

SEA Gas Project

Pelican Point Extension



Environmental Impact Report

SOUTH EAST AUSTRALIA



October 2002

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Executive Summary

The joint venture company South East Australia Gas Pty Ltd (SEA Gas) has recently gained approval for the construction of the SEA Gas Project. Central to the SEA Gas Project is a 680km transmission pipeline that will complete the Adelaide-Melbourne-Sydney high pressure gas transmission links.

The approved route of the Port Campbell to Adelaide pipeline commences at the Iona Gas Plant, north-east of Port Campbell, connects to the Minerva Gas Plant and terminates at Torrens Island, north of Adelaide (see Figure 1).

SEA Gas are proposing to extend the SEA Gas pipeline from Torrens Island to Pelican Point. The extension will include an additional horizontal directional drill under the Port River. This extension was not covered in the SEA Gas Project Environment Effects Report / Environmental Impact Report (EER/EIR).

This Environmental Impact Report (EIR) has been prepared to support the application for an extension to the SEA Gas Project Pipeline Licence (PL13), to extend the pipeline from Torrens Island to a meter station at the Pelican Point Power Station.

This document summarises, in conjunction with the SEA Gas EER/EIR (October 2001), the environmental hazards associated with the construction and operation of the proposed Pelican Point pipeline extension and identifies the following potential impacts:

- exposure of contaminated and/or acid sulphate soils, and
- minor disturbance to degraded native vegetation.

This EIR outlines general mitigation strategies that address these potential impacts. Detailed task-specific management and mitigation requirements will be included in the Construction Environmental Management Plan.

The existing SEA Gas Project Statement of Environmental Objectives (December 2001) adequately covers the objectives and assessment criteria associated with this extension to the SEA Gas pipeline licence and has not been revised.

1 Introduction

1.1 Background

The joint venture company South East Australia Gas Pty Ltd (SEA Gas) holds a Pipeline Licence (PL13) to construct and operate a 680km transmission pipeline, which will complete the Adelaide-Melbourne-Sydney high pressure gas transmission links.

The approved pipeline from Port Campbell to Adelaide commences at the Iona Gas Plant, north-east of Port Campbell, connects to the Minerva Gas Plant 10km further west and terminates at Torrens Island, north of Adelaide (see Figure 1).

SEA Gas is proposing to extend the SEA Gas pipeline an additional 1.9km from Torrens Island to Pelican Point. This option was not covered in the SEA Gas Project Environment Effects Report / Environmental Impact Report (SEA Gas Project EER/EIR).

1.2 Project Proponent

SEA Gas is a joint venture company established specifically to develop the SEA Gas Project. The company is owned equally by Australian National Power, Origin Energy and TXU.

1.3 Environmental Commitment

As stated in the SEA Gas Project EER/EIR, SEA Gas is committed to responsible environmental management for the construction and operation of the Project and believes that any potential adverse environmental effects can be effectively managed in a manner that complies with the requirements of this document, as well as:

- all relevant State and Commonwealth laws and regulations
- SEA Gas Environmental Policy
- relevant industry standards (such as Australian Standard 2885, EPA guidelines and ANZECC water quality criteria), and
- the Australian Pipeline Industry Association (APIA) *Code of Environmental Practice 1998*.

SEA Gas also recognises its community obligation to take all practicable steps to ensure its operations and activities are conducted in an efficient and environmentally sustainable manner.

1.4 Regulatory Framework

To support an application for the extension of the SEA Gas pipeline from Torrens Island to a meter station at the Pelican Point Power Station, SEA Gas 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.

1.4.1 Environmental Impact Report

This document, in conjunction with the SEA Gas Project EER/EIR, fulfils the requirements of an EIR as outlined in the Petroleum Act and Regulations.

1.4.2 Statement of Environmental Objectives

A Statement of Environmental Objectives (SEA Gas, December 2001) has been produced and approved for the SEA Gas Project. It outlines the environmental objectives with which construction, operation and decommissioning activities must conform and the criteria upon which achievement of these objectives will be assessed.

The existing SEA Gas Project SEO was reviewed to determine if the proposed extension to the pipeline would be adequately covered by this document. It was concluded that the existing SEO adequately covers the objectives and assessment criteria associated with this extension to the SEA Gas pipeline, primarily because the construction methods and potential environmental impacts involved in the pipeline extension are consistent with the methods and impacts identified for the remainder of the SEA Gas pipeline.

In particular, activities such as a horizontal directional drill of the Port River and pipeline construction in areas where there is some remnant vegetation and/or potential for shallow groundwater, contaminated soil or acid sulphate soils were considered in the SEA Gas Project EER/EIR and relevant objectives were included in the SEO. Section 6 of this report provides a list of the objectives contained in the existing SEO that address these potential environmental impacts.

Therefore, the existing SEA Gas Project Statement of Environmental Objectives (December 2001) adequately covers the proposed extension of the pipeline, and has not been revised.

1.4.3 Other Legislation and Approvals

Detailed discussion of the regulatory framework relevant to this Project is included in Chapter 2 the SEA Gas Project EER/EIR. It provides information on other relevant State and Commonwealth approvals and legislation, including:

- South Australia
 - *Aboriginal Heritage Act 1988*

- *Heritage Act 1993*
- *Water Resources Act 1997*
- *Environment Protection Act 1993*
- Commonwealth
 - *Environmental Protection and Biodiversity Conservation Act 1999*
 - *Native Title Act 1993*
 - *Aboriginal and Torres Strait Islander Heritage Protection Act 1984.*

Native Title

The Kurna Peoples have a registered native title claim over the Adelaide area. A land titles search and consultation with the Crown Solicitor is being undertaken to determine if Native Title applies to the proposed pipeline route. If Native Title is found to apply, SEA Gas will consult with the Department of State Aboriginal Affairs (DoSAA) and the Crown Solicitor to determine the appropriate course of action.

1.5 About This Document

This Environmental Impact Report (EIR) has been prepared to support the application for an extension to the SEA Gas Project Pipeline Licence (PL13), from Torrens Island to a meter station at the Pelican Point Power Station.

The document, in conjunction with the SEA Gas Project EER/EIR:

- provides a description of the proposed Pelican Point pipeline extension
- describes the specific features of the environment that can reasonably be expected to be affected by pipeline construction and operation activities
- identifies potential environmental impacts and consequences
- proposes measures to mitigate potential environmental impacts and consequences, and
- summarises stakeholder consultation.

As a comprehensive EIR has already been prepared for the SEA Gas Project, this document only seeks to provide additional information on the specific issues associated with the extension of the pipeline from Torrens Island to Pelican Point. Consequently it does not repeat information relating to the general aspects of the extension but, where applicable, makes reference to the SEA Gas Project EER/EIR.

2 Project Description

2.1 Project Overview

The proposed project will involve extending the SEA Gas pipeline from Torrens Island to Pelican Point and the construction of a meter station in the Pelican Point Power Station site. The pipeline extension will be approximately 1.9km long, including a 500m section to be drilled under the Port River. The proposed drill site is located at the southern end of the disused horse training track, south of the Old Quarantine Station on Torrens Island. The proposed route on Le Fevre Peninsula follows the existing powerlines north to the Pelican Point Power Station (see Figure 1).

2.2 Project Schedule

As detailed in the SEA Gas Project EER/EIR, construction of the SEA Gas pipeline is scheduled to commence in October 2002 and be completed by late 2003. Construction of the Pelican Point extension would form a component of the SEA Gas Project construction schedule and would occur within this timeframe.

2.3 Design and Engineering

The proposed Pelican Point pipeline extension will be designed in accordance with the Australian pipeline standard AS2885:1997 - Gas and Liquid Petroleum. Key engineering and design features of the pipeline are provided in Table 1 below.

Table 1: Pipeline Engineering and Design Features – Pelican Point Extension

Design Element	Details
Length	1.9km (total length 680km)
Diameter (outside)	455.6mm (18 inch)
Wall Thickness	10.1 to 12.0 mm
Pipe quality	API 5L Grade X70
Factory Coating	Tri-laminate
Pipeline Content	Dry Natural Gas
Operational Pressure	15,000 kPag
Maximum Allowable Operating Pressure	15,320kPag
Hydrotest Pressure	19, 150kPa (125% of operating pressure)
Design capacity	109.5 PJ/a
Standard Operation Easement Width	25m

Design Element	Details
Minimum depth of cover	In accordance with AS 2885, typically: <ul style="list-style-type: none"> ▪ Cross Country Sections – 750mm ▪ Town sections – 900mm ▪ Dairy areas – 1200mm (where req.) ▪ Rock areas – 450mm (minimum) ▪ Watercourses – 1200mm ▪ Major rivers – 2000mm ▪ Beneath Roads – 1200mm ▪ Beneath Railway – 2000mm
Corrosion Protection	External Coating and impressed current cathodic protection
Non Destructive Testing	100% radiography of welded joints
Buried marker tape	Installed at crossings. Minimum 300mm above pipe
Scada	Pipeline monitoring and line break protection system

A schematic diagram of the Port River horizontal directional drill crossing is provided in Figure 3.

The meter station at Pelican Point will be designed in accordance with all relevant legislation and standards.

2.4 Construction

Standard pipeline construction practices will be adopted for the proposed Pelican Point pipeline extension. Construction will be carried out as described in Section 3.7 of the SEA Gas Project EER/EIR and will be in accordance with the Australian Pipeline Industry Association *Code of Environmental Practice*.

On Pelican Point, the pipeline will be constructed in a 25m wide right-of-way. Typical construction layout is shown in Figure 2.

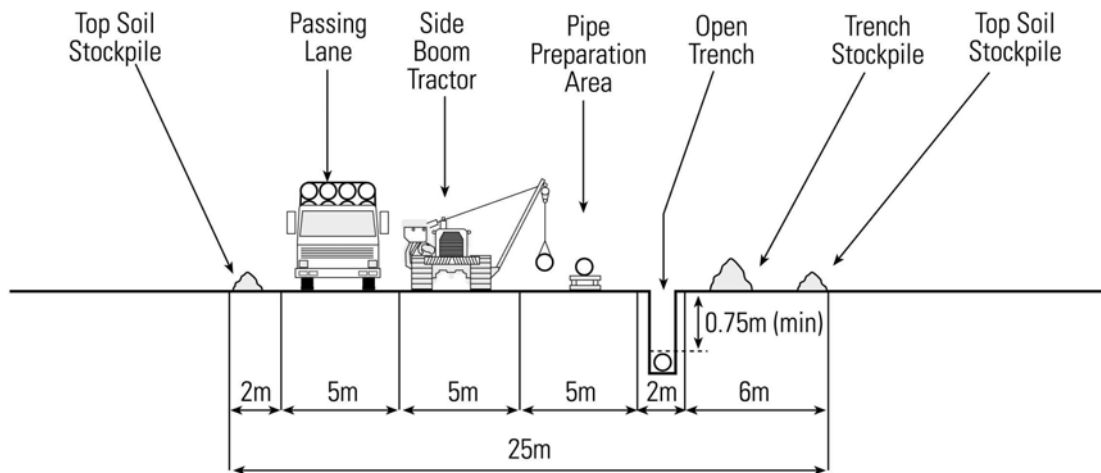


Figure 2: Typical Layout of Construction Right-of-Way

The pipeline will cross the Port River using a horizontal directional drill (HDD). The installation of the pipeline by HDD involves drilling a hole at a shallow angle beneath the surface (refer to Figure 3). The pipe is then pulled back through this hole. Drilling is conducted by a specially designed drill rig, operated by a specialist contractor. A variety of associated equipment and infrastructure is required. A typical HDD layout is shown in Figure 4.

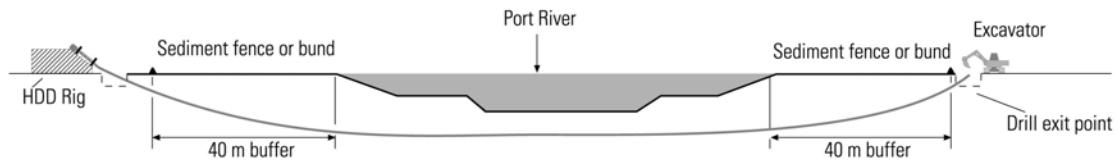
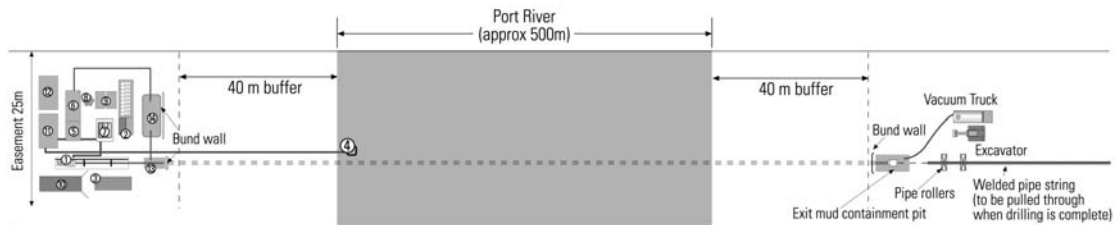


Figure 3: Schematic Profile of the Port River Horizontal Directional Drill Crossing

A drill pad approximately 40x40m in size will be established on Torrens Island to accommodate the drill rig and associated equipment. This pad is proposed to be located on the SEA Gas pipeline easement and adjacent land, in a disturbed area at the southern end of a disused horse training track (refer to Figure 1).

Prior to construction, topsoil on the drill pad will be stripped and stockpiled. Suitable material will be imported to create a compacted 'hardstand' area. Following construction, the hardstand material will be removed, topsoil replaced and the site rehabilitated.



- | | | | |
|---------------------|-----------------------------|---------------------------------|------------------------|
| 1. HDD Rig | 5. Mud Mixing Tank | 9. Power Generators | 13. Drill Entry Point |
| 2. HDD Control Unit | 6. Cuttings Separation Tank | 10. Equipment Storage | 14. Cuttings (returns) |
| 3. Drill Pipe | 7. Mud Pump | 11. Site Offices settlement pit | |
| 4. Water Pump | 8. Mud Storage | 12. Site Offices | |

Figure 4. Plan View of Typical HDD layout

The pipe string will be laid out and welded on the construction right-of-way on Le Fevre Peninsula and pulled back through the drill-hole to Torrens Island. Temporary workspace required to accommodate the pipe string will be cleared and stripped prior to construction, and rehabilitated following construction, in accordance with the rehabilitation carried out in the pipeline easement (refer to the SEA Gas Project EER/EIR Section 3.7).

A Construction Environmental Management Plan (CEMP) will be developed for the SEA Gas Project. It will outline the environmental objectives, roles and responsibilities for environmental management, site specific environmental management procedures, training programs and monitoring, auditing and reporting systems. The specific environmental aspects of the Pelican Point pipeline extension will be integrated into the SEA Gas Project CEMP.

2.5 Operation

Pipeline commissioning for the SEA Gas Project is scheduled for late 2003. Gas delivery will be controlled from the SEA Gas Control Centre in Adelaide.

Following reinstatement and revegetation of the construction right-of-way, very little above-ground infrastructure will be visible. Above ground infrastructure will be limited to marker posts to identify the location of the pipeline and the meter station, which will be located inside the boundary of the Pelican Point power station.

Environmental impact associated with operating gas pipelines is minimal and is generally associated with access and potential emissions (venting).

2.6 Decommissioning

The design life of the SEA Gas pipeline is 80 years. When the utility is no longer required, the pipeline will be decommissioned in accordance with the legislative requirements of the day.

3 Project Alternatives

Alternatives to the SEA Gas Project are discussed in detail in the SEA Gas Project EER/EIR.

Two options have been considered for the termination point of the pipeline:

- Pelican Point power station (as proposed in this EIR), and
- Torrens Island (as initially proposed in the SEA Gas Project EER/EIR and Pipeline Licence application).

The Torrens Island option involves terminating the pipeline at the north of the Old Quarantine Station on Torrens Island and tying into the existing lateral pipeline to Pelican Point. This option was initially proposed in the SEA Gas Project EER/EIR and is currently the termination point of the pipeline under Pipeline Licence 13.

The existing lateral pipeline is owned by Epic Energy and supplies gas from the Moomba – Adelaide Pipeline to Pelican Point.

The extension of the SEA Gas pipeline to Pelican Point has several advantages over the Torrens Island option. By providing an alternative supply of gas at Pelican Point, it will:

- increase the total gas supply capacity to the existing and future Pelican Point power stations
- increase competition for natural gas at Pelican Point, and
- increase security of natural gas supply to Pelican Point.

3.1 Pipeline Extension Route Alternatives

Three alternative routes were considered, all of which require horizontal directional drilling under the Port River. These alternatives were:

1. The pipeline would be drilled from the disused horse training track on Torrens Island diagonally across the river to the north of Mutton Cove, and parallel the existing Epic Energy pipeline easement on land to Pelican Point. Length 1.7km.
2. The pipeline would be drilled under the Port River adjacent to the existing (Epic Energy) pipeline, from north of the Old Quarantine Station on Torrens Island directly across the river. It would then parallel the existing Epic Energy pipeline easement on land to Pelican Point. Length 2.0km.
3. The preferred route described in this EIR. The pipeline would be drilled from the disused horse training track on Torrens Island directly across the river to the south of Mutton Cove. It would then follow the existing powerlines west and then north to the Pelican Point Power Station. Length 1.9km.

Option 1 presented significant risks associated with directional drilling adjacent to an existing gas pipeline, and there is no suitable cleared area to establish a drill pad at the northern end of the Old Quarantine Station. Option 2 was not considered feasible due to the length of the HDD required under the Port River and Mutton Cove.

Thus Option 3 was considered the preferred option on the basis of safety, economic feasibility and environmental impact. It follows an existing infrastructure corridor and is located predominantly on previously disturbed land.

4 Management of Environmental Issues

This section describes the existing environment along the proposed pipeline alignment, 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 (such as soils and terrain, ecology and heritage) rather than construction activity (such as clearing, trenching and welding). More detailed management procedures for specific Project tasks will be included in the Construction Environmental Management Plan (CEMP).

This document only addresses issues specifically relevant to this Pelican Point pipeline extension. More detailed information in the context of the entire SEA Gas Project is contained in the SEA Gas Project EER/EIR.

4.1 SEA Gas Environmental Management Strategy

SEA Gas has developed an environmental management strategy for the Project and is developing an Environmental Management Plan for the construction of the gas pipeline. Details of this strategy are provided in Section 5.2 of the SEA Gas Project EER/EIR.

4.2 Soils and Terrain

General information on soils and terrain in the region is provided in the SEA Gas Project EER/EIR in Section 6. Information relating specifically to the Pelican Point pipeline extension is detailed below.

4.2.1 Existing Environment

The Pelican Point area is comprised of flat coastal plains. The area is characterised by clays and surface sands which have been identified as potential acid sulphate soils (Kinhill 1999).

In addition to the area's natural geological features, historical land uses in the area have resulted in the modification and contamination of soils in the area. Soils on the northern part of the Le Fevre Peninsula are reported to contain fill consisting of industrial waste or dredged silty sand taken from the Port River. Possible contaminants include heavy metals, polynuclear aromatic hydrocarbons (PAH), phenols and other trace contaminants (Hyder Consulting 1998). The areas of

natural soil are distinguished by native plants where as the elevated areas of fill are generally covered by introduced plant species (Kinhill 1999).

Previous field investigations in the area have identified an area of potential contamination to the south of the Pelican Point power station, which is believed to have been used for the disposal of caustic grits (Hyder Consulting 1998). The proposed pipeline crosses the eastern edge of this area.

4.2.2 Potential Impacts

Potential impacts to soils as a result of pipeline construction are outlined in Section 6.2 of the SEA Gas Project EER/EIR. In the Pelican Point region, the most significant of these potential impacts is the possibility of exposure of contaminated or acid sulphate soils. Potential issues involve the health risks to workers and the public through exposure.

4.2.3 Impact Mitigation

Mitigation measures outlined in Section 6.3 of the SEA Gas Project EER/EIR will be followed to minimise adverse effects to soils of the area.

In particular, further investigation and soil sampling along the pipeline route will be undertaken prior to construction to determine the presence of contaminated or acid sulphate soils. Soil management procedures will be developed and incorporated into the SEA Gas Project CEMP. Complementary measures will also be developed to manage contaminated groundwater that may be encountered (refer to Section 4.3.3 below).

Procedures to deal with contaminated soil and/or groundwater will be based on an assessment of the level of contamination and the risks to human health and the environment, and may include measures to:

- undertake standard construction practices (i.e. no special management)
- contain on-site (e.g. cover soil stockpiles or contain soil in skips) and replace in the trench
- contain and treat on-site and replace in the trench, or
- remove off-site for disposal at a licensed facility and backfill with clean soil, if environmental risks cannot be adequately managed on-site.

Soil management procedures will be developed in consultation with the Environment Protection Authority. SEA Gas will comply with the general environmental duty under Section 25 of the *Environment Protection Act 1993* not to undertake an activity that pollutes, or might pollute, the environment unless it takes all reasonable and practicable measures to prevent or minimise any resulting environmental harm.

4.3 Hydrology

General information on hydrology in the Pelican Point area is provided in the SEA Gas Project EER/EIR in Section 7. Details relating specifically to the Pelican Point pipeline extension are detailed below.

4.3.1 Existing Environment

The groundwater in the area is characterised by shallow saline aquifers that are subject to tidal and seasonal influences. With the exception of the estuarine Port River, there are no surface water features on the Pelican Point pipeline alignment.

4.3.2 Potential Impacts

Potential impacts to surface and ground water as a result of pipeline construction are outlined in Chapter 7 of the SEA Gas Project EER/EIR. In the Pelican Point region, the most relevant of these is the potential contamination of groundwater by minor spills of fuel or chemicals or leachate from acid sulphate soil exposure.

Impact to the Port River will be avoided by the use of horizontal directional drilling at a depth of 5-8m below the river bed. The drill pad and exit point will be located approximately 40m from the river, and drilling mud will be contained on site and removed for disposal. There will be no discharges into the river.

4.3.3 Impact Mitigation

Mitigation measures outlined in Chapter 7 of the SEA Gas Project EER/EIR will be implemented to minimise adverse effects to hydrology of the area. In particular, procedures for the management of potential acid sulphate soils will be integrated into the CEMP, and any dewatering of the trench will be contained on land.

4.4 Flora and Fauna

General information on the ecology of the area is provided in Section 9 of the SEA Gas Project EER/EIR. Details relating specifically to the Pelican Point pipeline extension are detailed below.

4.4.1 Existing Environment

An assessment of the flora and fauna of the proposed alignment on Le Fevre Peninsula was undertaken on 31st July 2002¹. Vegetation and habitat along the length of the proposed alignment were inspected in a corridor approximately 40m wide, which covered the area likely to be impacted by the 25m construction corridor.

Plant species recorded within or adjacent to the pipeline easement on Le Fevre Peninsula are listed in Appendix A. Most annual plant species were believed to

¹ by Patrick O'Connor NRM

have germinated at the time of the survey, however it is possible that some late-season annuals may not have been present.

Flora

The majority of the proposed easement is disturbed or highly modified.

Between Port River and Mersey Road, small patches of *Sarcocornia quinqueflora* (Beaded Samphire) Low Shrubland are interspersed with disturbed patches dominated by *Critesion marinum* (Sea Barley-grass). Other alien species in this area include *Reichardia tingitana* (False Sow-thistle) and *Cakile maritima ssp. maritima* (Two-horned Sea Rocket).

The vegetation between the end of Mersey Road and Pelican Point power station is highly disturbed, criss-crossed with motorcycle tracks and represents a mosaic of disturbed coastal shrubland habitats. The area east of the powerline (Mutton Cove) contains significant inter-tidal vegetation dominated by *Halosarcia halocnemoides ssp. halocnemoides* (Grey Samphire) and *Suaeda australis* (Austral Seablite).

The vegetation west of the powerline is a mosaic of *Nitraria billardierei* (Nitre Bush) Low Shrubland, *Isolepis nodosa* (Knobby Club-rush) Tussock Sedgeland and *Sarcocornia quinqueflora* (Beaded Samphire) +/- *Halosarcia halocnemoides ssp. halocnemoides* Low Shrubland. These vegetation types intergrade into each other across variation in relief, soil type and disturbance history. All of these vegetation associations are rated as reasonably or excellently conserved in South Australia (Neagle, 1995).

Fauna

During the assessment of the alignment, numerous bird species were recorded and two introduced mammal species (rabbit and fox) were observed. No reptiles were observed.

Previous fauna assessments of the area (Kinhill 1999) have indicated that few native terrestrial fauna species are present due to considerable habitat disturbance and modification. No native mammals have been recorded in the area in recent years. However several common species of reptile have been recorded in the region including brown snakes and sleepy lizards.

The majority of avifauna found in the region are water birds and waders which inhabit the intertidal mudflats, mangroves and samphires in the area. Some common land species also inhabit the area including the Galah, Australian Magpie, Willie Wagtail and Masked Lapwing.

4.4.2 Potential Impacts

Potential impacts to flora and fauna as a result of pipeline construction are outlined in Section 9.2 of the SEA Gas Project EER/EIR.

The main impact of construction of the Pelican Point extension is removal of disturbed remnant vegetation from the right-of way.

The pipeline has been aligned to avoid the significant inter-tidal vegetation identified in Mutton Cove. There will be some impact to a small patch (approximately 30m long) of degraded samphire vegetation south-west of Mutton Cove. This vegetation is located in area that has generally been heavily disturbed by weed invasion, trail-bike riding and dumping of fill and rubbish (see Plate 1).

The impact resulting from the presence and activity of construction equipment and personnel will be of short duration. It is not expected to have a significant effect on fauna, as little native fauna is likely to be present and the area currently experiences high levels of disturbance from trail-bike riding activities.

There will be no impact on marine flora or fauna as the Port River will be horizontally directionally drilled and there is no planned discharge of material into the Port River or Mutton Cove.



Plate 1: Degraded samphires south-west of Mutton Cove, facing south-east along the proposed alignment.

4.4.3 Impact Mitigation

Mitigation measures outlined in Section 9.3 of the SEA Gas Project EER/EIR will be integrated into the CEMP, and implemented to minimise adverse effects to flora and fauna. In particular:

- topsoil and vegetation stripped and cleared from the right-of-way will be re-spread over the right-of-way following construction, to encourage re-colonisation of native plant species, and
- the impact to the degraded samphire vegetation south-west of Mutton Cove will be minimised by aligning the pipe as close as possible to the edge of the adjacent land title, reducing the right-of-way width and utilising the adjacent filled area as temporary workspace.

4.5 Cultural Heritage

General information on cultural heritage in the region is provided in Chapter 10 of the SEA Gas Project EER/EIR. Details relating specifically to the Pelican Point pipeline extension are detailed below.

4.5.1 Existing Environment

The physical character of Le Fevre Peninsula has been radically altered through extensive land fill and the reclamation of samphire marsh. The northern edge of the Peninsula has been extended hundreds of metres in the development of Outer Harbour. The proposed SEA Gas alignment parallels an existing high voltage transmission line along the eastern side of the Peninsula and is contained within land fill up to 2m in depth for much of this length. The northern portion of the proposed alignment appears to be in an area of disturbed sand dunes which have greater archaeological sensitivity.

According to the State Aboriginal Heritage Committee, the Kurna Meyunna Association have responsibility for this region. Field surveys of the alignment on Pelican Point and Torrens Island were carried out by Vivienne Wood, in conjunction with representatives of the Kurna Meyunna Association, including Heather Agius, Frank Wanganeen and Frank Wanganeen Jnr.

No indigenous or European heritage sites were recorded on the proposed alignment. Several indigenous and European heritage sites were recorded elsewhere on Torrens Island. The remains of two ships (the *Excelsior* and the *Jupiter*) are present in Mutton Cove on Le Fevre Peninsula, several hundred metres north of the proposed alignment.

The area, particularly Outer Harbour and Pelican Point, is of Aboriginal cultural significance through its connection with the story of *Tjirbruki*, an ancestral hero of the Kurna. *Tjirbruki* was responsible for the formation of a number of landscape features along the coast from the Sturt River, at Marion, to as far south as Cape Jervis and as far east as Brukunga.

4.5.2 Potential Impacts

Potential impacts to indigenous heritage as a result of construction activities are outlined in Chapter 10 of the SEA Gas Project EER/EIR. The Pelican Point extension has the potential to impact shallow artefact scatters or subsurface material present in areas where the original surface is less disturbed, particularly in the northern portion of the alignment.

There are no impacts likely to European heritage.

4.5.3 Impact Mitigation

The mitigation measures proposed in Section 10.1.3 of the SEA Gas Project EER/EIR will be implemented to minimise adverse impacts to indigenous heritage. In particular, it is proposed that monitoring be carried out during construction in the northern portion of the proposed alignment by representatives of the Kaurna Meyunna Association.

4.6 Social Issues

Chapter 11 of the SEA Gas Project EER/EIR outlines a range of potential social issues, including impacts to land use, visual amenity, third party infrastructure, public safety and risk and waste management. Specific issues relevant to the Pelican Point extension are summarised below.

4.6.1 Land Use

The main land use in the Pelican Point area is light and heavy industry, dominated by manufacturing. The Mutton Cove area is zoned as recreational and recreational activities occur on the Port River.

The Pelican Point pipeline is small scale and impacts to land use are expected to be minor.

Impact mitigation measures are discussed in Section 11.2 of the SEA Gas Project EER/EIR.

4.6.2 Public Safety and Risk

Information on the management of potential risks to the public relevant to the Pelican Point extension are provided in Section 11.5 of the SEA Gas Project EER/EIR.

4.7 Hazardous Storage, Spill and Emergency Response

A limited amount of chemicals and hazardous substances may be required on site for the construction of the pipeline. Information on mitigating the impact of these

substances on the local environment is provided in Section 11.7 of the SEA Gas Project EER/EIR.

4.8 Additional Mitigation Strategies

4.8.1 Construction Environmental Management Plan

A task-specific CEMP is being developed for the SEA Gas Project. Specific aspects of the Pelican Point pipeline will be incorporated into this EMP for review by PIRSA prior to construction and implemented during construction of the proposed pipeline.

4.8.2 Awareness Program

SEA Gas shall ensure that all personnel and associated contractors are adequately aware of the relevant impact mitigation strategies.

4.8.3 Contractual Obligations

All contracts with companies undertaking construction activities for SEA Gas on the Pelican Point extension shall include a requirement to:

- operate in a manner consistent with SEA Gas's Environmental Policy
- adopt mitigation strategies outlined in this EIR, and
- meet SEO commitments.

5 Consultation

SEA Gas recognises that an effective consultation program is an essential part of any project. Therefore SEA Gas aim to effectively communicate with all key landholders, stakeholders and other interested parties throughout the development of the Project.

SEA Gas has actively sought stakeholder input into the environmental assessment process of the Project. Information on stakeholder consultation and SEA Gas’s ongoing consultation strategy is provided in Chapter 12 of the SEA Gas Project EER/EIR.

Specific consultation regarding the Pelican Point extension is being carried out to supplement the consultation carried out for the Project.

5.1 Key Stakeholders

The following stakeholders have been identified as having a direct interest in the construction and operation of the extension to Pelican Point:

- State regulatory agencies
- Local government
- Landowners/occupiers and utilities operators
- Non-government organisations
- Aboriginal heritage groups and native title claimants.

Stakeholder consultation carried out is summarised in Table 2. Issues raised by stakeholders have been addressed within this EIR where appropriate.

Table 2: Stakeholder Consultation

Stakeholder	Consultation Method(s)	Issues Raised
State Government		
PIRSA Petroleum	Telephone discussions Meetings	<ul style="list-style-type: none"> ▪ EIR required for licence extension ▪ Ensure adequate stakeholder consultation, particularly regarding environmental impacts
DWLBC (Water)	Telephone Letter	<i>Awaiting response</i>
DWLBC (Native vegetation)	Meeting	<ul style="list-style-type: none"> ▪ Avoid disturbance to significant vegetation
Department of Industry & Trade	Telephone Letter	<i>Awaiting response</i>

Stakeholder	Consultation Method(s)	Issues Raised
EPA	Telephone Letter Meeting	<ul style="list-style-type: none"> ▪ Review Schedule 1 of the Environment Protection Act to determine if any component requires licensing ▪ Contaminated soil assessment should be carried out ▪ Contaminated soil excavated from the trench should be removed and the trench backfilled with clean soil ▪ Disposal of trench water – licence required if discharging to water body. Prefer avoid discharge to Port River ▪ General environmental duty under Section 25 to not cause environmental harm.
Transport SA	Telephone Letter	<i>Awaiting response</i>
Ports Corporation	Telephone Letter	<ul style="list-style-type: none"> ▪ Require adequate depth to allow future dredging of Port River
DEH (Maritime Heritage)	Telephone Letter	<ul style="list-style-type: none"> ▪ Alignment is clear of Mutton Cove shipwrecks ▪ Consider side scan survey of the riverbed where pipe will cross for 'lost' shipwrecks
DEH (Coast and Marine)	Telephone Letter	<ul style="list-style-type: none"> ▪ Need plans to deal with acid sulphate soils ▪ Avoid blocking flow to tidal creeks
DEH (Reserve Planning)	Telephone Letter	<i>Awaiting response</i>
DEH (National Parks and Wildlife)	Telephone Letter	<ul style="list-style-type: none"> ▪ No issues with proposal
Local Government		
Port Adelaide Enfield Council	Telephone Letter Meeting	<ul style="list-style-type: none"> ▪ Need to consult/inform interest groups ▪ Restrict disturbance to easement ▪ Contaminated soil investigations ▪ Need plans to deal with acid sulphate soils ▪ Requested details on survey plans and Cultural Heritage survey results ▪ Requested copy of EIR for comment
PAEC Wetlands Ranger	Meeting	<ul style="list-style-type: none"> ▪ Ensure shipwreck sites avoided
PAEC Coastcare Officer	Telephone Letter	<ul style="list-style-type: none"> ▪ Avoid transfer of contaminated material into Mutton Cove ▪ Some remnant vegetation between Mutton Cove and power station – need to minimise disturbance ▪ Revegetation work planned by community groups along proposed alignment – SEA Gas should consider revegetating easement to tie in with community programs and as a buffer around Mutton Cove ▪ Project is underway to restore some tidal flows and ecological integrity to Mutton Cove

Stakeholder	Consultation Method(s)	Issues Raised
Utility Operators		
Electranet	Telephone Letter	<ul style="list-style-type: none"> ▪ Avoid obstruction of easement and substation land
Heritage/Native Title		
Kurna Meyunna Association	Involved in heritage survey	<ul style="list-style-type: none"> ▪ No sites recorded; monitoring recommended for northern section
Crown Solicitor	Letter enquiring if Native Title applies	<i>Awaiting response</i>
DOSAA	Telephone	<ul style="list-style-type: none"> ▪ Ensure Kurna people involved in survey ▪ No issues
Interest Groups		
Port Adelaide Environmental Forum	Telephone Letter	<i>Awaiting response</i>

5.2 Landowners/occupiers

The pipeline extension traverses seven titles on Le Fevre Peninsula (see Table 3). Landowners/occupiers have been informed of the proposed extension and negotiations for easement acquisition are well advanced. SEA Gas will continue to work closely with landowners/occupiers as the Project progresses.

Table 3: Landholders on the Pelican Point Extension

Name	Title Reference
SA Ports Corp	CT 5781/99
Minister Environment and Heritage	CT 5660/242
Minister Environment and Heritage	CT 5732/372
Minister Environment and Heritage	CT 5863/7
Treasurer	CT 5859/947
National Power SA Inv Ltd	CT 5660/245
National Power SA Inv Ltd	CT 5660/246

5.3 Ongoing Consultation

SEA Gas aims to directly involve stakeholders from the planning stage right through to construction to ensure that all potential concerns are identified and appropriately addressed. All stakeholder correspondence will be registered and documented to ensure that issues are appropriately addressed.

During construction a number of methods shall be employed to ensure that communications with key stakeholders are maintained, as outlined in Section 12.6 of the SEA Gas Project EER/EIR. These methods shall include:

- signage identifying the pipeline route
- a 24 hour telephone contact line
- a complaints register and follow-up procedure
- landholder consultation, and
- Aboriginal heritage monitors in sensitive areas.

6 Statement of Environmental Objectives

The SEA Gas Project Statement of Environmental Objectives (SEO), December 2001 outlines the environmental objectives with which construction, operation and decommissioning activities must conform and the criteria upon which achievement of these objectives will be assessed.

The construction methods and potential environmental impacts involved in the extension of the pipeline to Pelican Point are consistent with the methods and impacts identified for the remainder of the SEA Gas pipeline.

Because no new construction techniques, additional environmental impacts or required mitigation strategies have been identified for extension of the pipeline, the SEA Gas SEO adequately covers the objectives and assessment criteria relevant to the extension of the pipeline.

In particular, the SEO Objectives listed in Table 4 address the main issues that have been outlined in this EIR. In addition, Section 5 of the SEO contains detailed conditions and requirements that must be complied with in order to meet the objectives and thus address the environmental issues described in this EIR.

Table 4: Relevant Objectives from the SEA Gas Project SEO (December 2001)

Issue	Relevant SEO Objectives
Soil contamination	1.6 To appropriately protect soils from contamination and to plan for the constraints posed by pre-existing soil contamination 1.7 To appropriately remediate soil contamination 1.8 To avoid the exposure of potential acid sulphate soils where practicable and to mitigate impacts where avoidance is not possible
Groundwater contamination	2.2 To appropriately protect groundwater quality from contamination by fuel, chemicals, acid sulphate soil leachate or other hazardous substances and remediate if required 2.4 To plan for the constraints posed by shallow groundwater to standard construction activities
Port River crossing	3.1 To minimise the amount of sediment entering surface water features 3.2 To appropriately protect surface waters from contamination by fuel, chemicals, highly saline groundwater, acid sulphate soil leachate or other hazardous substances 4.1 To minimise impacts on riparian, aquatic and water dependant biota 4.2 To minimise disturbance to watercourse bed and banks & remediate if required 4.4 To minimise erosion, sedimentation and acidification impacts & remediate if required

Issue	Relevant SEO Objectives
	<p>4.5 To achieve long term site stability</p> <p>4.6 Minimise disruption to third party use</p> <p>4.7 Minimise visual impact at water crossing locations</p>
Flora and fauna	<p>7.1 To minimise and where practicable avoid clearing of remnant vegetation</p> <p>7.2 To keep fauna fatalities to as low as possible</p> <p>7.3 To avoid destruction of significant fauna habitats</p> <p>7.4 To minimise and where practicable avoid fragmentation of fauna habitats</p> <p>7.5 To minimise disruption to critical fauna lifecycle stages</p> <p>7.6 To minimise loss of biodiversity</p> <p>7.7 To avoid the spread of environmental and proclaimed weeds</p> <p><i>Northern Adelaide Plains</i></p> <ul style="list-style-type: none"> ▪ To avoid impacts on significant vegetation ▪ To minimise impacts to the Samphire - Mangrove Complex in Barker Inlet and Torrens Island
Indigenous heritage	<p>8.1 To protect surface and shallow artefact scatters from damage</p> <p>8.2 To minimise damage to subsurface material</p> <p>8.3 To avoid damage to culturally significant vegetation</p> <p>8.4 To avoid damage to built heritage</p> <p>8.5 To obtain all necessary approvals for unavoidable site disturbance & remediate if required</p> <p>8.6 To implement appropriate protocols for dealing with cultural heritage material discovered during construction</p> <p>8.7 To avoid damage to sites of significance to Aboriginal anthropology or history</p>
Land use	<p>10.2 To avoid unacceptable disturbances to landowner assets and infrastructure remediate where required</p> <p>10.3 To adequately protect conservation or recreational values and activities</p> <p>10.5 To avoid adverse effects to residential and industrial activities</p>
Stakeholder consultation	<p>16.1 To establish SEA Gas' identity in the Project area as the proponent</p> <p>16.2 To ensure local communities and key stakeholders are aware of the SEA Gas Project and the associated assessment and approval process</p> <p>16.3 To identify issues and concerns to provide the opportunity for them to be addressed during project planning, assessment and design</p> <p>16.3 To provide opportunities for community input to the assessment process</p> <p>16.4 To provide a mechanism to ensure that SEA Gas' consideration of stakeholder issues is reported back to the community with further consultation as required</p> <p>16.5 To establish all necessary agreements with landowner/occupiers directly affected</p>

7 Conclusion

The extension of the SEA Gas pipeline (Pipeline Licence 13) to Pelican Point is a relatively small project that will form an important component of the SEA Gas Project by delivering gas directly to end-users at Pelican Point.

SEA Gas has developed this Environmental Impact Report in accordance with the South Australian *Petroleum Act 2000* to address issues specifically relevant to this Pelican Point pipeline extension. More general information in the context of the entire SEA Gas Project is contained in the SEA Gas Project EER/EIR (SEA Gas 2001).

The Pelican Point pipeline involves the construction of infrastructure in a degraded environment of low population density. The pipeline route has been selected to avoid impacts on environmentally and culturally sensitive areas.

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:

- management of contaminated or acid sulphate soils
- minimising disturbance to degraded remnant vegetation.

In managing potential impacts, SEA Gas is committed to working closely with all relevant authorities and landholders. SEA Gas shall take all necessary steps to rehabilitate areas affected by the Project during both construction and operation. As part of these commitments SEA Gas will integrate environmental management principles and procedures into the design and construction processes.

A Construction Environmental Management Plan (CEMP), which will outline the environmental objectives, roles and responsibilities for environmental management, site specific environmental management procedures, training programs and monitoring, auditing and reporting systems will be developed for the SEA Gas Project. The specific environmental aspects of the Pelican Point pipeline extension will be integrated into the SEA Gas Project CEMP.

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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.
CEMP	Construction Environmental Management Plan
EMS	Environmental Management System
DEH	Department for Environment and Heritage
DOSAA	Department of State Aboriginal Affairs
DWLBC	Department of Water, Land and Biodiversity Conservation
km	Kilometre
mm	Millimetre
PIRSA	Primary Industries and Resources, South Australia
SEA Gas	South East Australia Gas Pty Ltd
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

Plant Species List

Table A1. Native plant species occurring along the pipeline alignment or immediately adjacent (Nomenclature follows Lang & Kraehenbuehl 2001)

Family	Species	Common Name
GRAMINEAE	<i>Austrostipa sp.</i>	Spear-grass
GRAMINEAE	<i>Danthonia setacea var. setacea</i>	Small-flower Wallaby-grass
AIZOACEAE	<i>Disphyma crassifolium ssp. clavellatum</i>	Round-leaf Pigface
CHENOPODIACEAE	<i>Enchylaena tomentosa var. tomentosa</i>	Ruby Saltbush
CHENOPODIACEAE	<i>Halosarcia halocnemoides ssp. halocnemoides</i>	Grey Samphire
CYPERACEAE	<i>Isolepis nodosa</i>	Knobby Club-rush
CHENOPODIACEAE	<i>Maireana oppositifolia</i>	Salt Bluebush
MYOPORACEAE	<i>Myoporum insulare</i>	Common Boobialla
ZYGOPHYLLACEAE	<i>Nitraria billardiarei</i>	Nitre-bush
CHENOPODIACEAE	<i>Rhagodia candolleana ssp. candolleana</i>	Sea-berry Saltbush
CHENOPODIACEAE	<i>Salsola kali</i>	Buckbush
CHENOPODIACEAE	<i>Sarcocornia quinqueflora</i>	Beaded Samphire
COMPOSITAE	<i>Senecio lautus</i>	Variable Groundsel

Table A2. Alien plant species occurring along the pipeline alignment or immediately adjacent (Nomenclature follows Lang & Kraehenbuehl 2001)

Family	Species	Common Name
COMPOSITAE	<i>Arctotheca calendula</i>	Cape Weed
LILIACEAE	<i>Asphodelus fistulosus</i>	Onion Weed
GRAMINEAE	<i>Avena barbata</i>	Bearded Oat
GRAMINEAE	<i>Bromus rigidus</i>	Rigid Brome
CRUCIFERAE	<i>Cakile maritima ssp. maritima</i>	Two-horned Sea Rocket
AIZOACEAE	<i>Carpobrotus edulis</i>	Hottentot Fig
GRAMINEAE	<i>Cortaderia selloana</i>	Common Pampas Grass
GRAMINEAE	<i>Critesion marinum</i>	Sea Barley-grass
COMPOSITAE	<i>Cynara cardunculus</i>	Artichoke Thistle
GRAMINEAE	<i>Cynodon dactylon</i>	Couch
COMPOSITAE	<i>Dittrichia graveolens</i>	Stinkweed
BORAGINACEAE	<i>Echium plantagineum</i>	Salvation Jane
EUPHORBIACEAE	<i>Euphorbia terracina</i>	False Caper
AIZOACEAE	<i>Galenia secunda</i>	Galenia
GRAMINEAE	<i>Lagurus ovatus</i>	Hare's Tail Grass
LIMONIACEAE	<i>Limonium companyonis</i>	Sea-lavender
SOLANACEAE	<i>Lycium ferocissimum</i>	African Boxthorn
LEGUMINOSAE	<i>Medicago minima var. minima</i>	Little Medic
ONAGRACEAE	<i>Oenothera speciosa</i>	Rose Evening Primrose
CACTACEAE	<i>Opuntia sp.</i>	Prickly Pear
OXALIDACEAE	<i>Oxalis pes-caprae</i>	Soursob
GRAMINEAE	<i>Piptatherum miliaceum</i>	Rice Millet
PLANTAGINACEAE	<i>Plantago coronopus</i>	Bucks-horn Plantain
COMPOSITAE	<i>Reichardia tingitana</i>	False Sowthistle
EUPHORBIACEAE	<i>Ricinus communis</i>	Castor Oil Plant
GRAMINEAE	<i>Schismus barbatus</i>	Arabian Grass
COMPOSITAE	<i>Senecio pterophorus var. pterophorus</i>	African Daisy
CRUCIFERAE	<i>Sisymbrium officinale</i>	Hedge Mustard
COMPOSITAE	<i>Sonchus oleraceus</i>	Common Sow-thistle
LEGUMINOSAE	<i>Trifolium arvense var. arvense</i>	Hare's-foot Clover