

**Environmental Impact Classification**  
**Pursuant to Section 98 of the *Petroleum Act 2000***

**Balnaves #1 Well Proposal**

**May 2001**

**INTRODUCTION**

Pursuant to section 98 of the *Petroleum Act 2000* (the Act) the Minister must classify the regulated activities covered by a prepared Environmental Impact Report (EIR) as either low, medium or high impact.

The classification must be made on the basis of:

- The prepared Environmental Impact Report (EIR);
- Criteria established for classifying the level of environmental impact of regulated activities, a copy of which is found on the PIRSA Petroleum Group web page:  
<http://www.pir.sa.gov.au/dhtml/ss/section.php?sectID=437&templD=8>;  
and
- Comment received from Planning SA, Department of Environment and Heritage (DEH) and Department for Water Resources (DWR) in accord with established administrative arrangements between these respective departments and PIRSA.

This document summarises the classification made by PIRSA on the Balnaves #1 well proposal (regulated activity) in PEL 72 in the Otway Basin in South Australia. This classification is based on the information provided in the EIR and draft Statement of Environmental Objectives (SEO) both dated May 2001 as submitted to PIRSA by Origin Energy Ltd on the 10 May 2001.

This classification and the above EIR and SEO documents do not cover the construction of the drilling pad and access road of this well, these activities are covered by the May 2001 SEO for the construction of drilling pad and access roads on private land in the Otway Basin, approved on the 14<sup>th</sup> May and gazetted on the 17<sup>th</sup> of May 2001. This classification relates specifically to the activities associated with:

- Mobilisation and setting up of drilling equipment at the well site;
- Drilling of well and down hole construction;
- Management of down hole risks;
- Management of risks associated with surface spills and blow outs.

**SUMMARY OF CLASSIFICATION**

- 1) From an analysis of the environmental significance of the various potential impacts associated with this operation – summarised in attachment #1 against the classification criteria – this regulated activity has been

classified as **low impact**.

- 2) Comments received from DWR have been sought on this classification.
- 3) The most significant threat associated with any drilling in this region remains to be the potential for contamination of the Gambier Limestone and Dilwyn Formation aquifers.

The major source of risk for this threat stems from the potential of fluid crossflow from poorer water quality aquifers and/or hydrocarbon bearing formations into these key freshwater aquifers. The risk of such crossflow results mainly in the case of poor cement integrity behind casing and/or in cement plugs where set to isolate different formations within the well bore at abandonment.

In the case of this well, the precautions and measures outlined in the EIR in Table 2 on pages 30 to 33 and in the SEO under objectives 6 and 7 that will be taken have been assessed to be sufficient to ensure a very low chance of contamination of aquifers by drilling fluids and poor cement integrity resulting in poor isolation of the fresh water aquifers. Furthermore, as detailed in the assessment criteria under objective 6 in the SEO, in cases where the precautions taken to ensure adequate cement integrity behind casing fail, cement will be squeezed into the relevant zone behind the casing to achieve adequate cement integrity and zonal isolation.

- 4) Therefore pursuant to delegated powers dated 25 September 2000, gazetted 28 September 2000, I hereby classify this regulated activity as low impact.

**R A LAWS**  
**Director Petroleum Group**  
**Office of Minerals and Energy Resources**  
**Delegate of the Minister for Minerals and Energy**



Balnaves#1 - Environmental Significance Assessment				Attachment #1																					
				ABBREVIATIONS: H = High certainty; M = Medium certainty; L = Low certainty																					
EIR REFERENCES	TYPE OF IMPACT	EVENT(S)	POTENTIAL CONSEQUENCES	PREDICTABILITY						MANAGEABILITY						COMMENTS	Environmental significance								
				SIZE	SCOPE	DURATION	FREQUENCY	STAKEHOLDERS	SIGNIFICANCE	AVOIDANCE	PROBABILITY	DURATION	SIZE AND SCOPE	CUMULATIVE EFF	STAKEHOLDERS			SIGNIFICANCE							
	<i>Community Health &amp; Safety</i>																								
3.3.1, 3.4.1, Table 2		Mobilisation of equipment and personnel to well site.	Public vehicles colliding with heavy vehicles and putting lives at risk.	M	M	M	M	H	2	No	Very Low							1	Increased traffic due to mobilisation and demobilisation of drilling equipment, despite being over a short time period, poses an increased risk to third party road users. However, the precautions undertaken as outlined in Table 2 and those specified under the assessment criteria for objective 16 in the SEO are extensive enough to ensure that any such risk to third party road users will be reduced to an acceptable level.	Low					
3.4.3.1, Table 2			Creation of dust, visibility impairment to road users.	H	H	H	H	H	1	No	High	Short	Small	None	Low		2	Since the activity will be undertaken during dry conditions, dust creation will be unavoidable on unsealed roads used during the drilling activity. As specified in the assessment criteria for objective 14 in the SEO this problem will be minimised water spraying of dirt roads and restricting speed limits of vehicles associated with the drilling operation.	Low						
1.4.2, 3.4.1, Table 2		Blow out during drilling.	Threat to life.	H	H	H	H	H	1	No	Very Low							1	Blow out prevention and casing program to be adopted, outlined in Table 2 under "Well Control/Safety Issues", has provided sufficient assurance that the risk of such an adverse event has been reduced to an acceptable level. Section 3.4.1 states that the drilling site is visible from the public road 1 km away from the site. The possible risk that this may pose to curious third parties is being managed by clear no entry signs warning of the dangers associated with drilling rigs and the drilling crew being instructed to report any third parties approaching the rig to the Rig Supervisor and Drilling Contractor Rig Manager who in turn will see that these third parties are asked to keep away from the rig.	Low					
2.7.1, 2.7.2, Table 2		Fire ignition sources from well testing, welding and grinding.	Bush fires.	M	M	M	M	H	2	Yes								1	As specified in the assessment criteria for objectives 17 and 18 in the SEO, extensive precautions including clearing of nearby grass and readiness of water supply and pumps during periods of fire risk will be in place to reduce the risk of bush fires to an acceptable level. In addition to this the chances of bush because of the time of year is considered highly remote.	Low					
	<i>Economic Environment</i>																								
	<i>Existing Land Use Impacts</i>																								
2.7.1, Table 2		Equipment mobilisation.	Importation of exotic plant diseases or pathogens.	M	M	M	M	H	3	No	Very Low							1	The introduction of weeds or plant pathogens into this area as a result of the incoming drilling equipment is considered to be highly unlikely as all the equipment is coming from unaffected areas (section 2.7.1). Also as stated under objective 3 in the SEO, all equipment coming in is assessed for the risk of bringing in weeds or pathogens on a case by case basis and the land owner is aware of this.						
		Drilling operations.	Livestock injury.	H	H	H	H	H	1	Yes								1	The predominate land use in the region within which the well will be drilled is livestock grazing. As specified under objective 11 in the SEO the mud and flare pits will be fenced off in the presence of livestock and the land owner fully aware of the activities.	Low					

## Resource Management

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Our Ref: DWR0273/01

1 June 2001

Michael Malavazos  
Manager Petroleum Engineering Regulation  
Office of Minerals and Energy Resources SA  
Department of Primary Industries and Resources SA  
GPO Box 1671  
ADELAIDE SA 5001

Dear Sir

### **RE Balnaves #1 Well Proposal, Otway Basin**

I refer to your email request, dated 23 May 2001, seeking comment on the 'Balnaves #1 Well Proposal (Otway Basin), Environmental Impact Classification and Statement of Environmental objectives (SEO)', which were forwarded to this Department for consideration and comment, along with the Environmental Impact Report (EIR) for the well proposal.

### **Background**

The drilling of this well has been classified by PIRSA as being one of low impact, a position that is supported by this agency.

The proponent, Origin Energy Resources Limited proposes to drill the hydrocarbon exploration well, Balnaves #1, in PEL 32 in the South-East of the State. In the event that the well is successful it will be completed for future petroleum production. The EIR identifies the environmental issues, the response to which is stated in the SEO.



## The EIR and SEO

The surface water contamination issues are adequately dealt with. The major risks, from the water resource perspective, relate to groundwater contamination that may result from:

- Drilling activities, especially the possibility of total fluid losses.
- Inadequate casing and cementing which may result in inter-aquifer flow between aquifers with different salinity and pressure, and possibly cross-flow from the gas producing zone into the aquifers.

Aquifers in the Gambier Limestone and Dilwyn Formation will be isolated from the hydrocarbon bearing formations by casing bonded to the formation with cement. In the event that geophysical logging indicates zones of inadequate cementing, the casing in these intervals will be perforated, and cement squeezed and circulated to achieve a satisfactory bond. If the well is abandoned, cement plugs will be placed between permeable zones to ensure permanent isolation of aquifers.

It should be noted the water supply well, to be completed in the unconfined aquifer, will require a well construction permit from this agency. Authorisation, under section 11 of the *Water Resources Act 1997*, is required to take water from the unconfined aquifer, which is a prescribed resource. This agency will seek an authorisation from the Minister for Water Resources to cover this activity.

Please contact Stephen Howles on 8204 9814 if you have any queries concerning this matter.

Yours sincerely



Bryan Harris  
**DIRECTOR RESOURCE ASSESSMENT**