The Narrabri Coal Seam Gas Utilisation Project

PEL 238, Gunnedah Basin

New South Wales

(Project Application 07_0023)

Construction Environmental Management Plan (revised)

December, 2008

Eastern Star Gas Limited
ABN 29 094 269 780

Level 7
51 Pitt Street
Sydney NSW 2000
Australia

Postal Address
GPO Box 4526
Sydney NSW 2001
Australia

Ph: (02) 9251 5599
Fax: (02) 9251 2299
office@easternstar.com.

Table of Contents

1 Introduction 4
1.1 Project Description 4
1.2 Project Specific Construction Activities 5
1.2.1 Construction/Installation of the Gas Pipeline. 5
1.2.2 Installation and Testing of Gas Gathering System 7
1.2.3 Compression Facilities 7
1.2.4 Wilga Park Power Station Expansion 7
1.3 Environmental Risks 8
1.4 CEMP Context 10
1.5 Eastern Star Gas Environmental Policy 16
2 Environmental Management 17
2.1 Structure and Responsibilities 17
2.1.1 ESG Project Director 17
2.1.2 Independent Environmental Representative 18
2.1.3 ESG Project Site Manager 18
2.1.4 ESG Environmental Manager 18
2.1.5 ESG HSEC Manager 18
2.2 Environmental Training 19
2.3 Emergency Contacts 19
2.4 Planning and Legislative Context 19
2.4.1 Approvals and Licensing 20
2.5 Contractor Management 21
2.5.1 Adtech FRP Pty Ltd 21
2.5.2 Austerberry/Ausdrill 22
3 Compliance Tracking and Reporting 23
3.1 Daily Site Environmental Report 23
3.2 Weekly Construction Monitoring and Compliance Auditing and Reporting 23
3.3 Monthly Environmental Compliance Audit 23
3.4 Reporting to Determining Authorities, DECC and the DG 23
3.4.1 Non-compliance notification and reporting 24
3.5 Environmental Auditing 24
4 Community Information, Consultation and Notification Strategy 25
4.1 Community Information and notification 25
4.2 Stakeholder Consultation 25
4.3 Incident Management and Complaints Procedure 25
5 Environmental Management Plans 27
5.1 General Project Site and Access EMP 28

5.2 Soils and Land Capability EMP 31
5.3 Vegetation and Weed Management EMP 33
5.4 Dust Management EMP 35
5.5 Noise/Vibration Control EMP 36
5.6 Traffic Management EMP 38
5.7 Aboriginal and Non-indigenous Heritage EMP 39
5.8 Waste Management EMP 40
5.9 Erosion and Sediment Control EMP 41
5.10 Fauna Management (Open Trench) EMP 42
5.11 Monitoring EMP 43
6 Appendices 44
6.1 Appendix A – Site Induction (Environmental Awareness) 44
6.2 Appendix B - Daily Site Activity Diary 46
6.3 Appendix C – Weekly Environmental Compliance Checklist 47
6.4 Appendix D - Monthly Environmental Compliance Audit Checklist 48
6.5 Appendix E –Non-compliance Reporting Procedure 50
6.6 Appendix F – Incident/Complaints Recording Form 51
6.7 Appendix G – Emergency ERP Map 52
6.8 Appendix H - Adtech FRP AS/NZS ISO9001 Certification 53
6.9 Appendix I – Adtech FRP Pty Ltd Environmental Policy 54
6.10 Appendix J – Austerberry Environmental Policy 56
6.11 Appendix K – Austerberry's ECP for Sedimentation, Erosion and Wastewater Management 57

Index of Tables

Table 1 Stage 1 Construction Activity Timing 7
Table 2 Stage 2 Construction Activity Timing 8
Table 3 Emergency Contacts 19
Table 4 Approvals required prior to construction commencing 20
Table 5 Additional legislative and regulatory approvals 21

Table of Figures

Figure 1 Project specific management structure 17

1 Introduction

The purpose of this Construction Environmental Management Plan (CEMP) is to provide guidelines for the identification, protection and management of environmental aspects during the construction of the Narrabri Coal Seam Gas Utilisation Project.

The CEMP also addresses the requirements of:

- The conditions of Project Approval (07_0023) issued by the Minister for Planning; and
- The final Statement of Commitments submitted to NSW Department of Planning (DoP) in August 2008 .

The CEMP has been developed consistent with:

- The Eastern Star Gas Limited Health, Safety, Environment and Community Policies (2007);
- The Department of Infrastructure, Planning and Natural Resources (former) *Guideline for the Preparation of Environmental Management Plans* (2004);
- Australian Petroleum Production and Exploration Association (APPEA) *Code of Environmental Practice* (1996, revised 2008); and
- Current New South Wales legislation and regulations.

Eastern Star is the operator of the Narrabri Coal Seam Gas Project and therefore maintains the responsibility for environmental management issues associated with the construction of the Project as proposed in the *Environmental Assessment*. All Eastern Star Gas employees and contractors engaged in the construction activities within the Project Site are required to comply with the requirements and directives of the CEMP to mitigate to the greatest degree the potential for deleterious environmental impacts and regulatory non-compliance.

1.1 Project Description

The Narrabri CSG Utilisation Project comprises four main components:

1. A Gas Gathering System at the Bibblewindi and Bohena CSG Pilots.
   The gas gathering system will comprise a network of small diameter pipes transporting gas from individual wells to an inlet hub and gas compression facility. The system will collect gas from the Bibblewindi CSG Pilot and Bohena CSG Pilot.
2. Gas compression facilities at the Bibblewindi CSG Pilot
   Each gas compression package will increase gas pressure from approximately 100kPa to 1100kPa.
3. A 32km long buried gas flow line.
   The flow line will be located within a 20m wide easement although a corridor of only 10m will be required for all construction activities.
4. The expansion of generating capacity at the existing Wilga Park Power Station

The power station will be expanded to a maximum capacity of 40MW through the installation of up to 12 x 3MW gas driven reciprocating engine generators to compliment 4 x 1MW generators currently in place. The power station will supply electricity into the 66kV network through a substation adjacent to the power station.

A range of short-term strategic, environmental and socio-economic objectives have been integrated into the Project in support of the longer term goal to develop a sustainable and commercially viable gas field and transmission infrastructure in the Narrabri region. The Project objectives include the following.

- The ongoing assessment and development of both conventional petroleum and Coal Seam Gas (CSG) potential of PAL2 and PEL238;
- The conduct of the Project in line with statutory and regulatory requirements;
- The cultivation of best practice cultures both internally and for external contractors and service providers;
- The mitigation of cumulative environmental impacts associated with this activity with a specific focus on biotic and air quality/greenhouse gas impact minimisation;
- The cost effective production and transmission of CSG to the Wilga Park Power Station;
- The provision of socio-economic benefits to the Narrabri region through goods and services supply and direct/indirect employment.

Contractors have supplied engineering design, supply and delivery schedules for the various project components required during the construction phase of the Project. Civil works for the main pipeline and power station expansion are currently scheduled to begin in late November 2008 with projected completion date forecast for mid 2009. This revised construction schedule takes into account the likely cessation of construction activities for a short period over the Christmas and New Years break when contractors typically send crews on break.

Activities planned to occur during this period and the timing of such is discussed are outlined in tables 1 and 2.

1.2 Project Specific Construction Activities

The following specific construction activities will occur as subsets of the activities described in section 1.1

1.2.1 Construction/Installation of the Gas Pipeline.

The general activities that will occur during the construction and installation of the gas pipeline will include:

- **Surveying the Gas Flow Line Corridor**

  The proposed gas flow line corridor will be surveyed by a registered surveyor before any preparatory activities take place. Within the forested area, the corridor will be marked clearly to avoid wherever possible any substantial trees, particularly hollow-bearing trees on or near the proposed route. In the

event the alignment of either the trench or adjoining access road cannot avoid a mature tree, it will be clearly marked for later removal and relocation to an adjacent area.

- **Vegetation Clearance**

  Within either the Bibblewindi or Pilliga East State Forests, all commercial forestry products will be removed and stored in the closest staging area for later collection by Forestry NSW or its contractors. All hollow-bearing trees felled will be relocated to adjacent bushland. All remaining vegetation will be cleared from the corridor and stockpiled at the extreme edge of the corridor.

- **Topsoil Stripping and Stockpiling**

  The topsoil within the corridor will be stripped to a depth of at least 100mm and stockpiled next to the retained vegetation

- **Trench Surveying**

  The location of the trench centreline will be marked within the surveyed corridor.

- **Trenching**

  The trench will be formed by wheel or chain trencher or excavator. Subsoils will be stockpiled in a windrow on the opposite side of the corridor to the topsoils. In the event that any hard rock or hardpan layer is encountered during trenching, a rock saw or other suitable machinery will be employed to achieve and maintain the correct trench depth.

- **Flow Line Jointing**

  The individual lengths of gas flow line lying alongside the trench will be picked up by the jointing crew and placed onto the Adtech installation machine. The jointing crew will prepare the threaded sections of the two lengths of pipe and the installation machine screws them together with a predetermined level of force.

- **Pipe Hydrotesting**

  At regular intervals during the gas flow line construction period, sections of the gas flow line will be filled with water and pressurised to 125% of its design pressure for a minimum three hour period. In addition to computerised monitoring of the pressure test, each joint along the testing section will be inspected for visible leaks. The water utilised for hydrotesting purposes will be sourced from the water treatment plant located at Bibblewindi-1 or from an alternate suitable supply. At the completion of the test, the water can be reused for further sectional Hydrotesting or transported to the nearest on farm dam for stock consumption. The fibreglass pipe does not contain any agents that will contaminate the Hydrotesting water and render it unsuitable for reuse in this manner.

- **Backfilling and Restoration**

  The backfilling of the trench will commence at the completion of the Hydrotesting procedures. A magnetic identification/warning tape will be installed approximately 300mm above the gas flow line itself. The compaction of the backfilled subsoil will be closely monitored to minimise the chances of subsequent settling within the trench. Additional fill may be imported from suitable local supplies (subject to landholder approval). The topsoil stockpile will only be accessed once the trench has undergone sufficient backfilling and compaction. The respreading of topsoil will be closely followed

by the respreading of retained vegetative material (where available) to assist in soil stabilisation in accordance with agreed forestry protocols for site rehabilitation.

1.2.2 Installation and Testing of Gas Gathering System

As stated in section 3.4.2 of the ES, the process for installing the gas gathering systems follows a similar process as for the main pipeline, albeit in a much smaller scale and generally utilising existing disturbance corridors.

1.2.3 Compression Facilities

Construction activities undertaken at the Bibblewindi compression facility will comprise the following:

- The construction of concrete slab
- The placement of the compression equipment and ancillary control room
- The connection of the facility to the gathering system linking the Bibblewindi CSG wells
- The connection of the facility to the main pipeline to Wilga Park

1.2.4 Wilga Park Power Station Expansion

The expansion of the Wilga Park Power Station will involve the following component activities.

- Importation and compaction of approximately 1500m^3 of suitable base material to create the compound surface within the extended site.
- Excavation, construction / installation of all subsurface pipe work.
- Construction of concrete foundations for all generators and new buildings.
- Construction of all new buildings.
- Placement and connection of all new generators.
- Installation of upgraded transformers and related electrical equipment.
- Erection of a perimeter fence.

Stage 1 Activity	**Weeks**				
	1-5	**6-10**	**11-15**	**16-20**	**21-25**
Construction of Pipeline (Agricultural Lands)					
Installation Gas Gathering System at Bibblewindi and Bohena					
Preliminary civil works at Wilga Park					

Table 1 Stage 1 Construction Activity Timing

Stage 2 Activity	Weeks				
	1-5	6-10	11-15	16-20	21-25
Construction of Pipeline (State Forest Lands)					
Additional works at Wilga Park, substation upgrade and generator installation					
Compression facility construction					

Table 2 Stage 2 Construction Activity Timing

1.3 Environmental Risks

Section 4 of the EA describes the prioritization of environmental issues associated with the project and the risks assigned to each.

Potential Environmental Impacts	Discussion	Consequence	Likelihood	Unmitigated Risk Rating
Threatened Flora and Fauna				
Modification or destruction of vegetation		3	B	High
Direct adverse impacts on threatened species		3	C	Moderate
Reduced biodiversity		3	C	Moderate
Soils and Land Capability				
Alteration of soil structure, stability and biological efficacy		3	B	High
Decreased land and agricultural capability of project site		3	C	Moderate
Aboriginal Heritage				
Removal, destruction or modification of places & artefacts of Aboriginal heritage significance		4	D	High
Greenhouse Gas and Air Quality Impacts				
Greenhouse Gas Impacts	High	3	A	Extreme
Dust generation, Decreased air quality from vehicular movements, greenhouse gas emissions		2	C	Moderate
Decreases in localised air quality		2	A	High
Ground and Surface Water Impacts				
Alteration of natural ground and surface water regimes		2	C	Moderate
Construction and Operation Noise Impacts				
Construction noise exceeding noise criteria		2	C	Moderate
Operational noise exceeding noise criteria		3	D	Moderate
Consequence: 1 = Insignificant; 2 = Minor; 3 = Moderate; 4 = Major Likelihood: A = Certain; B = Likely; C = Possible; D = Unlikely				

4The issues identified as requiring assessment within the *Environmental Assessment* were prioritised based, in decreasing order, of emphasis upon the following.

- The key assessment requirements of the DGR's (see EA Section 4.2.2.3 and Appendix 2).
- Issues identified with a greater frequency of impacts with high or extreme risk ratings (see EA Table 4.5).
- Issues with a high frequency of identification (see EA Table 4.1).

The Proponent recognises that due to the breadth of the consultation for the Project, some community representatives are likely to have been consulted on more than one occasion or as part of more than one stakeholder group. Similarly, the various government agencies consulted invariably duplicated many issues requiring assessment. As a consequence, the frequency of identification for some issues may be slightly elevated. Notwithstanding this duplication, and considering the comprehensive nature of the consultation program, the potentially elevated frequency of identification for some issues, is not assessed as unduly influencing the prioritisation of issues given those issues likely to be repeated will generally be noted by many stakeholders and are therefore likely to be highly identified in any event.

Based on the issues identified and the risk ratings allocated to the potential environmental impacts of these, the following order of priority has been determined. This order of priority provides for the order of assessment in Section 5of the EA, namely:

1. Air Quality and Greenhouse Gases
2. Flora
3. Fauna
4. Soils and Agricultural Capability
5. Aboriginal Heritage
6. Ground/Surface Water
7. Noise
8. Traffic Management
9. Visual Amenity
10. European Heritage

The sources of risk and potential environmental impacts associated with each issue are discussed within relevant subsections within Section 5. All other issues generally allocated a "moderate" or "low" level of priority, have been addressed to the level considered appropriate throughout the *Environmental Assessment*.

1.4 CEMP Context

The application to the NSW DoP for approval to construct and operate the Project was submitted in May 2008 by Eastern Star Gas Limited ("the Proponent") on behalf of the Narrabri Coal Seam Gas Project Joint Venture ("the Joint Venture"), which comprises Eastern Star Gas 65% and Gastar Exploration 35%.

The project was declared a Major Project under section 75B(1)(a) of the *Environmental Planning and Assessment Act 1979*, because it is development of a kind described in clause 24 of Schedule 1 of *State Environmental Planning Policy (Major Projects) 2005*.

The Minister for Planning approved the application subject to various conditions contained within schedule 2 of the Project approval. The primary objectives of the CEMP are to provide a comprehensive summary document that outlines in clear terms the specific environmental commitments, safeguards and mitigation measures discussed in the Project *Environmental Assessment* (EA) and *Statement of Commitments* (SOC).

In response to condition 6.2 of the Project Approval, the CEMP will address all pertinent requirements of the EA, SOC and further specific issues raised by DoP in the Project Approval.

Approval Condition	Condition	CEMP Section
6.2	The Proponent shall prepare and implement a Construction Environmental Management Plan to outline environmental management practices and procedures to be followed during construction of the project and shall include, but not necessarily be limited to:	
	a) a description of all activities to be undertaken on the site during construction including an indication of stages of construction, where relevant;	1.1
	b) statutory and other obligations that the Proponent is required to fulfil during construction including all approvals, consultations and agreements required from authorities and other stakeholders, and key legislation and policies;	2.2
	c) details of how the environmental performance of the construction works will be monitored, and what actions will be taken to address identified adverse environmental impacts. In particular, the following environmental performance issues shall be addressed in the Plan:	5
	(i) measures to monitor and minimise soil erosion and the discharge of sediment and other pollutants to lands and/ or waters during construction activities, particularly during any construction works at or near drainage lines;	5.2, 5.9
	(ii) measures to minimise and manage impacts on native ecology, including minimisation of vegetation clearing; methods to minimise unintended impacts on vegetation to be retained and fauna; topsoil, seed and vegetative material re-use initiatives to be employed; and measures to be undertaken to control weed spread;	5.3
	(iii) measures to monitor and manage indigenous heritage values on site including involvement of the Narrabri Local Aboriginal Land Council, Pilliga Forest Aboriginal Management Committee and Gomeroi Traditional Owner Group;	5.7
	(iv) measures to monitor and manage dust emissions;	5.4
	(v) measures to monitor and control noise emissions during construction works; and	5.5
	(vi) measures to monitor and manage traffic impacts in consultation with relevant road authorities including details of traffic routes for heavy vehicles and any necessary route or timing restriction for oversized	5.6 and Traffic Control Plan

	loads; detailed consideration of measures to be employed to ensure traffic volume, acoustic and amenity impacts along the heavy vehicle routes are minimised; and detailed consideration of alternative routes (where necessary); d) description of the roles and responsibilities for all relevant employees involved in the construction of the project; and e) complaints handling procedures during construction. The Plan shall be submitted for the approval of the Director-General no later than one month prior to the commencement of any construction works associated with the project, or within such period otherwise agreed by the Director-General. Construction works shall not commence until written approval has been received from the Director-General.	(separate doc) 2.1 4.3

Additional matters referred to in schedule 2 of the Project approval which are covered by the CEMP include:

Approval Condition	Condition	CEMP Section
2.1	The Proponent shall construct the project in a manner that minimises dust emissions from the site, including wind-blown and traffic-generated dust. All activities on the site shall be undertaken with the objective of preventing visible emissions of dust from the site. Should such visible dust emissions occur at any time, the Proponent shall identify and implement all practicable dust mitigation measures, including cessation of relevant works, as appropriate, such that emissions of visible dust cease.	5.2, 5.4, 5.6 and 5.9
2.2	The Proponent shall not permit any offensive odour, as defined under section 129 of the *Protection of the Environment Operations Act 1997*, to be emitted beyond the boundary of the site.	N/A
2.5	The Proponent shall ensure that the vibration resulting from the construction and operation of the project at a capacity of more than 12 megawatts does not exceed the preferred vibration values for low probability of adverse comment presented in Assessing Vibration: A Technical Guideline (DECC, February 2006), at any affected residential dwelling.	Operations EMP (yet to be completed)
2.6	The Proponent shall only undertake construction activities associated with the project that would generate an audible noise at any residential premises during the following hours: • 7:00 am to 6:00 pm, Mondays to Fridays, inclusive; • 8:00 am to 1:00 pm on Saturdays; and • at no time on Sundays or public holidays. This condition does not apply in the event of a direction from police or other relevant authority for safety reasons.	5.5 and subject to an application to vary condition
2.24	Except as may be expressively provided by an Environment Protection Licence for the project, the Proponent shall comply with section 120 of the Protection of the Environment Operations Act 1997 which prohibits the pollution of waters.	5.9 and appendix K
2.25	Soil and water management controls shall be employed to minimise soil erosion and the discharge of sediment and other pollutants to lands and/or waters during construction activities, in accordance with Landcom's Managing Urban Stormwater: Soils and Conservation.	5.2, 5.9
2.26	The Proponent shall in consultation with the DPI (Fisheries) ensure that the construction methodology applied for the laying of the gas flow line is such that impacts to waterways (including surface cracking of creek beds through under-boring, stream bank and riparian vegetation disturbance, in stream activities) are avoided as far as practicable. Within three months of completion of construction activities in the vicinity of waterways, the Proponent shall in consultation with the DPI (Fisheries) rehabilitate and restore any disturbance associated with the project at waterways (including to riparian vegetation) to the satisfaction of the Director-General.	Separate Document
2.27	The Proponent shall not cause, permit or allow any waste generated outside the site to be received at the site for storage, treatment, processing, reprocessing, or disposal or any waste generated on site to be disposed of at the site, except as expressly permitted by a licence under the Protection of the Environment Operations Act 1997, if such a	5.8

	licence is required in relation to that waste.	
2.28	The Proponent shall ensure that all liquid and / or non-liquid waste generated and / or stored on the site is assessed and classified in accordance with Environmental Guidelines: Assessment, Type and Management of Liquid and Non-Liquid Wastes (DECC, 2004), or any future guideline that may supersede that document.	5.8
2.29	The Proponent shall store and handle all dangerous goods, as defined by the Australian Dangerous Goods Code, strictly in accordance with: • all relevant Australian Standards; • for liquids, a minimum bund volume requirement of 110% of the volume of the largest single stored volume within the bund; and • the EPA's Environment Protection Manual Technical Bulletin Bunding and Spill Management. In the event of an inconsistency between the requirements listed above, the most stringent requirement shall prevail to the extent of the inconsistency.	N/A
2.31	Prior to the commencement of construction of the project, the Proponent shall prepare and submit for the approval of the Director-General a Fire Safety Study for the project, covering all relevant aspects of the Department's publication Hazardous Industry Planning Advisory Paper No. 2 - Fire Safety Guidelines. The Study shall specifically cover safeguards to minimise the risks of bush fires due to accidental release of gas at compression stations and other above-ground facilities and the protection of above-ground facilities, particularly the compression stations, in the event of bush fire. The Study shall be submitted for approval to the Commissioner of the NSW Rural Fire Service prior to submission to the Director-General.	Separate Document
2.32	Upon determining the haulage route(s) for construction materials associated with the project, the Proponent shall commission a qualified person to undertake a Road Dilapidation Report of all roads proposed to be used for construction activities in consultation with relevant road authorities. The Report shall assess the current condition of the roads and detail mechanisms to restore any damage that may result due to traffic and transport related to the construction and ongoing operation of the project. The Report shall be submitted to the relevant road authorities for review prior to the commencement of haulage. he cost of any restorative work described in the Report or recommended by the relevant road authorities after review of the Report, shall be funded by the Proponent. Such work shall be undertaken at a time as agreed upon between the Proponent and the relevant road authorities. In the event of a dispute between the parties with respect to the extent of restorative work that may be required under this condition, any party may refer the matter to the Director-General for resolution. The Director-General's determination of any such dispute shall be final and binding on the parties	5.6 and Traffic Control Plan (Separate Document)
2.33	The Proponent shall ensure that the pipeline corridor width and associated construction related disturbance is limited as far as practicable to minimise the requirement for vegetation clearing and maximise the retention of significant vegetation and mature trees.	5.3
2.35	If during the course of construction the Proponent becomes aware of any previously unidentified Aboriginal object(s), all work likely to affect the object(s) must cease immediately and the DECC informed in accordance with the *National Parks and Wildlife Act 1974*. Works must not recommence until written authorisation from DECC advising otherwise is received by the Proponent.	5.7
2.36	If during the course of construction the Proponent becomes aware of any unexpected historical relic(s), all work likely to affect the relic(s) must cease immediately and the Heritage Office notified in accordance with the *Heritage Act 1977*. Works must not recommence until the Proponent receives written authorisation from the Heritage Office advising otherwise.	5.7
2.37	Prior to the commencement of construction the Proponent shall provide the Director-General with details of the urban design and landscaping measures to be implemented as part of the project and associated infrastructure to ensure that the project's visual impacts are minimised as far as practicable to surrounding receptors and roadways. This includes (but is not necessarily limited to): • The minimisation of the use of reflective building elements and maximising the use of building materials and treatments which visually complement surrounding landuse; • Ensuring that all external lighting associated with the project is mounted, screened, and directed in such a manner so as not to create a nuisance to the	Separate Document

	surrounding environment, receptors and roadways. The lighting shall be the minimum level of illumination necessary and shall comply with AS 4282(INT) 1997 – Control of Obtrusive Effects of Outdoor Lighting; and • As far as possible, the use of locally occurring indigenous species consistent with the surrounding landscape for landscaping purposes.	
4.1	Prior to the commencement of construction, the Proponent shall develop and implement a Compliance Tracking Program for the project, to track compliance with the requirements of this approval during the construction and operation of the project and shall include, but not necessarily limited to: • provisions for periodic review of the compliance status of the project against the requirements of this approval and the Statement of Commitments detailed in the document; • provisions for periodic reporting of the compliance status to the Director-General including at least prior to the commencement of construction of the project, prior to the commencement of operation of the project, and prior to the commencement of operation of the power station at a capacity more than 12 megawatts; • a program for independent environmental auditing in accordance with AS/NZ ISO 19011:2003 - Guidelines for Quality and/or Environmental Management Systems Auditing; • procedures for rectifying any non-compliance identified during environmental auditing or review of compliance; • mechanisms for recording environmental incidents and actions taken in response to those incidents; • provisions for reporting environmental incidents to the Director-General during construction and operation; and • provisions for ensuring all employees, contractors and sub-contractors are aware of, and comply with, the conditions of this approval relevant to their respective activities.	3
5.3	Prior to the commencement of construction of the project, the Proponent shall ensure that the following are available for community complaints for the life of the project (including construction and operation): • a telephone number on which complaints about construction and operational activities at the site may be registered; • a postal address to which written complaints may be sent; and • an email address to which electronic complaints may be transmitted. The telephone number, the postal address and the email address shall be displayed on a sign near the entrance to the site, in a position that is clearly visible to the public, and which clearly indicates the purposes of the sign and within the project website required under condition 0.	4
	Prior to the commencement of construction of the project, the Proponent shall establish a dedicated website or maintain dedicated pages within its existing website for the provision of electronic information associated with the project subject to confidentiality. The Proponent shall publish and maintain up-to-date information on this website or dedicated pages including, but not necessarily limited to: • information on the statutory context of project (including on any existing approvals obtained under the Environmental Planning and Assessment Act 1979 and relationship to mining and petroleum leases) and the current implementation status of the project; • a copy of this approval and any future modification to this approval; • a copy of each relevant environmental approval, licence or permit required and obtained in relation to the project; • a copy of each plan or report required under this approval; and • details of the outcomes of compliance reviews and audits of the project.	4

In accordance with the published final Statement of Commitments, the following table summarises each commitment for the all Project construction activities and where in the CEMP they have been addressed.

Outcomes	Action	CEMP Section
Project Site		
All approved activities to occur within the defined corridor boundaries.	Survey and clearly mark the boundary of the gas flow line corridor.	5.1
	Construction plans and induction program clearly state responsibilities of contractors to observe disturbance limitations.	
Operating Hours		
Management of construction activities in accordance with approved operating hours.	Undertake corridor creation & vegetation clearance and soil removal operations during approved construction hours	5.5
	Undertake corridor creation & soil removal operations during approved construction hours.	5.5
	Limit construction materials deliveries along gas flow line corridor to approved construction hours as above.	5.5
Waste Management		
Management of waste materials produced during construction phase.	Waste generated during construction is collected at staging points each day for regular removal by contractor.	5.8
	Waste materials collected for recycling where possible.	5.8
	General wastes collected and disposed of into receptacles at staging points.	5.8
Rehabilitation		
Rehabilitation of gas flow line corridor as soon as practicable post construction.	Ensure topsoil and trench spoil are clearly segregated within corridor.	5.2, 5.9
	Ensure topsoil is not placed back across working area until trench is adequately compacted to avoid settling.	5.2, 5.9
	Stabilise topsoil with retained vegetation as soon as practicable to encourage natural regeneration of disturbed corridor.	5.2, 5.9
Rehabilitation of gas flow line corridor as soon as practicable post construction. (Cont'd)	Apply forestry approved grass seed to corridor at recommended rates to encourage initial stabilisation (adequate rainfall permitting).	5.2, 5.9
	Apply landholder approved seed to corridor to encourage initial soils stabilisation.	5.2, 5.9
	Re-establish previous land uses as soon as practicable after trench backfilling and reduce the width required for ongoing access to 3m.	5.2, 5.9
Ecological Management		
Minimise impacts of on flora and fauna across project site and surrounding area.	Maintain strict control on the 10m wide clearance envelope. Ensure no clearing to occur outside of surveyed gas flow line corridor.	5.3
	Minimise extent of vegetation clearance where possible.	5.3
	Avoid unnecessary removal of hollow bearing trees identified during corridor surveying.	5.3

	Retain all understorey and groundcover vegetation from gas flow line corridor to ensure retention of natural seed stocks to facilitate rehabilitation program.	5.3
	Progam preparation activities to outside fauna breeding seasons.	5.3
Aboriginal Heritage		
Employees and contractors aware and respectful of Aboriginal heritage values of Project Site and surrounding area	Include specific Aboriginal heritage awareness items in project induction program.	5.7
Protect Sites of Aboriginal heritage significance	Ensure gas flow line corridor observes adequate buffer surrounding sites and items of significance.	5.7
	Construction plans to include specific action should unknown sites or items be discovered during corridor creation or any other period.	5.7
Soils		
Maintenance of soil value for rehabilitation and minimisation of soil loss through erosion	Observe soils protection strategy outlined in Soils Impact Assessment, particularly consistent removal of 150mm of topsoil.	5.2
	Observe strict controls over the stripping stockpiling and protection of topsoils and trench spoil during flow line installation.	5.2
	Avoid stripping of soils when wet.	5.2
	Replace trench spoil and topsoils as soon as practicable.	5.2
	Install silt fencing or otherwise to protect topsoil stocks where delays prevent replacement.	5.2
Air Quality		
Complete proposed development without exceeding DECC air quality criteria objectives	Suppress dust along site access roads and forestry tracks.	5.4
	Limit topsoil stripping and trenching during high winds.	5.2, 5.4
	Progressively rehabilitate gas flow line corridor.	5.2
Traffic Management		
Minimise the impact of the Project on the areas of normal traffic flow	Prepare a Traffic Management Plan to appropriate RTA standard.	5.6
Traffic safety considerations	Publish traffic management plan in all Project documents and include as part of Project Site induction.	Separate Doc
	Erect appropriate road signage along Project Site as per Forestry and NSC requirements.	5.6
	Minimise overall impacts of project on major traffic flows along Newell Highway.	5.6
	Inform all potentially affected residents adjoining the gas flow line corridor of proposed traffic arrangements.	5.6
Noise and Vibration		
All construction activities undertaken in appropriate manner to minimise noise and vibration impacts on surrounding environment	Publish operating hours clearly in all site induction documents.	5.5
	Observe stated operating hours.	5.5
	Encourage all employees and contractors to drive in courteous manner and avoid undue generation of traffic noise.	5.5, 5.6

	Ensure all equipment is good working order and noise attenuation equipment installed on all machinery.	5.5
	Minimise where possible the number of heavy vehicles entering and exiting the working area.	5.6
	Ensure deliveries of construction materials and equipment occur within operating hours .	5.5
Documentation and Management		
Documents governing planning, construction and operation	Provide accurate summary of all pertinent approval conditions to employees and contractors during induction period.	N/A
	Encourage strict observation of published construction plans and site specific work procedures.	3
	Create framework for the collection of project implementation and operational information for inclusion in annual environmental management reports.	3
Informative Induction Documentation	Ensure all construction and operating conditions are clearly published within induction documentation.	N/A
	Include specific environmental considerations in daily toolbox meeting agenda and encourage awareness of flora, fauna, Aboriginal heritage, land use and noise impact issues.	N/A
Effective management of soils	Prepare and implement an Erosion and Sediment Control Plan.	5.2, 5.9 and separate control plan
Risks are assessed prior to activities commencing	Undertake a risk assessment for all potentially hazardous activities.	S 4.2 of Project EA

1.5 Eastern Star Gas Environmental Policy

Eastern Star Gas is committed to conducting its business in a manner that prevents injury or illness to employees, contractors, customers and other stakeholders. We will encourage best practice in health and safety management within our community. A primary focus of the company is the safe conduct of all exploration and development activities with the smallest possible footprint utilising flexible methods that respect the operational environment.

Eastern Star's published environmental policy states:

- Eastern Star Gas is committed to minimising the environmental impact of its activities.
- At ESG, we believe the term "Environment" encompasses not only the physical environment in which we work, but includes people, their work and the things they value.
- We intend to be a leader in the coal seam gas exploration and production industry. Excellence in environmental performance will be a fundamental component of this goal.
- To deliver on our commitment we will:
- Incorporate environmental management systems as part of our critical business activities;
- Encourage new ideas or ways of minimising our environmental impacts;
- Strengthen our partnerships with stakeholders to achieve our objectives and obligations;
- Strive to effectively manage resources, reduce waste and eliminate or minimise adverse environmental effects and risks that may be associated with our operations;

- Comply with or exceed all applicable environmental laws, statutory obligations and relevant voluntary codes of practice;
- Monitor and set measurable targets to seek continual improvements to our environmental performance; and
- Periodically review and maintain our Environmental Policy and Procedures.

2 Environmental Management

2.1 Structure and Responsibilities

The organisation structure and key personnel responsible for environmental management during the Project construction phase is outlined below.

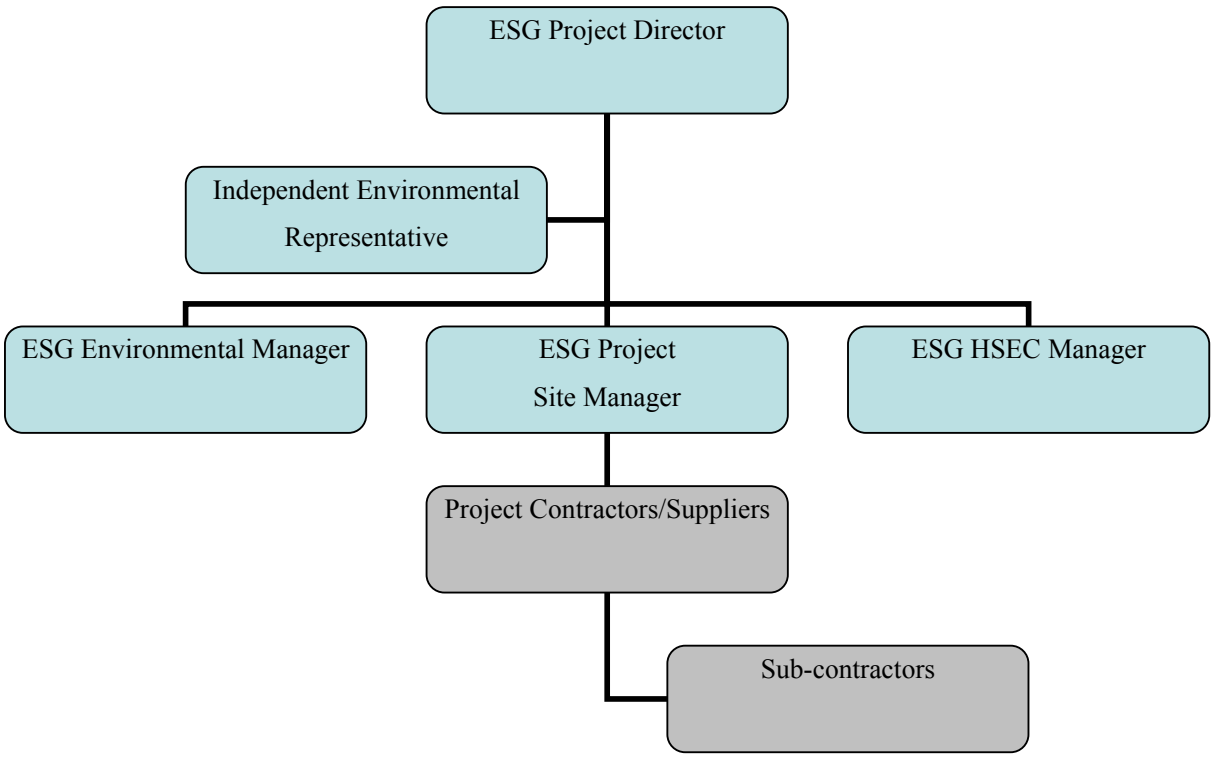


Figure 1 Project specific management structure

Those levels shaded grey indicate personnel external to Eastern Star Gas and will be subject to induction under the Project CEMP and its management plans.

2.1.1 ESG Project Director

ESG's project director leads the implementation of all engineering design and delivery and construction activities for the duration of this phase. With assistance from the project environmental and HSEC managers, the director has ultimate responsibility and accountability for the environmental performance on the project consistent with existing company policies on health, safety, environment and community. Additional

responsibility for legislative compliance, observation of contractual obligations and the maintenance of resources to achieve the main objectives of the CEMP resides with the project director.

2.1.2 Independent Environmental Representative

Mr Corey Beggs has been appointed to the role of Independent Environmental Representative (ER) for the construction phase. Mr Beggs meets all crieteria of CoA 6.1 in that he is and remains independent of the design, construction and operations personnel. As stated in CoA 6.1, Mr Beggs as the designated ER, has the authority and independence to recommend reasonable steps to be taken to avoid or minimise unintended or adverse environmental impacts, and, failing the effectiveness of such steps, to recommend that relevant activities are to be ceased as soon as reasonably practicable if there is a significant risk that an adverse impact on the environment will be likely to occur.

The appointment of ER for the operations phase will be determined prior to the commencement of any activities considered 'operations'.

2.1.3 ESG Project Site Manager

Reporting to the project director, the project site manager maintains accountability, either directly or by delegation, for the management of the project site and all employees and contractors entering the project site for the purposes of construction. The project site manager, in collaboration with the environmental and HSEC manager retains responsibility for the effective implementation of the CEMP and the conveyance of the plan and its objectives to all contractors entering site.

2.1.4 ESG Environmental Manager

Reporting to the project director, the environmental manager maintains accountability for the implementation, maintenance and monitoring of compliance with the CEMP. Additional project specific responsibilities include:

- liaison with regulatory authorities;
- Advising, consulting and supporting the ER
- advising project management on environmental issues;
- reviewing contractor HSEC and CEMP documentation (where applicable);
- maintenance of the complaints register and investigating, record and act to alleviate the impact of any complaints; and
- Ensuring the project director and managers are informed of all incidents and non-compliance and the corrective actions taken to mitigate any such incidents

2.1.5 ESG HSEC Manager

Reporting to the project director, the HSEC manager maintains accountability for the maintenance of the Company's HSEC standards, the induction of all contractors and their employees into site, the review of

contractor HSEC management plans and conducting routine inspections of operations to ensure compliance with all published management plans.

2.2 Environmental Training

To assist in the delivery of adequate site and project specific awareness to external contractors, the site induction process will contain key information on the environmental context of the Project and the main objectives of the CEMP. Areas to be addressed will include operating hours, traffic management, Aboriginal and non-indigenous heritage, air quality and dust minimisation, noise and vibration management and waste management.

An example of the information to be contained within the induction document can be found in appendix A.

2.3 Emergency Contacts

Title	Contact	Business Address	Contact Telephone
ESG Project Director	Brett Langley	Eastern Star Gas Ltd, Brisbane QLD 4000	0417 902 836
ESG Project Site Manager	John Higgins	Eastern Star Gas Ltd, 300 Yarrie Lake Rd, Narrabri NSW 2390	0427 923 401
ESG Environmental Manager	Tim Donnan	Eastern Star Gas Ltd, Level 7, 51 Pitt St Sydney NSW 2000	0403 922 474
ESG HSEC Manager	Tom Bennett	Eastern Star Gas Ltd, 300 Yarrie Lake Rd, Narrabri NSW 2390	0407 228 826
Clarke Energy Site Construction Manager	Robin Evans	Clarke Energy Thebarton, SA, 5031	0407 807 018
Adtech FRP Site Foreman (Pipeline)	Russell Parry	Adtech FRP Pty Ltd Unit 1, 345 Victoria Rd Malaga, WA 6090	0418 911 121

Table 3 Emergency Contacts

Eastern Star Gas Ltd, in conjunction with Forestry NSW, has prepared appropriate Emergency Response Plan for all operations within the Project Site. The plan can be found in Appendix G.

2.4 Planning and Legislative Context

The primary planning instrument under which the Project is being assessed, the Project Approval was issued and from which this CEMP is derived is the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

Further legislative and regulatory instruments provide a basis for additional licensing requirements that may be required to be addressed prior to the commencement of operations.

2.4.1 Approvals and Licensing

Approvals and consultation required prior to construction

Regulatory Authority	Project Approval Ref.	Approval/Consultation	Responsibility
DoP	6.2	The Proponent shall prepare and implement a Construction Environmental Management Plan to outline environmental management practices and procedures to be followed during construction of the project. The Plan shall be submitted for the approval of the Director-General no later than one month prior to the commencement of any construction works associated with the project, or within such period otherwise agreed by the Director-General. Construction works shall not commence until written approval has been received from the Director-General.	ESG
DPI (Fisheries) thence DoP	2.26	The Proponent shall in consultation with the DPI (Fisheries) ensure that the construction methodology applied for the laying of the gas flow line is such that impacts to waterways (including surface cracking of creek beds through under-boring, stream bank and riparian vegetation disturbance, in stream activities) are avoided as far as practicable.	ESG
DoP	2.31	Prior to the commencement of construction of the project, the Proponent shall prepare and submit for the approval of the Director-General a Fire Safety Study for the project, covering all relevant aspects of the Department's publication Hazardous Industry Planning Advisory Paper No. 2 - Fire Safety Guidelines.	ESG
Narrabri Shire, Forestry NSW thence DoP	2.32	Upon determining the haulage route(s) for construction materials associated with the project, the Proponent shall commission a qualified person to undertake a Road Dilapidation Report of all roads proposed to be used for construction activities in consultation with relevant road authorities.	ESG
DoP	2.37	Prior to the commencement of construction the Proponent shall provide the Director-General with details of the urban design and landscaping measures to be implemented as part of the project and associated infrastructure to ensure that the project's visual impacts are minimised as far as practicable to surrounding receptors and roadways.	ESG
DoP	4.1	Prior to the commencement of construction, the Proponent shall develop and implement a Compliance Tracking Program for the project, to track compliance with the requirements of this approval during the construction and operation of the project activities.	ESG
DoP	5.2	Prior to the commencement of construction of the project, the Proponent shall ensure that the following are available for community complaints for the life of the project (including construction and operation): • a telephone number on which complaints about construction and operational activities at the site may be registered; • a postal address to which written complaints may be sent; and • an email address to which electronic complaints may be transmitted.	ESG
DoP	5.4	Prior to the commencement of construction of the project, the Proponent shall establish a dedicated website or maintain dedicated pages within its existing website for the provision of electronic information associated with the project subject to confidentiality.	ESG

Table 4 Approvals required prior to construction commencing

Legislative Instrument and Authority	Relevant Section/Provision	Requirements	Status
Environmental Planning and Assessment Act 1979, NSW Department of Planning	Part 3A	Ministerial approval of proposal and environmental assessment	Approved
Roads Act 1993, Narrabri Shire	Consent to work in, on or under a road	Consent from Shire to install pipeline under Shire roads.	Approved
Roads Act 1993, Roads and Traffic Authority	Consent to work in, on or under a road	Consent from RTA to install pipeline under National Highway	Approved
Protection of the Environment Operations Act 1997, DECC	Environmental protection licensing for scheduled activities	Environmental protection licence for 'electricity generating works' that supply >30MW	Potential future requirement

Table 5 Additional legislative and regulatory approvals

2.5 Contractor Management

The key construction contractors and the manner in which they conduct their business is a key issue for Eastern Star. The completion of due diligence on the environmental performance of contractors to ensure adherence to relevant codes of practice and (where applicable) State and Commonwealth legislation/regulation is an important stage in the tender process.

The following section summarises the results of the environmental due diligence on each of the key construction contractors.

2.5.1 Adtech FRP Pty Ltd

Adtech FRP Pty Ltd specialises in the construction and installation of fibre reinforced plastic (FRP) pipelines. The company has been certified under AS/NZS ISO 9001: 2000. A copy of the certification can be found in appendix H

A review of Adtech's Safety, Health and Environment documents indicates a high level of understanding of environmental issues likely to factor in projects of this type and a commitment to the conduct of its operations by firstly avoiding impacts and thence minimising impacts to the greatest degree. Adtech's Environmental Policy (Appendix I) has been developed consistent with the Australian Pipeline Industry Association's Code of Environmental Practice for onshore pipelines. All employee's and subcontractors of Adtech undertake site specific inductions consistent with the EMP's listed in section 5.

2.5.2 Austerberry/Ausdrill

Austerberry/Ausdrill specialises in the installation of pipeline infrastructure under impediments such as roads and water courses using horizontal directional drilling techniques.

A review of Austerberry's environmental policy (Appendix J) indicates that the company is cognisant of the environmental impacts that the horizontal drilling technique may cause and has in place a range of environmental management plans to mitigate the risk of such occurrences. A copy of Austerberry's Environmental Control Plan for sedimentation, erosion and waste water management can be found in Appendix K. This plan outlines in clear terms the process of managing potential environmental risks associated with the installation of the gas pipeline under Bohena Creek and the Newell Highway.

3 Compliance Tracking and Reporting

In response to requirement 4.1 of the Project Approval, ESG has formulated a compliance tracking and reporting program that will assist in the accurate and timely communication of issues arising during the construction period that result in a detrimental impact on the project site, surrounding environment, local landholders and their property.

3.1 Daily Site Environmental Report

The site project manager will undertake daily operational site inspections with the assistance of construction/service contractor foremen. At this time, the results of daily contractor tool box meetings will be discussed (where appropriate) and entries into a site environmental management diary will be made in accordance with the form contained within appendix B.

3.2 Weekly Construction Monitoring and Compliance Auditing and Reporting

A weekly compliance audit will be carried out against the pertinent requirements of the Project Approval and the Statement of Commitments. The typical checklist can be found in appendix C

Reporting on issues of non-compliance will be completed via the non-compliance reporting procedure found in appendix D.

3.3 Monthly Environmental Compliance Audit

A more comprehensive monthly compliance audit will be carried out against the pertinent requirements of the Project Approval and the Statement of Commitments. The typical audit will reflect the final Statement of Commitments submitted to DoP in August 2008. See appendix E

3.4 Reporting to Determining Authorities, DECC and the DG

The status of compliance and the results of the monitoring and tracking program will be furnished in the form of a monthly report to the Director General during the construction phase. The report will contain a discussion of the current status of the project, summaries of daily site environmental reports, summaries of weekly construction monitoring and compliance audits, reports on issues of non-compliance, the complaints register and the corrective action taken to address each.

Where an issue of non-compliance is recorded, the following procedure is to be followed:

- ESG Environmental Manager will notify the independent ER within 24 hours and immediate corrective action consistent with approved EMP's taken. Action is to be taken as soon as practicable after the issue is identified and within a period not exceeding 48 hours.
- Reporting to DECC under appropriate environmental protection legislation will be at the discretion of the ER where the issue may have significant actual or potential significant off-site impacts on people or the biophysical environment,

- Reports on minor issues of non-compliance are to be incorporated into the standard monthly reports for the DG

3.4.1 Non-compliance notification and reporting

Where any incident with actual or potential significant off-site impacts on people or the biophysical environment, the ESG Environmental Manager and ER will notify the DG within 12 hours of becoming aware of the incident, thence provide full written details of the incident to the Director-General within seven days of the date on which the incident occurred.

If the situation warrants, the ER will subsequently notify DECC within this 12 hour period of the incident and request for an onsite assessment. The ER will then liaise with all Government officers to mitigate further impacts and initiate a rehabilitation strategy.

The Proponent shall then meet the requirements of the Director-General to address the cause or impact of any incident within such period as the Director-General may require, if not previously rectified.

3.5 Environmental Auditing

Under the direction of the independent ER, an environmental auditing in accordance with *AS/NZ ISO 19011:2003 - Guidelines for Quality and/or Environmental Management Systems Auditing* will be conducted on the Project at one, three and six months from the commencement of construction activities. Audit reports will be furnished to the Director-General as soon as practicable.

4 Community Information, Consultation and Notification Strategy

In response to requirement 5.2 of the Project Approval, ESG has formulated a community information, consultation and notification strategy that will assist in the conveyance of Project related information, encourage discussion and dialogue with the community and provide a clear complaints management procedure for the duration of the construction period.

4.1 Community Information and notification

Information on the current construction operations will be made available on the Company's website as required under condition 5.4 of the Project Approval.

The site will contain Project specific information including:

- All appropriate applications and approval documents;
- Contact names and telephone numbers of key project staff
- Information on how to make a complaint including telephone, email and postal addresses
- Planned work schedules

Further information on specific construction activities that are likely to affect the wider community (e.g. partial road closures etc) will be advertised in the local newspaper and letter box drops in the vicinity made prior to the commencement of such activities.

4.2 Stakeholder Consultation

Prior to the commencement of construction, all affected landholders will be contacted and provided with the proposed construction schedule, contact details of project managers and details of access to further information and the complaints register. Amendments to the schedule at the request of the landholder will be considered on an as needs basis and accommodated to the fullest extent possible.

4.3 Incident Management and Complaints Procedure

During the construction phase, an incident management and complaints register will be operational at the local Narrabri site offices at which all incidents of any nature and project specific complaints will be recorded and thence acted upon. Incident reports and complaints will be accepted via telephone, post or email. Notification of the telephone number, mailing address and email address is clearly posted at all operational sites, operations centres and on the Eastern Star Gas Ltd website.

All incident reports and complaints, regardless of the medium in which it is received, will be entered into the register and be passed onto the ESG Environmental Manager for immediate corrective action and resolution. Follow-up with the person/s reporting the incident or registering the complainant is to occur within 48 hours of receipt. The independent ER will be contacted to verify the mitigative action taken and subsequent preventative action to limit the risk of recurrence.

Monitoring of the incident or complaint is to be scheduled for between 48 hours and 7 days from the time/date of registration and positive mitigation observed at this point will essentially close the incident/complaints report.

Finalised reports on incidents and complaints will be collated for inclusion in monthly reports to the DG, however the register will be made available for inspection by the DG upon request.

The environmental complaints recording form can be found in appendix F.

5 Environmental Management Plans

A comprehensive review of project specific impacts was completed during the preparation of the Narrabri Gas Utilisation Project *Environmental Assessment*. The specific impacts of the project and ultimately how they are to be avoided or mitigated during construction fulfils the requirements of the Project Approval and applicable NSW legislation and regulatory policies.

The EMP's have been prepared to accurately reflect the results of the risk assessments carried out section 4.2 of the Project *Environmental Assessment* for construction specific activities. For each potential and likely environmental impact posed by the construction of the gas pipeline and expanded powerstation, a management plan has been formulated to assist in the avoidance or minimisation of risk that a deleterious impact will or may occur.

While the EMP's cover all activities required to construct and operate the proposed gas pipeline linking the Bibblewindi and Bohena CSG Pilots to the Wilga Park Power Station, specific focus on the construction phase is given. Furthermore, the EMP's take into account the unique characteristics and differing land capabilities of the Pilliga East State Forests and freehold agricultural lands encountered along the pipeline route.

The scope of the EMP includes the following key areas of construction, operations and environmental management and is consistent with the environmental management objectives of *AS 2885 Pipelines – Gas and Liquid Petroleum – operations and maintenance* and the Australian Pipeline Industry Association *Code of Environmental Practice*.

5.1 General Project Site and Access EMP

The nature and frequency of access to the pipeline disturbance corridor will vary considerably according to the two main land use types encountered, the specific pipeline disturbance corridor rehabilitation objectives and the extent of proposed maintenance.

Land Use Type	Management Measures
State Forests	• Access to the pipeline disturbance corridor during construction and operation should be limited to essential traffic and personnel to the greatest extent. The disturbance corridor is not to be used as general thoroughfare. • Access to the working and staging areas should utilise existing roads, tracks and access as far as practicable to ensure minimal disturbance of pipeline disturbance corridor. Sufficient existing access is available throughout the Bibblewindi and Pilliga East State Forests. • Access to all construction zones including compression facility compound shall be limited to essential staff and construction machinery • During periods of high rainfall in which damage to unsealed road surfaces from excessive use is more likely to occur, the ESG Project Site Manager shall, in consultation with Forestry NSW, determine if conditions are too wet to utilise the haulage routes identified in the road dilapidation report. Suspension of and consent to resume construction activities is to remain at the discretion of the Forestry NSW • Public access to the pipeline disturbance corridor during construction and operation should not be permitted unless the access already exists. • The safeguards, controls and mitigation measures discussed in the flora and soils impact assessment reports shall be strictly adhered to, most specifically: 1. The zones of disturbance at the compression facility is to be no greater than absolutely required for the safe construction of all project components. 2. The pipeline disturbance corridor is to be greater than 10m in width and is to be marked before commencement of clearing, and movement of plant, machinery or materials beyond the clearance boundary is to be rigorously avoided;

	3. the period when the trench is open should be limited to minimise the potential for soil erosion; and 4. excessive driving of vehicles on the area adjacent to the trench should be avoided to preserve soil structure • The safeguards, controls and mitigation measures discussed in the weed management plan shall be strictly observed at all times; • Speed limits shall be strictly observed by all contractors and their employees • Vehicular parking shall be limited to designated staging areas • Daily inspection of all haulage routes within State Forests Lands will be completed by ESG field service staff • Weekly inspection of all haulage within State Forests Lands will be completed by ESG site manager • Any issues of excessive dilapidation of haulage route surfaces is to be reported to Forestry NSW and rectified as soon as practicable to a standard satisfactory to Forestry NSW
Agricultural Lands	• Access to the pipeline disturbance corridor during construction and operation should be limited to essential traffic and personnel to the greatest extent. The disturbance corridor is not to be used as general thoroughfare • Access to the working and staging areas should utilise existing roads, tracks and access as far as practicable to ensure minimal disturbance of pipeline disturbance corridor. Sufficient existing access is available via shire roads located at regular intervals along this section • The zones of disturbance for the Wilga Park expansion is to be no greater than absolutely required for the safe construction of all project components. • Access to the Wilga Park Powerstation shall be limited to essential construction personnel and machinery. • During periods of high rainfall in which damage to unsealed road surfaces from excessive use is more likely to occur, the ESG Project Site Manager shall, in consultation with Narrabri Shire Council (NSC) Engineering Services, determine if conditions are too wet to utilise the haulage routes identified in the road dilapidation report. Suspension of and consent to resume construction activities is to remain at the discretion of the NSC. • The movement of plant, machinery or materials beyond the disturbance corridor boundary is to be rigorously avoided; • No public access shall be permitted to any section of the pipeline disturbance corridor on private property. Temporary or permanent gates installed at any intersection with an existing public thoroughfare shall be kept locked at all times unless where required by

	construction activities • Temporary fencing and cattle grids shall be installed where required to minimise impacts on farm operations • The safeguards, controls and mitigation measures discussed in the flora and soils impact assessment reports shall be strictly adhered to, most specifically: 1. The pipeline disturbance corridor within this land use type shall be reduced to the smallest width practicable 2. The period when the trench is open should be limited to minimise the potential for soil erosion; and 3. Excessive driving of vehicles on the area adjacent to the trench should be avoided to preserve soil structure and groundcover • The safeguards, controls and mitigation measures discussed in the weed management plan shall be strictly observed at all times • Speed limits shall be strictly observed by all contractors and their employees • Vehicular parking shall be limited to designated staging areas • In addition to the stated management guidelines, all courtesies shall be extended to private landholders and the conditions of entry contained within access agreements. • Daily inspection of all haulage routes will be completed by ESG field service staff • Weekly inspection of all haulage will be completed by ESG site manager • Any issues of excessive dilapidation of haulage route surfaces is to be reported to the NSC and rectified as soon as practicable to a standard satisfactory to the NSC

5.2 Soils and Land Capability EMP

Land Use Type	Management Measures
State Forests	• The safeguards, controls and mitigation measures discussed in the soils impact assessment reports within the Part 3A project Statement of Commitments shall be strictly adhered to, most specifically: 1. The clearance envelope of pipeline corridor and compression facility is to be marked before commencement of clearing, and movement of plant, machinery or materials beyond the clearance boundary is to be rigorously avoided; 2. The period when the trench is open should be limited to minimise the potential for soil erosion; and 3. Excessive driving of vehicles on the area adjacent to the trench should be avoided to preserve soil structure 4. No stockpiling of soils should be undertaken. Instead, the soil materials from topsoil stripping should be windrowed on one side of the excavated trench and the excavated subsoil material on the other side. The period when the trench is open should be limited to minimise the potential for soil erosion 5. Profile inversion should be avoided completely as the subsoil dispersibility will cause major erosion problems should subsoil material be placed on the surface of the rehabilitated trench line; 6. Soils shall not be worked if excessively moist in order to avoid structural degradation. 7. Topsoil should only be removed from the immediate vicinity of the trench where subsoil excavation is to occur. • The rehabilitation of the disturbance corridor within the State Forests is to occur as soon as practicable post construction. The re-instatement of the subsoil and topsoil profiles is to immediately precede the replacement of vegetation or 'brush' retained from the clearing activity.
Agricultural Lands	• The safeguards, controls and mitigation measures discussed in the flora and soils impact assessment reports within the Part 3A project Statement of Commitments shall be strictly adhered to, most specifically: 1. The pipeline disturbance corridor and expanded Wilga Park Facility within this land use type shall be reduced to the smallest area practicable 2. The movement of plant, machinery or materials beyond the disturbance corridor boundary is to be rigorously avoided; 3. The period when the trench is open should be limited to minimise the potential for soil erosion; and 4. Driving of vehicles on the area adjacent to the trench should be avoided to preserve soil structure

	5. No stockpiling of soils should be undertaken. Instead, the soil materials from the topsoil stripping should be windrowed on one side of the excavated trench and the excavated subsoil material on the other side 6. Profile inversion should be avoided completely as the subsoil dispersibility will cause major erosion problems should subsoil material be placed on the surface of the rehabilitated trench line 7. Soils shall not be worked if excessively moist in order to avoid structural degradation 8. Topsoil should only be removed from the immediate vicinity of the trench where subsoil excavation is to occur. 9. Compaction relief shall be initiated as required utilising shallow depth methods. 10. Appropriate pasture/cereal species selected by each landholder are to be sown along the disturbance corridor to minimise the rehabilitation timeframes. • Vehicular parking shall be limited to designated staging areas • Monitoring of the disturbance corridor during operations should adequately focus on the restored pipeline trench area where subsidence/slumping is most likely to occur. A low crown of mounded soil on the trench zone may be required to compensate for any likely slumping. • Imported soil materials to remediate any such issues shall be from landholder approved sources and be stored in appropriately located stockpiles

5.3 Vegetation and Weed Management EMP

Land Use Type	Management Measures
State Forests	• The clearance of vegetation along the disturbance corridor and compression facility location should be minimised as far as practicable and be no greater than 10m in width at any point • The retention of non-harvestable vegetation ('brush') shall be maximised to permit the rehabilitation of the disturbance corridor as described in the flora impact assessment report • The movement of plant, machinery or materials beyond the disturbance boundaries is to be rigorously avoided; • Habitat trees or those with significant natural, heritage or amenity value may be retained on or adjacent to the disturbance zones. An assessment of these trees will be made on a case by case basis in consultation with Forestry NSW and the safety guidelines for operations within Forestry Lands • Clearing shall aim to maximise the retention of understorey and groundcover root stock within the disturbance corridor • Slashing of understorey and groundcover shall be preferred to the use of bull dozers or graders as means to retain root stock material on areas away from the trenching zone • The regrowth of trees within 3m and shrubs within 1.5m of the trench centreline shall be removed at seedling or sapling stage so as to mitigate the risk of damage to the pipeline • Key features of the weed management plan include: 1. Plant and vehicle hygiene standards are to be maintained throughout the construction period to minimise the risk of weed and pathogen transfer. 2. Plant and vehicle wash down to occur at ESG maintenance depot on arrival in region or, for local contractors, prior to commencement of works. Wash down will focus on the removal of all soils, mud and vegetative matter. 3. Plant and vehicle wash down to occur after exit from Forest and prior to entry onto pasture/cropping lands in a specified wash down bay with appropriate seed, vegetative material and sediment collection devices. 4. Soils disturbed during stripping/stockpiling and trench spoil must remain at the point source as far as practicable. Any materials imported to the disturbance corridor must be from landholder approved sources.

	5. As per the rehabilitation and monitoring plan, weed monitoring and control of weeds will occur during the construction period and on a quarterly basis or as specified in individual land holder access agreements.
Agricultural Lands	• The movement of plant, machinery or materials beyond the disturbance zone boundary is to be rigorously avoided and disturbance zones within this land use type shall be reduced to the smallest width/area practicable and be no greater than 10m at any point • The movement of plant, machinery or materials beyond the disturbance boundary is to be rigorously avoided; • Habitat trees or those with significant natural, heritage or amenity value may be retained on or adjacent to the disturbance zones. An assessment of these trees will be made on a case by case basis in consultation with ESG Environmental Manager and the NSC where applicable • The period when the trench is open should be limited to minimise the potential for soil erosion • Appropriate pasture/cereal seed mixes selected by each landholder are to be sown along the disturbance corridor to minimise the rehabilitation timeframes. • Key features of the weed management plan include: 1. Plant and vehicle hygiene standards are to be maintained throughout the construction period to minimise the risk of weed and pathogen transfer. 2. Plant and vehicle wash down to occur at ESG maintenance depot on arrival in region or, for local contractors, prior to commencement of works. Wash down will focus on the removal of all soils, mud and vegetative matter. 3. Plant and vehicle wash down to occur after exit from Forest and prior to entry onto pasture/cropping lands in a specified wash down bay with appropriate seed, vegetative material and sediment collection devices. 4. Soils disturbed during stripping/stockpiling and trench spoil must remain at the point source as far as practicable. Any materials imported to the disturbance corridor must be from landholder approved sources. 5. As per the rehabilitation and monitoring plan, weed monitoring and control of weeds will occur during the construction period and on a quarterly basis or as specified in individual land holder access agreements. • Monitoring of the rehabilitation program, revegetation and weed management along the disturbance corridor shall continue on a monthly basis until such time as landholders have granted approval to the rehabilitation program

5.4 Dust Management EMP

Land Use Type	Management Measures
All Land Use Types	• Access to the disturbance zones during construction and operation should be limited to essential traffic and personnel to the greatest extent. The disturbance corridor is not to be used as general thoroughfare. • Access to the working and staging areas should utilise existing roads, tracks and access as far as practicable to ensure minimal disturbance of pipeline disturbance corridor. Sufficient existing access is available throughout State Forests and Agricultural lands • Slashing of understorey and groundcover shall be preferred to the use of bull dozers or graders as means to retain root stock material on areas away from the trenching zone • Vehicle speed limit restrictions on all unsealed roads and access tracks must be observed to minimise fugitive dust generation • Existing unsealed road surfaces will be subject to dust control up to twice daily depending on projected vehicular movements and weather conditions. The deployment of a water cart to suppress dusts will be at the discretion of the site foreman and Eastern Star's field representative • Any physical construction activities such as vegetation clearance, topsoils/subsoil stripping or trenching shall cease during periods of high winds and high temperatures • The suppression of dusts generated along the disturbance corridor during construction is to occur as per recommended soils management guidelines taking specific notice that all soils will be subject to structural degradation if worked when too moist. • Topsoils and subsoils stockpiled in windrows should be replaced as soon as practicable; the time the trench is open should be limited to minimise the potential for soil erosion • Where the trench is required to be open for longer periods, suitable physical protection of windrows (sedimentation barriers or Hessian cover) should be afforded to limit the potential for dust generation caused by high winds • Dust suppression during the construction of compression and expanded Wilga Park facility is to be undertaken on an as needs basis.

5.5 Noise/Vibration Control EMP

Land Use Type	Management Measures

All land use types	• Current approved construction hours are to be strictly observed:
	• The Proponent shall only undertake construction activities associated with the project that would generate an audible noise at any residential premises during the following hours:
	  • 7:00 am to 6:00 pm, Mondays to Fridays, inclusive;
	  • 8:00 am to 1:00 pm on Saturdays; and
	  • at no time on Sundays or public holidays.
	• Where possible, excessively noisy construction activities shall be scheduled for periods where nuisance is less likely e.g. after 9am and before 4pm
	• Where construction activities are to occur within close proximity to residences, strict observation of working hours and the previous management guideline will dictate activities. Local residents will be adequately notified of all upcoming construction activities that may cause a noise nuisance
	• Construction equipment shall be equipped with appropriate noise mitigation devices, shall be maintained in good working order and meet all relevant statutory guidelines for noise generating activities
	• Appropriate noise complaints processes shall be available to local residents via the steps noted below. Noise complaints will be investigated upon receipt of complaint and remedial action taken the same day.
	• Deliveries of materials to site shall be limited to within the approved construction hours and may be subject to additional limitation depending on proximity to noise receptors
	• Minimise the use of air brakes where possible
	• Where a noise related complaint is registered, the following procedure is to be followed
	  • Where an incident or complaint is received from a landholder or member of public, courtesy is of first importance
	  • React to the incident report or complaint in the first instance and do not dismiss the claim.
	  • Cease the activity and engage the ESG site supervisor and contractor foreman for advice on mitigation and rectification

	• Direct the person/s to the ESG operations office via the telephone number on all site signage to register the incident/complaint • Activities likely to result in excessive vibration being felt at local receptors will be scheduled between 9am and 4pm weekdays and 9am and 1pm Saturdays. These activities are to be conducted as efficiently as possible so that excessive nuisance is avoided over an extended period

5.6 Traffic Management EMP

Land Use Type	Management Measures
All Land Use Types	• All project related traffic will be restricted to the signposted access and egress routes to limit noise, dust and nuisance on residents • Vehicular speed limits of 40km/hr are to be observed within the signposted construction zone and along unsealed public roads • Designated turning areas will be signposted where appropriate to permit the most efficient use of public and private roads; construction and delivery vehicles will be encourage to enter and exit the construction zone in the most efficient manner possible while observing posted traffic signage • All construction zone traffic routes will be inspected on a daily basis for damage and to ensure safe driving conditions prevail at all times. • Minimise the use of air brakes across project site • During periods of high rainfall in which damage to unsealed road surfaces from excessive use is more likely to occur, the ESG Project Site Manager shall, in consultation with the appropriate authority (Narrabri Shire Council or State Forests NSW), determine if conditions are too wet to utilise the haulage routes identified in the road dilapidation report. Suspension of and consent to resume construction activities is to remain at the discretion of the appropriate authority • Signage will be inspected and maintained (where required) on a daily basis • Adequate off road parking for construction vehicles will be made available at designated locations along the operational section • Inform all surrounding landholders of proposed traffic arrangements where they differ significantly from normal • In response to correspondence with the Narrabri Shire (appendix 4 of Project EA), prior to the commencement of construction, a traffic control plan is to be prepared and submitted to the Narrabri Shire for approval by the Director of Engineering Services. • Weekly and monthly monitoring of haulage route conditions is to occur as described in weekly and monthly compliance checklists

5.7 Aboriginal and Non-indigenous Heritage EMP

Land Use Type	Management Measures
All Land Use Types	• While the results of the Aboriginal heritage investigations indicate a low likelihood of encountering sites of Aboriginal heritage significance, the following management measures are to be strictly observed during the construction period • If any material suspected as being of cultural significance is discovered, all work shall cease within the immediate area and the following action taken: 1. The Project site manager shall be notified of the find, who will in turn notify ESG's environmental representative 2. The NLALC/PFAMC/Gomeroi TOG heritage advisors are to be notified of the potential find and arrangements made for a site inspection 3. Further notification (where applicable) is to be given to the nearest DECC office and invitation given to inspect the site 4. Construction activities must not recommence until such time as the heritage advisors have completed their inspection and provided the Project director with confirmation of the sites status and appropriate corrective actions (where required) • In any material suspected of being of non-indigenous significance is discovered, all work shall cease within the immediate area and the following action taken: 1. The Project site manager shall be notified of the find, who will in turn notify ESG's environmental representative 2. The appropriate NSW heritage office shall be notified and immediate actions taken to protect the site 3. Construction activities must not recommence until such time as the NSW Heritage Office permits • Induction programs will include specific reference to Aboriginal heritage awareness and outline in detail the actions to be taken where items of potential significance are discovered.

5.8 Waste Management EMP

Land Use Type	Management Measures
All Land Use Types	• In accordance with good field practice, work crews will be required to contain waste materials within rubbish cages or recycling stockpiles located at each staging area along the pipeline disturbance corridor, Wilga Park and compression facility • Where possible, materials capable of being recycled and/or reused will be stockpiled and transported to the recycling centre at the Narrabri Waste Depot • General domestic refuse will be collected regularly from rubbish cages located at staging areas and collected for disposal at the Narrabri Waste Depot • Material wastes such as engine lubricants and coolant fluids will be stored and disposed of according to manufacturers and government guidelines • Portable ablution/portaloo units will be placed at the staging areas for the duration of the construction period and serviced regularly by local service providers • At any time during the construction activity, ESG and its contractors shall not cause, permit or allow any waste generated outside the site to be received at the site for storage, treatment, processing, reprocessing, or disposal or any waste generated on site to be disposed of at the site, except as expressly permitted by a licence under the Protection of the Environment Operations Act 1997, if such a licence is required in relation to that waste. • At any time during the construction activity , ESG and its contractors shall ensure that all liquid and / or non-liquid waste generated and / or stored on the site is assessed and classified in accordance with Waste Classification Guidelines Part 1: Classifying Waste (DECC, 2008), or any future guideline that may supersede that document.

5.9 Erosion and Sediment Control EMP

Land Use Type	Management Measures
All Land Use Types	• The main objectives of the erosion and sediment control plan is to minimise to the greatest extent the incidental mobilisation and hence loss of soil resources by wind and water; • Topsoils from SMU1 are to be rapidly protected by mulches or retained vegetation at the completion of construction activities; this SMU are commonly found between the Bibblewindi CSG Pilot and Brandon's Rd. • Strict limitations on the timeframes that subsoils through all SMU's are exposed on the surface; • No long term stockpiling of soils is to occur; • Limiting the time the trench is open; • Ensuring that profile inversion is avoided; • Excessive driving of vehicles on the area adjacent to the all working areas and trench should be avoided • The separate retention of topsoil and subsoil stockpiles on opposite sides of the cleared corridor is designed to retain of a majority of potentially sediment laden water within the cleared corridor where it can infiltrate naturally; • The installation of sediment controls including straw bales, silt top fencing and protective surface mulches will occur where minor changes of slope occur; • The rehabilitation of the disturbance corridor within the State Forests is to occur as soon as practicable post construction. The re-instatement of the subsoil and topsoil profiles is to immediately precede the replacement of vegetation or 'brush' retained from the clearing activity. • Following a site inspection, a site specific erosion and sediment control plan shall be formulated that will identify site and project specific activities that may result in erosion and sedimentation. As a result, the location of erosion and sediment control measures and project specific actions taken to reduce such risks will be finalised and published to all contractors. The plan will be contained within the first monthly report. • Compliance with section 120 of the *Protection of the Environment Operation Act 1997* will remain a minimum requirement for the duration of the construction phase. Environmental control plan (Appendix K) in effect for installation across Bohena Creek.

5.10 Fauna Management (Open Trench) EMP

Land Use Type	Management Measures
All Land Use Types	The excavation and retention of an open trench presents some risk to the native fauna which inhabit the operational environment. The objective of the fauna management (open trench) EMP is to mitigate the risks that the open trench poses to the normal movements of fauna across and around the working zone where the trench remains open during the overnight period. The following actions will be taken to achieve this objective • The operational zone and hence length of open trench shall be minimised to the smallest length possible; • The period over which any part of the trench remains open should be limited to the smallest timeframe practicable; • Fauna ramps will be placed in the trench (max 250m intervals) at the completion of each day shift where the trench will remain open overnight; • At the commencement of each days shift, a visual inspection of the open trench will occur to locate any fauna that has fallen into the trench and assist in its relocation off the working area; • Where the trench will remain open for extended periods throughout the day time, additional inspections will be scheduled and fauna refuge devices placed within the open trench to provide shelter.

5.11 Monitoring EMP

Land Use Type	Management Measures
All Land Use Types	• The main objectives of the monitoring program are to maintain the standards of environmental management incorporated into the project construction and operations plans for the life of the project • The structured monitoring of the disturbance corridor will ensure that the objectives of the vegetation/weed management, soils/land capability and access management plans are met and that the rehabilitation of the disturbance corridor is completed/maintained to an adequate standard • Monitoring of the disturbance corridor will occur on a weekly schedule from the completion of the construction phase for a period of 3 months, and then monthly until the rehabilitation has been signed off be each landholder • Monitoring of all haulage routes will occur on a weekly and monthly basis as described in the weekly and monthly compliance checklists and mitigative action take as soon as practicable to rectify any damage caused by construction activities. • The disturbance corridor will be visually inspected once per week for evidence of: 1. Unauthorised access to the disturbance corridor; 2. Soils instability, trench zone slumping and incidental erosion of topsoils whilst groundcover vegetation is reinstated; 3. Post rehabilitation weed emergence As a result of scheduled monitoring, the remediation of specific issues is to occur as soon as practicable. No action is to be taken without the direct consent of each landholder affected, specifically where any action will impact on current farming activities or where the application of herbicides is required.

6 Appendices

6.1 Appendix A – Site Induction (Environmental Awareness)

Narrabri CSG Utilisation Project – Site Induction (Environmental)	
Operating Hours	• Current approved operating hours are: - 7:00 am to 6:00 pm, Mondays to Fridays, inclusive; - 8:00 am to 1:00 pm on Saturdays; and - at no time on Sundays or public holidays.
Traffic Management	• Please observe all signposted traffic management directives • Speed limits of 40km/hr on all unsealed roads or within signposted construction zone are to be observed at all times • Use designated turning areas only • Do not loiter in the area once delivery has been made • Please be courteous to local traffic • Minimise the use of air brakes where possible • Observe signposted access and egress and do not deviate away from main public roads for any purpose
Aboriginal/Non-indigenous Heritage	• Project site generally has a low likelihood of unknown sites of significance • If during construction, any items are unearthed or discovered, cease operations and investigate. • Place a call to the ESG Site Manager/project supervisor for advice • Works cannot recommence until sign off received from ESG site manager
Air Quality and Dust Minimisation	• Avoid dust generating activities during dry and windy conditions. Refer ESG site manager for direction in this regard • Observe 40km/hr speed limit or as signposted, whichever is appropriate • Cover all loads immediately (where applicable) • Where excessive dusts are generated for any reason, cease operations and request immediate rectification from ESG Site Manager
Noise and Vibration Management	• Ensure all equipment is in good working order at the start of each day. Request maintenance where equipment is damaged or requires servicing • All plant and equipment is to be used appropriately; avoid long periods of idling or warming up within the vicinity of residences. • Observe posted operating hours or as notified during daily toolbox meeting • Enter and exit the work area as swiftly as possible noting speed limits • Limit excessively loud activities to between 9am and 4pm when background noise is expected to be highest
Waste Management	• Please collect all waste materials (paper, food waste, packing materials, containers, timber) for disposal at the nearest collection point. • Segregate all recyclable materials and place into appropriate receptacles • Make all attempts to keep the construction site clean and free of rubbish irrespective of who's it is. • Ensure all potentially hazardous waste (oils, filters, lubricants, oily rags, used absorbants, spill kit contents) are clearly segregated form landfill rubbish and recycleable. • Where possible, conduct all machinery maintenance in the area designated by ESG Site Manager • Report all spills to ESG Site Manager and take corrective action immediately to limit the spread; spill kits are always available
Flora/Fauna Management	• Avoid all unnecessary destruction of vegetation • Do not disturb any animals that are encountered; let them move along without interference • Ensure fauna ramps are placed into any open trench at the end of each day • Remove fauna ramps and inspect all open trench for animals prior to start of each day • Where potentially dangerous animals are encountered (e.g. Snakes), contact the ESG Site Manager for advice; do not interfere or attempt to move the animals along • Sick or injured animals must be reported to ESG Site Manager; Only authorised personnel may act to relocate such animals.

Erosion and Soils Management	• Overall soils protection can be achieved by limiting the time the trench is open; • When reinstating the subsoil and topsoil layers, ensure that profile inversion is avoided; • Excessive driving of vehicles on the area adjacent to the trench should be avoided • Working of soils when wet is to be strictly avoided
Emergency Management	• All incidents and emergencies must be reported to the ESG site manager as soon as practicable • Cease all activities until such time as the emergency has been addressed and all personnel have been accounted for and the site declared safe by ESG • Where any significant damage has occurred on or off site, all activities are to cease until such time as the ESG site manager permits resumption.
Incident/Complaints Procedure	• Where an incident or complaint is received from a landholder or member of public, courtesy is of first importance • React to the incident report or complaint in the first instance and do not dismiss the claim. • cease the activity and engage the ESG site supervisor and contractor foreman for advice on mitigation and rectification • Direct the person/s to the ESG site supervisor via telephone
Non-compliance	• Where an issue of environmental non-compliance is identified by ESG, please assist by ceasing all activities until such time as the ESG site supervisor permits resumption • Please make all efforts to adhere to site specific management plans as directed by ESG staff

6.2 Appendix B - Daily Site Activity Diary

Site:	**Date:**
Current/Forecast Weather Conditions:	**Proposed Activities:**
Site Walkthrough/Inspection:	**Contractors Present:**
HSEC Issues Identified:	
Issues Arising from Contractor Toolbox Meetings:	
Corrective Action Required:	

Signed:……

6.3 Appendix C – Weekly Environmental Compliance Checklist

Contractor……. Date:……..

Commitment/Action	Compliance (Y/N)	Comments/Corrective Action
Gas pipeline corridor boundary surveyed and clearly marked		
Site generally free of rubbish		
Construction wastes being collected at staging points each day		
General wastes collected and disposed of into receptacles at staging points		
Evidence of clearing outside of surveyed gas flow line corridor, extended Wilga Park power station compound or Bibblewindi compression facility compound		
Evidence of vehicles accessing area outside of surveyed gas flow line corridor		
Are dust levels acceptable		
Roads signage erected as required as per Forestry and NSC requirements		
Machinery noise acceptable across all project site (pipeline corridor/Wilga Park/compression facility)		
Are all haulage routes for current stage of construction in a satisfactory condition? Do they require inspection by the NSC or Forestry NSW?		
Are soil erosion prevention measures being employed for the appropriate stage of construction and if so, are they being maintained? Particular care is to be taken in the section from Bibblewindi to Brandon's Road		
Is any evidence of soil erosion apparent across Project Site? (pipeline corridor/Wilga Park/compression facility)		

Signed:…….

6.4 Appendix D - Monthly Environmental Compliance Audit Checklist

SoC/CEMP Environmental Management Targets	Compliance		Comments/Corrective Action
	Yes	No	
1. Project Site			
Gas flow line corridor clearly marked?			
Is work area traffic confined to the project site (pipeline ROW, Wilga Park and compression facility) and designated haulage routes?			
Are traffic utilising defined haulage routes to access and egress site?			
Is there evidence of clearing outside the defined project site (pipeline corridor, Wilga Park or Bibblewindi compression station)			
2. Operating Hours			
Are current posted operating hours being observed?			
3. Waste Management			
Is the work are generally free of rubbish?			
Waste receptacles serviceable and being maintained			
Recyclable materials clearly segregated from general rubbish?			
4. Rehabilitation			
Are topsoils and trench spoil clearly segregated along working area?			
Have previous land uses been re-established as soon as practicable?			
Are land profiles being re-established to previous or agreed condition?			
5. Ecological Management			
Is 10m wide clearance envelope being maintained?			
Has land clearance been minimised to smallest area possible?			
Have hollow bearing trees been protected where possible or otherwise retained as ground habitat?			
6. Aboriginal Heritage			
Have any sites of Aboriginal heritage been discovered during site preparation?			
If yes, has the correct notification protocol been observed?			
7. Soils			
Are the objectives of the soils protection strategy outlined in Soil EMP being observed?			
Are silt fences (where required) in serviceable order			
Any evidence of incidental soil erosion present?			
8. Air Quality			

Are adequate dust suppression methods being employed?			
Are vehicles observing sign posted speed limits?			
Is monitoring of fugitive dust generation required?			
Is there scope for additional control measures?			
9. Traffic Management			
Is signage in place along accepted access and egress?			
Are speed limits being observed?			
Evidence of unauthorised usage of public roads?			
Haulage Routes in good repair? Is inspection by NSC or SFNSW required?			
10. Noise and Vibration			
Are published operating hours for site being strictly observed?			
Is equipment being maintained, in good working order and noise attenuation apparatus fitted?			
11. Safety and Emergency Response			
Is safety signage clearly posted?			
Is fire protection apparatus available at site?			
Are spill kits available at site?			
Are appropriate medical kits available at site?			

Signed: …… Date:

Signed: ……. Date:

6.5 Appendix E –Non-compliance Reporting Procedure

Non-compliance Reporting Procedure	**Report No.**
Date/time of non-compliance	
Brief Description of non-compliance	
Cause/Origin of non-compliance	
Corrective Action Taken	
Resolution	

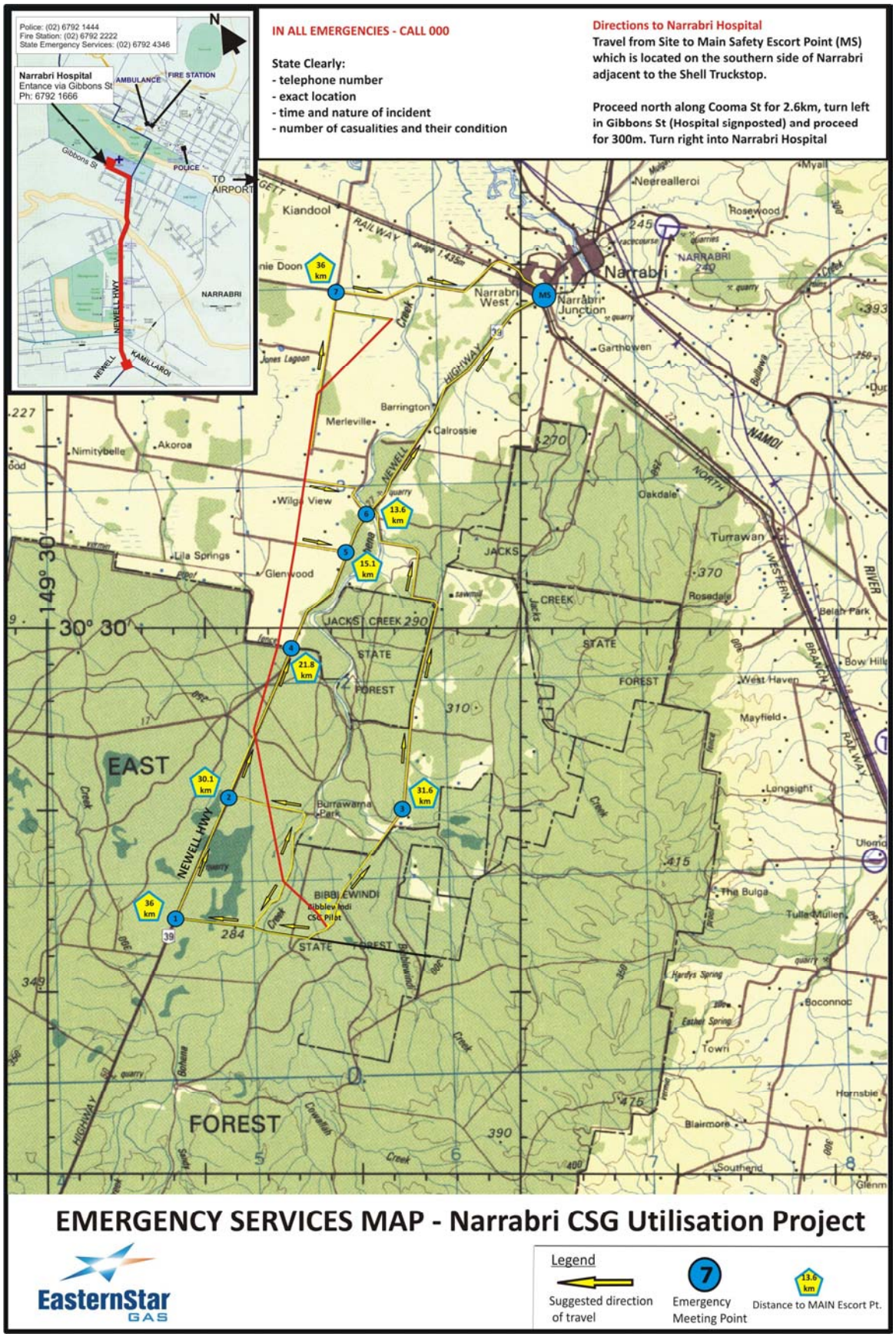
Investigation Supervisor:…… Date:…….

6.6 Appendix F – Incident/Complaints Recording Form

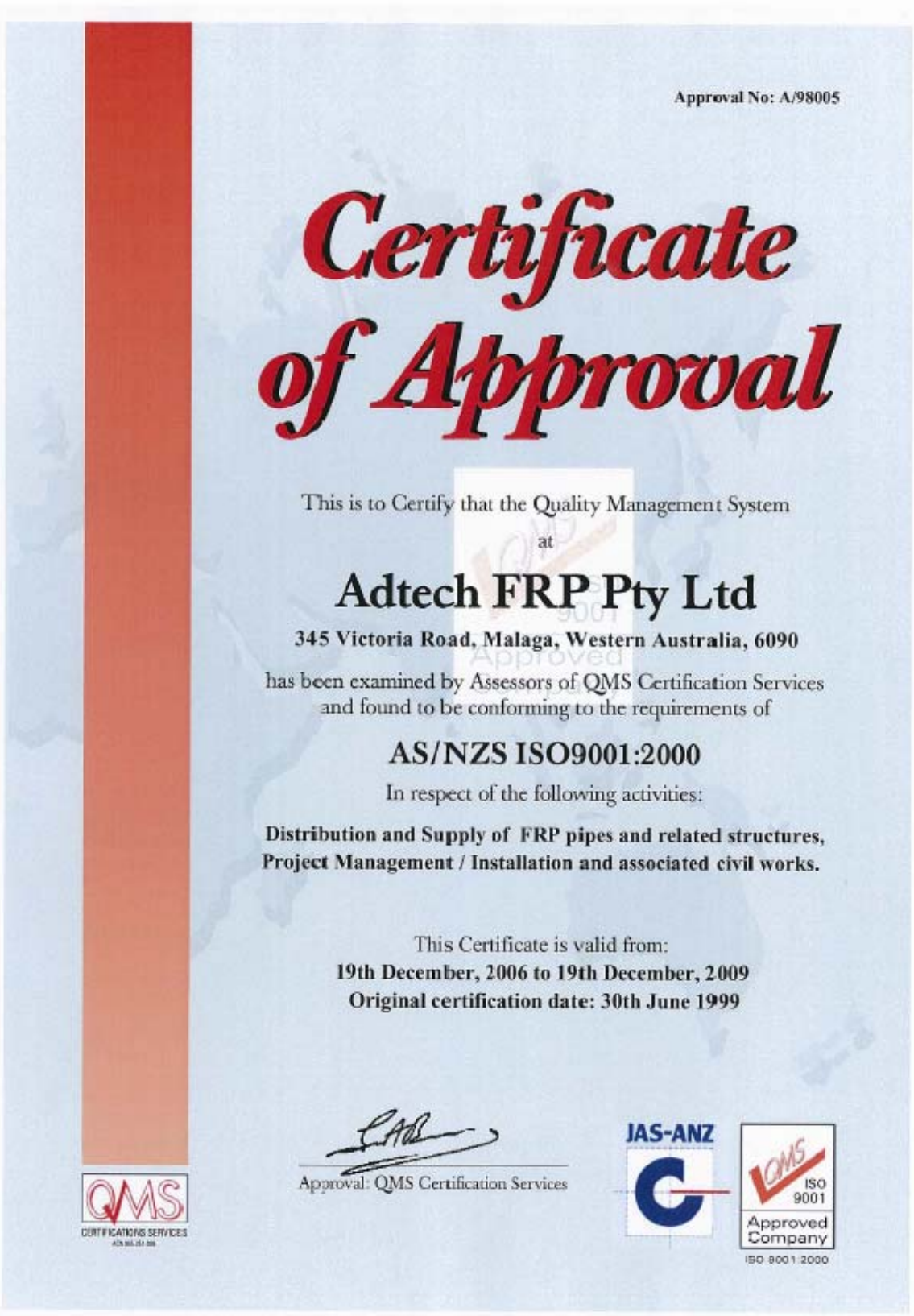
Date/Time of Incident/Complaint	
Description	
Name and Contact Details	
Investigated by	
Inspection/Validity Checks	
Cause	
Corrective Action	
Resolution	
Follow-up	

Investigation Officer:…….. Date:……..

6.7 Appendix G – Emergency ERP Map



6.8 Appendix H - Adtech FRP AS/NZS ISO9001 Certification



Approval No: A/98005

Certificate of Approval

This is to Certify that the Quality Management System

at

Adtech FRP Pty Ltd

345 Victoria Road, Malaga, Western Australia, 6090

has been examined by Assessors of QMS Certification Services
and found to be conforming to the requirements of

AS/NZS ISO9001:2000

In respect of the following activities:

Distribution and Supply of FRP pipes and related structures, Project Management / Installation and associated civil works.

This Certificate is valid from:
19th December, 2006 to 19th December, 2009
Original certification date: 30th June 1999

Approval: QMS Certification Services

QMS CERTIFICATIONS SERVICES

JAS-ANZ

QMS ISO 9001 Approved Company

ISO 9001:2000

6.9 Appendix I – Adtech FRP Pty Ltd Environmental Policy

SECTION 15: ENVIRONMENTAL POLICIES

Details of the supplier's environmental practices follow:

- Copy of ***"Adtech FRP"*** environmental policy
- Copy of ***"Adtech FRP"*** waste management policy

"Adtech FRP" code of Environmental Practice for Pipe Installation, Code of Environmental Practice sets out guidelines for minimisation, and where possible, avoidance of environmental impacts from installation operations.

"Adtech FRP" prides itself on the low environmental impact of both its product and its installation procedures.

The 20 + year life span of its product, combined with the negligible maintenance or chemical treatment requirements mean that once installed the product is environmentally benign.

Centron® surface pipe can be laid down, in most cases, over the natural ground surface using only two 4 wheel drive vehicles and trailers. Earth moving equipment is generally only necessary for below ground installation or where land contours exceed CENTRON® pipe minimum bend radius.

"Adtech FRP" installation operations shall be undertaken in a manner, which meets the following aims:
By inquiry to the client's Environmental Review and Management Program and strict adherence to the client's Code of Environmental Practice and by cross-reference to the APIA DRAFT Code of Environmental Practice – Onshore Pipelines (*Appendix 14*)

- avoid known sites of scientific, natural or cultural heritage;
- avoid pollution of land, water and air;
- avoid disturbance of the natural environmental environment wherever possible, and where disturbance is unavoidable, operate within parameters of the client's Code of Environmental Practice.

PLANNING

- Consult with the client to establish sensitive areas as detailed in their ERMP and to establish the procedures for operation outlined in their Code of Environmental Practice.
- Establish what are the client environmental inspection requirements for completion of contract
- Familiarise all relevant staff with the client's Code of Environmental Practice
- Identify the whereabouts of all environmentally, scientifically or culturally sensitive areas within proximity to operations and make plans which avoid impacts on same
- Where possible, plan to keep to existing roads, tracks or wheel marks
- Plan management routine for waste products. (Refer also to the ***"Adtech FRP"*** Waste Management Policy)

OPERATION

- Installation works and associated activities shall be carried out in the manner planned, with adherence to the client's Code of Environmental Practice and the relevant laws and regulations
- The bulk of waste product generated from GRE pipe installation is timber packing and plastic end caps from pipes. As containers are unpacked, timber shall be stacked and end-caps stockpiled. Other waste shall be collected and removed as it is created.

CAMPSITES

- Due to the low personnel requirements and the rapid installation possibilities of CENTRON® pipe, camps are of a short-term nature and potentially low impact. Where possible temporary campsites will be erected at pre-existing sites. When establishment of new campsites is necessary, it shall be established to minimise impacts on existing vegetation, and where possible, avoid disturbance of topsoil.
- All personnel shall be aware of, and follow waste management procedures as established in planning.

DEMOBILISATION

- When leaving camp, the site shall be rehabilitated in accordance with the client's Code of Environmental Practice requirements.
- Waste packing timber and plastic end-caps shall be removed to the nearest waste recycling/disposal centre as directed by the client.
- Other waste shall be dealt with as detailed in the client's Code Of Environmental Practice or as required under the relevant laws and regulations of the area

"Adtech FRP" Waste Management Policy

"Adtech FRP" Waste Management Policy supports and is incorporated in ***"Adtech FRP"*** Code of Environmental Practice which sets out guidelines for minimisation, and where possible, avoidance of environmental impact from installation operations.

- The bulk of waste product generated from ***"Adtech FRP"*** GRE pipe installation is timber packing and plastic end caps from pipes. As containers are unpacked, timber shall be stacked and end-caps stock-piled as set out in ***"Adtech FRP"*** Code of Environmental Practice, ready for removal to the nearest waste recycling/disposal centre as designated by the client.
- Organic waste from campsites shall be buried on site or disposed of in the manner required by the client.
- Any miscellaneous waste shall be buried on site or disposed of in the manner required by the client.

NOTE: The installation of CENTRON® GRE pipe does not require the use of, or create any toxic or hazardous substances.

6.10 Appendix J – Austerberry Environmental Policy

Environmental Policy

Protection of the environment is of primary importance to Austerberry Directional Drilling Services. Our organisation is committed to the development, implementation and continual improvement of environmental best practice across all operational activities.

The expectations of the community, our cliental and the requirements of relevant legislation will be addressed during the delivery of all Company services. All personnel are expected to fully engage in this process and are actively encouraged in developing a genuine respect for the environment and its protection.

Austerberry Directional Drilling Services' commitment will be evidenced by the development & implementation of appropriate environmental management plans, provision of suitable personnel & resources and ongoing consultation with all stakeholders to address environmental concerns and sensitivities.

Shayne Austerberry

Director,

Austerberry Directional Drilling Services.

November 2008

Enviromental Policy.DOC

6.11 Appendix K – Austerberry's ECP for Sedimentation, Erosion and Wastewater Management

Environmental Control Plan

Sedimentation, Erosion and Wastewater Management

PROJECT TITLE _____

OBJECTIVE(S) : To protect the quality and integrity of the local environment

TARGET OUTCOME(S) : Ensure that appropriate control measures are put in place to prevent sediment run-off and wastewater contaminating surrounding land, watercourses & stormwater systems.

SITE ASSESSMENT & CONTROLS:

POTENTIAL ENVIRONMENTAL RISK	PROPOSED CONTROLS
Sedimentation from site operations contaminates surrounding land, waterways or stormwater systems.	Sediment control devices are to be erected around all disturbed areas, stockpiles, drilling machines and placed around storm water drains located within the risk area. Sediment Control Structure Installation & Usage: ➢ Straw bale sediment filters *Installation* - place lengthwise across drainage line, indented by 0.1m with ends firmly butted together; drive two stakes through each bale to hold in place *Usage* - max. catchment = 4 000 m^2 max. slope grade = 1 in 2 Max. slope length = 40m ➢ Sediment fences *Installation* – install support posts max 1.8m apart, excavate a trench 0.1m wide by 0.2m deep, attach geotech filter material to uphill side of posts, lay base of material in trench & backfill *Usage* - max. catchment = 6 000 m^2 max. slope grade = 1 in 2 max. slope length = 60m ➢ Perimeter banks (for prevention of clean water flowing onto site) *Installation* – Earth Bank : excavate across the length of the disturbed area excavate a trench 0.2m wide by 0.1m deep and build an earth mound behind the trench 0.5m high by 2.5m wide with batter slopes less than 1 in 2 Straw Bales : see 'straw bale sediment fences' above *Usage* - max. catchment = 20 000 m^2 (earth) or 4 000 m^2 (straw) max. slope grade = greater than 1 in 2 max. slope length = N/A ➢ Stormwater sediment filters *Installation* – lift grate from drain, place geotech filter material across entrance and replace grate to hold in place; place sandbags / containment stockings in gutters and around source of liquid waste to contain in immediate area for removal. *Usage* - containment of waste water/slurry prior to vacuum truck removal, additional protection against unexpected storm events
Acid sulphate soils are present	Retained water from directional drilling operations must be adjusted to a neutral pH (7) before disposal – use lime to adjust pH & test to ensure compliance

POTENTIAL ENVIRONMENTAL RISK	PROPOSED CONTROLS
Erosion of disturbed area & resultant depositional soil movement onto adjacent ground	Sediment (erosion) control devices are to be erected around all disturbed areas and stockpiles (where present) located within the risk area. See above for details of installation & usage of the following control devices: ➢ Straw bale sediment filters ➢ Sediment fences ➢ Perimeter banks (for prevention of clean water flowing onto site) Keep open excavations to a minimum and backfill as much as is practical at the end of each days activities All disturbed soil is compacted immediately upon completion of construction activities Provide surface protection on steep slopes eg. jute, geotech fabric All disturbed vegetation is replaced / replanted with appropriate species as soon as affected areas have stabilised Ensure original soil surface profiles are restored with no depressed or bunded areas that may collect water or allow water to concentrate and run along an undesirable course All erosion & sediment control devices are to be left in place and maintained until the site has sufficiently recovered
Existing pits / manholes require de-watering	When de-watering pits: ➢ Do not attempt to pump out water, even if it appears clean, unless pumping into a liquid waste vehicle for appropriate disposal. ➢ Manually remove sedimentation that has accumulated at the bottom of the pit and dispose of appropriately.
Spills & leaks from plant and equipment on-site	Undertake pre-operative plants and equipment checks (where required), and undertake periodic checks during the period of operation All operational teams carry a spill kit in case of accidental liquid spills and are trained in appropriate deployment techniques. If there is a spill: 1. Stop the source. 2. Contain the spill. 3. Report the incident to the person responsible for the site (if necessary, arrange for specialist disposal personnel to be notified). 4. Collect the spilled material for correct disposal. Complete an Incident Report.
Sediment control devices become ineffective after storm events or protection margin degrades over course of works	Check all sediment control devices after storm events, prior to starting operations each day and before leaving site at the completion of the day's activities