

Quarantine Power Station Lateral Pipeline

Pipeline Licence Extension



subject to

AMCOR Lateral Pipeline

Environmental Impact Report



August 2001



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DOCUMENT CONTROL SHEET						
AMCOR Lateral Pipeline License - Environmental Impact Report						
Document Reference	Revision Number	Revision Date	Compiled by	Checked by	Approved by	Comment
fre004rsc	A	9/5/01	SC	SS	SS	Issued to Epic Energy for review and input
fre004rsc	B	22/5/01	AB	WEM	WEM	Issued to Epic Energy
fre004rsc	0	6/7/01	SC	AB	AB	Issued to PIRSA

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Executive Summary

Epic Energy SA Pty Ltd plan to construct a 10km pipeline to supply natural gas to the proposed AMCOR glass factory approximately 2km south-west of Roseworthy. The pipeline (referred to as the AMCOR Lateral Pipeline) will connect to the Angaston Lateral Pipeline at the existing Freeling Meter Station (Figure 1).

This Environmental Impact Report (EIR) has been prepared in support of an application for an extension of Epic Energy's existing Moomba to Adelaide Pipeline Licence No. 1 to include the proposed AMCOR Lateral Pipeline. The Moomba to Adelaide Pipeline Licence No.1 currently includes the main Moomba to Adelaide pipeline and a number of associated extensions, laterals and loopings.

This document outlines the environmental hazards associated with the construction and operation of the AMCOR Lateral Pipeline and identifies the following potential impacts:

- Damage to crops / pasture;
- Weed / disease introduction;
- Minor damage to native vegetation; and
- Erosion or compaction of soils.

The EIR outlines general mitigation strategies that address each of the above potential impacts. Detailed task-specific management and mitigation requirements will be included in an Environmental Management Plan.

A Statement of Environmental Objectives has been developed in conjunction with this EIR, which outlines the environmental objectives that Epic Energy are required to achieve and the criteria upon which objectives shall be assessed.

1 Introduction

1.1 Background

Epic Energy SA Pty Ltd (Epic Energy) plan to construct a pipeline to supply natural gas to the proposed AMCOR glass factory approximately 2km to the south-west of Roseworthy. The pipeline, referred to as "the AMCOR Lateral Pipeline", will be in the order of 10km long, commencing at the Freeling Meter Station on the Angaston Lateral Pipeline and terminating at the proposed factory site south of Argent Road (Figure 1).

Epic Energy currently own and operate the Moomba to Adelaide Pipeline under Pipeline Licence No.1, which authorises operation of the Moomba to Adelaide Pipeline and a number of pipeline extensions, laterals and loopings. It is proposed that the AMCOR Lateral Pipeline be similarly authorised as an extension to Pipeline Licence No.1.

1.2 Regulatory Framework

To support an application for the Moomba to Adelaide Licence No. 1 extension, Epic Energy must prepare:

- **An Environmental Impact Report (EIR) - in accordance with Section 97 of the South Australian *Petroleum Act 2000* (the Act) and Regulation 10 of the *Petroleum Regulations 2000* (the Regulations); and**
- **A Statement of Environmental Objectives (SEO) - in accordance with Section 99 and 100 of the Act and Regulations 12 and 13.**

This document fulfils the requirements of an EIR as outlined in the Petroleum Act and Regulations.

1.3 About This Document

This EIR has been prepared as a component of Epic Energy's application for an extension of Pipeline Licence No.1 to include the proposed AMCOR Lateral Pipeline. The document:

- Provides a description of the AMCOR Lateral Pipeline project (Section 2);
- Describes the specific features of the environment that can reasonably be expected to be affected by pipeline construction and operation activities (Section 3);
- Identifies potential environmental impacts and consequences (Section 3);
- Proposes measures to mitigate potential environmental impacts and consequences (Section 3); and
- Summarises stakeholder consultation (Section 4);

Figure 1: Proposed AMCOR Lateral Pipeline Route.

The SEO has been developed in conjunction with this EIR and outlines the environmental objectives that Epic Energy is required to achieve and the criteria upon which the objectives are to be assessed. The SEO has been developed on the basis of information provided in this EIR.

1.4 About Epic Energy

Epic Energy is one of Australia's largest transmission companies, with more than \$3.5 billion invested in energy infrastructure. Epic Energy owns 3,300km of pipeline in Australia and operates another 891km on behalf of other owners. Epic Energy's major transmission pipelines are:

- The Dampier to Bunbury Natural Gas Pipeline in Western Australia;
- The South West Queensland Pipeline in Queensland; and
- The Moomba to Adelaide Pipeline system in South Australia.

Epic Energy's gas customers include electricity generators, gas distribution companies and industrial users.

Epic Energy was established in 1994 and employs more than 250 people. Major shareholders in the company are El Paso Energy Corporation, Consolidated Natural Gas Company, AMP Asset Management Australia Limited, Deutsche Asset Management (Australia) Limited and Hastings Funds Management Limited.

1.5 Environmental Commitment

Epic Energy is committed to responsible environmental management of all phases of the AMCOR Lateral Pipeline project. All planning, construction and operation activities will be conducted in accordance with Epic Energy's Environmental Policy (Appendix A). Epic Energy is committed to achieving the environmental objectives outlined in the corresponding SEO.

1.5.1 Environmental Management System

Epic Energy has developed and implemented a detailed Environmental Management System (EMS) which applies to all of Epic Energy's activities. The following section details the key components of the Environmental Management System that are relevant to the AMCOR Lateral Pipeline.

1.5.2 Environmental Management Plans

Epic Energy shall develop an Environmental Management Plan (EMP) for the construction of the AMCOR Lateral Pipeline. The EMP contains detailed task-specific control measures to ensure that the environmental objectives for the project will be met. The EMP also details how environmental issues will be managed during pipeline construction including:

- Responsibilities;
- Induction and Training;
- Inspection, Monitoring and Auditing;
- Consultation; and

- **Reporting**

Epic Energy's EMP Operations details the environmental control measures for pipeline operations. Implementation of these measures will ensure that SEO objectives for operations are met.

1.5.3 Job Environmental Analysis

Prior to the commencement of each construction activity (eg. clear & grade, trenching), a Job Environmental Analysis (JEA) will be completed. The JEA will identify the specific environmental objectives and hazards associated with the particular type of construction activity and will receive approval from Epic Energy prior to the commencement of the activity.

JEA's will also be completed during pipeline operations for activities that could potentially have a significant impact on the environment.

Completed and approved JEA's are a designated hold and witness point in Epic Energy's inspection and test plan.

1.5.4 Environmental Monitoring Stations

Environmental Monitoring Stations (EM Stations) will be installed at representative locations along the pipeline construction route. Photographs will be taken along the easement at each location prior to construction, monthly during construction and immediately following restoration. EM Station locations and records will be maintained during operations as part of Epic Energy's EMS.

2 Project Description

2.1 AMCOR Lateral Pipeline Alignment

The proposed pipeline will be approximately 10km long and will commence at the Freeling Meter Station on the Angaston Lateral Pipeline.

The route travels south from the Freeling Meter Station, across farmland which is located directly to the west of Gawler Road, through to the Gawler Road and Flett/Argent Road intersection. Three minor deviations are required along this section of the route to avoid remnant vegetation, a farmhouse and a dam/soak (Figure 3). The pipeline will cross under Gawler Road to the eastern side of Gawler Road before travelling south across Argent Road to the proposed glass factory site (Plate 1).

2.2 Design and Engineering

The AMCOR Lateral Pipeline will be designed in accordance with the Australian pipeline standard AS2885:1997 - Gas and Liquid Petroleum. Key engineering and design features are outlined in Table 2-1.

Table 2-1: Engineering and Design Features

Feature	Details
Outside diameter	6 inches
Wall thickness	4mm
Grade	API 5L X42
Design Factor	0.72
Location Class	R1
MAOP	10,200 KPag
Operating Pressure	4,600 KPag
Coating	High Density Polyethylene (HDPE)
Cathodic Protection	Sacrificial Anode
Joint Coating	Denso S40 Pipeline Wrap
Depth of Cover	1,200 mm

2.3 Construction

Standard pipeline construction practices will be adopted for the AMCOR Lateral Pipeline project. Generally construction activities will follow the sequence outlined in Table 2-2.

Table 2-2: Pipeline Construction Sequence

Construction Activity	Description
Detailed Survey	Engineering, environmental and cultural heritage surveys are used both in routing and to determine if any special construction techniques or mitigation measures are required. Once the preferred pipeline route has been determined, then the centreline is surveyed and engineering aspects are finalised. Markers (pegs) are placed to identify pipeline route, centreline and right-of-way.
Fencing	Severed fences are replaced with construction gates.
Clear and Grade	Graders and bulldozers are used to clear the right-of-way of vegetation and topsoil ready for construction to commence. Vegetation and topsoil is stockpiled separately on the right-of-way. Topsoil will only be cleared from the passing lane on the working side, and stockpiled in the adjacent area.
Trenching	After the route is cleared, a trench (approx. 1.2 metres in depth) is dug for the pipeline either by a trenching machine or excavator. Trench spoil is stockpiled on the right-of-way, usually on the non-working side.
Stringing	Steel pipe is trucked to the construction site and sections, each approximately 18 metres long, are laid end-to-end next to the trench. The sections are placed on sandbags that are raised on blocks or wood (timber skids), to protect the pipe from corrosion and coating damage.
Bending	Where required, pipe sections are bent to match changes either in elevation or direction of the route.
Welding and Joint Coating	Pipe sections are welded together. The area around the weld is then sand blasted and coated, with the same protective coating as the rest of the pipe, to reduce corrosion.
X-raying	The pipes are inspected using x-ray equipment as per AS 2885.2-1995.
Padding	Where required, padding machines are used to sift the excavated subsoil to remove coarse materials. To protect the pipe coating the remaining fine material is used to pad beneath and on top of the buried pipe.
Lowering-in	Sidebooms (bulldozers with cranes) are used to lower the welded pipe into the trench.
Backfilling	Trench spoil is returned to the trench and material compacted to minimise risk of subsidence of material over the pipe.
Pressure Testing	Pipeline integrity is verified using hydrostatic testing in accordance with AS 1978. During hydrostatic testing the pipeline is capped with test manifolds, filled with water and pressurised up to 125% of operating pressure for a minimum of two hours. A 24-hour leak test then follows. Providing it meets water quality guidelines hydrotest water is discharged to the surrounding environment. If water fails to meet quality guidelines it will be treated prior to disposal eg. by chemical neutralisation. Hydrotest water is often treated with biocide, oxygen scavengers and corrosion inhibitors prior to testing, however it is unlikely that these chemicals will be used during testing of the Amcor lateral due to its small size and subsequent short period of testing.

Construction Activity	Description
Restoration and Rehabilitation	Environmental specialists oversee restoration procedures. The easement is recontoured to match surrounding landform and erosion controls constructed where appropriate. Separately stockpiled topsoil is then respread evenly across the easement and any cleared vegetation placed across the easement, to assist in soil retention and provision of seed stock.
Signage	Information signs are erected along the easement as per AS 2885.1-1997.

The construction working area (right-of-way) will be 25m and partitioned as illustrated in Figure 2.

Road crossings will be carried out in accordance with local municipality requirements, the Pipeline Code of Practice and AS 2885.1-1997. The pipeline will most likely be installed beneath sealed roads by directional drilling, and unsealed roads are likely to be crossed using traditional open cut methods.

Construction is scheduled to commence between late October and early November 2001 and is expected to be complete in approximately two months.

The construction workforce is expected to consist of approximately 20 people, including the project management and pipe supply/distribution personnel.

Figure 2: Construction Right-of-Way

2.4 Operation

Pipeline commissioning is scheduled for late January 2002. Gas delivery will be controlled remotely from Epic Energy's Gas Control Centre in Perth. Back up operating facilities are provided by staff at Epic Energy's Southern Depot at Dry Creek.

Day-to-day operations of natural gas transmission pipelines pose few environmental implications. Field operations undertake regular route inspections and maintain ongoing liaison with landholders as required. They will respond to maintenance requirements such as erosion control and weed control, as necessary.

2.5 Decommissioning

Epic Energy is committed to decommissioning the pipeline in accordance with the regulatory requirements and accepted current environmental best practice at the time of decommissioning.

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. However, all above ground facilities will be removed.

3 Management of Environmental Issues

This chapter describes the existing environment along the proposed pipeline route, the potential impacts to the environment as a result of pipeline construction/operation, and proposed impact mitigation strategies. Identification of potential impacts and mitigation strategies are based on environmental issues (eg. soil, flora, heritage, etc.) rather than construction activity (eg. clearing, trenching, welding). More detailed management procedures for specific project tasks will be included in an Environmental Management Plan (EMP), which is part of Epic Energy's EMS commitments (See Section 1.5). Completed and approved JEA's will form designated hold and witness points in Epic Energy's inspection and test plans.

3.1 Climate

The project area lies on the northern Adelaide Plains on the western foothills of the North Mount Lofty Ranges. The area has a well-defined Mediterranean climate, with long dry summers and cool to mild winters. The temperature ranges from a mean minimum of 8°C in June to a mean maximum of 30°C in February (Bureau of Meteorology 2001). Rainfall has a strong seasonal distribution (ie. distinct winter rainfall) with a mean annual rainfall of 440mm at Roseworthy.

3.2 Soils and Terrain

3.2.1 Existing Environment

The project area is characterised by flat to gently sloping plains. Soils along the pipeline route consist primarily of red sandy clays that are moderately deep. Soils can be prone to water logging after periods of inundation. There are no defined watercourses¹ within the project area.

Groundwater occurs in confined aquifers of marine limestone and sandstone beneath the northern Adelaide plains. The aquifer draws water mainly from the Little Para and Gawler Rivers.

¹ Defined watercourses are those marked and named on the State Government 1: 50,000 map series.

3.2.2 Potential Impacts

Construction of the pipeline may result in the following potential adverse effects to soils and terrain:

- Possible erosion associated with earthworks (eg. erosion of stockpiled soil);
- Compaction of soils;
- Subsidence over the pipeline;
- Changes in soil structure through mixing of topsoil and subsoil; and
- Contamination of soils by fuel, oils or chemicals (small quantities of fuel, oils and chemicals may be kept on-site for operation/maintenance of vehicles and equipment).

The project is not expected to have any impact on surface waters, due to the absence of drainage lines and watercourses in the project area. The project is also not expected to have any impact on confined groundwater aquifers.

3.2.3 Impact Mitigation

The above potential impacts can be mitigated through the application of appropriate mitigation strategies. These include:

- Restriction of construction activities to the construction right-of-way;
- Construction will be scheduled for dry periods of the year. In the event of rain and wet soils, movement of vehicles and equipment along right-of-way will be avoided;
- Any areas of compacted soil will be ripped as part of reinstatement works;
- The right-of-way and any associated access tracks will be reinstated promptly upon completion of construction works; and
- Hydrotest water will be tested before disposal to meet water quality guidelines;
- Implementation of appropriate storage and handling procedures for fuels and chemicals (eg. labelling, bunding);
- Topsoil and subsoil to be stockpiled separately;
- Trench spoil will returned to the trench and compacted;
- Construction activities will be monitored for excessive dust generation. Dust control measures (eg. use of water carts) will be implemented if excessive dust generation occurs.

3.3 Flora and Fauna

3.3.1 Existing Environment

Assessment of the flora and fauna of the proposed alignment was undertaken on 20 April 2001 by EAC - Ecological Evaluation. Vegetation and habitat along the length of the proposed alignment was inspected, assuming a right-of-way of 25 m for pipeline installation.

Plant species recorded on or near the pipeline easement are listed in Appendix B.

Flora

Approximately 99% of the native vegetation in the region has been cleared (Native Vegetation Management Branch 1987). A few isolated trees and small, degraded remnants are all that remain of the peppermint box (*Eucalyptus odorata*), mallee box (*E. porosa*) and bluegum (*E. leucoxylon*) woodlands that previously covered the area. Some remnant trees, shrubs and grasses are found along roadsides, but most roadsides in the region are degraded and weed infested, with little or no remnant native vegetation. Introduced pepper trees (*Schinus areira*) are common along roads, and revegetation with *Eucalyptus* spp. and *Acacia* spp. has been carried out along some roadsides.

The proposed pipeline route primarily passes through open paddocks. The small amount of native vegetation in these paddocks, that occurs on or near the proposed alignment, comprise:

- Eight remnant eucalypts (bluegum and mallee box) immediately south of the Freeling Meter Station (Plate 2);
- Small patches of native grasses (*Danthonia* sp. and *Stipa* sp.) mixed with weed spp. in the corner of three paddocks;
- A small dam/soak (dry at time of inspection) adjacent to Gawler Road containing *Typha domingensis* (narrow-leaf bulrush) and weeds;
- Planted, mature *E. cladocalyx* (sugar gum) along a residential access road north of Shanahan Road, with very sparse *Enchylaena tomentosa* (ruby saltbush) understorey; and
- A number of planted, mature sugar gums and blue gums at the southern end of the proposed alignment, at the northern corner of Gawler and Flett Roads.

The proposed alignment also crosses Gawler Road and six other minor roads. The verges of these roads have been heavily disturbed and are dominated by weed species. The native vegetation present in these areas, on or near the proposed alignment, comprise:

- Small numbers of native grasses (*Danthonia* sp. and *Stipa* sp.) mixed amongst weed species on three roadsides (Shanahan, Angas and Bamann Roads); and
- One *Acacia notabilis* (notable wattle) adjacent to the proposed alignment on Shanahan Road.

There may be some annual plant species present along the pipeline route that can only be detected in spring. It should also be noted many grasses were identified to genus level, as seeds were not present for complete identification to species level.

Fauna

Fauna assessment was predominantly based on literature review with additional ground truthing conducted during the site inspection.

Because very little intact habitat remains in the area, fauna consists of low numbers of common and widespread species that are able to tolerate high levels of disturbance. Brown snakes, sleepy lizards, Australian magpies and Australian kestrels were the only fauna species observed on or near the proposed alignment during the site inspection.

3.3.2 Potential Impacts

Flora

Clearing of the construction right-of-way and indirect damage to vegetation by vehicles and equipment will impact on some native grasses along the proposed alignment. The numbers and locations of native grasses that may be cleared as a result of construction activities are listed in Table 3-1.

Table 3-1: Native Grass Location and Numbers

Species	Number of plants	Location
<i>Stipa sp.</i>	<10 small plants	Shanahan Road, within 25m of ROW.
	<10 small plants	Angas Road Approximately 20 m from junction with Gawler Road.
	Small numbers	Baman Road: On roadside and on bank of small disused dam*.
	Scattered among pasture grasses.	Gawler and Flett Road intersection (north corner)
	Scattered among pasture grasses (represents 20-30% of total vegetation cover)	Gawler and Argent Road intersection (northern corner). Extends for 40m from paddock corner (Plate 3)
<i>Danthonia sp.</i>	Small numbers	Baman Road: On roadside and on bank of small disused "dam"*.
	Scattered among pasture grasses.	Gawler and Flett Road intersection (north corner)
	Scattered among pasture grasses (represents 20-30% of total vegetation cover)	Gawler and Argent Road intersection (northern corner). Extends for 40m from paddock corner (Plate 3)

* This dam is planned to be filled and levelled.

The overall impact of clearing the right-of-way is not considered significant as existing vegetation is highly disturbed with a high proportion of weed species and very few remnant species. However, an application will be submitted to the Department for Environment and Heritage for clearance of native grasses. The proposed alignment does not require clearing of any remnant trees or shrubs.

Trench construction may indirectly impact several trees adjacent to the proposed alignment. In particular, the two mature bluegums situated approximately 200m south of the Freeling Meter Station may be at risk of having their roots damaged by the pipeline trench, as they are situated only 15m from the fence line (Plate 4). The impact of root loss is difficult to predict, as there is little documented evidence on its effects. However, informal guidelines obtained from the Biodiversity Assessment Section (Department for Environment and Heritage) recommend that cutting tree roots within the area covered by the tree canopy should be avoided (J. Cutten, pers. comm.).

Weeds are common and widespread along the proposed alignment. Although nine of the weed species detected are proclaimed plants, none require destruction or specific control measures. There is presently no sign of disease. There is the potential for introduction or spread of weeds and/or disease associated with movement of vehicles and machinery.

Fauna

Potential impacts to fauna include:

- Mortality due to entrapment in the open trench; and
- Short term disturbance associated with noise and human activity.

Given the short time that the trench will remain open and the lack of abundance of animals in the area, impacts to fauna are not considered significant. Introduced house mice (*Mus musculus*) and possibly brown snakes (*Pseudonaja textilis*) are the only animals likely to be affected.

3.3.3 Mitigation Measures

Flora

The following mitigation measures shall be implemented to minimise impacts on vegetation:

- The pipeline shall be realigned to avoid mature mallee box and bluegums immediately south of the Freeling Meter Station;
- An application shall be submitted to the Department for Environment and Heritage for clearance of native grasses.
- The right-of-way shall be restricted to avoid adverse damage to the root systems of the two mature bluegums located 200m south of the Freeling Meter Station (earthworks shall only occur outside of the canopy line and tree roots shall not be cut within the tree canopy line);
- Trees to be avoided shall be flagged prior to construction;
- Vegetation along the pipeline route shall be trimmed rather than cleared where practicable;
- A spring flora survey will be undertaken to review and detect annual plant species;
- Vehicles and machinery shall be washed prior to entering the easement. Cleaning procedures shall ensure that machinery and vehicles are free of soil and vegetation before and after entering the project area, to prevent the introduction of weeds and disease. Actions and procedures will be recorded in a vehicle washdown register;
- Impacts to native grasses shall be minimised by keeping movement of vehicles and machinery to a minimum in areas where native grasses occur. Native grass areas shall be flagged prior to construction;
- Topsoil shall be stockpiled separately from subsoils and respread promptly after backfilling; and
- Cleared or trimmed vegetation shall be stockpiled separately and respread promptly after backfilling.

▪

Figure 3: Vegetation Map of Pipeline Project Area.

Fauna

Impacts to fauna shall be minimised through the following mitigation measures:

- The period of time that the trench is left open shall be minimised;
- Open trenches shall be checked daily for trapped fauna; and
- Ramping and branches shall be placed in the trench to provide a means of escape from the trench.

3.4 Cultural Heritage

3.4.1 Existing Environment

An assessment of Aboriginal and European cultural heritage values of the project area was undertaken by Vivienne Wood, a qualified archaeological consultant, on the 20 April 2001.

The proposed pipeline route was initially driven in order to identify any areas that might be of high archaeological sensitivity (eg. watercourses). The pipeline route was then inspected a second time and stops were made periodically to undertake closer inspection of the route. Representatives of the Mannum Aboriginal Community Association Inc. and the Ngadjuri Heritage Committee also inspected the entire pipeline route on the 20 and 27 April respectively.

No Aboriginal archaeological sites were found during any of the surveys. This is likely to be a reflection of the nature of the landscape, with no obvious foci for Aboriginal occupation identified, and the current landuse in the area. The level of disturbance brought about through a long history of agricultural and pastoral land-use is likely to have had a dramatic effect upon the preservation of any materials that might have been located along the proposed pipeline route.

In addition to consultation with relevant Aboriginal organisations the Register of Aboriginal Sites and Objects, held at DOSAA, was consulted to ascertain whether there are any registered sites in the study area. No previously recorded and/or registered Aboriginal sites are registered in the vicinity of the proposed alignment.

No sites of European cultural heritage value were identified along the proposed pipeline route. A search of the State Heritage Register and the Register of the National Estate did not identify any European cultural heritage sites within the project area.

3.4.2 Potential Impacts

Given that no Aboriginal archaeological sites were found during the survey, there is no foreseeable impact to known Aboriginal sites and therefore there can be no archaeological constraints on construction activities.

3.4.3 Mitigation Measures

All Aboriginal archaeological sites, objects and remains in South Australia are protected by provisions of the *Aboriginal Heritage Act 1988*, which makes it an

offence to collect, damage or destroy such sites, objects or remains without the written authorisation of the Minister for State Aboriginal Affairs. In the event of cultural material being uncovered during the construction phase of the project, work must cease and officers of the Department of State Aboriginal Affairs shall be contacted to determine what action should be taken. These procedures are outlined in Epic Energy's Cultural Management Plan.

3.5 Noise

3.5.1 Existing Environment

Background noise levels along the pipeline route are moderate. Background noise levels are typically low in rural areas, however traffic along Gawler Road generates moderate levels of noise, particularly during the day.

3.5.2 Potential Impacts

Noise emissions during construction are likely to result from the operation of equipment such as excavators, graders, bulldozers and boring equipment.

The project area is not densely settled, with the closest residence being approximately 100m from the pipeline easement. Construction shall occur between 7.00am and 6.00pm, Monday to Saturday, and between 9.00am and 6.00pm on Sunday (EPA Information Sheet IS No. 7 September 1999).

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

3.5.3 Impact Mitigation

Noise impacts shall be mitigated through the following measures:

- Under normal operating conditions, construction will be scheduled in accordance with EPA recommendations (EPA Information Sheet IS No. 7 September 1999); and
- All vehicles and equipment shall conform to appropriate noise control standards.

3.6 Air Quality

3.6.1 Existing Environment

Air quality in the project area is expected to be relatively good. The surrounding environment is predominantly rural and there are few emission sources in the project area. Vehicle emissions are considered to be the only significant source of pollutants.

3.6.2 Potential Impacts

Minor emissions of pollutants such as nitrous oxides, sulphur oxides and carbon monoxide are associated with the exhausts of machinery and support vehicles. The potential impact of construction phase emissions is expected to be minimal due to the short term nature of the project. The air quality and Greenhouse gas impacts of these emissions will be insignificant.

Dust is likely to be the main hazard with regard to air quality. Dust may result from clearing and grading, excavation and trenching, movement of machinery and vehicles and grading of the right-of-way for restoration purposes. Dust generation is likely to be localised and restricted to the construction phase of the project (approx 2½ months). Impacts are expected to be minor.

3.6.3 Impact Mitigation

General management strategies for minimisation of potential impacts to air quality include:

- Machinery and vehicles will be regularly maintained and serviced to limit the amount of pollution generated;
- Dust will be mitigated by minimising the period between clearing and restoration, limiting vehicle speeds and watering sections of the ROW if necessary.

3.7 Land Use

3.7.1 Existing Environment

Agriculture is the dominant landuse within the project area and consists mainly of broadacre farming with some sheep grazing (Figure 3). The pipeline only traverses the corner of one paddock, located on the northern side of Argent Road, which is currently used to graze sheep. Remaining farmland is cropped with either wheat and/or barley. Fourteen agricultural properties will be traversed by the pipeline (Section 4).

Land parcels in the project area are medium to large and as a result the population density is moderate to low.

Seven road reserves are crossed (ie. Shanahan, Wasley, Angas, Lawson, Roseworthy, Gawler and Argent Roads). The only other third party infrastructure along the proposed easement is a SA Water pipeline, which runs parallel to the northern boundary of Argent Road. High voltage powerlines are also present at the Argent Road intersection.

There are no noted areas of conservation significance within the project area, with the closest conservation reserve, proclaimed under the *National Parks and Wildlife Act 1972*, being Sandy Creek Conservation Park which is some 12 km south-east of the proposed pipeline route.

3.7.2 Potential Impacts

The AMCOR Lateral Pipeline project is small in scale and impacts to landuse are expected to be minor. Localised impacts can be summarised as:

- Short-term reduction in availability of cropping land;
- Temporary replacement of permanent fences with access gates;
- Short term disturbance to sheep (in paddock north of Argent Road) associated with noise and human activity;
- Injury to, or mortality of, sheep in the open trench;
- Temporary detours on unsealed roads (during open cut trenching); and
- Risk of fire associated with welding and the use of vehicles and machinery in paddocks.

3.7.3 Impact Mitigation

Standard pipeline construction methods minimise the impact of construction on landuse by restricting construction activity to a defined right-of-way.

Appropriate mitigation measures include:

- Disturbance to crops shall be restricted to the 25m right-of-way;
- Access shall be restricted to that which is essential for pipeline construction and operation;
- All vehicles shall carry fire extinguishers;
- The exact location of the SA Water pipeline shall be determined before construction proceeds across Argent Road;
- The pipeline shall be buried to a depth of 1200mm, thereby allowing cropping to continue following completion of pipeline construction;
- All fences shall be reinstated following rehabilitation of the easement; and
- Landholders shall be compensated by Epic Energy for any loss of production associated with the project.

Measures used to mitigate impacts to fauna (Section 3.3.3) will also be effective in minimising construction impacts on sheep.

3.8 Public Risk and Safety

3.8.1 Existing Environment

The project area is classified as "Rural Land" R1 with residences located significant distances apart. The main transport corridor in the project area is Gawler Road, which will be adjacent to the construction right-of-way.

3.8.2 Potential Impacts

The potential impacts to public safety are fire, explosion or radiation exposure as a result of pipeline rupture. The main potential causes of damage or pipeline failure are considered to be:

- Heavy vehicle traffic;
- Corrosion of the pipeline (external or internal);

- **Natural events which stress the pipeline (eg. earthquake);**
- **Excavation in easement by third parties;**
- **Overpressure; and/or**
- **Metallurgical or construction faults.**

Injury to third parties is also a potential impact of construction activities. Hazards include construction work across roads, increased heavy vehicle traffic in the project area and dust generation. Hazards associated with dust are discussed in Section 3.6.

3.8.3 Mitigation Measures

Mitigation strategies include:

- **Installation of appropriate signage, in accordance with project traffic management plans, during construction and operation to clearly identify the presence of construction vehicles and the pipeline;**
- **The design installation and commissioning process shall be in accordance with relevant codes, in particular AS 2885.1-1997;**
- **Appropriate safety measures shall be undertaken where construction activities occur adjacent to or across roads;**
- **The pipeline line will be pressure tested prior to commissioning to ensure integrity of pipes and welds;**
- **A comprehensive corrosion prevention program shall be implemented;**
- **All welded joints shall be subject to x-ray inspection during construction to ensure integrity of welds;**
- **Regular liaison shall be conducted with landholders and local residents to inform them of the schedule of construction works; and**
- **Monitoring of the pipeline from Epic Energy's Gas Control Centre in Perth and by locally based field inspectors.**

3.9 Additional Mitigation Strategies

3.9.1 Environmental Management Plan

A task-specific EMP shall be developed and implemented during construction of the proposed pipeline.

3.9.2 Awareness Program

Epic Energy shall ensure that all personnel are adequately aware of the relevant impact mitigation strategies.

3.9.3 Job Environmental Analysis

Epic Energy will subject construction activities to Job Environmental Analysis².

3.9.4 Contractual Obligations

All contracts with companies undertaking construction activities for Epic Energy on the AMCOR Lateral Pipeline project shall include a requirement to:

- **Operate in a manner consistent with Epic Energy's Environmental Policy;**
- **To adopt mitigation strategies outlined in this EIR; and**
- **Meet SEO commitments.**

3.9.5 Reporting

Any complaints from landowners that arise as a direct result of construction activities shall be recorded by the Lands Officer and reported to the Epic Energy Lands and Environmental Manager.

² Job Environmental Analysis is a system used by Epic Energy to ensure all potential hazards and consequences are identified and mitigation measures (including implementation strategies) are identified and recorded by field staff.

4 Consultation

During the preliminary survey, planning and design phases of the project Epic Energy initiated consultation with various stakeholders and interest groups will be directly impacted by the construction and operation of the AMCOR Lateral Pipeline. The following sections summarise consultation undertaken with State and Local Government, utility providers, private landholders and Aboriginal organisations.

4.1 State and Local Government

Epic Energy has consulted with representatives from the following State and Local Government Departments and Agencies:

- Light Regional Council;
- Transport SA; and
- Department of State Aboriginal Affairs (DOSAA).

Transport SA's Roadside Significant Site Database was reviewed and no significant sites were identified within the project area.

In addition the following utility providers were also consulted by Epic Energy's Land Officer:

- ETSA;
- Telstra; and
- SA Water.

No issues of concern have been raised, however Light Regional Council has requested that reinstatement of road crossings conforms to Council's documented road construction requirements.

The Department for Environment and Heritage was also consulted by EAC Ecological Evaluations regarding potential impacts to native vegetation along the pipeline route.

4.2 Private Landowners

The proposed pipeline traverses 14 private properties (Table 4-1). Landholders have been informed of the proposed pipeline project and negotiations for easement acquisition are near completion. Epic Energy shall continue to work closely with landholders to ensure that they are well informed of the nature and schedule of construction activities.

Table 4-1: Properties traversed by the proposed AMCOR Lateral Pipeline

Landowner	Title Reference
N and R Molo	CT5536/332
PM Kemp	CT5535/323
KW Haesy	CT5148/740 CT5148/743
PM and AF Kemp	CT5635/11 CT5400/562
CK Tremlett Ltd	CT5367/22 CT5803/18
CJ Teusner	CT5174/65
CR and AG Neldner	CT5521/808
JE Nelder Ltd	CT5095/979
NW Schuster	CT5381/103
DJ Shanahan	CT5734/900
MS Shanahan	CT5532/711

4.3 Aboriginal Organisations

The study area lies near the boundary of the Peramangk and Ngadjuri Tribal boundaries as described by Norman Tindale (1974). While the reliability of these boundaries is constantly being debated, they are still the primary means used by DOSAA in determining which of the Aboriginal Heritage organisations should be consulted for development projects.

Initial advice received from DOSAA was that the Mannum Aboriginal Community Association Inc. was the relevant organisation to contact about the project. Richard Hunter, the Chairperson of this organisation, was contacted and he and Jean Hunter participated in the field survey of the proposed alignment on the 19 April 2001.

Subsequent to this survey, additional advice was received from DOSAA that the Ngadjuri Heritage Committee should also be involved. As a recent agreement has been reached between the Ngadjuri Native Title working group and the Ngadjuri Heritage Committee, representatives of both were invited to view the proposed alignment. The second field trip took place on 27 April 2001 and included an archaeologist and representatives of the Ngadjuri.

5 Conclusion

The AMCOR Lateral Pipeline is a small project involving construction of infrastructure in a highly modified environment of low population density. The potential impacts to landholders, the environment and stakeholders are expected to be short-term and minor in extent. No significant long-term adverse impacts are expected. Nevertheless, the following key issues requiring attention during construction and operation of the proposed pipeline have been identified:

- Protection of remnant native vegetation, particularly remnant trees;
- Prevention of soil erosion and compaction;
- Maintenance of agricultural landuse and infrastructure;
- Prevention of weed and disease introduction and establishment; and
- Safeguarding of public safety.

In managing potential impacts Epic Energy is committed to working closely with all relevant authorities and landholders. Compliance with the EMP shall be audited, and ongoing monitoring and maintenance programs shall be implemented. Epic Energy shall take all necessary steps to rehabilitate areas affected by the project during both construction and operation.

References

Bureau of Meteorology. (2001). Climate Averages.
<http://www.bom.gov.au/climate>.

Environment Protection Agency. (September 1999). EPA Information Sheet IS No. 7: Construction Noise. South Australian Environment Protection Agency.

Native Vegetation Management Branch (1987). Remaining Vegetation in the Agricultural Regions of South Australia. Department of Environment and Planning, Adelaide.

Abbreviations

Ecos	Ecos Consulting (Aust) Pty Ltd
EIR	Environmental Impact Report prepared in accordance with Section 97 of the <i>Petroleum Act 2000</i> and Regulation 10.
EMP	Environmental Management Plan
EMS	Environmental Management System
DEH	Department for Environment and Heritage
DOSSA	Department of State Aboriginal Affairs
ETSA	Electricity Trust of South Australia
JEA	Job Environmental Analysis
km	Kilometre
mm	Millimetre
PIRSA	Primary Industries and Resources, South Australia
PSL	Preliminary Survey Licence issued in accordance with Section 10 of the <i>Petroleum Act 2000</i> .
SEO	Statement of Environmental Objectives prepared in accordance with Section 99 and 100 of the <i>Petroleum Act 2000</i> and Regulations 12 and 13.

Appendix A

Environmental Policy



Epic Energy operates in an environmentally friendly manner.

Epic Energy operates in an environmentally friendly manner. The company is committed to complying with all relevant environmental statutes and standards, and to operating according to sound environmental procedures to minimise the impact of its activities on the natural environment. This commitment to preserving the environment is an integral part of all work processes. These processes are documented and used by all employees and contractors.

Epic Energy's Environmental Management System, the shell of which is detailed within this document, is modelled on AS/NZS/ISO 14001 to ensure continuous improvement of activities related to the reduction and prevention of waste, air pollution, noise emissions, pollution of ground and surface water receptors, land degradation and harm to fauna and flora.

Epic Energy's environmental strategies and objectives are set and reviewed annually. Targets are monitored continuously using a system of process result reporting strategies, management reviews and internal and external audits, when necessary supported by risk management strategies.

Senior management team gives an active commitment to the successful implementation and communication of this policy to all employees and contractors.

Chief Executive Officer

Appendix B

Plant Species List

Table A 1: Plants Recorded Along the Proposed AMCOR Lateral Pipeline Route

Botanical name	Common name	Ratings			Locations present							
		AUS	SA	NL								
<i>Acacia notabilis</i>	Notable wattle					2						
* <i>Asphodelus fistulosus</i>	Onion weed				1	2	3	4		6		
* <i>Avena barbata</i>	Bearded oat				1	2			5	6		
* <i>Brassica tournefortii</i>	Wild turnip				1	2		4	5	6		
* <i>Carduus tenuiflorus</i>	Slender thistle				1	2	3	4				
* <i>Chenopodium album</i>	Fat hen									6		
<i>Convolvus sp.</i>	Bindweed						3	4				
* <i>Critesion murinum</i>	Barley-grass				1					6		
* <i>Cucumis myriocarpus</i>	Paddy melon					2						
* <i>Cynodon dactylon</i>	Couch						3	4	5	6		
<i>Danthonia sp.</i>	Wallaby-grass					2				6		
<i>Dianella revoluta var. revoluta</i>	Black-anther flax-lily				1					6		
* <i>Dittrichia graveolens</i>	Stinkweed							4	5			
* <i>Echium plantagineum</i>	Salvation Jane					2	3	4		6		
<i>Enchylaena tomentosa var. tomentosa</i>	Ruby saltbush									6		
<i>Enneapogon nigricans</i>	Black-head grass											7
<i>Eucalyptus cladocalyx</i>	Sugar gum									6		
* <i>Eucalyptus gardneri</i>	NA											
* <i>Eucalyptus lehmannii</i>	NA											
<i>Eucalyptus leucoxydon</i>	Blue gum				1					6		
<i>Eucalyptus odorata</i>	Peppermint box									6		
<i>Eucalyptus porosa</i>	Mallee box				1							
* <i>Foeniculum vulgare</i>	Fennel											7
* <i>Kickxia spuria ssp. integrifolia</i>	Round-leaf toadflax											7
* <i>Lepidium africanum</i>	Common peppergrass				1					6		
<i>Lomandra effusa</i>	Scented mat-rush					2						
* <i>Lycium ferocissimum</i>	African boxthorn									6		
<i>Malva sp.</i>	NA							4	5	6	7	
* <i>Marrubium vulgare</i>	Horehound				1					6		
* <i>Oenothera stricta ssp. stricta</i>	Common evening primrose											7
* <i>Olea europaea ssp. europaea</i>	Olive				1							

* <i>Opuntia stricta</i> var. <i>stricta</i>	Erect prickly pear											7
* <i>Oxalis pes-caprae</i>	Soursob				1			4		6		
* <i>Panicum hillmanii</i>	Witch-grass				1	2	3		5	6		
* <i>Paspalum dilatatum</i>	Paspalum								5	6		
* <i>Piptatherum miliaceum</i>	Rice millet				1	2	3	4		6		
<i>Plantago</i> sp.	Plantain					2	3		5	6		
* <i>Polygonum aviculare</i>	Wireweed						3	4	5	6		
<i>Rumex</i> sp.	Dock					2		4	5	6		
* <i>Scabiosa atropurpurea</i>	Pincushion				1	2	3		5			
* <i>Schinus areira</i>	Pepper-tree				1				5			
* <i>Solanum nigrum</i>	Black nightshade				1		3	4				
<i>Stipa</i> sp.	Spear-grass				1	2	3	4				
<i>Typha domingensis</i>	Narrow-leaf bulrush			Q								7
* <i>Xanthium spinosum</i>	Bathurst burr					2						

Locations are:

1 Freeling Meter Station

2 Shanahan Road

3 Angas/John Eden Roads

4 Bamman Road

5 Roseworthy Road

6 Argent and Flett Roads (southern end of pipeline)

7 Other locations

Notes:

* Denotes introduced species

Conservation Status Q – not yet assessed, but flagged as being of possible significance

Appendix C

Plates

Plate 1: Proposed AMCOR Glass Factory site.

Plate 2: Remnant mallee box and bluegums immediately south of the Freeling Meter Station.

Plate 3: Native grass species to the north of Gawler/Argent Road intersection.

Plate 4: Remnant bluegums approximately 200m south of the Freeling Meter Station

