements.</li> <li>▪ Carry out and/or coordinate environmental audits including the compliance of operational activities to regulatory requirements with regards to environmental performance.</li> <li>▪ Maintain a register of Non-conformances and Corrective Action Reports resulting from audits of the EMP by regulating authorities, internal audits and/or from incidents recorded at KNCGPF.</li> <li>▪ Ensure EMP incorporates appropriate integrity of technical / engineering issues.</li> <li>▪ Devise annual works program to meet environmental requirements.</li> </ul>

Position Title	Environmental Responsibilities
HSE Advisor	<ul style="list-style-type: none"> <li>▪ Coordinate and assist Operations Manager in the implementation of the requirements of the EMP.</li> <li>▪ Manage review and update of the EMP.</li> <li>▪ Monitor compliance with the EMP and ensure Manager Transmission Operations is informed of non-conformances.</li> <li>▪ Ensure environmental conditions in the EMP are reflected in the Emergency Response Plan.</li> <li>▪ Record greenhouse gas emissions and report against National Pollution Inventory (NPI).</li> <li>▪ Ensure operational input into the HSE Management Systems and specifications including this management plan.</li> <li>▪ In conjunction with Operations Manager KNCGPF develop and coordinate a structured inspection and monitoring program.</li> <li>▪ Maintain Material Safety Data Sheets (MSDS) and Chemical inventory for CGP and KNCGPF.</li> </ul>
HELM Manager	<ul style="list-style-type: none"> <li>▪ Liaise with land management groups, community representatives, local state and regulatory authorities on land management issues (e.g. access, surveillance) as required.</li> <li>▪ Assist in monitoring third party activity on ROW.</li> <li>▪ Report on, and address as required, existing and emerging Cultural Heritage issues.</li> <li>▪ Identify and maintain currency with relevant land management industry best practice.</li> <li>▪ Conduct training related to environmental and land issues.</li> <li>▪ Collation of environmental data for reporting to Manager HR &amp; HSE.</li> </ul>
Specialist Environmental Advisers / Engineering Contractors	<ul style="list-style-type: none"> <li>▪ Specialist environmental advisers may be employed from time to time to carry out specific tasks such as weed control, environmental audits and noise and air monitoring as determined by consultation between Operations Manager KNCGPF and the Operations and Technical Services Engineer.</li> </ul>
Field Staff, Technical Officers, and Engineers	<ul style="list-style-type: none"> <li>▪ Responsible for ensuring that all works under their control are carried out in accordance with this EMP.</li> </ul>



Position Title	Environmental Responsibilities
Pipeline Operators / Technicians	<ul style="list-style-type: none"> <li>▪ Maintain the Right of Way in accordance with the stated requirements of the EMP and as directed by the Operations Manager KNCGPF.</li> <li>▪ Undertake Pipeline ROW Patrols regularly in accordance with environmental work orders.</li> <li>▪ Conduct Station checks on a regular basis.</li> <li>▪ Sign off completed environmental work orders in accordance with Work Order Management System.</li> <li>▪ Liaise and/or undertake awareness programs on environmental matters with landholders, councils, public authorities, emergency services and/or contractors in their designated ROW area of responsibility.</li> <li>▪ Maintain Material Safety Data Sheets (MSDS) and Chemical inventory for CGP.</li> <li>▪ Maintain licences under the Agricultural Chemicals Distribution Control Act.</li> <li>▪ Participate in environmental training and emergency response exercises.</li> <li>▪ Participate in risk assessment programs in their designated ROW area of responsibility and assist in other ROW areas.</li> </ul>

### 3.4 Training and Induction

Operations personnel, contractors and sub-contractors (regardless of company position or work duties) shall attend HSE inductions and training programs prior to commencing work. Qualified staff will conduct inductions to ensure that all personnel are aware of environmental responsibilities and have obtained a basis to fulfil such responsibilities.

HSE inductions will cover general environmental management issues, including:

- Role of EMP;
- Personal responsibilities;
- Water quality protection;
- Waste management;
- Storage and handling of fuels, oils and chemicals;
- Spill prevention and response; and
- Incident / non-conformance reporting procedures.

### 3.5 Risk Management

As part of its HSE Management System, APA has developed risk management guidelines and procedures. This framework identifies techniques for the evaluation of risk and provides a description of risk criteria and metrics to allocate risk ratings. These guidelines provide guidance for employees to assess and identify financial, environmental, community and health & safety hazards. In the context of environmental factors, the risk assessment process evaluates the likelihood that adverse environmental impacts may occur as a result of exposure to one or more stressors (US EPA 1998).

APA's risk methodology was developed in accordance with the principles and guidelines contained in:

- AS/NZS ISO 14001:2004 Environmental Management Systems- Specification with guidance for use;
- AS 2885.3-2001 Pipelines - Gas and Liquid Petroleum – Operation and Maintenance; and
- AS/NZS 4360:2004 Risk Management.

Environmental risks are assessed by:

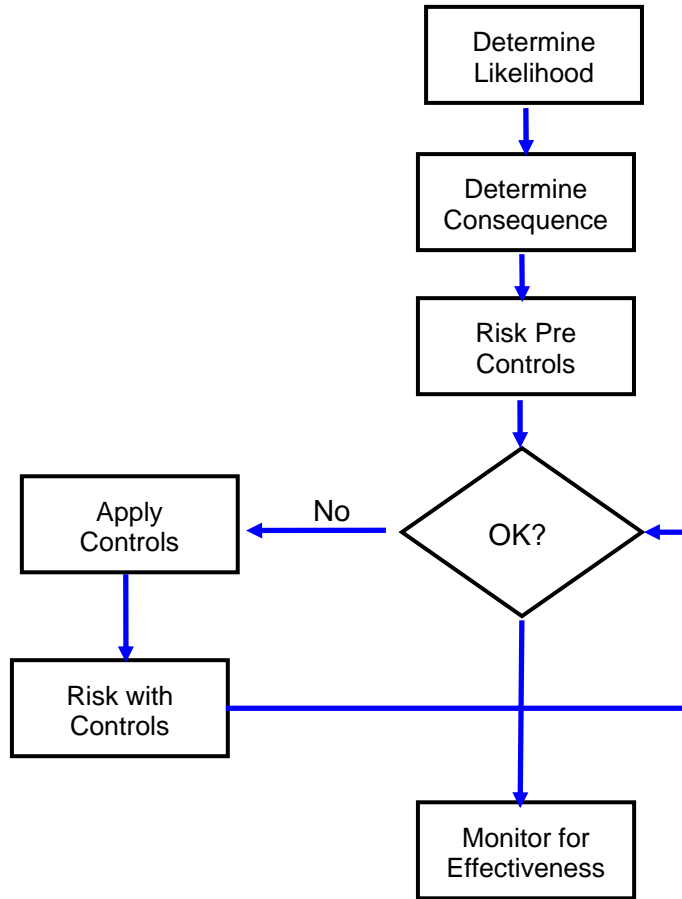
- Identifying the environmental aspects, i.e. those activities carried out on the KNCGPF that interact with the environment;
- Determining the severity and frequency of each aspect;
- Assessing risk according to severity and frequency, thereby identifying 'Significant Aspects';
- Identifying actions or treatments to further mitigate the risk for significant aspects to reduce risks to a level 'as low as reasonably practicable' (ALARP); and
- Allocating 'Responsibility' to manage 'Significant Aspects'.

Environmental aspects with a risk deemed 'extreme', 'very high' or 'high' have specific programs in place which are monitored at management level or higher to reduce risk. An example of a management-level program would be an EMP or an Environmental Improvement Plan (EIP) which control the implementation of mitigation measures and thus control risk minimisation. Where the risk cannot be reduced to a tolerable level then the management team must modify the project or operation's objective or obtain written approval from the Manager, Transmission Operations QLD to accept the risk.

### **3.5.1 Risk Assessment Methodology**

APA's risk assessment follows the methodology outlined in Figure 6. The definitions of Consequence, Likelihood and Levels of Risk are found in Appendix C.

Each of the KNCGPF aspects that have the potential to impact on the environment are summarised in Table 3 to Table 16 within Chapter 5. Their risks have also been assessed, taking into account control measures implemented and persons responsible for implementation with each impact having a Likelihood, Consequence and overall Risk rating applied.



**Figure 6: Risk Assessment Flowchart**

### 3.6 Emergency Preparedness and Response

It is recognised that emergencies at the KNCGPF may lead to serious, long term environmental damage. Environmental emergencies may include (but are not limited to):

- Fire / explosion;
- Gas leaks from pipeline;
- Chemical spills;
- Natural events (bushfires, flooding, earth slippage); and
- Third party damage.

#### 3.6.1 Emergency Response Plan (POL 1-07)

In meeting the policy objectives described above, the Queensland Transmission business unit of the APA has developed an Emergency Response Plan. (Emergency Response Plan POL 1-07).

The Emergency Response Plan for the APA is maintained to provide an efficient, safe, effective co-ordinated operational plan to deal with the emergency and to maintain and restore normal business operations as quickly and safely as possible. It is the responsibility of the Operations Manager to ensure that staff are conversant with the emergency response requirements and to ensure that training sessions are attended.

All incidents and situations with the potential to develop into an emergency shall be reported to Pipeline Control Centre in the first instance. An emergency is defined as: “Any incident or occurrence, not forming part of the normal operations and maintenance of the facilities, which causes or has the potential to cause a reduction or cessation of gas supply to one or more delivery points and/or has potential to cause significant harm to persons, property, or the environment” (refer Table 2).

The Qld Emergency Response Plan comprises the following:

- Provides a framework for the management of emergencies for Transmission assets in Queensland;
- Defines the emergency organisation to be established for different levels of emergency and defines the roles, responsibilities and participants in the emergency response organisation;
- Provides guidelines for response to various types of emergency situations which may arise;
- Contains lists of the resources and equipment to be used in the emergency response and initial repairs; and
- Provides a basis for training requirements for emergency response preparedness Contact.

This Emergency Response Management Plan is designed to provide a framework to respond to and manage the following types of emergencies.

**Table 2: Emergency Response Classification**

Number	Description
1	Serious Personal Injury (includes vehicles)
2	Missing personnel (Refer Travel Policy)
3	Fire / Explosion
4	Major Leak
5	Minor Leak OR Damage -no leak
6	Equipment Malfunction
7	Reported Hit
8	Environmental incident – (serious)
9	Bomb Threat / Terrorist action
10	Causing Property Damage

These codes are used on the emergency forms to assist with defining actions associated with each type of emergency. It is possible that more than one type is applicable, for example, there may be a case where both 3 and 1 are ticked on the initial assessment report.

**3.6.1.1 Training and Simulations**

All personnel are required to undergo emergency response training according to their individual training plans.

Emergency response training for all personnel commences with a generic "Emergency Response Training" module that must be completed within twelve months of commencing

work. Thereafter, all personnel must complete emergency response refresher training annually. The training required will depend on the designated role of the employee and will be set out as per their individual training plan developed by their leader.

The regular use of simulated exercises is a key resource for emergency training. Areas addressed through this type of training are:

- Individual response to the emergency, reporting techniques, review of personal protective equipment, condition and evacuation techniques;
- Supervisory actions through controlling and monitoring the emergency situation, handling issues that arise from the emergency and implementing control procedures;
- Team response through controlling and handling repair and isolating procedures;
- Control centre actions and response through communications and supply notifications; and
- All clear and reinstatement procedures.

## 4 Legislative Framework and Requirements

This EMP aims to ensure that all operation and maintenance activities are performed in a manner consistent with applicable legislation, regulations and codes of industry practice. The following sections outline the key Acts and codes relevant to pipeline operations within the Commonwealth (Section 4.1), Queensland (Section 4.2) and Australian Standards and Industry Codes (Section 4.3) as well as the specific licence requirements for the KNCGPF (Section 4.4).

### 4.1 Commonwealth Legislation

The relevant Commonwealth legislation includes, but is not limited to the following:

- *Aboriginal and Torres Strait Islander Heritage Protection Act 1984;*
- *Australian Heritage Commission Act 1975;*
- *Environmental Protection and Biodiversity Conservation Act 1999;* and
- *Ozone Protection Act 1989.*

### 4.2 State Legislation

The relevant Queensland legislation includes, but is not limited to the following:

- *Aboriginal Cultural Heritage Act 2003;*
- *Aboriginal Lands Act 1991;*
- *Agricultural and Veterinary Chemicals (Queensland) Act 1994;*
- *Agricultural Chemicals Distribution Control Act 1966;*
- *Cultural Record (Landscapes Queensland and Queensland Estate) Act 1987 (now superseded by the Aboriginal Cultural Heritage Act 2003);*
- *Dangerous Goods Safety Management Act 2001;*
- *Environmental Protection (Waste Management) Regulation 2000;*
- *Environmental Protection Act 1994;*
- *Environmental Protection Policies for Air 1997, Noise 1997, Water 1997 and Waste Management 2000;*
- *Fire and Rescue Service Act 1990;*
- *Fisheries Act 1994;*
- *Forestry Act 1959;*
- *Land Act 1994;*
- *Land Protection (Pest and Stock Route Management) Act 2003;*
- *Native Title Act 1993;*
- *Nature Conservation Act 1992;*
- *Petroleum (Submerged Lands) Act 1982;*
- *Petroleum and Gas (Production and Safety) Act 2004;*
- *Petroleum and Gas (Production and Safety) Regulation 2004;*
- *Plant Protection Act 1989;*
- *Queensland Heritage Act 1992;*
- *Queensland Workplace Health and Safety Act 1995;*
- *Soil Conservation Act 1986;*
- *Sustainable Planning Act 2009;*
- *Transport Infrastructure Act 1994;*
- *Vegetation Management Act 1999;* and
- *Water Act 2000.*

### 4.3 Australian Standards and Industry Codes

In addition to legislative requirements, this EMP has given consideration to relevant Australian and Industry standards, including:

- AS 2885.0 – 2008: Pipelines – Gas and Liquid Petroleum Part 0: General Requirements;
- AS 2885.1 – 2007: Pipelines – Gas and Liquid Petroleum Part 1: Design and Construction;
- AS 2885.3 – 2001: Pipelines – Gas and Liquid Petroleum Part 3: Operation and Maintenance;
- AS 2885.5 – 2002: Pipelines – Gas and Liquid Petroleum Part 5: Field Pressure Testing;
- AS 1678: Emergency Procedure Guides;
- AS 2809: Road Tank Vehicles for Dangerous Goods;
- AS 2931: Selection and Use of Emergency Procedure Guides for the Transport of Dangerous Goods;
- AS 1940: Storage and Handling of Hazardous Substances;
- ANZECC/ARMCANZ 2000: Australian and New Zealand Guidelines for Fresh and Marine Water Quality;
- Australian Code for the Transport of Dangerous Goods by Road and Rail;
- Australian Petroleum Exploration Association (APEA) Code of Environmental Practice – Onshore;
- Australian Petroleum Production and Exploration Association (APPEA) Code of Environmental Practice, 1996;
- Australian Pipeline Industry Association (APIA) Code of Environmental Practice Onshore Pipelines 2009;
- National Code of for the Control of Workplace Hazardous Substances [NOHSC: 2007(1994)];
- National Code of Practice for the Labelling of Workplace Substances [NOHSC: 2012(1994)];
- National Code of Practice for the Preparation of Material Safety Data Sheets [NOHSC: 2011(1994)]; and
- National Environment Protection Measures – National Pollutant Inventory.

### 4.4 Licence Requirements

The KNCGPF is operated under PPL 120 granted by DEEDI (Formerly DME) under the *Petroleum and Gas (Production and Safety) Act 2004*. A corresponding EA (No.PEN100100007 formerly EA 150 383) was granted by the DERM (formerly EPA) for a Chapter 4 Environmentally Relevant Activity (ERA 15 – fuel burning) for a Non Code Compliant Level 1 Petroleum Project.

## 5 Environmental Management Strategies

This chapter discusses the potential aspects and impacts posed to the environment by the operation and maintenance of the KNCMPF. Management strategies have been implemented to reduce potential impacts to an acceptable level of risk are also outlined.

The key activities that may have an impact on the environment are:

- Easement access;
- Soil and ground stability;
- Vegetation and weed management;
- Control of diseases;
- Earthworks and land use;
- Bushfire prevention;
- Air emissions;
- Noise emissions;
- Heritage – natural and built environments;
- Watercourse management;
- Management of pipeline facilities;
- Waste management;
- Pipeline spill prevention;
- Fuel and chemical storage; and
- Decommissioning and restoration.

These activities are also represented in the Australian Pipeline Industry Association's Code of Environmental Practice – Onshore Pipelines (March 2009). Each of these activities is considered in more detail in the following sections.

These strategies have been cross-checked against recommendations from a previous operational compliance audits undertaken in 2006 to assess environmental performance along of the KNCMPF.

### 5.1 Access

Physical access to the pipeline easement and facility grounds is required to carry out routine surveillance and maintenance activities including preventative maintenance, risk-specific maintenance, and corrective maintenance activities on above ground facilities (described in Section 2). Infrequent physical access to the easement and facility grounds is also required for other activities such as erosion control works, vegetation control works and coating defect repairs. Where possible, surveillance activities will reduce the amount of physical access required to minimise potential impacts as well as for practical and operational quality reasons.

The key environmental impacts resulting from access requirements are:

- Disturbance to native vegetation, wildlife and heritage areas;
- Damage to agricultural production or other land uses; and
- Soil compaction, erosion or release of sediment to land and water.



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Table 3 outlines the key management measures employed to mitigate environmental impacts through easement and facility access activities, as well as the responsibilities for those activities. A risk assessment of the key impacts was undertaken with the highest level of risk being identified as *Moderate* for impacts related to soils compaction, erosion and release of sediment to land and water. The risk assessment process identified all other impacts as having a *Low* risk.

**Table 3: Access Management**

**Related Documents:** Easement Maintenance Procedure (MGT 6-11)

**Targets and Objectives of Management**

- No complaints relating to access creating impacts on residents, landowners and third parties.

Environmental Aspect	Impact	Mitigation	Responsibility	Residual Risk Rating
Maintaining permanent access along the easement and to the compound	<b>3-1</b> Disturbance to native vegetation, wildlife and heritage areas (disturbance due to vehicular movement, track clearing, repairs, etc).	Limit direct physical access to activities essential for the operation, maintenance and related activities, to ensure the continued safe operation and protection of the local environment.	All	<b>3-1</b> Likelihood – <i>Unlikely (2)</i> Consequence – <i>Minor (0.5)</i> Risk – <b>LOW (1)</b>  <b>3-2</b> Likelihood – <i>Unlikely (2)</i> Consequence – <i>Minor (0.5)</i> Risk – <b>LOW (1)</b>  <b>3-3</b> Likelihood – <i>Possible (3)</i> Consequence – <i>Important (1)</i> Risk – <b>MODERATE (3)</b>
		Do not allow public access along corridor unless that right already exists. Public access shall be controlled by measures such as physical barriers and signs.	All	
	<b>3-2</b> Damage to agricultural production or other land uses.	Use permanent access tracks to access above ground facilities.	All	
	<b>3-3</b> Soil compaction, erosion or release of sediment to land and water.	Maintain access tracks to the minimum navigable width (i.e. 4 m).	Pipeline Technicians	
		Use existing farm tracks and public roads wherever possible. Obtain landowner permission to use private tracks on a property basis before access is required or by ongoing arrangement.	All	
	Erect barrier fencing around any excavations when unattended.	Pipeline Technicians		
	Consult relevant utility authorities for identification of overhead and buried cables, lines, pipes, water mains or other potentially affected infrastructure.	Pipeline Technicians		

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## 5.2 Soil and Ground Stability

The potential development of new soil and ground stability issues created during surveillance and routine maintenance activities is controlled by limiting access to the pipeline easement and facility grounds. Routine surveillance activities are used to identify and monitor trench subsidence and erosion.

The key environmental impacts to soil and ground stability are:

- Damage to agricultural production or other land uses;
- Damage to native vegetation and wildlife habitat; and
- Soil erosion, sedimentation (land and water) and land subsidence

Table 4 outlines the key management measures employed to mitigate environmental impacts associated with soil and ground stability, as well as the responsibilities for those activities. A risk assessment of the key impacts was undertaken with the highest level of risk being identified as *Moderate* for impacts related to soil erosion and sediment release and also for impacts to agricultural production. The risk assessment process identified all other impacts as having a *Low* risk.

**Table 4: Soil and Ground Stability Management**

**Related Documents:** APIA Code of Environmental Practice for Onshore Pipelines – (2009), “Soil Erosion and Sediment Control Engineering Guidelines for Queensland Construction Sites”; local council erosion and sediment control guidelines.

**Targets and Objectives of Management Plan**

- No significant erosion impacting the easement or facility grounds to minimised the potential for soil erosion;
- Sediment and erosion controls in place and maintained to adequately prevent or control sediment release to land and water;
- No exposure of buried pipeline due to erosion to minimise the risk of exposure of buried pipelines; and
- Any reported subsidence issues repaired as soon as practicable to adequately control subsidence of the pipeline trench.

Environmental Aspect	Impact	Mitigation	Responsibility	Residual Risk Rating
<ul style="list-style-type: none"> <li>• Excavation works during scheduled maintenance or emergency response.</li> <li>• Patrols and inspections.</li> <li>• Vegetation control activities.</li> <li>• Management of storm water runoff and soil protection measures at facilities.</li> </ul>	<b>4-1</b> Soil erosion, sediment release to land and water, subsidence of pipeline trench.	Identify and monitor potential soil and ground stability problems such as erosion and subsidence during routine surveillance activities.	All	<b>4-1</b> Likelihood – <i>Possible (3)</i> Consequence – <i>Important (1)</i> Risk – <b>MODERATE (3)</b>  <b>4-2</b> Likelihood – <i>Unlikely (2)</i> Consequence – <i>Important (1)</i> Risk – <b>MODERATE (2)</b>  <b>4-3</b> Likelihood – <i>Unlikely (2)</i> Consequence – <i>Minor (0.5)</i> Risk – <b>LOW (1)</b>
		Use and install appropriate erosion controls and ground stability measures in areas that have been revegetation, rehabilitated or restored.	Pipeline Technicians	
	<b>4-2</b> Damage to agricultural production or other land uses).	Undertake erosion control and management strategies and remedial action for ground instability in accordance with relevant codes and guidelines.	All	
		Use routine surveillance to monitor the stability of surfaces that have been restored and rehabilitated following Company activities for a minimum of 12 months.	Pipeline Technicians	
	<b>4-3</b> Damage to native vegetation and wildlife.	Revegetate areas of poor ground cover, eroded/unstable areas, areas disturbed as a result of Company activities (such as excavations) and areas under rehabilitation / restoration to promote ground stability, where practicable.	All	
		Restrict access to areas to reduce the risk erosion and promote ground stability, where required.	All	
		Inspect and maintain all installed erosion control structures as part of ongoing surveillance.	Pipeline Technicians	

### 5.3 Vegetation and Weed Management

Clearing of trees and tall shrubs is required along the easement so as to comply with the requirements of AS 2885.3. This code dictates that there should be a clear line of sight between pipeline marker signs and that the pipeline coating should be protected from damage by roots.

The KNCGPF easement is relatively short (0.05 km) and, as a result, clearing is minimal and has negligible impacts upon native vegetation. Even so, clearing of the easement is only undertaken as-needed. This enables the existing vegetation along the easement to continue to protect the KNCGPF against the impacts of erosion and weed growth as well as providing habitat for native fauna.

The key environmental impacts to vegetation include:

- The spread of weeds along the easement and the introduction of new weed species to the easement and facility grounds;
- Excessive vegetation re-growth especially of weeds;
- Competition from weed species leading to displacement of agricultural crops or native flora; and
- Poor vegetation cover that may lead to erosion or loss of agricultural capacity.

Weeds have the potential to adversely alter ecosystem function, reduce primary industry productivity and profitability, and seriously limit the long-term sustainability of agricultural and natural resources. Surveillance and routine maintenance activities have the potential to develop new weed infestation areas through the:

- Disturbance to topsoils;
- Removal of vegetation competition;
- Redistribution of weed seed-stock; and
- Introduction of species from other infested area.

Table 5 outlines the key management measures employed to mitigate impacts to vegetation and to manage weeds associated with the KNCGPF. A risk assessment of the key impacts was undertaken with the highest level of risk being identified as *Moderate* for impacts related to the spread and introduction of weeds along the easement and the risk of erosion through poor vegetation cover. The risk assessment process identified all other impacts as having a *Low* risk.

**Table 5: Vegetation and Weed Management**

**Related Documents:** *Lands Protection (Pest and Stock Route Management) Act 2002.*

**Targets and Objectives of Management Plan**

- No evidence of erosion or sedimentation due to a lack of vegetation cover that is inconsistent with the surrounding landscape to promote and maintain stable vegetation cover;
- No evidence of weeds being of a higher density within the easement / compound than the surrounding landscape to enable prompt identification and control of weeds to eliminate noxious weed species; and
- No evidence of new weed species being recorded on the easement / compound to minimise the introduction and spreading of weeds.

Environmental Aspect	Impact	Mitigation	Responsibility	Residual Risk Rating
Maintaining permanent access along the easement	<p><b>5-1</b> Spread of weeds along the easement and the introduction of new weed species to the easement.</p> <p><b>5-2</b> Excessive vegetation re-growth especially of weeds</p> <p><b>5-3</b> Competition from weed species leading to displacement of agricultural crops or native flora</p> <p><b>5-4</b> Poor vegetation cover that may lead to erosion or loss of agricultural capacity</p>	Conduct routine surveillance to identify and monitor any potential areas of poor or excessive vegetation cover and for the presences of weeds.	Pipeline Technicians	<p><b>5-1</b> Likelihood – <i>Possible (3)</i> Consequence – <i>Important (1)</i> Risk – <b>MODERATE (3)</b></p> <p><b>5-2</b> Likelihood – <i>Unlikely (2)</i> Consequence – <i>Minor (0.5)</i> Risk – <b>LOW (1)</b></p> <p><b>5-3</b> Likelihood – <i>Unlikely (2)</i> Consequence – <i>Minor (0.5)</i> Risk – <b>LOW (1)</b></p> <p><b>5-4</b> Likelihood – <i>Possible (3)</i> Consequence – <i>Important (1)</i> Risk – <b>MODERATE (3)</b></p>
		Remove regrowth trees within 3 m of either side of the pipe centreline at the seedling or sapling stage to ensure the roots do not create a safety risk to the pipeline. Remove saplings at ground level.	Pipeline Technicians	
		Avoid damage to vegetation outside the easement unless unavoidable and only with landowner consent & approval of regulatory authorities where required.	Pipeline Technicians	
		Implement wash down procedures for machinery and equipment that has been operated or travelled through an area where declared plants / weeds are present. Record inspections and washdowns on a washdown register.	Pipeline Technicians / Corrosion Engineer	
		Wash slashing equipment prior to moving from known weed infestation areas to weed free areas. Record inspections and washdowns on a washdown register.	Pipeline Technicians	
		Monitor weed growth along the easement during routine scheduled surveillance activities. Determine excessive weed growth by comparing the amount of weeds within the easement to adjacent areas.	Pipeline Technicians	
		Train contractors in weed identification and management techniques.	Operations Manager	
		Advice maintenance contractor's of obligations and responsibilities with regards to weed management. Supervise their actions.	Operations Manager	

## 5.4 Control of Diseases

Plant and animal diseases have the potential to cause serious environmental, economic and social problems. In particular, the spread of disease around the KNCGPF could potentially impact on commercial crop and stock production in the Dalby and Kogan region.

Queensland is currently free of most of the serious contagious animal diseases that occur elsewhere in the world (DPI, 2008). Diseases that do occur in Queensland (e.g. anthrax and botulism) are considered under control through successful management by industry, veterinary professionals and government animal health authorities.

The many known plant diseases present in Queensland are usually caused by bacteria or phytoplasma infection to the host plants and can result in widespread die-off of species or can reduce potential harvest. The spread of plant diseases can occur over long distances during severe weather events where strong winds and rain are present. Diseases can also spread by moving infected plants and contaminated equipment, vehicles, tools, gardening equipment or people (hands, shoes and clothing).

Table 6 outlines the key management measures employed to mitigate the potential impact of diseases associated with the KNCGPF. A risk assessment of the key impacts was undertaken with the highest level of risk being identified as *Low* for impacts related to the spread and introduction of diseases into new areas.

Table 6: Control of Pests and Diseases				
<b>Related Documents:</b> APIA Code of Environmental Practice – Onshore Pipelines (2009)				
<b>Targets and Objectives of Management</b>				
<ul style="list-style-type: none"> <li>No landholder or third party complaints regarding possible transmission of disease to minimise the spread of disease and to prevent the introduction of disease to new areas.</li> </ul>				
Environmental Aspect	Impact	Mitigation	Responsibility	Residual Risk Rating
Maintaining permanent access along the easement	6-1 Spread of diseases or introduction of diseases into new areas.	Consult with the local Department of Primary Industries and Fisheries and affected landholders if an outbreak of a new exotic disease occurs. Create an appropriate management strategy in accordance with the APIA Code, which is communicated to all staff.	Relevant manager	6-1 Likelihood – <i>Rare (1)</i> Consequence – <i>Serious (1.5)</i> Risk – <b>LOW (1)</b>
		Obtain landholder approval for the importation of soil in areas where diseases are currently an issue.	All	
		Develop a comprehensive pathogen management procedure, that includes: <ul style="list-style-type: none"> <li>Quarantine requirements;</li> <li>Machinery, vehicle and personnel hygiene measures; and</li> <li>Records management &amp; monitoring.</li> </ul> Post-construction control.	Relevant manager	



## 5.5 Earthworks and Land Use

Earthworks are only carried out on an as-needed basis and are primarily undertaken for maintenance activities or when installing new infrastructure.

Typical maintenance activities requiring earthworks are:

- Site maintenance;
- New cathodic protection point installations;
- Pipeline coating repairs; and
- Pipeline crossings (usually undertaken by others with the Company's supervision).

The key issues associated with earthworks that may also affect land use are:

- Soil erosion and sediment release;
- Interruption to natural surface and groundwater flows;
- Disturbance to native vegetation and wildlife;
- Temporary disruption to residents, landowners and third parties; and
- Introduction of weed species.

Table 7 outlines the key management measures used to mitigate the potential issues resulting from earthworks associated with the KNCGPF. A risk assessment of the key impacts was undertaken with the highest level of risk being identified as *Moderate* for impacts related to the spread of weeds and soil erosion. The risk assessment process identified all other impacts as having a *Low* risk.

**Table 7: Earthworks and Land Use Management**

**Related Documents:** MGT 6-02 Guidelines for Work, O&M 8-01 Excavation of Pipeline with Machinery, MGT 6-06 Easement Encroachment, MGT 6-11 Easement Maintenance

**Targets and Objectives of Management**

- No reports of erosion or flow disruption at new earthworks to minimise impacts of erosion, sedimentation and disruption of environmental flows;
- No unapproved disturbance of vegetation outside of the easement or of cultural or heritage areas to minimise disturbance to native flora and fauna; and cultural or heritage areas;
- No landholder or third party complaints relating to new earthworks to minimise disruption to residents, landowners and third parties; and
- No landholder or third party complaints relating to new earthworks to minimise disruption to agricultural production or other land uses.

Environmental Aspect	Impact	Mitigation	Responsibility	Residual Risk Rating
Earthworks for maintenance activities or for the installation of new infrastructure.	<b>7-1</b> Soil erosion and sediment release.	Wash excavating machinery prior to arrival on site. Inspect machinery prior to it being unloaded. Keep a wash down register.	Supplier / Pipeline Technicians	<b>7-1</b> Likelihood – <i>Possible</i> (3) Consequence – <i>Important</i> (1) Risk – <b>MODERATE (3)</b>  <b>7-2</b> Likelihood – <i>Unlikely</i> (2) Consequence – <i>Minor</i> (0.5) Risk – <b>LOW (1)</b>  <b>7-3</b> Likelihood – <i>Unlikely</i> (2) Consequence – <i>Minor</i> (0.5) Risk – <b>LOW (1)</b>  <b>7-5</b> Likelihood – <i>Possible</i> (3) Consequence – <i>Important</i> (1) Risk – <b>MODERATE (3)</b>
	<b>7-2</b> Interruption to natural surface and groundwater flows	Use an accredited Permit Issuing Officer to supervise any pipeline excavation.	Pipeline Technicians	
	<b>7-3</b> Disturbance to native vegetation and wildlife	Manage soil and ground stability in accordance with EMP.	All	
	<b>7-4</b> Introduction of weed species.	Maintain landscape profiles, as closely as practicable, to the original profile.	Pipeline Technicians / Corrosion Engineer	
		Design water diversion structures required for erosion control in accordance with the Company's Qld Easement Maintenance Procedure.	Pipeline Technicians / Operations Manager	
Earthworks for maintenance activities or for the installation of new infrastructure.		Consult Queensland DERM prior to excavations which may interfere with the water flows along the easements (clauses 50 and 51 <i>Queensland Water Regulation 2002</i> ). Avoid native vegetation, wherever practicable.	Pipeline Technicians / Operations Manager All	<b>7-6</b> Likelihood – <i>Unlikely</i> (3) Consequence – <i>Important</i> (0.5) Risk – <b>LOW (1.5)</b>

Earthworks for maintenance activities or for the installation of new infrastructure.		Prevent the entrapment of animals by placing hazard netting or branches around excavations.	All	
		Consult landowners prior to commencing work, wherever possible.	All	
		Reschedule work to avoid disruptions to landowners, where practicable, except in emergency situations.	All	
		Use fill material that is clean, similar to the natural soil of the area and sourced from an area free from weeds. Return topsoil to facilitate revegetation.	Pipeline Technicians	
		Stockpile soil horizons separately to allow for replacement in order following maintenance activities ( <i>i.e.</i> , subsoils first, then topsoils).	Pipeline Technicians	
		Develop site-specific ecological management plan, if necessary. Manage ecological issues in consultation with regulatory agencies to reduce impacts.	Operations Manager	

## 5.6 Bushfire Protection

The risk of creating a bushfire as a result of operation and maintenance of the KNCGPF is considered low. The key environmental issues associated with bushfires are:

- Injuries to public or personnel;
- Damage to or loss of flora, fauna and habitat;
- Damage to agricultural production; and
- Damage to, or loss of, third party infrastructure.

Table 8 outlines the key management measures to mitigate potential bushfires during the operation and maintenance of the KNCGPF. A risk assessment of the key impacts was undertaken with the highest level of risk being identified as *Low* for all of the impacts assessed.

**Table 8: Bushfire Management**

**Related Documents:** AS 1940 – The Storage and Handling of Flammable and Combustible Liquids, Qld Rural Fire Service ([www.ruralfire.qld.gov.au](http://www.ruralfire.qld.gov.au))

**Targets and Objectives of Management**

- Evidence that control measures have been implemented to minimise bushfire risk;
- No bushfires started as a result of pipeline operations and maintenance to prevent the spread of bushfire in the event of ignition; and
- Response to fires situation in accordance with the Company Incident Management Strategy to provide adequate response in the event of ignition.

Environmental Aspect	Impact	Mitigation	Responsibility	Residual Risk Rating
Fire resulting from operation or maintenance of the pipeline	<b>8-1</b> Injuries to public or personnel	Undertake slashing, welding, grinding or cutting works under a relevant permit to work.	All / Permit Issuing Officer	<b>8-1</b> Likelihood – <i>Rare (0.5)</i> Consequence – <i>Serious (1.5)</i> Risk – <b>LOW (1)</b>  <b>8-2</b> Likelihood – <i>Rare (0.5)</i> Consequence – <i>Important (1)</i> Risk – <b>LOW (1)</b>  <b>8-3</b> Likelihood – <i>Rare (0.5)</i> Consequence – <i>Important (1)</i> Risk – <b>LOW (1)</b>
	<b>8-2</b> Damage to or loss of flora and fauna	Check the status of total fire bans prior to any works involving potential ignition sources by either contacting the local Fire Warden, the QLD Rural Fire Service (RFS) or the local RFS. Such works during these periods shall not proceed except under proper authority.	All	
	<b>8-3</b> Damage to agricultural production	Conduct operations during the bushfire season (generally 1 <sup>st</sup> October to 31 <sup>st</sup> March but can be extended when necessary) in accordance with the requirements of regulatory and local fire authorities.	All	
	<b>8-4</b> Damage to, or loss of, third party infrastructure	Carry a minimum of 1X 20 L water spray knapsack and 1X 9 L fire extinguisher (foam) each slasher when slashing.	All	
		Clear or wet down a 3 m area around any cutting or welding work. Ensure a 20 L water spray knapsack and a 9L fire extinguisher is available.	All	
		Use an observer to monitor the situation while welding or cutting works are undertaken.	All	
		Maintain firebreaks around any above ground facilities. Firebreaks outside the compound are subject to landholder and fire authority approval and Consult an APA Environmental Engineer prior to installing new firebreaks off the easement.	Pipeline Technician / Maintenance Staff	
		Adequately train personnel (including contractors) regarding fire prevention and safety, personnel responsibilities and basic fire suppression.	Pipeline Technicians	

## 5.7 Air Emissions

Adverse effects on air quality are predominantly created by dust and gas emissions from leaks, controlled purging and venting activities and vehicle movements.

The compressors are driven by Caterpillar V16 gas engines. The exhaust is discharged vertically with the top of the exhaust located 6.7 m above the ground. Emission data for these engines obtained from the data sheet are:

- $\text{NO}_x = 1.5 \text{ g/bhp-hr}$ ; and
- $\text{CO} = 1.89 \text{ g/bhp-hr}$ .

Activities such as purging and flaring only occur on an as-needed basis (i.e. very infrequently) and, as such, are considered to have a minimal impact on air quality. There are no nuisance issues relating to the use of the existing compressors. Due to the distance separation of the facility from rural residential premises (2.9 km), air quality exhaust emissions are not expected to be a major issue.

The key issues associated with air emissions are:

- Release of air pollutants;
- Greenhouse gas emissions;
- Odour emissions;
- Temporary reduction in amenity associated with dust; and
- Impacts to flora and fauna.

Table 9 outlines the key management measures used to mitigate air emissions during the operation and maintenance of the KNCGPF. A risk assessment of the key impacts was undertaken with the highest level of risk being identified as *Moderate* for impacts related to the spread of weeds and soil erosion. The risk assessment process identified all other impacts as having a *Low* risk.

**Table 9: Air Emissions Management**

**Related Documents:**

**Targets and Objectives of Management**

- Purging or venting activities carried out on an only as needed basis to minimise atmospheric and greenhouse emissions; and
- Dust nuisance minimised to reduce disturbance to the community.

Environmental Aspect	Impact	Mitigation	Responsibility	Residual Risk Rating
Adverse effects on air quality from purging and flaring during maintenance activities and accidental or fugitive gas release	<b>9-1</b> Release of air pollutants	Conduct purging or venting activities only as needed and with consideration of potential noise receptors. Undertake major venting only when necessary and complete an individual Risk Assessment or Job Hazard Analysis.  Advise adjacent residents and local authorities of pending major venting operations.  Conduct annual checks to detect gas leaks from above ground facilities. Rupture detection equipment is fitted to the pipeline to detect significant leaks.  Manage particulate air emissions from abrasive blasting in accordance with the APA Integrated Environmental Management System Abrasive Blasting.	All	<b>9-1</b> Likelihood – <i>Possible</i> (3) Consequence – <i>Minor</i> (0.5) Risk – <b>LOW (1.5)</b>  <b>9-2</b> Likelihood – <i>Possible</i> (3) Consequence – <i>Minor</i> (0.5) Risk – <b>LOW (1.5)</b>  <b>9-3</b> Likelihood – <i>Possible</i> (3) Consequence – <i>Minor</i> (0.5) Risk – <b>LOW (1.5)</b>
	<b>9-2</b> Greenhouse gas emissions		Operations Manager	
	<b>9-3</b> Odour emissions		Operations Manager	
	<b>9-4</b> Temporary reduction in amenity associated with dust		Operations Manager	
Dust and exhaust along the easement from vehicle and machinery operation	<b>9-5</b> Impacts to flora and fauna	Use a water cart or other appropriate strategies (e.g. seeding with grass or installation of other suppressants such as gravel) should dust nuisance occur at particular locations.  Cease work temporarily if dust impacts become unacceptable and cannot be adequately controlled.  Regularly maintain vehicles to minimise emissions.	All	<b>9-4</b> Likelihood – <i>Possible</i> (3) Consequence – <i>Minor</i> (0.5) Risk – <b>LOW (1.5)</b>  <b>9-5</b> Likelihood – <i>Unlikely</i> (2) Consequence – <i>Minor</i> (0.5) Risk – <b>LOW (1)</b>
			All	
			All	
			All	

## 5.8 Noise Emissions

Current noise conditions stipulated by the DERM (formerly EPA) in Environmental Authority EA150383 for the site are as follows.

<b>Noise limits at a noise sensitive place</b>	
<b>Period</b>	<b>Noise level</b> <i>L<sub>A max, adj, T</sub></i>
7am – 6pm	<i>Background noise plus 5 dB(A)</i>
6pm – 10pm	<i>Background noise plus 5 dB(A)</i>
10pm – 7am	<i>Background noise plus 3 dB(A)</i>
<b>Noise limits at a commercial place</b>	
<b>Period</b>	<b>Noise level</b> <i>L<sub>A max, adj, T</sub></i>
7am – 6pm	<i>Background noise plus 10 dB(A)</i>
6pm – 10pm	<i>Background noise plus 10 dB(A)</i>
10pm – 7am	<i>Background noise plus 8 dB(A)</i>

Noise from 2 compressors running at the facility were recorded at 50 dB(A) at 60 m distance. With three compressors running, the noise level will increase to 52 dB(A) at 60 m. By using standard distance attenuation methodology (-6 dB(A) with doubling of distance), it is calculated that compressor noise at the nearest rural residential premises at 2.9 km would be 15 dB(A). From both the predicted and measured data, the plant continues to comply with the current noise conditions stipulated by DERM (formerly EPA) in Environmental Authority EA150383. Noise from the facilities remains inaudible at the closest rural residential premises.

Noise emissions resulting from the operation and maintenance of the KNCGPF have been minimised by:

- Operating noisy facilities such as compressor stations on an on-demand basis.

Non-routine corrective and preventative maintenance activities such as flaring, purging or pigging have a greater potential to create elevated noise levels. However, these activities occur very infrequently and only on an as-needed basis (typically 10 yearly).

The key issues associated with noise emissions are:

- Disturbance to local residents and other land users; and
- Disturbance to stock and wildlife.

Table 10 outlines the key management measures used to mitigate noise emissions during the operation and maintenance of the KNCGPF. A risk assessment of the key impacts was undertaken with the highest level of risk being identified as *Low* for all of the impacts assessed.



**Table 10: Noise Emissions Management**

**Related Documents:**

**Targets and Objectives of Management**

- No complaints from landholders or third parties relating to noise issues during normal operations to minimise operational noise impacts on adjacent residents and other land users.

Environmental Aspect	Impact	Mitigation	Responsibility	Residual Risk Rating
Operation of stationary and non-stationary equipment e.g., generators, water pumps and air compressors	<b>10-1</b> Disturbance to local residents and other land users	Select noise generating equipment with consideration of noise emissions and proximity to sensitive receptors (i.e. residents).	All	<b>10-1</b> Likelihood – <i>Unlikely (2)</i> Consequence – <i>Minor (0.5)</i> Risk – <b>LOW (1)</b>  <b>10-2</b> Likelihood – <i>Unlikely (2)</i> Consequence – <i>Minor (0.5)</i> Risk – <b>LOW (1)</b>
	<b>10-2</b> Disturbance to stock and wildlife	Schedule noisy maintenance activities for periods that are less likely to result in noise nuisance. Inform potentially affected parties of potential noise prior to commencement, except in emergency situations. Document consultation.	Operations Manager	
		Inform and consult potentially affected parties of potential noise from maintenance or project activities prior to commencement. Document consultation.	Operations Manager	
		Investigate and close out complaints. Record the complaint and actions taken on a complaints register.	All	

## 5.9 Heritage- Natural and Built Environment

The greatest risk to the heritage of the natural and built environment is the disturbance or destruction of identified sites. Routine maintenance activities are unlikely to disturb heritage areas, as any surface sites within the easement or facility grounds would have been disturbed during the clean and grade operations undertaken during pipeline and plant construction.

Non-routine maintenance activities have a higher likelihood of creating damage to heritage areas. If works are required outside the easement, an archaeological assessment may be required, depending on the nature of surface disturbance at the proposed location. Excavation work outside of the licence area is infrequent and is subject to the Permit to Work Procedure (O&M 1-04).

Pipeline Plant personnel are aware that they may uncover areas of unknown burial sites or buried artefacts within the compound area. If, during the process of a non-routine maintenance activity involving excavation, artefacts, bones or other evidence of a burial site are found, excavation is to stop and the DNRW and traditional owners notified.

Table 11 outlines the key management measures used to mitigate disturbances to cultural heritage during the operation and maintenance of the KNCGPF. A risk assessment of the key impacts was undertaken with the highest level of risk being identified as *Low* for all of the impacts assessed.

**Table 11: Heritage Management - Natural and Built Environment**

**Related Documents:** Heritage Consultation Protocol (which reflects the requirements of the *Aboriginal Cultural Heritage Act 2003* and the Cultural Duty of Care Guidelines gazetted in April 2004), Permit to Work Procedure (O&M 1-04).

**Targets and Objectives of Management**

- No unapproved disruption of cultural or heritage sites to avoid impacts to sites on or near the pipeline corridor or in the vicinity of associated facilities; and
- Inspections carried out and approvals obtained for disturbance of any known site at the plant or for any works carried out off the easement (i.e. new CP installations) to implement an effective consultation program with regulatory authorities and other relevant stakeholders, where required.

Environmental Aspect	Impact	Mitigation	Responsibility	Residual Risk Rating
Excavation or disturbance of soils for general operations and maintenance activities	<b>11-1</b> Disturbance or destruction of heritage sites	Consult relevant authorities and stakeholders when works are to be undertaken in the areas of known cultural heritage.	Pipeline Technicians / Operations Manager	<b>11-1</b> Likelihood – <i>Rare (1)</i> Consequence – <i>Minor (1.5)</i> Risk – <b>LOW (1.5)</b>
		Monitor works in or adjacent to areas of known heritage to ensure that the heritage site is not damaged.	Pipeline Technicians	
		Report any disturbance to known heritage sites. Undertake action to address site disturbance in consultation with the Department of Employment, Economic Development and Innovation and the local Aboriginal Parties where appropriate.	Pipeline Technician	
		Stop excavation if artefacts, bones or other evidence of a burial site or heritage items are uncovered / disturbed. Notify the appropriate authorities.	Pipeline Technician / Operations Manager	

## 5.10 Water Management

Potential water related issues are primarily related to run-off and erosion control. Potential new issues are further limited by using existing tracks to access pipeline facilities wherever practicable.

Non-routine maintenance activities and other projects are rarely required within the easement or facility grounds. Potential impacts to water quality associated with such activities are evaluated and addressed prior to commencement of these activities.

Run-off / erosion controls are created in susceptible areas during construction or operation of the pipeline and/or facility. The condition of these controls is monitored during routine surveillance. Specific attention is given to steep sections, watercourses and drainage lines that cross the pipeline easement. Any run-off / erosion issues that are identified are addressed as soon as possible as described in Section 5.2 Soil and Ground Stability.

The key issues associated with water management are:

- Reduction in water quality as a result of increased sediment loads;
- Contamination of surface or groundwater;
- Altered drainage patterns and water flow regimes; and
- Spillage of chemicals or other pollutants.

Table 12 outlines the key water management strategies employed during the operation and maintenance of the KNCGPF. A risk assessment of the key impacts was undertaken with the highest level of risk being identified as *Low* for all of the impacts assessed.

Table 12: Water Management				
<b>Related Documents:</b>				
<b>Targets and Objectives of Management</b>				
<ul style="list-style-type: none"> <li>No reports of excessive erosion to control erosion in all operational areas;</li> <li>No reports of sedimentation of waterways to minimise the volume of sediment entering the waterways from the pipeline corridor, associated facilities or operational activities; and</li> <li>No evidence of contaminated water bodies to prevent contamination of surface water, water courses and groundwater.</li> </ul>				
Environmental Aspect	Impact	Mitigation	Responsibility	Residual Risk Rating
Changes to water flow patterns or quality resulting from: <ul style="list-style-type: none"> <li>Above ground gas processing and pipeline facilities.</li> <li>Use of heavy machinery and vehicles.</li> <li>Vegetation control activities</li> </ul>	<b>12-1</b> Reduction in water quality as a result of increased sediment loads	Inspect and monitor easement conditions including watercourse banks during routine surveillance for water-related damage and potential water contamination.	Pipeline Technicians	<b>12-1</b> Likelihood – <i>Unlikely (2)</i> Consequence – <i>Minor (0.5)</i> Risk – <b>LOW (1)</b>
	<b>12-2</b> Contamination of surface or groundwater	Prevent spills of harmful substances and respond to such events in accordance with Section 5.13 this EMP.	All	<b>12-2</b> Likelihood – <i>Unlikely (2)</i> Consequence – <i>Minor (0.5)</i> Risk – <b>LOW (1)</b>
	<b>12-3</b> Altered drainage patterns and water flow regimes			
	<b>12-4</b> Spillage of chemicals or other pollutants	Consider appropriate methods of disposal of hydrostatic test waste water in the job specific JHA, if testing is required during non-routine maintenance.	Operations Manager	<b>12-3</b> Likelihood – <i>Rare (1)</i> Consequence – <i>Important (1)</i> Risk – <b>LOW (1)</b>
		Manage incidents involving potential water contamination in accordance with the Company's emergency response plan, the Incident Response Manual.	All	<b>12-4</b> Likelihood – <i>Unlikely (2)</i> Consequence – <i>Minor (0.5)</i> Risk – <b>LOW (1)</b>
	No maintenance (i.e. oil changes) or refuelling of vehicles or machinery is to be undertaken with 150m of a watercourse or water body. Suitable controls must be in place to prevent potential water contamination.	All		

## 5.11 Pipeline Facilities Management

Pipeline facilities have the potential to create noise emissions, increase traffic and have safety issues, in addition to the specific issues discussed in previous sections. A list of the facilities associated with this pipeline is included in Section 2. In general, above ground facilities associated with operations include:

- A gathering system protected by a back-pressure control valve
- Inlet de-watering system;
- A produced water handling plant;
- Three Universal compressor packages;
- A compressor lube oil filter coalescer separator unit;
- A TEG Dehydration Unit;
- A OD TEG filter coalescer separator Unit; and
- A custody transfer metering skid.

All above ground facilities are fenced and securely locked to prevent entry of unauthorised persons. Security is monitored during routine surveillance.

The key issues associated with managing pipeline facilities are:

- Safety hazards resulting from increased traffic;
- Bushfire and internal fire risk;
- Noise disturbance to local residents, other land use and wildlife or stock;
- Reduction of visual amenity; and
- Chemical spills.

Table 13 outlines the key strategies used to manage pipeline facilities during the operation and maintenance of the KNCGPF. A risk assessment of the key impacts was undertaken with the highest level of risk being identified as *Low* for all of the impacts assessed.

**Table 13: Pipeline Facilities Management**

**Related Documents:**

**Targets and Objectives of Management**

- Site compounds free from combustible materials or vegetation to minimise the risk of bushfire.

Environmental Aspect	Impact	Mitigation	Responsibility	Residual Risk Rating
General routine and non-routine maintenance activities	<b>13-1</b> Safety hazards resulting from increased traffic	Store fire fighting equipment at the Kogan facility and inspect every 6 months.	Operations Manager	<b>13-1</b> Likelihood – <i>Rare (1)</i> Consequence – <i>Minor (0.5)</i> Risk – <b>LOW (0.5)</b>
	<b>13-2</b> Bushfire and internal fire risk			<b>13-2</b> Likelihood – <i>Rare (1)</i> Consequence – <i>Serious (1.5)</i> Risk – <b>LOW (1.5)</b>
	<b>13-3</b> Noise disturbance to local residents, other land use and wildlife or stock	Check the security of facilities (i.e. locked gates and fences) during routine surveillance patrols.	Pipeline Technicians	<b>13-3</b> Likelihood – <i>Unlikely (2)</i> Consequence – <i>Minor (0.5)</i> Risk – <b>LOW (1)</b>
	<b>13-4</b> Reduction of visual amenity	Monitor all above ground facilities for gas leaks and odours during routine maintenance. Address identified leaks or odours as appropriate.	Pipeline Technicians	<b>13-4</b> Likelihood – <i>Unlikely (2)</i> Consequence – <i>Minor (0.5)</i> Risk – <b>LOW (1)</b>
	<b>13-5</b> Chemical spills			<b>13-5</b> Likelihood – <i>Unlikely (2)</i> Consequence – <i>Minor (0.5)</i> Risk – <b>LOW (1)</b>
				<b>13-6</b> Likelihood – <i>Unlikely (2)</i> Consequence – <i>Minor (0.5)</i> Risk – <b>LOW (1)</b>
		Implement the bushfire prevention methods outlined in the Bushfire Prevention EMP.	All	<b>13-4</b> Likelihood – <i>Unlikely (2)</i> Consequence – <i>Minor (0.5)</i> Risk – <b>LOW (1)</b>
	Keep all facilities in a tidy manner.	All	<b>13-5</b> Likelihood – <i>Unlikely (2)</i> Consequence – <i>Minor (0.5)</i> Risk – <b>LOW (1)</b>	
	Keep all facilities free of vegetation and weeds to maintain visual amenity and reduce bushfire risks to facilities.	Operations Manager / Pipeline Technicians	<b>13-6</b> Likelihood – <i>Unlikely (2)</i> Consequence – <i>Minor (0.5)</i> Risk – <b>LOW (1)</b>	

## 5.12 Waste Management

Routine maintenance and surveillance activities generate few waste materials. Impacts to the environment due to the wastes from these activities are very low. Waste lubricating oil from the compressors is stored in a 1,000 L ISO container and disposed via contract by Allied Waste Pty Ltd.

Any oily process water is collected in a 20,000 L above ground banded storage tank before being processed by the oil water separator unit. Water from the separator is sent to the evaporation pond. The oil is piped to the ISO waste oil container.

Non-routine corrective and preventative maintenance activities have a greater possibility of generating waste than routine activities. The types of waste produced could include:

- General rubbish;
- Human wastes (sewage); and
- Putrescible waste.

Major repair activities involving excavation and welding along the easement may generate small amounts of more harmful wastes. Such wastes could include:

- Cleaning fluids;
- Radiography fluids; and
- Waste oils.

These activities are rarely required and waste volumes will typically be small (less than 20 L of fluids). The risk of impact to the environment from these activities is limited.

The key issues associated with waste management are:

- Contamination of land, soil and water, including groundwater;
- Health risks to the community and the workforce;
- Adverse effects on native vegetation and wildlife; and
- Reduction of visual amenity.

Table 14 summarises the key strategies used to manage waste created during the operation and maintenance of the KNCGPF. A risk assessment of the key impacts was undertaken with the highest level of risk being identified as *Low* for all of the impacts assessed.



**Table 14: Waste Management**

**Related Documents:**

**Targets and Objectives of Management**

- Implement recycling and reuse to minimise the amount of waste generated to maximise the efficiency of resource use; and
- No complaints relating to the visual effects of waste produced during operation to minimise visual impacts.

Environmental Aspect	Impact	Mitigation	Responsibility	Residual Risk Rating
Storage and disposal of wastes generated by: <ul style="list-style-type: none"> <li>• Maintenance of plant and equipment</li> <li>• Internal cleaning and inspection of pipeline (pigging)</li> <li>• General office activities.</li> </ul>	<b>14-1</b> Contamination of land, soil and water, including groundwater	Dispose sewage in approved septic systems.	Operations Manager	<b>14-1</b> Likelihood – <i>Unlikely (2)</i> Consequence – <i>Minor (0.5)</i> Risk – <b>LOW (1)</b>
	<b>14-2</b> Health risks to the community and the workforce	Adopt the principles of 'Reduce, Reuse, Recycle' in all operations.	All	<b>14-2</b> Likelihood – <i>Rare (1)</i> Consequence – <i>Serious (1.5)</i> Risk – <b>LOW (1.5)</b>
	<b>14-3</b> Adverse effects on native wildlife and vegetation	Remove general rubbish after all maintenance activities and dispose in an appropriate manner.	All	<b>14-3</b> Likelihood – <i>Unlikely (2)</i> Consequence – <i>Minor (0.5)</i> Risk – <b>LOW (1)</b>
	<b>14-4</b> Reduction of visual amenity	Provide suitable storage areas for all wastes including soil, water and spills. Wastes shall be collected and disposed of by suitably licensed waste contractors.	Operations Manager	<b>14-4</b> Likelihood – <i>Unlikely (2)</i> Consequence – <i>Minor (0.5)</i> Risk – <b>LOW (1)</b>
		Monitor and remove rubbish from the pipeline facilities. Litter and rubbish shall be removed from facilities and disposed in an appropriate manner.	All	<b>14-4</b> Likelihood – <i>Unlikely (2)</i> Consequence – <i>Minor (0.5)</i> Risk – <b>LOW (1)</b>
		Monitor and remove rubbish from the pipeline facilities. Litter and rubbish shall be removed from facilities and disposed in an appropriate manner.	All	

## 5.13 Spill Prevention

The potential for spills is limited as:

- Spills associated with pipeline rupture are not an issue for gas pipelines;
- Large volumes of liquids are not used during routine maintenance and surveillance of the pipeline. The possibility of a spill occurring during these activities is very limited;
- Oil within the gas is collected in filters; and
- During major non-routine maintenance activities on-site storage of small volumes of liquids may be required. However, such activities occur very rarely. The potential for adverse environmental impact due to spills can be considered to be very low.

Any fuels or chemical storage facilities are be managed in accordance with Section 5.14 Fuel and Chemical Storage.

The key issues associated with spill prevention are:

- Safety hazards to the workforce and the public; and
- Contamination of soil and water, including groundwater.

Table 15 summarises the key strategies used to reduce potential spills during the operation and maintenance of the KNCGPF. A risk assessment of the key impacts was undertaken with the highest level of risk being identified as *Low* for all of the impacts assessed.

Table 15: Spill Prevention Management				
<b>Related Documents:</b> Emergency Response Plan, Safety and Operating Plan, Fuel and Chemical Storage Plan				
<b>Targets and Objectives of Management</b>				
<ul style="list-style-type: none"> <li>No safety hazards due to pipeline spills to avoid unacceptable safety hazards; and</li> <li>No contamination of soil and water due to pipeline spill to prevent contamination of soil and water.</li> </ul>				
Environmental Aspect	Impact	Mitigation	Responsibility	Residual Risk Rating
Chemical or fuel spill resulting from operations or maintenance activities.	<b>15-1</b> Safety hazards to the workforce and the public  <b>15-2</b> Contamination of land, soil and water, including groundwater	Operate the pipeline in accordance with AS 2885 to minimise the risk of pipeline failure.	All	<b>15-1</b> Likelihood – <i>Unlikely (2)</i> Consequence – <i>Important (0.5)</i> Risk – <b>LOW (1)</b>  <b>15-2</b> Likelihood – <i>Unlikely (2)</i> Consequence – <i>Minor (0.5)</i> Risk – <b>LOW (1)</b>
		Minimise volumes of liquids required for all maintenance activities, wherever practicable.	Pipeline Technicians	
		Train pipeline operation and/or maintenance personnel on spill response and recovery procedures. Keep records of training.	Operations Manager	
		Keep spill kits on hand and train personnel in their use during all refuelling activities or the handling of any chemicals, fuels, oils and lubricants. Keep records of spill response training.	All	
		Keep Material Safety Data Sheets (MSDS) with chemicals currently in use, at all times. Conduct toolbox talks for new chemicals and provide an MSDS for each new chemical.	All	
		Respond to any spill that occurs in accordance with relevant spill response procedures; as described in the MSDS and/or product label for the spilled substance and the wearing of appropriate PPE as described in the MSDS and/or product label for the spilled substance.	All	
		Consider all spills of fuels, oils, lubricants and chemicals as environmental incidents, which require classification, reporting and investigation in accordance with the APA Incident Notification, Reporting and Investigation Standard.	All	
		Remove material contaminated as a result of a spill and place in an appropriate container to prevent further contamination. Dispose appropriately in line with local government requirements.	Pipeline Technicians	

## 5.14 Fuel and Chemical Storage

Lubricating oil is used for the compressors. Two 1,000 L ISO containers of oil are stored on banded pallets on site. Three 205 L drums of triethylene glycol are maintained for topping up the Dehydration Unit and are stored in the Dehydration Unit banded area.

The key issues associated with fuel and chemical storage are:

- Contamination of soil and water including groundwater;
- Safety hazards to the workforce and the public; and
- Air and odour emissions.

Table 16 summarises the general storage procedures used for fuels and chemicals during the operation and maintenance of the KNCGPF. A risk assessment of the key impacts was undertaken with the highest level of risk being identified as *Low* for all of the impacts assessed.

**Table 16: Fuel and Chemical Storage Management**

**Related Documents:** Material Safety Data Sheets (MSDS), AS 1678, AS 2809 and AS 2931; APA Procedure Control of Hazardous Substances (O&M 1-05).

**Targets and Objectives of Management**

- All fuels and chemicals stored appropriately to prevent contamination of soil and water and to avoid unacceptable safety hazards.

Environmental Aspect	Impact	Mitigation	Responsibility	Residual Risk Rating
Chemical or fuel spill resulting from operations or maintenance activities or storage	<b>16-1</b> Safety hazards to the workforce and the public <b>16-2</b> Contamination of land, soil and water, including groundwater <b>16-3</b> Air and odour emissions	Store minimum practicable volumes of oils, fuels, lubricants and other chemicals required during maintenance to reduce the risk of spillage and potential land and water contamination.	All	<b>16-1</b> Likelihood – <i>Unlikely (2)</i> Consequence – <i>Important (0.5)</i> Risk – <b>LOW (1)</b>  <b>16-2</b> Likelihood – <i>Unlikely (2)</i> Consequence – <i>Minor (0.5)</i> Risk – <b>LOW (1)</b>  <b>16-3</b> Likelihood – <i>Unlikely (2)</i> Consequence – <i>Minor (0.5)</i> Risk – <b>LOW (1)</b>
		Store chemicals, fuels and oils in accordance with manufacturer's instructions, product MSDS and all relevant legislation and standards.	All	
		Train all relevant personnel in aspects of fuel and chemical storage, including contractors.	Operations Manager	
		Wear appropriate PPE by all who are handling and using chemicals, as stated on the product label and MSDS, in accordance with relevant legislation and standards.	Operations Manager	
		Keep spill kits at all permanent and temporary fuel, oil and chemical storage locations.	Operations Manager	
		Keep MSDS with all storage locations, including vehicles carrying chemicals at all times. Conduct toolbox talks for new chemicals and to distribute the relevant new MSDS.	Operations Manager	
		Store all fuel, oil and chemicals in banded (roofed storage using pallet bands is sufficient) or purpose built chemical storage cabinets as appropriate. Secure all storage areas.	Operations Manager	
		Minimise chemical use where practicable.	All	
Chemical or fuel spill resulting from operations or maintenance activities or storage		Minimise the risk of spills when handling, transporting and storing fuel, oil and chemicals in accordance with Section 5.13 of this EMP.	Environmental Specialist	

## 5.15 Decommissioning and Restoration

When required, APA shall decommission individual components of the KNCGPF and associated infrastructure in accordance with the licence and regulatory requirements and accepted environmental best practice of the day.

The most likely options are:

- **Moth-balling** – this would involve depressurising the pipeline, capping and filling with an inert gas such as nitrogen. The cathodic protection would be maintained to prevent the underground pipework corroding. This will prevent ground subsidence associated with the corrosion of the pipe that may result in surface water diversion, ponding and erosion; and
- **Abandonment** – this could involve purging the pipe of natural gas, disconnecting it from the manifolds and removing all above ground facilities. The pipe would then be left to corrode in-situ. Removing the pipe from the ground is unlikely to be an environmentally or commercially viable option. A detailed rehabilitation program would be developed and implemented in consultation with landholders and relevant Regulatory Authorities at the time of abandonment.

Prior to either mothballing or abandonment of the pipeline service and the facilities, an investigation into the potential environmental problems associated with either of these options shall be undertaken.

The plant and equipment contained on site has a design life of 15 years, however, the facility may continue processing thereafter, pending on availability of gas supply. Decommissioning of the site for abandonment would involve the following:

- Removal of skid mounted plant and equipment;
- Removal of concrete bunding;
- Removal of underground stormwater holding tank;
- Removal of fixtures including workshop, demountable utilities building and demountable control building;
- Removal of aboveground pipework; and
- Removal of mesh fencing.

### 5.15.1 Rehabilitation

The EA requires that owner, as soon as practicable and within six months (or longer period agreed in writing with the administering authority) of the completion of activities causing disturbance to land:

- Remediate contaminated land in accordance with *Environmental Protection Act 1994* requirements;
- Re-shape all significantly disturbed land to a stable landform similar to that of the surrounding undisturbed areas; and
- On all significantly disturbed land:
  - Re-establish surface drainage lines;
  - Reinststate the top layer of the soil profile; and
  - Promote establishment of vegetation of the same species and density of cover to that of the surrounding undisturbed areas.

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The EA standard conditions require that all infrastructure constructed by owner must be removed from the site and rehabilitated, prior to surrender of the petroleum authority, except where it is to remain with the written agreement of the administering authority and post pipeline authority landowner / holder.

For the safety of the public and wildlife, all above ground structures shall be removed. The site shall be left clean and safe.

Consideration shall be given to alternate use of buildings as circumstances allow, and the site shall be restored accordingly. If necessary, groundwater or soil testing shall be undertaken to ensure that site is free of contamination. If contamination is found, the site shall be cleaned using the appropriate reclamation methods. If buildings are removed completely, the ground shall be ripped and rehabilitated accordingly.

As the removal of below ground structures will cause unnecessary environmental impacts, the pipeline shall very likely be left in the ground. Below ground facilities will be cut off and blinded below ground level. The site shall be rehabilitated following completion of termination.

## 6 Monitoring, Measurement and Evaluation

Environmental inspection, monitoring and auditing shall be undertaken to assess if operational activities are in compliance with regulatory requirements and the objectives outlined in this EMP. This process minimises environmental and cultural impacts of the operations and maintenance activities associated with the pipeline.

Monitoring, measurement and evaluation of pipeline operations include:

- Environmental inspections including patrols of Right-of-Way (ROW), inspections of above-ground facilities and specific surveys for cathodic protection and gas leak detection;
- Mechanisms and requirements for reporting results of inspections and patrols; and
- Compliance and systems reviews and audits including mechanisms for corrective actions.

### 6.1 Environmental Inspection and Patrols

Environmental patrols include regular ground patrols around the compound and along the 0.05 km easement. Special ground patrols may also be undertaken after heavy storms or earthquakes to check for damage to the pipeline, its facilities, and erosion and sediment control structures, as required.

The type of surveillance and the frequency required for safe pipeline operation has been determined to adequately address the identified risks and implemented control measures, as prescribed in the pipeline's Risk Assessment. Scheduled patrols of the pipeline route are mandatory under pipeline regulations and are a condition of the pipeline licence.

The purpose of the pipeline surveillance is to check for changing conditions on the pipeline easement. The type of surveillance may be by foot, vehicle or aircraft such that the patroller can clearly identify the pipeline and observe all the surveillance criteria. The route shall be patrolled and inspected whenever it is considered that damage or threats to the integrity of the pipeline may have occurred or may be expected to occur. Corrective action shall be initiated immediately a condition requiring such action is detected.

The pipeline surveillance shall be carried out by the pipeline technician to ensure that the pipeline is free from any identifiable leaks, and to identify any new or changed threats to the pipeline or environment, particularly any un-notified external interference near the pipeline. . Gas leak detection surveys will be undertaken every year for aboveground pipework and every 5 years for belowground pipework, or as required by the AS 2885 risk assessment or other assessment

Surveillance activities shall be conducted in accordance with the APA Safety and Operations Plans (SAOP). When activities or adverse conditions are found, follow up action shall be required, such as stopping, controlling, monitoring of the anomaly. Reports and records of the changed conditions shall be collated, with an entry reported

### 6.2 Environmental Incidents

APA's Incident / Near Miss and Reporting and Investigation Procedure (MGT 1-01) outlines the method of reporting incidents and Near Misses in the workplace. The procedure also defines what constitutes an Incident, a Near Miss or a Class A Near Miss and determines



when to carry out an investigation. The procedure applies to all staff and contractors employed by the APA.

In the event of an Incident or Near Miss occurring, the Manager Transmission Operations Qld, or the delegated authority, will be informed by the relevant Leader, or nominated responsible person within one (1) hour of the event occurring. The Manager Transmission Operations Qld will determine whether to escalate notification to the appropriate APA General Manager. This process will be followed in conjunction with current emergency management processes. Incident reporting timeframes are as published within APA and summarised in the Environment Management Manual.

All incidents shall be investigated under the guidelines provided within this document. It is important that the investigation results in root cause analysis that may assist in preventing the same of similar incident re-occurring.

The Manager Transmission Operations Qld or Operations Manager shall determine what level of investigation the incident requires. Incidents that have a low risk and severity rate may not require the level of investigation of an incident with a high risk and severity rate. Where a Formal Investigation has been undertaken, then the investigation report shall be documented on the Incident Report Template (see Appendix D) and may be altered to suit the investigation.

### **6.2.1 Hazard Alert / System Improvement Form (HASIFs)**

APA's Queensland Transmission Group utilises an electronic Integrated Management System (IMS) that enables all personnel to report environmental and other hazards via the Hazard Alert and System Improvement Form (HASIF Reporting MGT 1-02). This system has been devised as a preventative strategy for early control of environmental and safety issues, and has been incorporated into the operation of the KNCGPF. The electronic version is mirrored into a handbook and HASIF booklets are made available to all employees and contractors.

Personnel at all levels enter issues directly into the database, or complete a HASIF and submit it to the Health, Safety, and Environment Quality (HSEQ) Manager for entry into the database. The database contains HASIF details and the required actions to implement arising from the issue / event. Each employee can monitor the status of any HASIF from entry into the database through to HASIF completion.

### **6.2.2 Statutory Reporting**

In the event of an incident which may be in breach of statute requirements, the Manager Transmission Operations QLD (or delegate), in consultation with the Environmental Manager, is responsible for submitting any Environmental Incident Reports to the Statutory Authorities.

The Company will also maintain reports to satisfy the Environmental Authority e.g. if there is more than 4 ha of significant land disturbance. Note: For the purposes of this condition, access roads and tracks required for the necessary maintenance of the pipelines are excluded from the area of significant disturbance.

## 6.3 Compliance and System Reviews and Audits

### 6.3.1 Environmental Auditing

Environmental audits are conducted on a routine basis to ensure continuous improvement and compliance with updated legislation and regulatory requirements, with regards to the effective management of environmental impacts resulting from the operation of the pipeline. Audits are conducted by a Technical / Environmental Compliance Specialist who is either a suitably qualified internal environmental professional or, if not available internally, a suitably qualified environmental consultant.

Internal auditing procedures are outlined within MGT 3-02 Internal Auditing. The purpose of the document is to define the system used for planning, performing and reporting (internal) integrated management system audits.

An audit of the EMP shall include all components of the EMP, including all associated procedures and work instructions, and shall further take into account the manner in which the activities are completed. An audit shall not need to inspect the entire pipeline easement.

Compliance audits of the EMP are to be completed at a minimum of 2-year intervals.

The findings of environmental audits shall be submitted to the Manager Transmission Operations QLD. Copies of the results of the audits will be available to regulatory authorities upon request or sent to the regulatory authorities as required by the applicable Petroleum Licence.

Any corrective actions resulting from environmental audits will be incorporated into the Works Management System and the Company's IMS through 'System Improvement Requests' where priorities and responsibilities are assigned. Improvement Requests (e.g. Corrective Actions Request or Non-conformance Report) are the mechanism in the Company to generate corrective actions towards any non-conformance. The IMS entry must be addressed and closed out by the Manager Transmission Operations QLD or relevant Operations Manager. The records will be contained in the database for historical reference.

### 6.3.2 EMP Review

This Environmental Management Plan shall be reviewed to ensure that:

- Information and environmental management procedures contained remain current;
- All opportunities for improvement are identified; and
- Any changes to legislation, licence and approval conditions are adhered to.

Reviews shall take the following forms:

- APA shall consider the above issues on an ongoing basis; and
- On completion of the first 12 months of full implementation of this EMP, the first annual review will be undertaken.

The EMP will be reviewed whenever, any of the following occurs:

- A non-conformance is detected in the EMP;
- The EMP no longer reflects the actual work practices; and
- The operational program is amended.

### 6.3.3 Corrective Action

Corrective and preventative actions are utilised to improve any identified system deficiencies and/or areas of environmental performance requiring improvement. Corrective and preventative actions may be generated as an outcome from work site inspections, incident report / investigations, audits or as a result of community complaints. These actions will be documented by utilising HASIF forms and the Integrated Management System electronic database.

### 6.3.4 External Communication

Consultation with relevant regulatory authorities shall continue during operation of the KNCGPF. Consultation will ensure that stakeholders are kept informed, and that local knowledge and expertise are utilised appropriately. The Operations Manager shall be responsible for coordinating external communications. The Environmental Compliance Specialist is available to provide assistance where necessary.

Local Councils are also contacted at least once a year and are encouraged to contact the Company if any developments are occurring in the vicinity of the pipeline easement.

### 6.3.5 Complaints Management

APA maintains a comprehensive landowner liaison program that includes:

- An annual mail out of a landowner package with safety, contact details and other relevant information;
- Visiting the landowner from time to time on an as needed basis; and
- Maintaining a landowner database along the pipeline easement.

Landowners are encouraged to phone APA if they wish to ask any questions or make any complaints with regard to the condition of the pipeline easement or the KNCGPF compound. Records are kept of all landowner contact and of any complaints received.

Once a complaint is received it is the responsibility of the relevant Pipeline Technician and the Operations Manager to ensure that the complaint is resolved to the satisfaction of both parties. Records are to be kept of all actions taken by personnel.

A landowner complaints database is maintained so that all complaints can be monitored on-line. The complaints database records the complainant's details (name, phone no., address, property affected) and actions taken to remedy the situation.

## 7 Contact Directory

### 7.1 KNCGPF / RBP Management

Position Title	Contact Phone Numbers
KNCGPF Site Office	Phone: 07 4663 5520
Operations Manager, KNCGPF	Phone: 07 3323 6156 Mobile: 0410 440 793
Lands Manager	Phone: 07 3323 6148 Mobile: 0411 879 441
HSE Advisor	Phone: 07 3323 6128 Mobile: 0418 819 412
Manager Transmission Operations Qld	Phone 07 3323 6070 Mobile: 0422 840 228
Engineering Manager – Gas Transmission Qld	Phone: 07 3323 6140 Mobile: 0439 492 585

### 7.2 APA

Position Title	Contact Phone Numbers
APT Control Room - Brisbane	1800 017 000 (24 Hr General Enquiry Number for RBP)
Manager HR & HSE (Qld)	Phone: (7 3323 7634 Mobile: 0413 353 271
General Manager Engineering (APA)	Phone: 02 9693 0062 Mobile: 0402 059 716

### 7.3 Emergency Services

Authorities	Contact Phone Numbers
Emergency	000
Queensland Fire & Rescue Service	000
Air Traffic Control	13 17 57
Queensland Workplace Health & Safety (QWHS)	07 3896 3363 (accident notification) or 1300 369 915
Department of Environment and Resource Management (DERM)	1 300 130 372 (Incident Number)
Electrical Safety Office (ESO)	07 3235 4596 or 1300 650 662

### 7.4 State Government Departments

Government Departments	Contact Phone Numbers
Department of Emergency Services (DES)	07 3247 8821
Department of Employment, Economic Development and innovation (DEEDI)	Petroleum and Gas Inspectorate: 07 32371626 General Enquiries:1800 657 567
Department of Primary Industry (DPI)	13 25 23
Animal and Plant Health Service (APHS)	13 25 23
Qld Parks and Wildlife	07 3227 8185

## 8 Abbreviations

The acronyms and terms used in this EMP are described in Table 17 Abbreviations.

**Table 17 Abbreviations**

Abbreviation	Description
APT	APT Management Services Pty Ltd - a member of the APA Group
ALARP	As Low As Reasonably Practicable
ANZECC	Australian New Zealand Environment Conservation Council
APIA	Australian Pipeline Industry Association
APPEA / APEA	Australian Petroleum Production and Exploration Association (originally Australian Petroleum Exploration Association - APEA)
ARMCANZ	Agriculture Resource Management Council of Australia and New Zealand
AS	Australian Standard
DEEDI	Department of Employment, Economic Development and Innovation
DERM	Department of Environment and Resource Management
DN	Diameter Nominal
DPI&F	Department of Primary Industries and Fisheries
EA	Environment Authority
EIP	Environmental Improvement Plan
EMP	Environmental Management Plan
EMS	Environmental Management System
ERA	Environmentally Relevant Activity
GASS	Gas Accounts and Service System
GIS	Geographical Information System
HASIF	Hazard Alert and System Improvement Form
HSEQ	Health, Safety, Environment and Quality
HS&E	Health, Safety and Environment
IMS	Integrated Management System
ISO	International Standards Organisation
JHA	Job Hazard Analysis
KP	Kilometre Point
MLV	Main Line Valve
MSDS	Materials Safety Data Sheet
NOHSC	National Occupational Health & Safety Commission
NPI	National Pollution Inventory
NZS	New Zealand Standards
OD	Outside Diameter
RFS	Rural Fire Service
ROW	Right-of-Way
SAOP	Safety and Operating Procedure
TEG	Triethylene Glycol

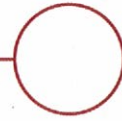
# Appendix A

## APA Health, Safety and Environment Policy



# APA Group

Health Safety & Environment



## Health, Safety & Environment Policy

**APA Group is committed to providing an injury free work environment and a sustainable future by maintaining a positive culture based on continual improvement in health safety and environmental performance and ensuring that all business activities are conducted in a manner that protects all of our people, the environment and greater community with which we interact.**

To achieve this APA Group will:

- comply with applicable health, safety & environment legislation and best practice requirements to which APA Group subscribes.
- provide leadership and direction to drive management accountability for the performance of our health, safety & environment management systems.
- assess the risks to health, safety and the environment that may be affected by the groups activities in order to eliminate or minimise that risk.
- provide and maintain safe systems of work and codes of practice.
- provide adequate and appropriate training, supervision and specialist support to health, safety & environment matters.
- proactively reduce the risk of accidents, incidents and near misses. Investigate all reported accidents, incidents and near misses promptly and take appropriate actions to prevent a reoccurrence.
- keep employees, contractors and other relevant parties informed in relation to relevant parties our health, safety & environment systems and processes.
- partner with contractors having the same health safety & environmental standards and values as APA Group.
- regularly monitor our health safety & environmental performance against established internal & external standards.

## General Responsibilities for Health, Safety & Environment

**Every employee** (permanent or temporary) has an obligation to look after their own health and safety, and the safety of those who may be affected by their acts or omissions. They must also comply with the group's HSE policies and procedures. They must report all accidents, incidents and near misses.

**All managers and supervisors** are responsible for managing HSE in accordance with group policy as an integral and mandatory duty of their position.

**Contractors and sub-contractors** have an obligation to look after their own health and safety, and the safety of those who may be affected by their acts or omissions. They must also comply with all applicable health, safety and environmental legislation and local site rules and APA has a duty of care to ensure the APA worksites where contractors and sub-contractors are working are safe.

Mick McCormack – Managing Director

# Appendix B

## Risk Assessment Methodology



**Risk definition and classification**

Where possible, the use of quantitative data and risk expressions to measure likelihood and consequence of any identified risks can be applied. In some circumstances this may not be possible nor efficient or effective. Therefore a qualitative approach is acceptable. APA's qualitative approach applies the following measures.

Level	Descriptor	Description	Frequency
5	Almost certain	Is expected to occur in most circumstances	At least once per year
4	Likely	Will probably occur in most circumstances	At least once every 3 years
3	Possible	Might occur at some time	At least once every 10 years
2	Unlikely	Could occur at some time	At least once every 25 years
1	Rare	May occur only in exceptional circumstances	Less than once every 25 years

**Qualitative Risk Analysis Matrix – Level of Risk**

For each component of the activity subject to a risk analysis, the evaluation of likelihood and consequences will apply the matrix below to determine the level of risk as per Standards Australia Guidelines - AS/NZS 4360:2004 - Risk Management.

Likelihood	Consequences				
	Insignificant 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
5 Almost Certain	H	H	E	E	E
4 Likely	M	H	H	E	E
3 Possible	L	M	H	E	E
2 Unlikely	L	L	M	H	E
1 Rare	L	L	M	H	H

Legend:	
<b>E</b>	<b>Extreme risk</b> – Immediate action required and risk monitored at Board level
<b>H</b>	<b>High risk</b> – Senior Management attention needed and risk monitored
<b>M</b>	<b>Moderate risk</b> – Management responsibility must be specified
<b>L</b>	<b>Low risk</b> – Manage by routine procedures

**Consequence**

Level	Descriptor	Example Impacts Descriptions				
		Health & Safety	Financial impact	Environment	Compliance, Legal & Other Requirements	Reputation impact
1	Insignificant	<ul style="list-style-type: none"> <li>No significant injury or illness</li> <li>A 'near miss'</li> </ul>	<ul style="list-style-type: none"> <li>Less than \$10,000</li> </ul>	<ul style="list-style-type: none"> <li>On-site release immediately contained with no detectable change to the environment</li> <li>Impact duration of &lt; 1 week</li> <li>Isolated to a confined area</li> </ul>	<ul style="list-style-type: none"> <li>No breach of compliance with legal and other requirements</li> </ul>	<ul style="list-style-type: none"> <li>May result in isolated public comments</li> </ul>
2	Minor	<ul style="list-style-type: none"> <li>First aid injuries</li> <li>Medical treatment with return to normal duties</li> <li>Acute or short term illness with no lost time</li> </ul>	<ul style="list-style-type: none"> <li>\$10,000 - \$1 million</li> </ul>	<ul style="list-style-type: none"> <li>On-site release not contained or off-site release immediately contained with minor change to the environment</li> <li>Impact duration of &lt; 1 month</li> <li>Minor impact to a site</li> </ul>	<ul style="list-style-type: none"> <li>Non-conformance with company requirement or voluntary standards</li> <li>Voluntary explanation to a regulator necessary</li> </ul>	<ul style="list-style-type: none"> <li>May result in repeated public complaints</li> </ul>
3	Moderate	<ul style="list-style-type: none"> <li>Restricted work case</li> <li>Loss time injury or illness</li> </ul>	<ul style="list-style-type: none"> <li>\$1million - \$5 million</li> </ul>	<ul style="list-style-type: none"> <li>Off-site or ongoing release requiring ongoing management with moderate change to the environment</li> <li>Impact duration &lt; 1 year</li> <li>Moderate impact to a local area</li> </ul>	<ul style="list-style-type: none"> <li>Non-compliance with licence conditions</li> <li>Formal explanation required</li> <li>Regulator enquiry</li> <li>Possible on-the-spot fine for operational practices</li> </ul>	<ul style="list-style-type: none"> <li>Widespread public complaints or isolated adverse local media</li> </ul>
4	Major	<ul style="list-style-type: none"> <li>Disabling injury or chronic health ailment</li> <li>Single fatality</li> </ul>	<ul style="list-style-type: none"> <li>\$5 million - \$20 million</li> </ul>	<ul style="list-style-type: none"> <li>Off-site release not contained requiring management with substantial external assistance and resources causing major damage to the environment</li> <li>Impact duration &lt; 10 years</li> <li>Wide area affected</li> </ul>	<ul style="list-style-type: none"> <li>Serious breach of regulations with penalty notice and fine issues</li> <li>Regulator or Authority investigation, report required</li> </ul>	<ul style="list-style-type: none"> <li>Isolated adverse coverage in national media</li> </ul>
5	Catastrophic	<ul style="list-style-type: none"> <li>Multiple fatalities or disabilities</li> </ul>	<ul style="list-style-type: none"> <li>Greater than \$20 million</li> </ul>	<ul style="list-style-type: none"> <li>Off-site release not contained requiring management with substantial external assistance and resources causing severe damage to the environment</li> <li>Impact &gt; 10 years</li> <li>Wide areas severely affected</li> </ul>	<ul style="list-style-type: none"> <li>Major breach of regulations</li> <li>Significant fines and/or litigation</li> </ul>	<ul style="list-style-type: none"> <li>Extended adverse coverage in national / international media</li> </ul>

