South East Pipeline System

Environmental Impact Report

Pipeline Licence 3 & Pipeline Licence 4

S-31-107-ER-L-001

July 2017

Prepared by:

Epic Energy South Australia Pty Ltd
ABN 54 068 599 815
26 High Street Dry Creek, South Australia

This EIR was originally prepared in 2002 and 2003 by Ecos Consulting (Aust) Pty Ltd on behalf of Epic Energy.

DOCUMENT CONTROL SHEET

PL3&4 Environmental Impact Report

Reference	Rev	Date	Prepared by	Reviewed by	Approved by	Comment
540-EMP	A	11-08-03	ZB, KD			Internal revision
540 -EMP	B	12-11-03	ZB, KD			Inclusion of consultation responses
540-EMP	0	20-02-04	ZB, KD	Epic	Epic	Issued to PIRSA
S-31-107-ER-L-001	0A	16-09-14	NF	PF	B Willcocks	Updated to suit current environmental practices, new document number. Issued to DSD.
S-31-107-ER-L-001	0B	18-07-16	NF	AT	B Willcocks	Updated following review of PL1 EIR. Issued to DSD.
S-31-107-ER-L-001	0C	27-10-16	NF, SM	AT	B Willcocks	DSD comments addressed and reissued to DSD.
S-31-107-ER-L-001	1	25-07-17	NF	AT	N. Flint	Comments from EPA and DSD-AAR addressed. Issued for use.

Contents

Appendices

1 Introduction

1.1 Background

The South East Pipeline System (SEPS) in South Australia is an 82.5km pipeline system that was constructed by the Pipeline Authority of South Australia in 1990 and acquired by Epic Energy in 1995. The pipelines transport natural gas from the Katnook gas fields south of Penola to consumers near Penola (SAFRIES factory site), Mount Gambier, (Kimberley-Clark paper mill) and Nangwarry (Carter, Holt & Harvey Mill). Epic Energy owns and operates the Katnook to Penola pipeline (Safries Lateral) under Pipeline Licence No.3 and the Katnook to Tantanoola (Katnook to Kimberly-Clark) Pipeline, the Mt Gambier Lateral pipeline and the Kalangadoo to Nangwarry (Nangwarry Lateral) pipeline under Pipeline Licence No.4.

Following a gradual decline in the availability of gas from the Katnook gas field, the APA-owned South East South Australia (SESA) Pipeline was commissioned in 2005 to supply gas from the Port Campbell to Adelaide (SEAGas) Pipeline into the SEPS.

1.2 Regulatory Framework

This document was first prepared in 2002/03 following changes to the South Australian *Petroleum Act 2000* (now the *Petroleum and Geothermal Energy Act 2000*) (the Act) that required the following documents be prepared in relation to the operation of a pipeline system:

- An Environmental Impact Report - in accordance with Section 97 of the Act and Regulation 10 of the *Petroleum Regulations 2000* (now the *Petroleum and Geothermal Energy Regulations 2013*) (the Regulations); and
- A Statement of Environmental Objectives - in accordance with Section 99 and 100 of the Act and Regulations 12 and 13.

This document fulfils the requirements of an Environmental Impact Report (EIR) as outlined in the Act and Regulations.

1.3 About this Document

This EIR has been prepared to satisfy the requirements of the Act with regard to the operation of the SEPS, as detailed under Pipeline Licence 3 and 4 (PL3&4). This document:

- Provides a description of the SEPS (Section 2);
- Describes the specific features of the environment that are reasonably expected to be affected by pipeline operational activities (Section 3);
- Identifies potential environmental impacts and consequences (Section 4);
- Proposes measures to mitigate potential environmental impacts and consequences (Section 4); and
- Summarises stakeholder consultation (Section 5).

This EIR was updated in 2016 to reflect changes to, Epic Energy's Environmental Management System, mitigation measures used to minimise environmental impacts.

A Statement of Environmental Objectives (SEO) was developed in conjunction with this EIR, outlining the environmental objectives that Epic Energy is required to achieve and the criteria upon which the objectives are assessed. The SEO was developed on the basis of information provided in this EIR and subsequently updated in 2009 and again 2016.

1.4 About Epic Energy

Epic Energy South Australia owns and operates high pressure gas transmission pipelines to provide gas transportation services for customers in the electricity generation, gas distribution and industrial sectors. Epic Energy owns and operates the MAPS and the South East Pipeline System (SEPS), both of which are located in South Australia. Customers include AGL, Origin Energy, Amcor, Arrium, Energy Australia and Adelaide Brighton Cement.

Epic Energy also maintains the Moomba to Port Bonython High Vapour Pressure Liquid Hydrocarbon Pipeline (Liquids Line) on behalf of Santos, and the Beverley Lateral on behalf of Heathgate Resources Pty Ltd.

1.5 Environmental Management System

The Epic Energy Environmental Management System (EMS) provides a framework for the management of environmental responsibilities, issues and risks associated with the operation and maintenance of pipelines and associated infrastructure. The EMS ensures that commitments contained within the Environmental and Land Access Policy are achieved and provides clarity and direction for employees and contractors.

The EMS applies to all personnel associated with and activities undertaken for Epic Energy including:

- Pipeline construction (including route selection, design, land access and construction activities);
- Pipeline operations; and
- Operation of ancillary facilities.

The ‘environment’ is defined as the surroundings in which Epic Energy operates including:

- Land, air, water (surface and underground), organisms and ecosystems;
- Buildings, structures, cultural artefacts and other heritage factors;
- Social and economic life; and
- Amenity value of an area.

The EMS is based on a continuous improvement model as defined in the Australian/New Zealand Standard ISO 14001:2004 Environmental management systems–Requirements with guidance for use.

Driven by leadership, the EMS is used to integrate objectives, plans and activities into daily operations. The model is utilised within Epic Energy to ensure a systematic approach to environmental management.

The EMS consists of an Overview Manual and supporting documents including the policy, risk and compliance registers, management plans, procedures, work instructions, as well as monitoring and auditing programs.

The EMS consists of 5 elements and associated sub elements. The elements are interrelated and the proper implementation of each element is essential for the effective functioning of the EMS.

Refer to Figure 1 for a graphical representation of the relationship between the 5 elements:

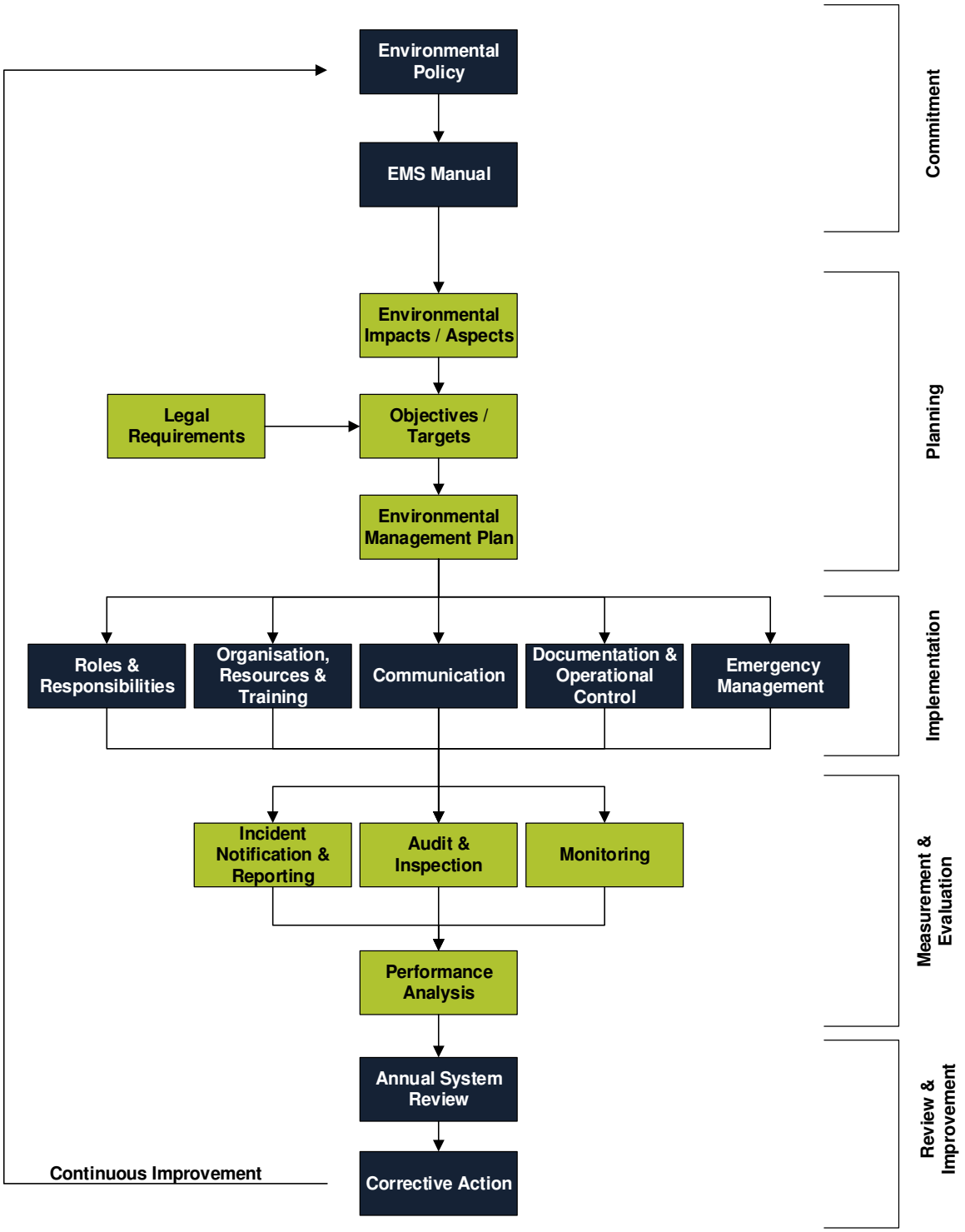
1. Commitment;
2. Planning;
3. Implementation;
4. Measurement & Evaluation; and
5. Review & Improvement.

The following section details the key components of the EMS that are relevant to operation and maintenance of the SEPS.

Any contractors engaged by Epic Energy are required to undertake environmental inductions and carry out their work in compliance with the EMS and associated procedures and work instructions.

The Epic Energy Environmental Management System Overview Manual provides full description of the EMS and supporting documents.

Figure 1: Structure of the Environmental Management System



1.5.1 Environmental Commitment

Epic Energy has a sound environmental record and reputation, and is committed to conducting its business operations in an environmentally responsible manner.

Environmental Values

Epic Energy has a corporate culture which stresses environmental, health and safety excellence and makes this the responsibility of every employee and contractor. Epic Energy seeks to be recognised as a leader in the protection of the environment, the public, its employees, contractors and the communities it works with.

Policy

Epic Energy has a Corporate Environmental and Land Access Policy that outlines in broad terms how environmental objectives will be achieved.

The policy is endorsed by the Chief Executive Officer, reviewed regularly and updated as required. It commits the company to achieving a high standard of environmental compliance.

The policy is communicated by a number of methods to all personnel and contractors. It is available in all new contracts packages, communicated at corporate and field inductions, and displayed on the internet, intranet and in all foyer areas. Refer to Appendix A, Environmental and Land Access Policy.

Leadership

Leadership accountability and visibility is key to the success of the EMS. Leaders direct the management system process, set objectives that challenge the organisation to achieve continuous improvement, and monitor progress via management review.

Leaders demonstrate their commitment through engagement with the workforce, setting personal examples in day-to-day work and sharing information learned inside and outside of the workforce.

1.5.2 Planning

Epic Energy's activities are managed to reduce environmental impacts through the following methods:

- Conducting activities in accordance with relevant regulatory and corporate obligations;
- Considering the concerns of the community and landholders;
- Conducting risk assessment workshops to identify environmental aspects and impacts;
- Implementing measures during the project planning phase to minimise environmental impacts;
- Developing and documenting control measures for all activities considered to have a potentially significant impact on the environment; and
- Defining responsibilities for the implementation of environmental control measures.

Environmental Impacts & Aspects

Epic Energy is committed to identifying and managing environmental impacts for all activities and maintains an Environmental Risk Register, managed via the online Corporate Governance Risk program (CGR), which documents key activities, environmental aspects and impacts, business consequence and control measures identified through risk assessment processes.

Control measures for environmental impacts are implemented through:

- Development of control documentation such as environmental procedures, work instructions, guidelines, emergency response plans and management plans;
- Implementation of the above documentation via the Environmental Management Induction and the Operations Field Induction;
- Briefing staff on environmental responsibilities;
- Complying with regulatory requirements;
- Ongoing monitoring of the effectiveness of control measures; and
- Corrective action to improve on control measures.

Legal Requirements

Epic Energy is required to be compliant with the relevant regulatory obligations and other standards to which it subscribes. The Regulatory & Government Affairs Advisor maintains a Compliance Register and provides guidance on legislative obligations, including licences, codes, industry standards, commitments and relevant legislation to be consulted for particular licensing requirements.

Statement of Environmental Objectives

This EIR forms the foundation for a SEO which includes measurable criteria used to assess whether the objectives are being achieved.

In developing an SEO, the following shall be considered:

- Environmental objectives and performance;
- Environmental aspects; and
- Regulatory compliance.

1.5.3 Implementation

The successful implementation and operation of Epic Energy's EMS requires commitment from all levels of the organisation. Epic Energy management ensures the availability of resources to establish, implement, maintain and improve the EMS.

Organisation, Resources and Training

Roles and responsibilities are defined, documented and communicated to facilitate effective environmental management.

Training and education ensures employees have the skills to undertake their work in an environmentally sound manner. All employees are required to complete the:

- Corporate Induction, which provides introduction to the environmental program;
- Online Environmental Induction for all workers which introduces Epic Energy's EMS, environmental risks, documentation, responsibilities and implementation strategies;
- Operations Field Induction, which includes an environmental component and provides a broad introduction to environmental risks and management requirements. All Epic Energy employees and contractors are required to complete the induction prior to engaging in field activities; and
- Additional face to face training as required to address specific environmental issues or field based risks.

All staff are briefed on environmental responsibilities by line management prior to commencement of new activities.

Recruitment, selection and placement processes ensure that personnel with environmental responsibility have the required experience, knowledge and skills to undertake their position.

Environmental competency requirements and key accountabilities are defined for individual roles and included in position descriptions.

Communication

Continuous improvement to achieve best environmental practice requires effective liaison with local councils, government departments, industry associations (e.g. Australian Pipeline & Gas Association) and other gas utilities. This provides an opportunity to share expertise, co-ordinate efforts, and remain aware of new developments throughout the industry.

Where appropriate, documentation is maintained from meetings with regulatory agencies and key stakeholders. This includes:

- Records of attendance;
- Agendas (including key discussion topics);
- Issues discussed/minutes; and
- Actions identified.

All landholder contact details and other relevant information is maintained and updated on the Epic Energy Land Management System (LMS), X-Info Connect. Other details such as land-use, foreign crossings, landholder concerns and issues are recorded on the LMS for future reference and reporting.

There is scheduled, formal contact with relevant landholders on an annual basis. Additional contact is conducted as required, or if there is perceived environmental risk. Landholder liaison involves discussion of relevant environmental issues or concerns. This ongoing process is designed to reduce the risk of third party incidents and to encourage ownership of activities around the pipeline.

Meetings of workgroups and committees foster discussion of environmental and safety issues, and provide an opportunity for the dissemination of new technologies, standards, and procedures to all staff. Minutes of meetings are maintained, action items identified, and accountabilities assigned.

Documentation and Operational Controls

Epic Energy's environmental documentation supports the EMS and provides direction on environmental management. In addition to the Environmental and Land Access Policy and the 'planning' documents described above, Epic Energy maintains the following:

- Environmental Management System Overview Manual;
- Environmental procedures, work instructions and guidelines to address significant environmental aspects and ensure activities are undertaken consistently across the company;
- Specific management plans such as weed management plans;
- Environmental Monitoring Program; and
- Environmental Audit Program.

Epic Energy aims to plan its operations to ensure consistency with its environmental policy, objectives and targets, by:

- Establishing, implementing and maintaining processes and procedures to control situations where the absence of such measures could lead to deviation from the company's environmental policy, objectives and targets;
- Stipulating the company's required operating criteria in the procedures; and
- Establishing, implementing and maintaining procedures related to the identified environmental aspects arising from Epic Energy's environmental activities and relationships.

The identification of specific actions in documented procedures, work instructions, guidelines and management plans are based on:

- The consequences, including those to the environment, of not doing so; and
- The need to demonstrate compliance with legal and other requirements to which the organisation subscribes.

A Job Hazard Analysis (JHA) is also used to help personnel identify, analyse and manage the hazards that exist in the work they undertake. The JHA requires personnel to examine the task they are about to undertake and:

- Break the job into separate, defined steps;
- For each step, identify the potential hazards associated with that job step; and
- For each potential hazard, list the method to be followed to prevent the hazard causing an injury, loss, damage or environmental incident.

A JHA must be completed prior to the commencement of any task that has the potential to cause a significant adverse environmental or cultural impact (e.g. ground disturbance, vegetation clearing, handling hazardous materials and identified high risk activities).

Epic Energy's Environmental Monitoring Program and Environmental Audit Program are designed to measure compliance with regulatory requirements, SEO obligations, and the effectiveness of implemented procedures, work instructions, guidelines and management plans.

Emergency Management

Crisis and emergency response plans have been developed and are in place for Epic Energy's pipeline systems and associated facilities. Resources are available to protect the public and environment in the event of an incident. The requirements of the crisis and emergency response plans are communicated to all relevant personnel.

1.5.4 Environmental Monitoring Program

Key characteristics of operations that can have a significant environmental impact are included in the Epic Energy Environmental Monitoring Program. The characteristics to be monitored are based on significant environmental aspects as per the risk assessment process, or regulatory requirements.

The objectives of the monitoring program are:

- To assist in demonstrating compliance with regulatory requirements; and
- To measure performance against the Environmental Policy and SEO obligations.

Patrols

Regular patrols are undertaken to look for evidence of adverse environmental impacts from operations. The Environmental Advisor is advised of any issues requiring remediation.

Disturbance Checklists

Disturbance checklists are used during excavation activities or land disturbance to ensure compliance with the requirements of internal procedures and work instructions. Copies are provided to the Environmental Advisor, with selected sites included in the Annual Environmental Monitoring Report (document number E-00-099-ER-L-001). Refer to Appendix C: Disturbance Checklist.

Monitoring Points

Environmental Monitoring Points are established along pipeline routes to maintain records of:

- Different land systems and environmentally sensitive areas (e.g. vulnerable or actual soil erosion sites) along the route; and
- Pre-disturbance and post-remediation condition of key areas along the route.

The location and interval for monitoring each of the points is to be maintained within the GIS database. A record must be maintained of each of the Monitoring Points including a photograph and when the site was visited. Monitoring results are recorded in the Annual Environmental Monitoring Report.

Groundwater and Soil Contamination

Consultants are engaged as required, but at least every 5 years, to undertake environmental monitoring at Epic Energy facilities to monitor for groundwater contamination, bore water quality, soil contamination and water vapour contamination.

Additional Monitoring

Any additional site-specific monitoring requirements for new projects (e.g. resulting from a license or approval condition) are to be documented within the project specific Construction Environmental Management Plan (CEMP). This is to include accountabilities, review of results and reporting requirements. Once a pipeline or facility has been commissioned the relevant environmental information in the CEMP is to be included in the Operational EMP.

1.5.5 Environmental Incidents

Epic Energy has an incident reporting and investigation process underpinned by the Incident Reporting and Investigation Procedure and managed within CGR to:

- Provide guidance and minimum requirements for incident notification and reporting;
- Ensure corrective actions have been identified to address each root cause and any other actions required to reinforce immediate controls; and
- Enable final approval of the incident by the responsible manager.

All incidents are managed and recorded online via Epic Energy's CGR system.

In the event of an incident occurring or a hazard being identified, a Report Form is completed by the person reporting the hazard or incident. The appropriate Team Leader and Manager is notified of the incident without delay and the report forwarded for further action in a timely manner.

In an emergency, the Incident Management Plan and Emergency Response Manual is enacted.

For non-emergencies, the Manager notifies the WHS Officer, Environment Officer and Regulatory & Government Affairs Advisor to determine the requirement for response and also to provide relevant information to the regulatory bodies and corporate management.

All significant incidents are investigated to identify root causes and/or contributing factors that need to be rectified in order to prevent recurrence.

Following the reporting and investigation of an incident, the relevant Manager is responsible for developing and implementing corrective actions to address the incident in a timely manner.

1.5.6 Auditing

The Epic Energy Environmental Audit Program assesses the implementation and effectiveness of the EMS and the management of significant environmental risks.

Regular inspections of all pipelines and facilities are completed to monitor the effectiveness of the defined control measures in minimising the environmental impacts of the activity.

Environmental compliance audits will be conducted with the audit criteria based on the relevant SEO.

Auditors are to be appropriately qualified and experienced in auditing environmental management systems including documentation and implementation.

Auditors shall review all relevant documentation, prior to undertaking the audit. This shall include the identification of key regulatory requirements, if an assessment of compliance to the requirements is to be included as part of the audit. Reference should also be made to the Compliance Register.

Audit results are to be discussed at the following Health Safety and Environment Committee (HSEC) meeting, where the findings and recommendations will be used to determine the corrective actions required. Corrective actions are managed and recorded online via Epic Energy's CGR system.

1.5.7 Review and Improvement

The HSEC meets regularly, providing a forum to manage, monitor and support the environmental objectives of the company and is responsible for setting the direction for HSEC management, including:

- Evaluating effectiveness of the EMS;
- Monitoring the Environmental Audit process;
- Reviewing changes to legislation and recommending updates to the EMS where required; and
- Ensuring that all corrective actions are addressed in a timely manner.

A regular review of the EMS shall be conducted to monitor overall effectiveness and determine areas for improvement. The review is to address as a minimum:

- The Environmental and Land Access Policy;
- The relevance of the environmental objectives in light of changes to operations, legislation, industry best practice, results of audits and incidents/complaints;
- Progress of any recommended improvements, particularly the availability of resources to implement plans for the following year;
- Review of resourcing and the organisational structure for environmental management;
- Review of training needs with respect to environmental management;
- The results from any audits with a focus on trends that require actioning;
- Trends from incidents or public comments; and
- Efficiency of the EMS and recommendations for improvement.

The review shall be used to inform changes to the EMS.

2 Pipeline Description

2.1 South East Pipeline System Alignment

The SEPS was built in 1990 to design compliant with AS 2885.1—1987. When commissioned in 1991, the pipeline system transported natural gas from the Katnook gas fields near Penola to industrial and domestic customers in and near Penola, Mt Gambier, Nangwarry and Tantanoola (refer to Figure 2). The Pipeline Licence 3 route runs from the Katnook gas field to the Safries factory south of Penola. The Pipeline Licence 4 route runs from the Katnook gas field to a point south of Allendale where the pipeline splits (referred to as Glencoe Junction) and proceeds in to separate directions; a south-easterly direction to terminate at Mt Gambier; and in a westerly direction to terminate near Tantanoola. This pipeline system also includes the Nangwarry Lateral which runs from a point one kilometre north-west of Kalangadoo and supplies a timber mill at Nangwarry.

Following a gradual decline in the availability of gas from the Katnook gas field, the APA-owned South East South Australia (SESA) Pipeline was commissioned in 2005 to supply gas from the Port Campbell to Adelaide (SEAGas) Pipeline into the SEPS.

2.2 Design and Engineering

2.2.1 Pipelines and Laterals

The SEPS transports natural gas for domestic and industrial customers in the Penola, Mt Gambier, Tantanoola and Nangwarry regions, with gas from the SESA Pipeline, and some locally sourced gas processed at the Katnook Processing Plant.

The design parameters and description of the facilities for the SEPS are provided in the following sections.

Plate 1: Pipeline Marker Sign

Table 2: Pipeline Design Parameters

	Katnook to Snuggery Pipeline	Mount Gambier Lateral	Safries Lateral	Nangwarry Lateral
Construction Date	1990-91	1990-91	1990	2001
Commission Date	March 1991	April 1991	January 1991	August 2001
Meter Stations	APCEL	Mount Gambier	Safries	Nangwarry
Main Line Valves	3	2	Up and downstream isolations valves	Up and downstream isolations valves
Actuators	Manual	Manual	Manual	Manual
MAOP (MPa)	10.0	10.0	10.0	9.85
Outer Diameter (mm)	168.3	168.3	60.3	88.9
Wall Thickness Normal (mm)	4.2	4.2	3.9	3.2
Wall Thickness Crossings (mm)	5.0	5.0	3.9	4.0
Pipe Grade	API 5LX 42	API 5LX 42	ASTM A106 Gr B	API 5LX 56
Length (km)	46.1	18.9	4.5	11.5
Coating Material	Yellow Jacket	Yellow Jacket	Yellow Jacket	Yellow Jacket
Measurement Length (m)	86	86	25	40

Katnook to Snuggery Pipeline (Pipeline Licence 4)

The Katnook to Snuggery Pipeline is also known as the Kimberley Clark Pipeline or APCEL Lateral as it supplies gas to the Kimberley Clark Pulp Mill, formerly known as the APCEL Pulp Mill, having been established by Australian Paper Manufactures Ltd and Cellulose Australia Ltd in 1960.

The pipeline and runs from EESA's Katnook Facility, adjacent to the Katnook Production Plant, through Glencoe Junction, to the APCEL Meter Station on Snuggery Road, north of Tantanoola.

The cathodic protection system is sacrificial anodes, and the pipeline was constructed with Zaplock joints. The pipeline has pig trap facilities at Katnook and Snuggery and a Main Line Valve (MLV) midway along the pipeline at Glencoe Junction.

Plate 2 and 3: Pipeline easement and the APCEL Meter Station

Mount Gambier Lateral (Pipeline Licence 4)

The Mount Gambier Lateral runs from Glencoe Junction, midway along the Katnook to Snuggery Pipeline, to the Mount Gambier Meter Station on Nick Lyon Road, Mount Gambier, then on to a buried monolithic joint near Pine Hall Road.

The cathodic protection system consists of sacrificial anodes, and the pipeline was constructed with Zaplock joints. The pipeline has pig trap facilities at Glencoe and the Mount Gambier Meter Station.

Plate 4: Mt Gambier Meter Station

Safries Lateral (Pipeline Licence 3)

The Safries Lateral runs for 4.5 kilometres from EESA's Katnook Facility adjacent to the Katnook Production Plant to a meter station in the Safries Pty Ltd property, situated on the Penola to Mount Gambier Road.

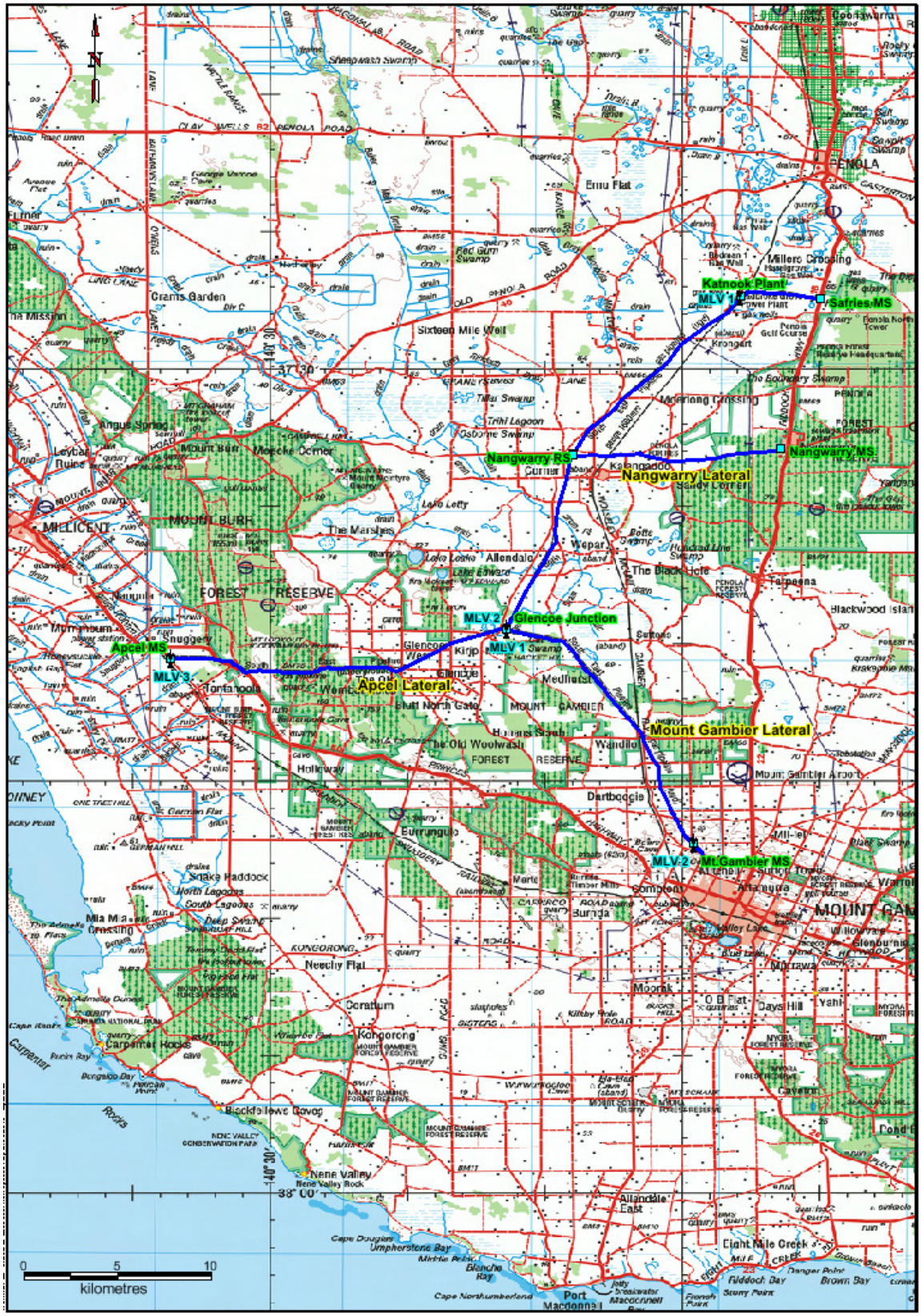
The cathodic protection system is sacrificial anodes and the pipeline has welded joints.

Nangwarry Lateral (Pipeline Licence 4)

The Nangwarry Lateral runs for 11.5 kilometres from an off-take near Kalangadoo on the Katnook to Snuggery Pipeline to a meter station at Nangwarry.

The lateral is protected with sacrificial anodes, is buried at a minimum depth of 1000 mm and 1200 mm at crossings and has welded joints. The pressure in the lateral is reduced to 2000 Kpa at a regulator off-take station near Kalangadoo.

Figure 2: Location of Pipeline and Laterals (PL3&4)



2.2.2 Facilities and Infrastructure

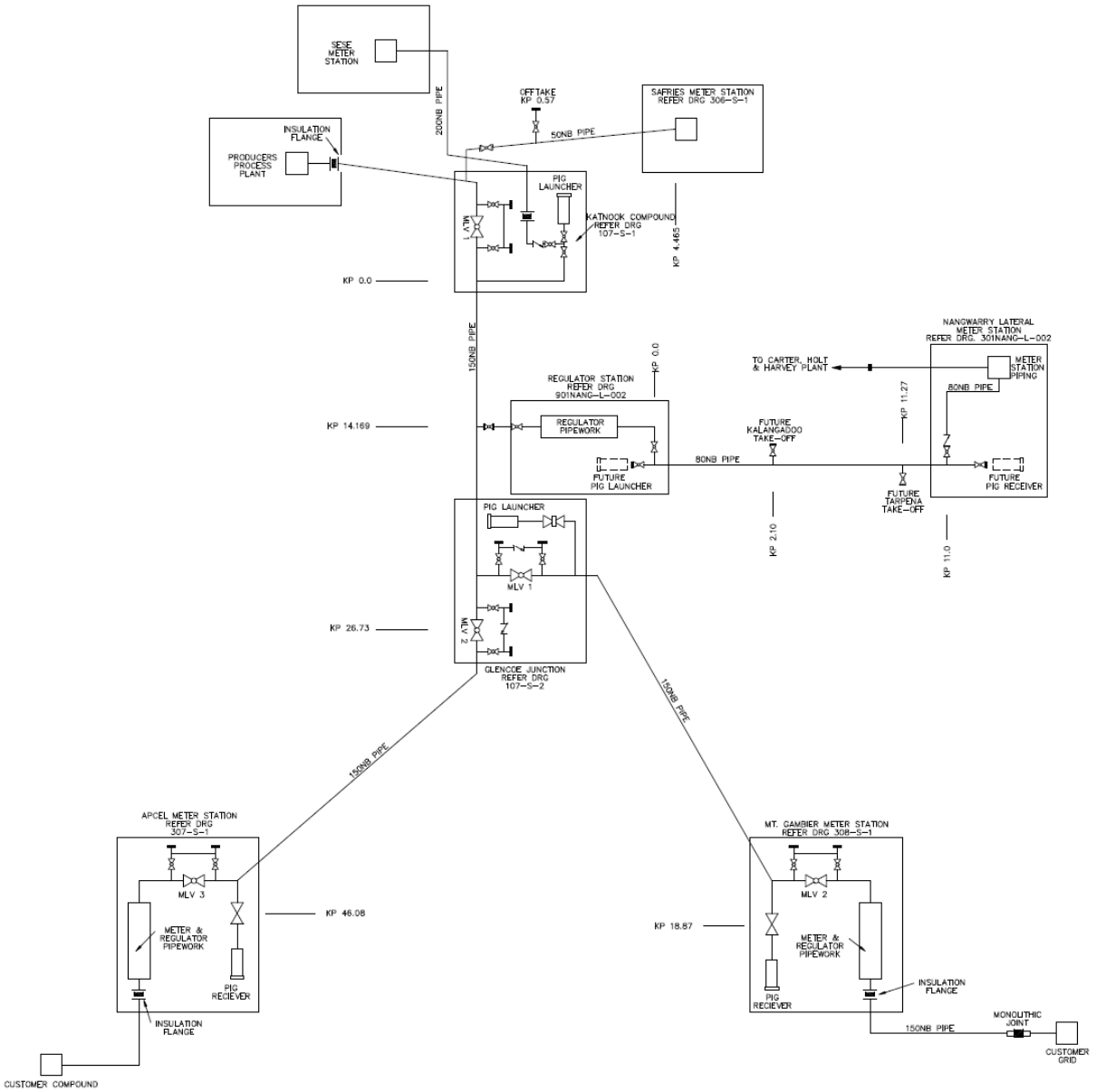
A description of the pipeline facilities and associated infrastructure is provided in Table 2.

Table 2: Pipeline Facilities and Infrastructure

Facility	Description.
Cathodic Protection	A cathodic protection system is incorporated into the pipeline design to protect the pipeline from corrosion. This involves the use of buried anode beds, which are connected to the pipeline via cabling. In addition, cathodic protection test posts are located approximately every 2km. The test posts are required to allow for monitoring of the effectiveness of the corrosion protection system.
Isolation Valves	All pipelines can be isolated from the system via upstream and downstream isolation valves.
Mainline Valves	Mainline valves are located approximately every 32 km. Mainline valves are installed to automatically shut down a section of the pipeline when any rapid drop in system pressure is detected. The valves are designed to operate automatically, but may also be operated manually.
Metering Stations	Metering stations are located where gas volumes leave the main transmission lines.
Pipeline Marker Signs	Pipeline Marker Signs are located along the pipeline easements, at intervals, so that a person can clearly see a marker sign in either direction. The maker signs are placed closer at bends, on either side of road and watercourse crossings and at fence lines.
Regulator Station	The Regulator Station reduces the gas pressure to meet supply pressure.
Scraper Stations	Scraper stations are required to allow for cleaning devices (pigs) to be inserted into, and removed from, the pipeline to clean the line and/or detect damage or pipe corrosion along the pipeline.

Plate 5 and 6: Cathodic Protection Test Post and Pipeline Marker Sign

Figure 3: Pipeline Route and Facilities Schematic



2.3 Operation

Day-to-day operations of natural gas transmission pipelines pose few environmental implications. The pipeline is designed to be operated remotely from the Pipeline Control Room at the Epic Energy Head Office in Dry Creek. Field operators undertake regular route inspections, maintain ongoing liaison with landholders, and respond to maintenance requirements such as erosion control and weed control, as necessary.

The key activities which may have an impact on landowners, occupiers and the environment include:

- Maintenance of the pipeline easement (e.g. weed control, rehabilitation of erosion and excavation sites);
- Maintenance of the pipeline and facilities (e.g. excavation of the pipeline for maintenance, hydrotesting, assessment of internal pipeline integrity and welding);
- Access to the pipeline easement;
- Inspection & testing of the pipeline, easement and facilities;
- Emissions from the pipeline;
- Storage and use of hazardous substances;
- Production and disposal of waste materials; and
- Potential accidents or emergency situations.

2.4 Decommissioning

Epic Energy is committed to decommissioning the pipeline system to an appropriate standard as required by the legislation and standards of the day.

Currently decommissioning procedures require the removal of all above ground infrastructure and the restoration of associated disturbed areas.

At the time of decommissioning a decision will be made regarding the opportunities for future use of the pipeline. If no longer required, the pipeline will be purged of gas and below ground facilities allowed to gradually degrade in-situ. If however, it is considered that the pipeline may offer some future benefits, it will be filled with an inert material and the cathodic protection system maintained to prevent corrosion. Above ground facilities will be removed.

3 Description of Environment

3.1 Introduction

The purpose of this section of the document is to describe the environment in which the pipeline system operates and was prepared in 2003 following a desktop assessment of the entire pipeline route. Publicly available information and previous environmental and cultural heritage investigations completed on behalf of Epic Energy were referred too. The desktop assessment was followed up by a field inspection to verify the findings. In addition, site specific information was sourced, from the Epic Energy Land Management System (LMS) and a range of Epic Energy personnel. A list of reference sources is included in Section 7.

The original pipelines and facilities were installed approximately 13 years before the 2003 assessment. Consequently the easement had, for the most part, revegetated to a state similar to adjoining land. Due to the close proximity of the pipelines to existing road networks an easement access track has not been maintained, consequently the easement is virtually indistinguishable from the surrounding land use and for the most part is covered by crops or pasture.

3.2 Environmental Regions

In order to manage the environmental issues associated with the pipeline, the route has been divided into environmental regions. The environmental regions are based on the bioregions and land systems of South Australia and are used to describe the sections of the pipeline with similar receiving environments and/or land uses. The use of the regions allows for specific controls, where required, to be identified and implemented to address the environmental issues specific to the region.

The regions associated with the pipeline route are summarised in Table 3 and described in detail in Section 3.3 and 3.4 below. It is important to note that while a specific start and end point has been provided for each region, these are indicative only. In practice, the landforms of the area generally change over a number of kilometres. The location specific information presented in this section is not exhaustive, and is included to provide an example of the specific issues that may exist.

Table 3: Locations of Environmental Regions

Region	Pipeline Licence Number	Katnook to Snuggery Pipeline (KP)	Mt Gambier Lateral (KP)	Safries Lateral (KP)	Nangwarry Lateral (KP)
Naracoorte Coastal Plain	3 4	0 – 29.1 43.7 – 46.1	0 – 9.9	0 – 4.5	0 – 11.5
Mt Gambier Volcanic Region	4	29.1 – 43.7	9.9 – 18.9	-	-

3.3 Naracoorte Coastal Plain

At least part of each pipeline lies within this region.

3.3.1 Climate

This region has a Mediterranean climate with cool wet winters and mild dry summers. There is a distinct winter rainfall with the average annual rainfall in the region varying from 600mm in the north to 800mm in the south (PASA 1990b, Laut *et al* 1977). Evaporation rates average between 1600-1700 mm per year (Laut *et al* 1977).

3.3.2 Soils and Terrain

This region is dominated by a system of plains and dunes inter-dispersed with swamps and lakes. The plains are poorly drained and subject to seasonal flooding while the sandy dunes are well drained.

The plains are characterised by mottled-yellow duplex soils and black self-mulching clays, with black organic soils present in the swamps. The dunes are characterised by red sandy soils which are prone to slight drift (Laut *et al* 1977).

Many of the natural lagoons and swamps in the region have been drained and the surface drainage has been significantly altered due to extensive agriculture in the region.

Underground caves and sinkholes are also an important geological feature in this region (PASA 1990b).

3.3.3 Flora and Fauna

Flora

The vegetation in this region has been highly modified by agriculture and as a result limited areas of remnant native vegetation remain. These remaining areas of native vegetation are considered to be significant. Native vegetation is this region is generally comprised of the following associations:

- Open woodland or scattered trees with a pasture understorey on the plains. The overstorey includes remnant River Red Gum (*Eucalyptus camaldulensis*), Swamp Gum (*E.ovata*) and Pink Gum (*E. fasciculosa*). Some native heath, comprised of species such as Slender Honey-myrtle (*Melaleuca gibbosa)* and Dwarf Hakea (*Hakea rugosa)* can also be found.
- A mixture of open woodland and shrubland, comprised of coastal mallee (*Eucalyptus diversifolia*) and stringybark (*E. obliqua* and *E. baxteri*) can be found on the dunes.
- The swamps and lagoons are typically characterised by open woodlands or shrublands of paper-bark (*Melaleuca* spp.) with an understorey of sedges (e.g. Cutting Grass (*Gahnia trifida)*, Chaffy saw-sedge (*G. filum)*), rushes (*Juncus* spp.) and samphires (*Tecticornia* spp.) (Laut et al 1977).

Much of the native understorey and sections of the overstorey have been cleared and replaced with pastures for grazing.

The remaining remnant woodlands are prone to invasion and displacement by introduced grasses and herbs. Phalaris is one of the most aggressive weeds found in the region and is able to crowd out native plant species. It also creates a fire hazard as it is highly flammable (Croft *et al* 1999).

Environmental weed species considered the most threatening in the SE NRM Region are identified in the *South East Pest Risk Assessment (2009)* and summarised in the Regional NRM Plan (South East NRM Board 2010) and include:

- Monterey Pine (*Pinus radiata*)
- European Olive (*Olea europaea* ssp.)
- Bridal Creeper, Bridal Veil, Basket Asparagus (*Asparagus* spp.)
- Phalaris (Phalaris species, especially *P.aquatica*)
- Boneseed (*Chrysanthemoides monilifera*)
- Blackberry (*Rubus* species)
- Golden Wreath Wattle (*Acacia saligna*)
- Sollya / Native Bluebell Creeper (*Billardiera heterophylla*)
- Buckthorn (*Rhamnus alaternus*)
- Spiny Rush (*Juncus acutus*).

In addition there are two plant diseases of particular environmental concern which have the potential to be introduced into the region: Phytophthora (*Phytophthora cinnamomi*) and Mundulla Yellows.

The Mt Gambier Lateral traverses the edge of the Hacket Hill and Wandilo Native Forest Reserves between KP5.5 and KP11.5 (following an existing road reserve and fire break).

The Katnook to Snuggery Pipeline traverses adjacent to the Glencoe Hill and Mount Watch Native Forest Reserves between KP38 and KP40 (following an existing road reserve and fire break).

Plant species likely to occur in the regions traversed by the pipelines that are listed under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) include:

Name	Status		Source*	
	SA	Cth	Recorded	Predicted
River Swamp Wallaby-grass (*Amphibromus fluitans*)	-	Vulnerable	✓	
Limestone Spider-orchid (*Caladenia calcicola*)	Endangered	Vulnerable	✓	
Coloured Spider-orchid (*Caladenia colorata*)	Endangered	Endangered		✓
Ornate Pink Fingers *(Caladenia ornata)*	Endangered	Vulnerable	✓	
Wrinkled Cassinia (*Cassinia rugata*)	Endangered	Vulnerable		✓
Avenue Cassinia (*Cassinia tegulata*)	Endangered	Critically Endangered		✓
Trailing Hop-bush (*Dodonaea procumbens)*	Vulnerable	Vulnerable		✓
Clover Glycine (*Glycine latrobeana*)	Vulnerable	Vulnerable	✓	✓
Sand Ixodia (*Ixodia achillaeoides* ssp. *arenicola*)	Endangered	Vulnerable		✓
Silver Daisy-bush (*Olearia pannosa* ssp. *pannosa*)	Vulnerable	Vulnerable	✓	✓
Kangaroo Island Pomaderris (*Pomaderris halmaturina* ssp. *halmaturina*)	Vulnerable	Vulnerable	✓	✓
Leafy Greenhood (*Pterostylis cucullata*)	Endangered	Vulnerable		✓
Swamp Greenhood (*Pterostylis tenuissima*)	Vulnerable	Vulnerable	✓	
Green-striped Greenhood *(Pterostylis chlorogramma)*	Endangered	Vulnerable	✓	
Swamp Fireweed *(Senecio psilocarpus)*	Vulnerable	Vulnerable	✓	✓
Metallic Sun-orchid (*Thelymitra epipactoides*)	Endangered	Endangered		✓
Spiral Sun-orchid (*Thelymitra matthewsii*)	Endangered	Vulnerable		✓

*Source: Recorded – Record of species within rectangular search area bounding the pipelines (NatureMaps 2016a); Predicted – Predicted to occur in the search area by the EPBC Act protected matters search tool (DEE 2016)

A number of other species that are listed under the *SA National Parks and Wildlife Act 1972* as rare, vulnerable or endangered also occur in the region, predominantly within patches of remnant native vegetation.

The threatened ecological community *Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains*, which is listed as Critically Endangered under the EPBC Act, occurs in the regions traversed by the pipelines. No areas mapped as this community are traversed by the pipeline (NatureMaps 2016), however there are four wetlands mapped as this community within 200 m of the pipeline, in adjacent paddocks or forestry blocks.

A number of plant communities that have been identified as rare or threatened at a State level also occur in the regions traversed by the pipelines (South East NRM Board 2010).

Fauna

This region contains habitats that support a variety of native mammal, bird and reptile species. Many species are now confined to isolated areas of remnant vegetation.

Fauna species likely to occur in the regions traversed by the pipelines that are listed as threatened under the SA *National Parks and Wildlife Act 1972* and/or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* include:

Name	Status		Source*	
	SA	Cth	Recorded	Predicted
Mammals				
Yellow-footed Antechinus (*Antechinus flavipes*)	Vulnerable	-	✓	
Swamp Antechinus (mainland) *(Antechinus minimus maritimus)*	Endangered	Vulnerable		✓
Eastern False Pipistrelle (*Falsistrellus tasmaniensis*)	Endangered	-	✓	
Southern Brown Bandicoot (E and SE) (*Isoodon obesulus obesulus)*	Vulnerable	Endangered	✓	✓
Southern Bent-winged Bat (*Miniopterus orianae bassanii*)	Endangered	Critically Endangered	✓	✓
Gould's Long-eared Bat (*Nyctophilus gouldi*)	Endangered	-	✓	
Smoky Mouse (*Pseudomys fumeus*)	-	Endangered		✓
Grey-headed Flying Fox (*Pteropus poliocephalus*)	Rare	Vulnerable		✓
Swamp Wallaby (*Wallabia bicolor*)	Vulnerable	-	✓	
Birds				
Grey Goshawk (*Accipiter novaehollandiae*)	Endangered	-	✓	
Australasian Bittern (*Botaurus poiciloptilus*)	Vulnerable	Endangered	✓	✓
Chestnut-rumped Heathwren (*Calamanthus (Hylacola) pyrrhopygius*)	Vulnerable	-	✓	
Curlew Sandpiper (*Calidris ferruginea*)	-	Critically Endangered		✓
Red-tailed Black Cockatoo (SE sub-species) (*Calyptorhyncus banksii graptogyne*)	Endangered	Endangered	✓	✓
Yellow-tailed Black Cockatoo (*Calyptorhynchus funereus*)	Vulnerable	-	✓	

Name	Status		Source*	
	SA	Cth	Recorded	Predicted
Little Lorikeet (*Glossopsitta pusilla*)	Endangered	-	✓	
Painted Honeyeater (*Grantiella picta*)	Rare	Vulnerable		✓
Brolga (*Grus rubicunda*)	Vulnerable		✓	
Swift Parrot (*Lathamus discolor*)	Endangered	Critically Endangered	✓	✓
Lewins Rail (*Lewinia pectoralis*)	Vulnerable	-	✓	
Satin Flycatcher (*Myiagra cyanoleuca*)	Endangered	-	✓	
Orange-bellied Parrot *(Neophema chrysogaster*)	Endangered	Critically Endangered		✓
Blue-winged Parrot (*Neophema chrysostoma*)	Vulnerable	-	✓	
Powerful Owl (*Ninox strenua*)	Endangered	-	✓	
Eastern Curlew (*Numenius madagascariensis*)	Vulnerable	Critically Endangered		✓
Plains Wanderer (*Pedionimus torquatus*)	Endangered	Critically Endangered		✓
Flame Robin (*Petroica phoenicea*)	Vulnerable		✓	
Australian Painted Snipe (*Rostratula australis*)	Vulnerable	Endangered		✓
Pied Currawong (*Strepera graculina ashbyi*)	Endangered	-	✓	
Amphibians				
Southern Bell Frog (*Litoria raniformis*)	Vulnerable	Vulnerable	✓	✓
Marbled Toadlet (*Pseudophryne semimarmorata*)	Vulnerable	-	✓	
Reptiles				
Striped Legless lizard (*Delma impar*)	Endangered	Vulnerable		✓
Swamp Skink (*Lissolepis coventryi*)	Endangered	-	✓	
Glossy Grass Skink *(Pseudemoia rawlinsoni)*	Vulnerable	-	✓	
Freshwater Fish				
Silver Perch (*Bidyanus bidyanus*)	-	Critically Endangered	✓	
Dwarf Galaxias (*Galaxiella pusilla*)	-	Vulnerable	✓	✓

*Source: Recorded – Record of species within rectangular search area bounding the pipelines (NatureMaps 2016a); Predicted – Predicted to occur in the search area by the EPBC Act protected matters search tool (DEE 2016)

A number of additional fauna species listed as rare under the SA *National Parks and Wildlife Act 1972* also occur in the regions traversed by the pipelines.

3.3.4 Water Resources

The dunes which extend across the plains, running parallel to the coast, in this region act as an impediment to surface drainage to the sea. As a result the surface hydrology of the region is characterised by large areas of seasonal swamps and very few river channels. However agricultural practices in the region have led to the construction of an extensive network of drains which now divert the majority of water to the sea, resulting in few areas of inundation.

The pipeline alignment avoids permanent and major seasonal swamps in this region. However some sections of the pipeline are subject to short-term seasonal inundation (PASA 1990b).

Groundwater in the region is found in aquifers located in the Gambier Limestone and Dilwyn Formations. The depth of the water table varies and can be as shallow as 5 m in some areas, dependant on recharge (Epic Energy 2000). These aquifers contain good to poor quality water which is suitable for drinking and are recharged by the infiltration of rainwater through the soil profile. Water from the Dilwyn formation is used for residential, irrigation, stock and industrial purposes (Origin Energy 2002). The region falls within the Lower Limestone Coast Prescribed Wells Area which is proclaimed under the Natural Resources Management Act.

3.3.5 Land Use

The main land use of this region is agriculture with extensive livestock grazing for the production of beef, mutton and wool. The area is also used for forestry, with numerous Pine plantations present and viticulture occurs in the Coonawarra region.

Several other primary industries also occur in the region including timber milling, petroleum gas production and food processing.

Other land uses in the region include tourism (Coonawarra wine region, Tantanoola caves) and conservation (Gower Conservation Park, Tantanoola Caves Conservation Park and Telford Scrub Conservation Park).

3.4 Mt Gambier Volcanic Region

The Pipeline Licence 4 pipeline passes through the Mt Gambier Volcanic Region at the following locations:

- Katnook to Snuggery Pipeline – between KP29.1 and KP43.7; and
- Mt Gambier Lateral – between KP9.9 and KP18.9.

3.4.1 Climate

This regions climate is characterised by cold, wet winters and warm, dry summers. Rainfall generally occurs during the winter months with an annual average of 750-850 mm. Evaporation is moderate and averages 1600 mm per annum (Laut *et al* 1977).

3.4.2 Soils and Terrain

This region has a distinctly higher relief than surrounding regions and is characterised by a slightly uplifted limestone plain with higher several volcanic cones.

The plains generally consist of red, weakly structured sandy soils, bleached sands with rocky outcrops or ash with brown loams. The majority of the soils in this sub-region are well drained and as a result no surface water is present.

The volcanic cones are comprised of basalt with a cover of brown, friable loams and rock outcrops. The soils in this sub-region are subject to sheet erosion and major gully erosion during periods of intensive rainfall. These cones are enclosed and support fresh water lakes.

3.4.3 Flora and Fauna

Flora

The vegetation in this region has been extensively cleared and modified to support forestry and agriculture. As a result, limited areas of remnant native vegetation remain. Native vegetation in this region is generally comprised of open woodland, comprised of River Red Gum (*Eucalyptus camaldulensis*), Brown Stringy-bark (*E. baxteri*) and Swamp Gum (*E. ovata*), with a pasture understorey on the plains. No native vegetation remains on the volcanic cones which have been cleared and utilised for agricultural activities.

The remaining remnant vegetation in this region is prone to invasion and displacement by introduced grasses and herbs. Environmental weed species considered the most threatening in the SE NRM Region are listed in Section 3.3.3.

Plant species likely to occur in the regions traversed by the pipelines that are listed as endangered, vulnerable or rare under State and Commonwealth legislation are listed in Section 3.3.3.

Listed threatened ecological communities in the regions traversed by the pipelines are discussed in Section 3.3.3.

Fauna

This region contains habitats that support a variety of native mammal, bird and reptile species. Many species are now confined to isolated areas of remnant vegetation.

Fauna species likely to occur in the regions traversed by the pipelines that are listed as threatened under State and Commonwealth legislation are listed in Section 3.3.3.

3.4.4 Water Resources

The volcanic cones in this region have been inundated by near-surface groundwater which has led to the formation of deep perennial crater lakes (PASA 1990b). The Blue Lake system at Mt Gambier provides the water supply for the city and immediate region.

3.4.5 Land Use

The dominant land use in this region is forestry with numerous Pine plantations present. Some grazing of modified pastures also occurs.

Several other primary industries also occur in the region including timber milling, and food processing.

Other land uses in the region include tourism (Blue Lakes).

3.5 Cultural Heritage

The pipeline easements traverse a number of Native Title claimant and cultural heritage areas. It also passes by a number of European heritage sites.

A cultural heritage survey of the pipeline route was undertaken prior to construction in 1990. Four areas of potentially high archaeological significance were identified and are detailed below.

Naracoorte Coastal Plain

Three areas were identified on the Katnook to Tantanoola pipeline between approximately KP35 and KP47.2:

- Between the Tantanoola Forest headquarters and the base of the Mt Burr Range;
- 2km north of Koorine Corner to the Tantanoola Forest; and
- at the entrance to Millicent where the alignment crosses a sand dune ridge.

A number of 'scarred trees' are present within the vicinity of the Nangwarry Lateral (Epic Energy 2000).

Victorian Volcanic Plain

One area was identified in the corridor south of Airport Road near Mt Gambier at KP13 to KP19.7 on the Mt Gambier Lateral.

Numerous aboriginal heritage sites are also known to be present in this region and primarily consist of camp sites and artefact scatters. Mythological sites are also present (Laut *et al* 1977).

3.6 Land & Groundwater Contamination

The South East Pipeline System has been in operation since commissioning in 1991. All potential hydrocarbon contamination sources (e.g. pigging stations) are located within infrastructure compounds where appropriate spill prevention and control measures are in place. To date there has been no incident/evidence of land contamination associated with the operation or maintenance of the SEPS.

Mitigation measures in place to prevent contamination as a result of pipeline operations are detailed in Section 4.10.

4 Potential Impacts & Mitigation Measures

This chapter describes the potential impacts to the environment as a result of pipeline operation and provides an outline of the impact mitigation strategies adopted by EESA. Identification of potential impacts and mitigation strategies are based on environmental issues (e.g. soil, flora, heritage, etc.) rather than operational activity.

A summary of the potential impacts in terms operational activities is included in Appendix B.

4.1 Flora

4.1.1 Potential Impacts

When constructed in 1990, the SEPS was designed to avoid areas of native vegetation where possible. The pipelines and laterals are predominately aligned in cleared agricultural land or service corridors. Some native vegetation was cleared for a small section of the Mt Gambier Lateral.

Daily pipeline operation activities have little impact on native vegetation, however some maintenance activities have the potential to impact on flora. Impacts are short-term and restricted to existing easements that have previously been used for pipeline construction activities. These activities include:

Pipeline Excavations

Excavations are required to undertake inspection and repair of the pipeline or pipeline coating. The SEPS is protected by a 'Yellow Jacket' coating that provides excellent protection against corrosion, reducing the need for pipeline repairs. Historically, excavation on the SEPS have been limited to approximately one or two per year.

Vegetation Control

Vegetation on the pipeline easement is maintained in accordance with *Australian Standard 2885.3—2012, Pipelines—Gas and liquid petroleum, Operation and maintenance*, which stipulates that vegetation must be controlled to maintain visibility of signs, access and to prevent tree roots from damaging the pipeline coating.

4.1.2 Mitigation Measures

EESA subscribes to the Australian Pipeline Industry Association Code of Environmental Practice, which includes obligations regarding vegetation management. EESA maintains low-level vegetation on the pipeline easement to provide ground stability, protection against erosion and habitat for fauna.

EESA has developed a Vegetation Management Procedure to summarise requirements and provide clear and concise direction to field staff involved with vegetation management. Some management strategies that are implemented to minimise the impacts on flora include:

- Restricting operational activities to access tracks and the pipeline easement;
- Trimming vegetation rather than clearing;
- Where possible, avoiding the clearing of isolated trees, roadside treebelts and small isolated clumps of trees; and

- Where practical, removing vegetation without disturbing the soil to preserve root and seed-stock along the easement.

When required, excavations are undertaken in accordance with EESA's Excavation Procedure, which includes land access, cultural heritage and environmental requirements. These requirements are documented in the 'Land Access & Environmental Checklist' which is completed for all excavations. Some specific vegetation management strategies included in the checklist include:

- Photo point monitoring before and after land disturbance;
- Keeping cleared vegetation, topsoil and subsoils stockpiled separately;
- Reinstating soil profiles post pipeline repair;
- Respreading cleared vegetation after backfilling in the immediate vicinity of its origin; and
- Re-contouring the land surface consistent with the surrounding area to ensure localised habitats/niches are maintained.

4.2 Fauna

4.2.1 Potential Impacts

The pipeline facilities are primarily located on agricultural or forestry land with limited habitat value. However some sections of the pipeline are located within or adjacent to state forests or patches of remnant vegetation which do provide an important habitat for native fauna.

Daily pipeline operation and maintenance activities have little impact on fauna, however irregular or unscheduled maintenance activities, such as excavations, have the potential to result in the loss of foraging and breeding habitat. The impact of such disturbances is likely to be short-term and restricted to existing easements that have previously been used for pipeline construction activities. There is also the potential for entrapment of fauna at excavation sites, although the duration of excavation work is generally limited to 3 days (may be longer for complicated maintenance work). Control measures are outlined in Section 4.2.2.

Other potential impacts to fauna as a result of the operation of the pipeline and associated facilities include:

- Fauna mortality, through incidental roadkills or occasional contact with facilities; and
- Short-term disturbance associated with noise, vehicle traffic and human activity on the easement and at facilities (especially relevant times, such as breeding, when fauna are sensitive to disturbance).

The pipeline facilities also traverse agricultural land used for the grazing of livestock. The daily operation of the pipeline has little impact upon livestock.

4.2.2 Mitigation Measures

Impact mitigation measures to reduce the potential impact to fauna include:

- Restricting operational activities to the easement access tracks and the easement;
- Minimising the time between clearing and rehabilitating the easement when excavations are required;
- Planning excavations to minimise the period of time that the trench is open;
- Liaising with landholders to determine appropriate livestock management during excavation activities;
- Provision of fauna escape means in open trenches and regular inspection of open trenches for trapped fauna; and

- Re-contouring the land surface consistent with the surrounding area to ensure localised habitats/niches are maintained.

4.3 Soils and Terrain

4.3.1 Potential Impacts

Operation and maintenance of the pipeline may result in the following potential adverse effects to soil and terrain:

- Soil inversion and resulting loss in fertility or structure;
- Erosion of disturbed sandy soils and the fine powdery sub-soils, particularly by wind;
- Erosion of banks and channels of watercourses;
- Compaction of soils;
- Contamination of soils by oil or chemicals; and
- 'Tunnelling' of sub-surface water along pipeline trench.

The regions that are more susceptible to soil erosion are:

Region	Potential Impact
Naracoorte Coastal Plain	Sand dunes - prone to slight drift and erosion through water and wind processes
Mt Gambier Volcanic Region	Brown loam soils - subject to sheet erosion and major gully erosion during periods of intensive rainfall

4.3.2 Mitigation Measures

Measures that are adopted by EESA to reduce potential impacts to soil and terrain:

- Minimising the area cleared during excavations, in particular minimising the disturbance of erodible soils;
- Use of a 'Disturbance Checklist' (Appendix C) during to help ensure soil profiles
- Minimising the time period between clearing and restoration;
- Promoting rapid restoration by conserving and re-spreading topsoil;
- Reinstating surface contours and natural drainage patterns;
- Reinstating watercourse banks as soon as practicable and applying bank stabilisation techniques as necessary;
- Restricting the use of heavy machinery to the minimum necessary to complete the task; and
- Restricting vehicle use in wet or boggy conditions.

The potential for the movement of water (leading to tunnel erosion) along/within the pipeline trench has been considered, however due to the nature of the soils (primarily sands and loams) and the landforms through which the pipelines pass, and the installation of trench breakers during the construction of the pipelines, it is unlikely that sufficient water movement would occur along the trench to create these issues.

EESA have implemented various mitigation methods for preventing contamination to land resources including the following:

- Chemical and fuel storage facilities are bunded and in hardstand areas in accordance with applicable licence conditions and Australian Standards (e.g. AS1940: 2004 *The storage and handling of flammable and combustible liquids*).
- EESA has implemented a Hazardous Substances & Dangerous Goods Management Procedure to provide formal instruction on the protocols required for managing the storage and use of hazardous substances and dangerous goods in the workplace. The document provides a systematic method for identifying, assessing and controlling potential chemical and hydrocarbon related hazards in order to minimise the risk of adverse health and safety effects to persons, the environment or property.
- EESA has a Spill Prevention & Response Procedure that describes the process and considerations that apply to the appropriate environmental management of fuel, oils, chemicals, and other hazardous liquids (pollutants) and the response to spills on EESA's pipeline easements, access tracks and associated facilities. This procedure provides practical guidance to ensure that:
  - Pollutants are handled and stored in a manner that will reduce the likelihood of a spill occurring resulting in the escape of pollutants to the environment;
  - Epic Energy is prepared for a spill event and able to respond in a timely and appropriate manner; and
  - Epic Energy can minimise the potentially serious environmental impacts of a spill event.
- Ensuring all vehicles are well maintained and that all servicing occurs at designated facilities;
- EESA Waste Management Procedure describes appropriate waste disposal practices for all waste generated by EESA including solid and putrescible waste, waste water, electronic waste and hazardous waste; and
- Workers are required to complete a Job Hazard Analysis (JHA) prior to the commencement of any task that has the potential to cause a significant adverse environmental impact to help personnel identify, analyse and manage the hazards that exist in the work they undertake. For each potential hazard identified, a method is agreed to be followed to prevent the hazard causing an injury, loss, damage or environmental incident.

4.4 Pests and Diseases

4.4.1 Potential Impacts

A wide variety of weed species are present along the pipeline due to the extensive agricultural activities undertaken in the region.

While most weeds have become endemic and can be spread by stock, animals and agricultural vehicles there are a number of weeds which can be spread by pipeline operations.

The movement of maintenance vehicles and equipment along the easement has the potential to result in the spread of weed species through the transport of plant material on vehicles or soil.

4.4.2 Mitigation Measures

Measures that are adopted by EESA to reduce the risk of pest and/or disease spread include:

- Remaining on existing road and established access tracks;
- Preventing the transportation of soil along the easement;
- Ensuring vehicles are soil and weed free before entering the pipeline easement;
- Maintaining facilities to be weed free; and
- Implementation of targeted weed eradication programs for declared weeds if required (no declared weeds have been identified on the pipeline easement).

4.5 Water Resources

4.5.1 Potential Impacts

Pipeline operation may result in potential impacts to surface water including:

- Disturbance of surface water drainage patterns; and
- Reduced water quality associated with low level contamination.

It is considered that these impacts are minimal in terms of severity and duration, and can be appropriately managed through the implementation of the mitigation measures outlined below.

The potential for pipeline operations to impact on upon subsurface water (aquifers) has been considered, however it is considered that potential impacts to aquifers would be minimal due to nature of the natural gas transported.

There is currently no known subsurface or surface water contamination on the SEPS.

4.5.2 Mitigation Measures

Mitigation of impacts on surface water largely relates to the protection of drainage patterns and preventing contamination. Mitigation methods for protecting drainage patterns include:

- Ensuring excavation activities (including stockpiles) do not unduly impede surface water flows;
- Conducting maintenance activities across drainage lines when dry, where practicable;
- Utilising sediment control measures;
- Reinstating surface contours as part of the rehabilitation process; and
- Reducing the level of activity during wet weather.

EESA have implemented various mitigation methods for preventing contamination to water resources (also described in Section 4.3 Soil and Terrain). These include:

- Chemical and fuel storage facilities are bunded and in hardstand areas in accordance with applicable licence conditions and Australian Standards (e.g. AS1940: 2004 *The storage and handling of flammable and combustible liquids*).
- EESA has implemented a Hazardous Substances & Dangerous Goods Management Procedure to provide formal instruction on the protocols required for managing the storage and use of hazardous substances and dangerous goods in the workplace. The document provides a systematic method for identifying, assessing and controlling potential chemical and hydrocarbon related hazards in order to minimise the risk of adverse health and safety effects to persons, the environment or property.
- EESA has a Spill Prevention & Response Procedure that describes the process and considerations that apply to the appropriate environmental management of fuel, oils, chemicals, and other hazardous liquids (pollutants) and the response to spills on EESA's pipeline easements, access tracks and associated facilities. This procedure provides practical guidance to ensure that:
  - Pollutants are handled and stored in a manner that will reduce the likelihood of a spill occurring resulting in the escape of pollutants to the environment;
  - Epic Energy is prepared for a spill event and able to respond in a timely and appropriate manner; and
  - Epic Energy can minimise the potentially serious environmental impacts of a spill event.
- Ensuring all vehicles are well maintained and that all servicing occurs at designated facilities;

- EESA Waste Management Procedure describes appropriate waste disposal practices for all waste generated by EESA including solid and putrescible waste, waste water, electronic waste and hazardous waste; and
- Workers are required to complete a Job Hazard Analysis (JHA) prior to the commencement of any task that has the potential to cause a significant adverse environmental impact to help personnel identify, analyse and manage the hazards that exist in the work they undertake. For each potential hazard identified, a method is agreed to be followed to prevent the hazard causing an injury, loss, damage or environmental incident.

4.6 Land Use

4.6.1 Potential Impacts

The operation of the pipeline has only a minor localised impact on land use. Localised impacts can be summarised as follows:

- Restricting activities or infrastructure in the pipeline easement that have potential to interfere with the integrity or operation of the pipeline, such as pine plantations or permanent structures.
- Occasional short-term reduction in available pastoral grazing or cropping land during excavations.
- Occasional temporary cutting of fences to allow access during excavations.
- Use of access tracks on farm properties to access the easement.

Impacts to conservation values are associated with the potential disturbance to flora, fauna or items of cultural heritage. These issues are dealt with sections 4.1, 4.2 and 4.9, respectively. Impacts are contained to the existing, previously disturbed easement and as such, there is very minimal disturbance to existing land uses as a result of pipeline operations.

There are no known impacts to conservation areas or tourism.

4.6.2 Mitigation Measures

Measures implemented to mitigate impacts on land use include:

- Minimising the extent of disturbance to native vegetation/pastoral fodder/crops and restricting activities to the immediate easement as far as possible;
- Planning activities to minimise the time between clearing of ground cover and rehabilitation;
- Reinstating all fences cut during maintenance activities, following rehabilitation of the easement and ensuring temporary arrangements are determined in consultation with the relevant property manager. Any damage to farm property infrastructure is to be rectified;
- Ensuring property gates are left as found; and
- Annual communication with all landowners to ensure any potential impacts from pipeline operation and maintenance are appropriately managed.

4.7 Noise

4.7.1 Potential Impacts

Noise emissions associated with the operation of the pipeline include vehicle movement along the easement, the occasional operation of heavy equipment or machinery such as excavators, graders and bulldozers, and the operation of pressure relief valves.

Heavy vehicles and machinery typically have a noise level of 90-95 dB(A) at distances of 10 m from the source.

Minor noise emissions result from routine testing and inspection of pressure relief valves (6 monthly), but the duration is generally limited to less than 30 seconds. All are located within fenced facilities.

Noise associated with normal operation of mainline valves is generated during remote valve operation but these operations only occur on an occasional basis.

Noise may also be generated as a result of venting gas during emergency situations. Depending on the nature of the situation, noise emissions could be remain for few minutes up to 1 or 2 hours. Whilst there are no dwellings in close proximity to the mainline valves, there is some commercial and industrial activity. This type of emission would occur very rarely.

There are very few residential areas in the immediate vicinity of the pipeline. These residential areas are unlikely to be affected by noise associated with the operation of the pipeline.

There is no noise associated with normal operation of the gas pipeline.

4.7.2 Mitigation Measures

Equipment is maintained with standard noise suppression devices fitted. It is considered that specific noise mitigation measures are not required.

Emergency situations are minimised through pipeline protection and maintenance activities. Refer to 0 below.

4.8 Emissions

4.8.1 Potential Impacts

Dust is likely to pose the main threat to existing air quality, however the threat is localised, short term and restricted to vehicle movement on unsealed roads, occasional excavation, and road maintenance activities. Dry conditions are likely to increase dust generation.

No significant impacts are expected to occur to agricultural areas, pastoral areas, residences, native vegetation or water bodies.

Minor air emissions of nitrous oxides, sulphur oxides and carbon monoxide are associated with the exhausts of machinery and support vehicles. These are small and limited.

Minor gas emissions also occur from pressure relief valves and some minor emissions may occur from scraper stations during the loading and removal of ‘pigs’ and during routine inspection and testing of relief valves. Minor quantities of gas may also be discharged where it is necessary to remove sections of the pipeline or equipment for maintenance or repair. The pipeline has been designed to allow sections of the pipeline to be isolated to minimise the amount of gas discharged in these circumstances.

The air quality and Greenhouse gas impacts of these emissions will be insignificant.

Emissions may also be generated as a result of venting gas during emergency situations. Depending on the nature of the situation, gas could be emitted for few minutes up to 1 or 2 hours. This type of emission would occur very rarely.

4.8.2 Mitigation Measures

Dust emissions will be mitigated by minimising the period between clearing and restoration, and limiting vehicle speeds on access tracks and the easement.

Other air emissions will be mitigated by employing adequate pollution control measures on plant and equipment.

4.9 Cultural Heritage

4.9.1 Potential Impacts

Potential impacts to cultural sites are likely to be minimal as all operational activities are located within existing easements. However, potential impacts may occur as a result of excavation activities where they result in the accidental discovery of new materials.

The discovery of new sites or identification of cultural material is most likely to occur during excavation activities and may yield sub-surface remains, including human remains.

The region where accidental discovery of cultural heritage sites is more likely to occur is Naracoorte Coastal Plain where artefacts may be encountered on sand dunes or in close proximity to water sources or caves.

4.9.2 Mitigation Measures

The principal keys to effective management of cultural heritage issues lie in awareness of heritage as a valid management issue, commitment to protection of cultural heritage and the adoption of clear, systematic and consistent management procedures.

The Aboriginal Cultural Heritage Management Procedure has been adopted to reduce potential impacts to sites of cultural significance. These include:

- Completion of an archaeological survey to identify all significant areas prior to the commencement of excavation activities in previously undisturbed areas;
- Entry of all known sites into EESA's GIS system;
- Implementation of a comprehensive induction program to ensure that all personnel are aware of cultural heritage obligations;
- Where an archaeological survey has identified cultural heritage site/s, a qualified archaeologist and Aboriginal Monitors are employed during excavation activities to ensure the site/s are protected; and
- When required, development of further management measures are adopted in consultation with community representatives.

4.10 Social and Economic Factors

High pressure natural gas transmission pipelines have made a significant contribution to social and economic prosperity in Australia providing an extremely safe and reliable transportation service for customers in the electricity generation, gas distribution and industrial sectors.

Although pipelines are one of the safest forms of transporting fuel such as natural gas and liquid hydrocarbons, damage to a pipeline which causes the gas or liquid to escape can pose a public safety risk for those in close proximity to the pipeline.

Reliability of gas supply has become an expectation and Epic Energy is committed to ensuring all practical measures are taken to maintain the transmission pipelines. Any interruption to a transportation service has the potential to cause social and economic disruption to customers. Epic Energy invests heavily in pipeline integrity to prevent any interruptions to supply. Refer to Mitigation Measures below.

Currently, there are over 10,000km of high-pressure natural gas transmission pipelines operating in south-eastern Australia. Pipelines are recognised as a safe and efficient means of transporting natural gas. Epic Energy's SEPS infrastructure poses a very low level of risk to public safety.

4.10.1 Potential Impacts

The main public safety, social and economic threats resulting from the operation and maintenance of the pipeline are fire, explosion or radiation exposure as a result of pipeline rupture, with subsequent interruption to transportation services. The main causes of such ruptures are considered to be:

- Earthquake;
- External corrosion;
- Overpressure;
- Material defects;
- Design defects;
- Construction defects;
- Direct impact from a vehicle or heavy machinery;
- Installation of electricity poles or other services; and
- Maintenance of roads and drainage ditches.

Epic Energy has completed a Safety Management Study (SMS) of the SEPS in accordance with the requirements of AS2885. The SMS is reviewed on a 5 yearly basis or as required with changed land use. It is used to verify appropriate control measures are implemented to ensure that the risks associated with the operation of the pipeline were reduced to As Low As Reasonably Practical.

The SMS identified that the greatest threats to the integrity of the pipeline were associated with:

- Third Party or External Interference to the pipeline; and
- Pipeline Corrosion.

All other threats were identified as low or negligible.

4.10.2 Mitigation Measures

Pipeline Design

There are a number of features of the design and operation philosophy that mitigate the risk posed by the pipeline to people who may be living, working or travelling in the immediate area.

The SEPS is operated in accordance with the *Australian Standard 2885.3—2012, Pipelines—Gas and liquid petroleum, Operation and maintenance.* This Australian Standard describes the minimum standards for the operation and maintenance of pipelines, and requires Pipeline Licence holders to:

- Develop operating procedures based on the requirements of the standard;
- Ensure that operating personnel are suitably qualified, trained and experienced;

- Ensure that changes to the original design of the pipeline are fully assessed to ensure that the integrity of the pipeline is not impaired and that the safety of the public, operating personnel and/or protection of the environment is not diminished;
- Ensure the appropriate inspections, assessments and maintenance activities are completed; and
- Establish safe systems of work for pipeline repairs.

Pipeline Integrity Management

Epic has a Pipeline Integrity Management Plan to ensure continued pipeline integrity during the life of the pipeline. The plan describes the monitoring, inspection and mitigation of the identified integrity threats, and includes the following:

- Pipeline structural integrity, including the technical aspects of maintaining pipelines;
- Anomaly assessment and defect repair;
- External interference threats to the pipeline;
- Operating condition changes and remaining life review; and
- Stations operations and maintenance.

External Interference Management

With over 1,250 km of gas pipelines under operation across South Australia, Epic recognises the importance of ensuring people who live or work near the company's gas transmission pipelines are aware of those pipelines and their operation.

Epic aims to maintain a high level of public safety through Community Awareness Programmes specially developed to promote awareness of the company's assets and operational requirements.

In order to ensure that all risks associated with the operation of the pipeline is reduced to As Low as Reasonable Practicable, control measures implemented by Epic Energy include:

- Vehicle and helicopter pipeline patrols to identify any unauthorised activity near the pipeline which may cause a danger to the buried facilities or pose a threat to third parties and the public;
- Operation of a 'One Call - Dial Before You Dig' service to provide third parties that are intending to work near the pipeline the location of pipeline assets, prior to the work activity;
- Control and supervision of approved activities near the pipeline;
- Annual Landowner Contact Program with all land owners and occupiers, providing pipeline safety information and discussing changes to land use;
- Community Pipeline Awareness Program involving presentations to local contractors, emergency service providers and utilities in areas along the pipeline route to educate personnel on the nature of the pipeline, contents, correct work procedures for the easement and emergency procedures;
- Pipeline danger signs along the pipeline route;
- Buried tape markers above the pipeline in areas of increased risk from excavation e.g. road crossings; and
- Pipeline awareness advertising in industry publication.

Pipeline Monitoring

In addition, Epic Energy has in place a range of advanced monitoring and control techniques to ensure the safety and security of the pipeline and facilities. These measures include:

- A 24 hour pipeline control centre incorporating state-of-the art monitoring and control systems that continuously receive and analyse pipeline operating reports;
- Fire and gas leak detectors; and
- 'Intelligent pigging' operations, in which detection equipment travels inside the pipeline checking for abnormalities and corrosion.

A corrective action program is developed and implemented for identified risks that are not considered to be ALARP. Implementation of such programs is monitored by the Department of State Development.

Emergency Response

It is a key objective of Epic to maintain, review and enhance crisis and emergency management procedures to ensure the company can implement those procedures efficiently and effectively whilst minimising impacts on the environment.

Epic is committed to ensuring open and pro-active communication on pipeline safety issues with local communities in which Epic operates. Regular briefings are held with emergency services personnel and testing of crisis and emergency procedures up to four times per year.

The Epic Energy Incident Management Process is made up of the following parts that are enacted in an emergency situation:

- Incident Management Plan (E-00-000-CMP-G-001) to provide guidelines to manage a crisis and determine the objectives for recovery from a crisis situation;
- Emergency Response Manual Part 1, Pipeline Control Procedures for Immediate Response and Support (E-00-000-ERM-G-001); and
- Emergency Response Manual Part 2, In the Field Procedures for Immediate Response and Support (E-00-000-ERM-G-002).

Measurement and Evaluation of Mitigation Measures

The implementation and effectiveness of the mitigation measures listed above including the Pipeline Integrity Management Plan, External Interference Management, and Emergency Response is assessed through the measurement of Key Performance Indicators including the following:

- Percentage completion of Preventative Maintenance Work Orders;
- Percentage compliance of Cathodic Protection Performance;
- Periodic intelligent inspection of pipelines using inline tools;
- Annual review workshops of compliance with Integrity Management Plans;
- Number of Emergency Response Drill completed per year;
- Number of operational incidents or faults;
- Completion of engineering and integrity improvement projects;
- Dial Before You Dig enquiries responded to;
- Percentage completion of annual Landowner Contact Program; and
- Instances of unauthorised activity on a pipeline easement.

5 Consultation

5.1 Consultation Specific to the EIR & SEO

During the initial preparation of this EIR and associated SEO in 2002 and 2003, Epic Energy undertook extensive consultation with various stakeholders and interested groups that may have had an interest in the operation of the pipeline. The following section summarises the consultation undertaken with State and Local Government, landholders and/or occupiers and Aboriginal Organisations.

5.1.1 Stakeholder Mailout

Key stakeholders associated with the operation of the SEPS were contacted by EESA. They were informed that EESA was in the process of developing the EIR and SEO and invited to identify any issues that they may have in relation to the operation of the pipeline. A summary of the stakeholders contacted is provided in Appendix E 'Stakeholder Response 2002'.

Table 5: Stakeholders Contacted

Group	Stakeholder
Landholders / Occupiers	As listed in Epic Energy's Landholder Management Database
Local Councils	City Council of Mount Gambier, District Council of Grant, Wattle Range Council.
Government Agencies	Australian Rail Track Corporation Ltd, Dept. of Environment & Heritage (DEH), Dept. of Water, Land & Biodiversity Conservation, Environment Protection Authority, Forestry SA, Primary Industry and Resources SA (PIRSA), Planning SA, Transport SA.
Aboriginal Groups	South East Nungas Community Organisation, Kungari Heritage Association Inc.
Control Boards	SE Water Conservation & Drainage Board, Grant Animal and Plant Control Board, Lower South East Soil Conservation Board, Wattle Range Animal and Plant Control Board.

A summary of the feedback received is provided in Appendix D – Stakeholder Response.

5.1.2 Government Workshop

On 21st November 2003, EESA held a workshop that was attended by representatives from:

- Primary Industry and Resources SA (PIRSA);
- Department of Water Land and Biodiversity Conservation (DWLBC);
- Forestry SA; and
- Animal and Plant Control Boards and Soil Conservation Boards; and

- Local Government representatives.

The purpose of the workshop was to provide the government representatives and stakeholders with information regarding:

- The operation of the pipeline;
- The key areas that EESA had identified where there may be an environmental impact;
- EESA's Environmental Management System; and
- EESA's proposed environmental objectives for the operation of the pipelines.

The workshop also allowed representatives to identify any additional issues that they considered should be addressed in the preparation of the EIR and SEO.

A summary of the outcome of the workshop is provided in Appendix D.

5.2 Existing Consultation Program

5.2.1 Landholder Contact

EESA maintains a Landowner Contact Program for the SEPS, visiting each owner or occupier along the pipeline system annually. Other contacts made by Field Maintenance Officers and Superintendents during the course of daily business, or other land related issues that arise occasionally are recorded in the Land Management System (LMS).

Landholder contact and management is supported by dedicated LMS software (X-Info Connect) that provides a powerful data base of EESA facilities and landowner and property details. All property details and notes relating to discussions or issues with property owners are recorded in the LMS. Through the LMS's mapping facility, aerial imagery and cadastral boundaries of each property relative to the pipeline route can be displayed.

If personal contact cannot be made during a visit (e.g. unattended premises), the occupier or owner is telephoned or mailed a letter explaining the reason for the visit, the contact officer's business card, an information brochure on pipeline safety and the 'Dial Before You Dig' contact phone number. Each year property owners receive the EESA's pipeline safety brochure and other pipeline awareness material, such as a note pad, pen and a calendar, all of which strongly reinforce safe working practices near high-pressure gas lines.

A hard file is maintained for each of the 1500 land parcels crossed by pipelines. Each property is flagged with the Land Titles Office who informs EESA of any changes in ownership or land tenure details, ensuring that EESA's records are always up to date for pipeline awareness mail outs and personal visits.

5.3 Pipeline Location Service

EESA provides a free service to locate pipelines for which they are responsible. This service is primarily used by other companies carrying out civil works in the vicinity of pipelines administered by EESA.

The majority of the pipeline locations requested were as a result of the ' Dial Before You Dig' system, and required EESA supervision for third party activity within the pipeline easement, mainly for the replacement or installation of new fences and vehicles working within the easement boundaries.

All authorised activities within the pipeline easement are supervised by EESA field officers to ensure the safety and integrity of the pipeline.

5.4 Community Awareness

EESA implements a Community Awareness Program, which entails holding awareness meetings with communities along the pipeline route.

Meetings are held regularly with key stakeholders such as the CFS, MFS, Police, Ambulance, SES, Local Councils, earth moving contractors, irrigation installation contractors, fencing contractors and various community members invited to attend.

The focus of awareness presentation are on the specific nature and characteristics of the natural gas carried by the SEPS, the route of the pipeline system, basic information about the pipeline and its monitoring, control, restrictions for working near a pipeline and emergency procedures..

6 Conclusion

High pressure gas pipelines are a vital component in the gas supply chain, transporting natural gas from the producing regions to the demand centres of cities and industry, thus helping to deliver social and economic prosperity in a very safe, reliable and efficient manner. There are currently over 25,000 km of gas transmission pipelines performing this task in Australia.

The SEPS has been in operation since 1991, without any significant injury or damage to property. The impacts from operations to landholders, the environment and stakeholders are short-term and minor in extent. No significant long term adverse impacts are expected. Nevertheless, the following key issues requiring attention during the operation of the pipeline have been identified:

- Avoiding disturbance to 3rd party infrastructure, landholders or landuse;
- Prevention of soil erosion and inversion;
- Maintenance of vegetation cover;
- Prevention of weed and disease introduction and spread;
- Prevention of water and land contamination;
- Safeguarding public safety;
- Minimisation of noise due to operations;
- To minimise atmospheric emissions; and
- Protection of cultural heritage sites and values.

The Australian high pressure gas pipeline industry has an excellent record in safety and environmental performance and has worked with government to develop industry standards that lead the world. EESA is committed to working closely with all relevant authorities and landholders and monitoring our activities to ensure that all potential impacts are minimised.

7 References

Croft T, Carruthers S, Possingham H & Inns (1999) *Biodiversity Plan for the South East of South Australia*. Department for Environment, Heritage and Aboriginal Affairs.

Epic Energy (2000) *Kalangadoo – Nangwarry Pipeline Declaration of Environmental Factors / Environmental Impact Report*. Prepared by Epic Energy July 2000.

Laut P, Keig G, Lazarides M, Loffler E, Margules C, Scott RM & Sullivan ME (1977) *Environments of South Australia. Province 1 South East* Division of Land Use Research, Commonwealth Scientific and Industrial Research Organisation.

Origin Energy (2002) *Activity Notification for the Construction and Operation of a compressor Station at the Katnook and Ladbroke Grove Gas Plants. Otway Basin – South Australia*. Prepared by Ecos Consulting (Aust), November 2002.

Pipelines Authority of South Australia (1990a) *Katnook to SAFries Pipelines Declaration of Environmental Factors*. Prepared by PASA and Kinhill, February 1990.

Pipelines Authority of South Australia (1990b) *South East Pipeline Project Declaration of Environmental Factors*. Prepared by PASA and Kinhill, April 1990.

Appendix A

Epic Energy Environmental & Land Access Policy

Commitment:

Epic Energy South Australia Pty Ltd shall act responsibly and proactively to identify and manage our environmental and social impacts. In keeping with 'OUR EPIC' values, Epic Energy has established and implemented effective management processes that shall be regularly evaluated and continually improved, in the ongoing pursuit of reliability and excellence.

Policy:

To achieve our commitment, we will:

- Act in accordance with 'OUR EPIC' values and take responsibility for managing environmental and social impacts by complying with our established Environmental Management System;
- Identify and manage environmental and social aspects and impacts utilising our enterprise wide risk management systems;
- Comply with, as a minimum all relevant legislation and industry standards;
- Maintain a program for setting and reviewing measurable environmental and land access objectives;
- Ensure that we have the appropriate resources, skills and training with roles and responsibilities defined and understood;
- Communicate issues and promote worker involvement and consultation in developing and maintaining environmental management and land access systems;
- Integrate environmental management and respect for landholders into the training and responsibilities of all workers;
- Where practicable, apply sustainable solutions to manage the impact of our activities on the environment, landholders and the community;
- Endeavour to prevent pollution and develop opportunities for recycling and more efficient use of energy, water and other resources;
- Openly and transparently communicate and report on environmental, social and land access issues and performance to interested parties;
- Monitor and continually improve our environmental and land access performance through regular process review and adjusting our practices as required.

Approved by	Position	Signed	Date
Clive D'Cruz	Chief Executive Officer		17.5.2017
Jarrod Gilby	HSEC Chair		15.5.2017

PRINTED DOCUMENTS ARE UNCONTROLLED AND MAY NOT BE THE MOST UP TO DATE VERSION

Appendix B

Potential Environmental Impact from Operational Activities

POTENTIAL IMPACTS FROM OPERATION OF PL3&4 – EASEMENT MAINTENANCE

ACTIVITY DESCRIPTION				PRIMARY IMPACTS & EIR REFERENCE *							
ACTIVITY	**WHAT IS DONE**	**SIZE**	**FREQUENCY / DURATION**	**VEGETATION & FAUNA (Section 4.1, 4.2 & 4.4)**	**SOIL (Section 4.3 & 4.11)**	**WATER (Section 4.5& 4.6)**	**DRAINAGE (Section 4.5)**	**LANDHOLDERS / LANDUSE (Section 4.7)**	**EMISSIONS (Air & Noise) (Section 4.8 & 4.9)**	**CULTURAL HERITAGE (Section 4.10)**	**SOCIAL & ECONOMIC FACTORS (Section 4.11)**
1. Line-of-Sight.	Removal of trees greater than 1m tall and within 2m of the centreline of the pipeline is carried out to ensure line-of-sight is maintained. Trees usually cut at ground level and roots left in place. In some cases, trimming of branches is sufficient. This is necessary to enable pipeline marker signs to be clearly identified along the easement.	Line of site control occurs over the entire length of easement, 2m either side of centreline.	Experience shows line-of-sight operations are required every 5+ years, depending upon rainfall events.	Permanent removal of trees greater than 2m tall and within 2m of the pipeline centreline. Where possible, trees are trimmed rather than removed. Undergrowth is allowed to revegetate across the easement. As the majority of the easement has been cleared for agricultural practices only a small proportion of the easement in areas adjacent to forest reserves is likely to require some vegetation removal. Vegetation removed is abundant in the areas adjacent the easement and therefore fauna habitat loss is minor. Fauna will only be temporarily disturbed while the activity is occurring.	None	None	None	Short term access to land required which may cause minor temporary impact to landholders and land use within the immediate area of the activity.	Minor air and noise emissions from vehicles. Noise also associated with machinery used to clear vegetation (dozer, saws). Impacts are minor and temporary and occur for the duration of the activity only.	None	Only an issue if carried out where there is a public access or near public places.
2. Patrolling / inspections - easement access.	Traveling along pipeline, on formed tracks (either purpose built for pipeline or private/public roads) or over cleared paddocks. Involves access to private property and use of private tracks.	Entire length of easement.	Generally, properties are not traversed on the easement as existing access tracks are used where possible. Easement inspections can be carried out on a daily to monthly basis. This frequency is increased where a particular issue exists on a property that may require maintenance or monitoring	Patrolling has the potential to spread of weeds/diseases. Epic has implemented a range of control measures to ensure that this risk is minimised (refer Section 4.4) Patrolling has the potential for occasional road kill (stock or native animals), although this rarely occurs.	Soil compaction is not considered an issue as formed tracks are generally used. Access to pipeline only occurs over cleared paddocks when access to a particular pipeline section is required (e.g. for maintenance) and not on a continuous basis.	None	None	Temporary disturbance while Epic personnel traverse properties.	Temporary minor impacts from dust generation, vehicle emissions and noise. These are limited to the immediate are of the activity.	None	Access and patrolling the easement does not impact on public safety. Epic uses public roads but these vehicles create no greater risk than other vehicles on the roads.
3. Easement Maintenance.	Facility and easement access tracks require maintenance, i.e. Grading, re-sheeting, to allow on-going use by vehicles and to prevent major damage to road infrastructure.	Applies to access tracks to facilities. Public roads are used to access the majority of the easement.	Maintenance occurs on an ongoing basis, depending on track condition, weather condition and track use.	None	Impact from excavation of borrow pits. Refer to Activity # 8 Excavations.	None	Access tracks have been in place for over 10 years. Construction of the access tracks may have caused minor disturbance to surface drainage. All easement maintenance work is conducted to ensure that the new drainage patterns are maintained (i.e. no further impact to drainage occurs).	Temporary disturbance while maintenance work is completed. As tracks tend to be located away from residences etc., this is considered minor.	Temporary minor impacts from dust generation, vehicle emissions and noise. These are limited to the immediate are of the activity.	Potential for impact on unknown cultural heritage sites from excavation for pipeline maintenance. Refer to Section 4.9.	Refer to Activity # 2 Patrolling.

* Refer to relevant section of the EIR for control measures applied by Epic Energy to minimise the risk of adverse impacts.

POTENTIAL IMPACTS FROM OPERATION OF PL3&4 – PIPELINE OPERATIONS

ACTIVITY DESCRIPTION				PRIMARY IMPACTS & EIR REFERENCE *							
ACTIVITY	**WHAT IS DONE**	**SIZE**	**FREQUENCY / DURATION**	**VEGETATION & FAUNA (Section 4.1, 4.2 & 4.4)**	**SOIL (Section 4.3 & 4.11)**	**WATER (Section 4.5& 4.6)**	**DRAINAGE (Section 4.5)**	**LANDHOLDERS / LANDUSE (Section 4.7)**	**EMISSIONS (Air & Noise) (Section 4.8 & 4.9)**	**CULTURAL HERITAGE (Section 4.10)**	**SOCIAL & ECONOMIC FACTORS (Section 4.11)**
4. Cathodic Protection Surveys.	Traveling on easement, stopping to inspect CP points (above-ground post) on foot. May involve repairs - see activity # 8 Excavations.	Cathodic Protection inspection posts are located approximately every 1.5km along the entire length of easement, usually on fence lines to reduce impact to land use.	Conducted every 6 months, over a 2 day period.	As per Activity # 2 Patrolling.	As per Activity # 2 Patrolling.	None	None	As per Activity # 2 Patrolling.	As per Activity # 2 Patrolling.	None	As per Activity # 2 Patrolling.
5. Testing and Inspection of Relief Valves.	Involves the controlled venting of minimal quantities of gas to atmosphere.	Relief valves are located at each Meter Station.	Relief valves are tested on a 6 monthly basis. Air and noise emissions are limited to the duration of the test, which is generally limited to 30 seconds.	None	None	None	None	None	Minor volume of methane gas emitted when each valve is tested. Discharge of gas also results in noise generation, although the duration is generally limited to less than 30 seconds. All impacts are considered to be minor and temporary. Refer also to Activity # 6 Emissions.	None	None
6. Emissions.	Methane gas is released to atmosphere as a result of pipeline and facility maintenance operations (i.e. Unit blow downs / venting, valve opening / testing).	500m^3 of gas released per year during unit blow downs.	Occurs for the duration of operational life during filter and separator changes, pigging operations and relief valve maintenance. 15-20 controlled blow downs per year.	None	None	None	None	None	Minor volume of methane gas emitted when each valve is tested. Discharge of gas also results in noise generation, although the duration is generally limited to less than 30 seconds. All impacts are considered to be minor and temporary. Refer also to Activity # 6 Emissions.	None	None
7. Pipeline Incident.	The main threats to public safety from the operation and maintenance are fire, explosion or radiation exposure as a result of pipeline rupture. Epic has completed a Safety Management Study (SMS) of the SEPS and determined that the greatest threats are associated with third party or external interference to the pipeline and pipeline corrosion. The SMS is to also ensure that the risk associated with the operation of the pipeline (e.g. risk of a pipeline incident occurring) are reduced to As Low As Reasonably Practical (ALARP). Refer to 4.10.	A pipeline rupture could affect an area up to the size of the pipeline measurement length from the point of rupture. This varies depending on the pipeline size and pressure. The measurement length on the SEPS is up to 86m.	None	The actual impact of a potential pipeline incident would be dependent on the nature and scale of the incident. In addition to the potential to create a public safety risk, incidents have the potential to disturb and destroy vegetation, disturb wildlife, cause soil disturbance and erosion and result in significant air and noise emissions. Epic Energy has procedures in place to ensure that once the emergency situation has ceased and access to the area is available, remediation measures would be put in place to restore the area.					Noise may also be generated as a result of venting gas at mainline valves during emergency situations. Depending on the nature of the pipeline fault, noise emissions could be remain for few minutes up to 1 or 2 hours. Whilst there are no dwellings in close proximity to the mainline valves, there is some commercial and industrial activity. This type of emission would occur very rarely. Air emissions may also be generated as a result of venting or uncontrolled gas release. Main line valves limit the volume of gas released.	Dependent on location of incident. Cultural heritage could be impacted during emergency response.	Dependent on location. Potential to create public safety risk. An incident on a lateral pipeline could cause interruption to supply for one week.

* Refer to relevant section of the EIR for control measures applied by Epic Energy to minimise the risk of adverse impacts.

POTENTIAL IMPACTS FROM OPERATION OF PL3&4 – PIPELINE MAINTENANCE

ACTIVITY DESCRIPTION				PRIMARY IMPACTS & EIR REFERENCE *							
ACTIVITY	**WHAT IS DONE**	**SIZE**	**FREQUENCY / DURATION**	**VEGETATION & FAUNA (Section 4.1, 4.2 & 4.4)**	**SOIL (Section 4.3 & 4.11)**	**WATER (Section 4.5& 4.6)**	**DRAINAGE (Section 4.5)**	**LANDHOLDERS / LANDUSE (Section 4.7)**	**EMISSIONS (Air & Noise) (Section 4.8 & 4.9)**	**CULTURAL HERITAGE (Section 4.10)**	**SOCIAL & ECONOMIC FACTORS (Section 4.11)**
8. Excavations-coating refurbishment - installation of anode beds – emergency response exercises - new tie-ins.	Vegetation is cleared. Topsoil is stockpiled. Excavation performed and spoil stockpiled. Pipeline maintenance performed (may include welding, painting, and blasting). Backfill of trench spoil. Topsoil replaced. Surface re-contoured. Rip compacted areas. Respread of vegetation. Seeding / planting if necessary.	Pipeline excavations typically 4 metres wide by 5 metres long and 2 metres deep, located entirely on the easement. In extreme cases, excavations can be 50m metres long.	Excavations typically up to 3 times per year at various locations (operations dependent). Typically maximum of 1 week. Vegetation rehabilitation is dependent on seasonal conditions.	Excavations generally occur within the easement and therefore areas that have been previously disturbed. Vegetation clearance is limited to the area of excavation and 5-10m beyond for storage and stockpile areas. Cleared vegetation is respread as part of restoration. Area of disturbance is limited to that required for the safe conduct of the activity. Regrowth is dependent on seasonal conditions. In some cases, seed and fertiliser may be spread to assist. Fauna impacts are primarily associated with vegetation clearance and subsequent regrowth on the disturbed area. Potential for fauna entrapment but this is rare, as fences are installed to prevent stock entrapment and ramps are placed in the pit to assist reptile/mammal escape. Refer to Section 4.1 & 4.2 for additional mitigation measures.	Topsoil and subsoil are disturbed by excavation. There is the potential for loss of topsoil and soil inversion. Impacts to soil are minimised through the implementation of management measures. Mitigation measures include separating topsoil and subsoil upon excavation and backfilling soil in the correct horizons.	No impacts for aquifers greater than 2 metres deep occur. For very near surface groundwater, an area of 4 by 5 by 2m is disturbed (i.e. volume less than 40 m3). Where required, surface water (creeks and watercourses) may be temporarily dammed and diverted for excavations. No permanently flowing creeks are encountered on the easement. Primary mitigation is avoiding such areas when wet. Some silt may be generated during temporary diversions however sediment traps are usually installed as part of standard management measures.	Surface drainage patterns over the area of the excavation may be disturbed for the duration of excavation. These are restored as part of the restoration process.	Impacts to landuse are limited to the area of disturbance. In some instances fences are cut to allow temporary access. Any impacts to landholders and land use are generally restricted to the duration of the activity.	Minor air and noise emissions from vehicles. Noise also associated with machinery used for clearing and excavation. Impacts are minor and temporary and occur for the duration of the activity only.	No impact to known sites due to the implementation of effective management measures. There is potential for accidental discovery of previously unknown site (potential is higher in some zones). Epic has implemented detailed management measures to address accidental exposure/discovery. Refer to Section 4.10 for additional information.	Only an issue if carried out where there is public access or near public places. Majority of work is undertaken in relatively remote areas.
9. Hydrotest.	Hydrotesting involves filling a section of pipe with water under pressure to test the integrity of the pipe. Sometimes an inhibitor is added to the water to prevent organisms colonising the pipe but this usually only happens on very long sections of pipe (e.g. new pipelines). Depending upon the location of the testing water is usually sourced locally from mains, dams, bores or trucked in. Water is usually discharged from the pipe onto a suitable area of ground away from water bodies. Erosion and sedimentation controls are used where required.	Hydrotesting is usually only occurs on new or repaired sections of pipe which can vary in length from 10m up to 10km.	Testing is carried out rarely on an as – required basis. Tests normally take between 4 and 24 hours to complete.	Nil or minimal – Ref Sect. 4.5.2.	Impacts to soil are minimal as water is discharged onto a suitable area of ground (stable or stabilised before discharge) and erosion and sediment controls are used where there is the potential or sedimentation to occur. Refer section 4.3.	None – water is discharged onto solid ground away from waterways.	None	None	None	None	None
10. Pigging.	Pipeline Inspection Gauge (PIG) placed in the pipe via a launch bay. Pig travels along inside pipe before being removed at a pig exit site. Removal of pig from pipeline results in minor venting of gas to atmosphere and collection of some oil sludge and debris.	Confined to existing facilities. 50km sections usually completed at a time.	Cleaning pigging undertaken annually or as required. Major intelligent pigging programs (to monitor pipeline integrity) conducted every 5-7years. Program takes 1 week per 50km section/run.	None	Pigs are removed within a contained area, therefore contamination from debris and oily sludge is unlikely. Licensed contractors used for hazardous waste disposal.	Where required, surface water (creeks and watercourses) may be temporarily dammed and diverted for excavations. Licensed contractors used for hazardous waste disposal.	None	None	Minor controlled release of methane upon removal of the pig. Refer also to Activity # 6 Emissions.	None	None
11. Welding.	Welding usually required when undertaking repairs of pipeline or making modifications to existing infrastructure. Pipeline welding usually occurs following the excavation of the pipeline (ref Activity # 8 Excavations).	Dependent upon length of pipeline under repair.	Ongoing as required.	The risk of bushfire as a result of welding is minimised through the implementation of strict management measures refer Section 4.10.2.	None	None	None	None	None	None	None
12. Painting.	Epoxy painting (spray) of welds or repair areas of pipeline or above ground pipeline.	Dependent upon length of pipeline under repair.	Painting completed as required, activity duration is less than 2 hours.	None	Potential for minor contamination from overspray and cleaning agents.	Potential for minor contamination from overspray and cleaning agents.	None	None	Minor noise emissions associated with operating compressor.	None	None
13. Blasting.	High-pressure abrasive surface blasting of pipe work prior to painting. Undertaken for pipeline inspection or for pipeline coating systems.	Area of exposed pipe.	Completed as required, activity duration is less than 2 hours.	None	Minor contamination from excess medium, the majority of which is usually captured within the trench.	Minor contamination from excess medium, the majority of which is usually captured within the trench.	None	None	Dust generation from blasting activity. Minor noise emissions associated with blasting. Restricted to duration of the activity.	None	None
14. Replacement of pipeline section.	Section of pipeline is isolated and controlled release of gas undertaken from affected section. Affected area then excavated, old pipeline removed and replaced (includes welding, blasting, coating). Excavation then reinstated.	Generally less than 100m section of pipe excavated.	Historically occurs once every 20+ years. Activity usually lasts for approximately 2 weeks.	Refer to Activity # 8 Excavations.	Refer to Activity # 8 Excavations.	Refer to Activity # 8 Excavations.	Refer to Activity # 8 Excavations.	Refer to Activity # 8 Excavations.	Controlled release of methane to atmosphere occurs upon isolation of the pipeline section. Minor noise associated with venting/release of gas. Impact temporary.	Refer to Activity # 8 Excavations.	Refer to Activity # 8 Excavations.

* Refer to relevant section of the EIR for control measures applied by Epic Energy to minimise the risk of adverse impacts.

POTENTIAL IMPACTS FROM OPERATION OF PL3&4 – FACILITY OPERATION AND MAINTENANCE

ACTIVITY DESCRIPTION				PRIMARY IMPACTS & EIR REFERENCE *							
ACTIVITY	**WHAT IS DONE**	**SIZE**	**FREQUENCY / DURATION**	**VEGETATION & FAUNA (Section 4.1, 4.2 & 4.4)**	**SOIL (Section 4.3 & 4.11)**	**WATER (Section 4.5& 4.6)**	**DRAINAGE (Section 4.5)**	**LANDHOLDERS / LANDUSE (Section 4.7)**	**EMISSIONS (Air & Noise) (Section 4.8 & 4.9)**	**CULTURAL HERITAGE (Section 4.10)**	**SOCIAL & ECONOMIC FACTORS (Section 4.11)**
15. Main Line Valves.	Main Line valves are used to isolate sections of pipeline. They are used for controlled pipeline activities & in the event of an emergency.	Located either within a Meter Station compound or within a compound 4m by 4m. The valve is located within the pipe.	5 MLVs are open continually except if isolations are required or in the event of an emergency. Operated every 6 months for testing or in emergency.	None	None	None	None	None	None	None	None
16. Meter Stations.	Meter Stations measure gas flow and regulate and filter gas.	Located in a compound with a control building, batteries, and oil collection facilities. Compound size ranges from 10m x 10m to 20m x 30m square.	Operated 24 hours a day 365 days a year.	None	Potential for contamination associated with failure of overhead oil collection tanks for debris removed from product in pipe (dropout). Risk is minimised through regular monitoring and implementation of control measures (refer Section 4.3 and 4.10)	Potential for contamination associated with failure of overhead oil collection tanks for debris removed from product in pipe (dropout). Risk is minimised through regular monitoring and implementation of control measures (refer Section 4.3 and 4.10).	None	None	Minor controlled release of methane for maintenance activities. Refer also Activity # 6 Emissions.	None	None
17. Weed Control.	Spray pack used to spray weeds in and around compounds.	Conducted within compounds at MS and MLV sites.	Weed control typically occurs twice per year for 1 week duration (additional control as required).	Death of target weed species. Weed species of concern is targeted. Minor temporary impact to non-target species may occur within the immediate vicinity.	None	None	None	None	Minor air and noise emissions from vehicles, limited to the immediate vicinity of the activity.	None	None
18. Production of Hazardous Waste.	Meter Stations (MS) separators remove debris from line - includes hydrocarbon. Some waste hydrocarbons generated from pigging operations (e.g. pipeline / product). Mercury and other heavy metals extracted from product and trapped in filters. Contaminated filters from maintenance change-overs Contaminated waste and oils removed from site for disposal by a licensed contractor.	Approximately 500 litres of waste oil removed from collection tanks each year.	Materials continually produced, stored and disposed during the operation of the pipeline.	None	Potential for contamination associated with failure of condensate collection/storage tanks. Risk is minimised through the implementation of control measures (refer Section 4.3 and 4.10).	Potential for contamination associated with failure of condensate collection/storage tanks. Risk is minimised through the implementation of control measures (refer Section 4.3 and 4.10).	None	None	None	None	None
19. Station blow downs.	Uncontrolled venting as a result of equipment failure e.g. regulator failure at MS.	Refer to Activity # 6 Emissions	Dependent upon type and duration of failure.	None	None	None	None	None	Release of gas to atmosphere. Noise associated with release of gas.	None	Risk to public safety is considered As Low as Reasonable Practicable (ALARP). Refer to Section 4.10.

* Refer to relevant section of the EIR for control measures applied by Epic Energy to minimise the risk of adverse impacts

Appendix C

Disturbance Checklist

Disturbance Checklist

DESCRIPTION OF ACTIVITY		
Description:		
Pipeline:	**KP:**	**Other Ref:**
Project Manager/Supervisor:		
Crew/Contractor undertaking work:		
Commencement Date:	**Completion Date:**	

PLANNING		
Checklist	**Y/N**	**Comment/Details**
Landowner / affected parties contacted and informed of works? Name/s and date/s contact made (or attach list): _____ _____		Attached record of any agreement or file reference.
Are there any chemical restrictions on the property (i.e. Organic farming)?		
Has the GIS been consulted to determine if there are any known heritage sites or environmentally sensitive areas in the area of impact?		List any known sites / areas:
Will the site require examination for cultural heritage material prior to the commencement of work (for work involving significant off ROW disturbance)?		If yes, include date completed and reference to any reports:
Will the site require an ecological assessment (for work involving significant off ROW disturbance)?		If yes, include date completed and reference to any reports:
Name of person completing planning checklist:		
Position Title:		**Date:**

Note: Photo Monitoring

Environmental Photo Points should provide a comparison with adjacent land and a record of the following impacts:

- Pre-disturbance condition of area;
- Activities undertaken;
- Area of clearing (has it been minimised); and
- Post disturbance condition (erosion, contamination, litter, soil inversion, contours, 3rd party infrastructure).

Continue over page…

UNDERTAKING ACTIVITY			
Environmental Photo Point (pre disturbance)			
Location of photo point(s):	Photo Record No(s).		Date Taken:
Checklist	**Y/N**	**Comment**	
Did work involve opening a trench or significant excavation?		Date Trench Opened:	
		Date Trench Closed:	
Vegetation above 300 mm removed and stockpiled separately?			
Topsoil (including low level vegetation) removed and stockpiled separately?			
Overburden removed and stockpiled separately?			
Stockpiles been placed outside drainage lines?			
Is the open trench being monitored for fauna?		Raise incident report (or keep a record) for any trapped fauna. Report number:	
Is Hydro testing required? Consider any possible chemical restrictions on the property.		Record if chemicals added, relevant approvals sought, disposal location and method.	
Name of person completing checklist:			
Position Title:			**Date:**

SITE REMEDIATION			
Checklist	**Y/N**	**Comment/Details**	
Overburden and topsoil has been replaced in the correct profile?			
Site lightly ripped and contours have been returned to original / stable condition?			
Any cleared vegetation has been respread over site?			
Environmental Photo Point (post remediation)			
Location of photo point(s): *As above*	**Photo Record No(s).**		**Date Taken:**
Name of person completing checklist:			
Position/Title:			**Date:**

Appendix D

Stakeholder Feedback Form 2002

YOUR CONTACT DETAILS (OPTIONAL)				
Name:			**Contact Address:**	
Phone:				
Fax:			**Organisation & Position:** *(where relevant)*	
Email:				
Stakeholder Category:	Landholder/Occupier			Aboriginal Group	
	Government			Other	

KEY ENVIRONMENTAL ISSUES IDENTIFIED (Please add any additional issues/comments that you may have)	
Disturbance/Disruption to Landuse - Disruption to landuse over the pipeline - Disturbance to infrastructure (fences, gates etc) - Access to the pipeline - Use of private roads / tracks - Changes to landuse over the pipeline - Excavations	*Your Issues / Comments*
Flora and Fauna - Protection of sensitive vegetation and habitats - Maintenance of regrowth - Introduction and spread of pest species	*Your Issues / Comments*
Erosion / Runoff - Protection of drainage channels and watercourses - Erosion and sediment runoff - Maintenance of soil stability - Protection of topsoil	*Your Issues / Comments*
Emissions - Noise - Odour - Uncontrolled / unplanned gas emissions - Dust	*Your Issues / Comments*

Cultural Heritage - Protection of known heritage sites - Accidental discovery of previously unknown heritage sites - Protection of areas of cultural significance	*Your Issues / Comments*
Public Safety - Identification of the pipeline - Signage - Controlling external activities on the easement - Risk from third party activities - Protection of the public during normal operations and maintenance - Protection of the public during uncontrolled events	*Your Issues / Comments*
Other Issues *Please include any other issues that you would like to see addressed during the preparation of the Environmental Impact Report and Statement of Environmental Objectives for the Moomba to Adelaide Pipeline.*	

Once completed, please return in the reply paid envelope, or fax to 08 8357 0411.

Appendix E

Stakeholder Response 2002

Organisation	Position	Stakeholder Category	Key Environmental Issues						
			Disturbance to Land	Flora & Fauna	Erosion/ Runoff	Emissions	Cultural Heritage	Public Safety	Other Issues
NP	NP	L/O	NC	NC	NC	NC	NC	NC	NC
NP	NP	L	Note that gates on property are padlocked to protect stock. Epic should contact Landholder regarding access to property with exception of house yard.	NC	NC	NC	NC	NC	Other issues do not affect landholder
Grant Animal & Plant Control Board	Authorised Officer	G	NC	Plant hygine appears adequate	NC	NC	NC	NC	NC
South East Nungas Community Organisation	Heritage Officer		Concern regarding potentialf for disturbance of heritage items during excavation activities	NC	NC	NC	Concern regarding potentialf for disturbance of heritage items during excavation activities	NC	NC
NP	NP	L/O	No issues	No issues	No issues	No issues	No issues	No issues	No issues
NP		L	NC	NC	NC	NC	NC	NC	NC
Forestry SA	Operations Manager	G	Pipeline depth should be 150cm in forest areas to enable commercial logging. Outcome is to maintain integrity of pipeline and still enable operations to be carried out. Soil subsidance needs to be monitored to ensure adequate depth.	Noxious weed spreading is a real issue with vehicle movement, particularly from non-local areas.	Needs to be monitored and remedial action taken.	No found to be an issue to date.	NC	NC	NC
City of Mt Gambier	Councillor	LG	No issues	No issues	No issues	No issues	No issues	No issues	Ensure public is well informed at all times
NP	NP	L/O	No issues	No issues	No issues	Nothing observed/smelt	NA	Very good	Believes Epic is doing a good job. Believes yearly landholder meetings serve as a good reminder of presence of pipeline and a good way to sort out any issues/queries.
City of Mt Gambier	Director Operational Services	LG	Appropriate level of reinstatement to road crossings. Close liaison with local government on pipeline location on or across roads. Appropriate depth of pipeline given different landuses.	Weed control post excavation extreamly important	Sensitive design/ location/ excavation practices required.	Doesn't believe this to be a major issue in SE internal controls outlined should cover this aspect.	Agrees with objectives and actions outlined.	Balance required between size, number of signs and 'visual pollution'.	
Limestone Coast Railway	Operations Manager	LG	No issues	No issues	No issues	No issues	No issues	Reqests that Epic personnel wear visibility safety vests when working on railway land.	Impact of potential seismic activity in region (eg. Earthquake). Good understanding of geological structure, particularly with regards to faults, etc.
NP	NP	L/O	Would like to grow roses over pipeline and would like to know if this is possible.	No issues	No issues	No issues	No issues	No issues	No issues

Legend

L	Landholder
LG	Local Government
L/O	Landholder / Occupier
N/A	Not applicable provided in feedback form
NC	No comment made on feedback form
NP	Not provided, information not provided on feedback form

Appendix G

Comments and Replies from Government Consultation 2016

(To follow consultation)

No.	Department	Document	Comment	Epic Energy Response