

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

SACBJV Production & Processing Activities – Cooper Basin, South Australia

18 August 2003

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 in accord with established administrative arrangements between Planning SA and PIRSA.

This document summarises the classification made by PIRSA on Santos' Production & Processing activities in the Cooper Basin. This classification is based on the information provided in the EIR and draft Statement of Environmental Objectives (SEO) dated February 2003 as submitted to PIRSA by Santos on 28 February 2003.

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 – and due to the scope of the activities being undertaken i.e. as the activities are basin wide, this regulated activity has been classified as **MEDIUM** impact.
- 2) Comments received from Planning SA on 14 August 2003 concur with this classification.

Therefore pursuant to delegated powers dated 28 March 2002 and Gazetted 11 April 2002, I hereby classify this regulated activity as low impact.



Barry A. Goldstein
Director Petroleum
Minerals and Energy Division
Delegate of the Minister for Resources Development

REF in EIR	ACTIVITY	POTENTIAL HAZARDOUS EVENTS	POTENTIAL CONSEQUENCES	PREDICTABILITY						MANAGEABILITY						COMMENTS	ENVIRONMENTAL SIGNIFICANCE
				SIZE	SCOPE	DURATION	FREQUENCY	STAKEHOLDERS	SIGNIFICANCE	AVOIDANCE	PROBABILITY	DURATION	SIZE AND SCOPE	CUMULATIVE EFFECTS	STAKEHOLDERS	SIGNIFICANCE	
		NATURAL ENVIRONMENT															
		Soil Impacts															
4.2, 7.1	Pipeline Construction																
Table G-1	General Construction activities	Vehicle movement along ROW	Soil compaction	M	H	M	M	H	2	No	Med	Short	Confin ed	Med	Low	2 Vehicle movements occur as part of various pipeline construction operations. These movements will be contained within the ROW. Any areas of compaction will be ripped and the ROW will be re-instated post construction (except in Gibber)	Low
Table G-3	Clear and Grade	Removal of topsoil to stockpile.	Loss of topsoil due to incorrect stockpiling Wind and water erosion, resulting in loss of soil fertility.	M	M	M	M	H	2	No	Med	Short	Small	Low	No	2 In land systems, where disturbance of soil will have significant impact, any form of grading will not be allowed (wetlands, gibberplains, tablelands, salt lakes). Topsoil will be stockpiled separately to avoid soil inversion or mixing. ROW will be reinstated ASAP. Inspections during operational phase are conducted periodically and will pick up any consequences.	Low
Table G-3	Trenching and backfilling (buried pipeline)	Removal of trench material to stockpile, and returning to trench	Mixing of soil types (inversion), loss of fertility Erosion in environments susceptible to water erosion (eg gibber plains, tablelands)	M	M	M	M	H	1	No	Low - Med	Short - Med	Small	Low	No	2 Separate stockpiling of different soil layers to avoid soil mixing. Trenches opened for minimum time possible to avoid soil erosion impacts. Salt Lake and Wetlands are avoided when planning pipeline routes due to their environmental sensitivity. General route planning also takes areas of environmental sensitivity into account.	Low
7.1.1		Flood event when trench open	Soil erosion	M	H	M	M	M	2	No	Low	Med	Confin ed	Med	No	1 Flood mapping in the Cooper Basin region assists in planning construction work to minimise the risk of the two events occurring simultaneously.	Low
Table G-5	Hydrotesting	Disposal of hydrotest water. Leak during testing	Soil contamination	M	H	M	M	H	2	No	Low	Med	Small	Low	No	2 Hydrotest water will be disposed of in lined evaporation ponds, and only dispose of to land where no additives are used	Low
8.2.6, Table G-3	Site Restoration	Recontouring of easement	Subsidence Compaction Inversion of soil profile Erosion	M	M	M	M	H	2	No	Low	Med	Confin ed	Low	No	2 Reinstatement of the ROW will take place ASAP after construction. Any areas of compaction will be ripped in these land systems only. Follow up inspections are carried out on ROWs for evidence of continuation of consequences. To avoid subsidence topsoil will be compacted or mounded over the trenchline. Note in the case of gibber plains, where gibber stones are removed they are replaced. - not covered in update of EIR, but available in relevant Santos environmental procedure for pipeline construction and operation.	Low

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Table G-2	Fuel and chemical storage and handling.	Stored chemical or fuel spills	Contamination of soil	M	M	H	M	H	2	No	Med	Short	Small	Low	No	1	Though the extent size and scope of consequences of spills is not addressed in the EIR, the management of fuel and chemical spills through appropriate bunding and clean up procedures manages the consequences to an acceptable level. All spill trends are monitored and targets set for reduction in spills due to operations. These are reported quarterly to PIRSA.	Low
4.2.1, 7.1.2	Pipeline Operation																	
Table G-8.		Pipeline failure - leak (oil or condensate) - dunefields and gibber plains.	Contamination of soil	M	M	M	M	H	2	No	Med	Med	Small	Low	Low	3	Pipelines are operated in accordance with the AS2885 pipeline standards. Level of impact of a pipeline leak depends on what is carried within the pipe and the environment the leak occurs within. The consequences of oil spills are not as severe in dry environments as oil is easier to contain and recover in dry conditions. Regular inspections will be carried out of above ground pipelines to avoid problems such as rapid pitting of the pipe from contact with the ground and of below ground pipes through pigging..	Low
Table G-9.		Pipeline failure - leak (oil or gas line) - floodplains and wetlands	Contamination of soil	M	L	M	M	M	4	No	Med	Med	Small	Low	Low	3	As above - except wet environments are more susceptible to harm, particularly in flood conditions. Current studies being undertaken on Cooper Creek Oil Spill and Oil spill remediation end point criteria to better understand and respond to spills. Guidelines in place for pipeline construction and operation to mitigate impacts of pipeline rupture in wet environments, particularly creek beds.	Medium
Table G-6 and G-7.		Pipeline failure - explosion (oil or gas line)	Contamination of soil	H	H	M	M	H	2	No	Low	Short	Small	Low	Low	2	Pipelines are designed to AS2885 standards, which required protection measures possible pipeline rupture. For oil pipelines, low probability occurrence due to low volatility and flammability of oil, and pipeline maintenance and inspection procedures in place. In the event of an incident occurring, there will be immediate cleanup and remediation of any soil contamination.	Low
Table G-10.		Nodal compressor failure	Contamination of soil	M	H	M	M	H	2	No	Low	Short	Small	Low	Low	1	The equipment is designed in accordance with the AS1940 bunding standards and regular inspections conducted on compressors, plus emergency response procedures in place for spill events.	Low
		Air Impacts																
	Pipeline Construction																	

REF in EIR	ACTIVITY	POTENTIAL HAZARDOUS EVENTS	POTENTIAL CONSEQUENCES	PREDICTABILITY						MANAGEABILITY						COMMENTS	ENVIRONMENTAL SIGNIFICANCE	
				SIZE	SCOPE	DURATION	FREQUENCY	STAKEHOLDERS	SIGNIFICANCE	AVOIDANCE	PROBABILITY	DURATION	SIZE AND SCOPE	CUMULATIVE EFFECTS	STAKEHOLDERS			SIGNIFICANCE
	General Construction activities																	
4.2, 7.1.1, table 7-2, 8.2.15, table G-4		Ignition of fire from construction activities	Particulate emissions to atmosphere	M	M	M	M	H	2	No	Low	Med	Small	Low	No	1	Managed through no lighting of open fires and no smoking on the worksite. Safe work permits issued for the type of operations that could spark a fire on site. Emergency response procedures in place.	Low
Tables 7-3, & G-8 and G-10	Pipeline Operation	Gas leak during pipeline operation or nodal compressor failure	Atmospheric pollution	M	H	M	M	H	2	No	Med	Med	Small	Low	Low	3	Undertake regular monitoring of equipment and protection measures.	Low
7.1.2,8.2.15, Tables 3, G-6 and G-7		Explosion or fire along pipeline	Atmospheric pollution	M	H	M	M	H	2	No	Low	Short	Small	Low	Low	1	Pipelines are designed to AS2885 standard to reduce the threat to as low as reasonably possible. Undertake regular monitoring of equipment and have protection measures in place. Emergency response training and procedures in place.	Low
		Surface Water Impacts																
4.2, 7.1.1	Pipeline Construction																	
7.1.1	General Construction activities	Flooding of Cooper Creek Floodplain and associated water courses	Contamination of water courses Siltation of watercourses	H	M	M	H	H	2	No	Low	Short	Small	Low	Low	1	Appropriate timing of work to mitigate the impacts. IS THIS AN ISSUE AS HYDRODYNAMICS OF FLOODING IN THE COOPER CREEK FLOOD PLAINS WOULD NOT RESULT IN POINT SOURCE CONTAMINATION SUCH AS THE CONSEQUENCES DESCRIBED HERE	Low
Table 7-2, 8.2.13, 8.2.15, table G-2		Spill of stored chemicals or fuel into water courses.	Contamination of water courses	L	L	L	L	H	4	No	Med	Short	Small	Low	Low	2	Managed through environmental and handling procedures, such as bunding and emergency shut-off valves, response mechanisms to spills, and incident management system providing education.	Medium
Table 7-2, 8.2.2, Table G-3	Clear and Grade	Removal and stockpiling of surface material.	Alteration of natural drainage. Siltation of water courses.	L	L	M	M	H	4	No	Low	Short	Small	Low	No	1	ROW reinstated in the shortest time possible and natural contours restored. ROWs restricted to 8m at creek crossings. Also pipeline construction activities avoided during periods of flood. Santos environmental procedures for Construction, Operation and Abandonment of Pipelines are implemented for construction.	Low
Table 7-2, 8.2.2, Table G-3	Trenching (buried pipeline)	Impediment to flood water by open pipeline trench.	Disturbance to natural drainage Siltation of water courses	L	L	M	M	H	4	No	Low	Short	Small	Low	No	1	ROW reinstated in the shortest time possible and natural contours restored. ROWs restricted to 8m at creek crossings. Also pipeline construction activities avoided during periods of flood. Santos environmental procedures for Construction, Operation and Abandonment of Pipelines in place.	Low

REF in EIR	ACTIVITY	POTENTIAL HAZARDOUS EVENTS	POTENTIAL CONSEQUENCES	PREDICTABILITY						MANAGEABILITY						COMMENTS	ENVIRONMENTAL	
				SIZE	SCOPE	DURATION	FREQUENCY	STAKEHOLDERS	SIGNIFICANCE	AVOIDANCE	PROBABILITY	DURATION	SIZE AND SCOPE	CUMULATIVE EFFECTS	STAKEHOLDERS			SIGNIFICANCE
7.1.2, table 7-3, 8.2.13, 8.2.15 Table G-9, table G-10	Pipeline Operation	Oil or condensate leak during pipeline operation or nodal compressor failure into water courses.	Contamination of watercourses	M	M	M	M	M	3	No	Med	Med	Small	Low	Low	3	Operated in accordance with the AS2885 standard, regular inspections are conducted on pipelines and facilities. Extra protection in place at creek crossings including burying pipeline at 2 m depth. Emergency response mechanisms in place, and incident reporting to ensure improved management. Oil spill studies currently being undertaken to identify consequences of spill events.	Medium
		Ground Water Impacts																
	Pipeline Construction																	
7.1.1, Tables 7-2, 8-4 and G-2		Spill of stored chemical or fuel into groundwater.	Contamination of potable or non potable groundwater	L	L	L	L	H	4	No	Low	Short	Small	Low	No	1	Due to storage and handling procedures for fuel and chemicals such spills are expected to be rare and minor. In the event of a spill in unbunded areas the volume would be such that it would only penetrate into the first few centimetres of soil and be no risk to any aquifers. Also any spill will be managed and handled immediately by cleanup procedures.	Low
7.1.1, Tables 7-2, 8-4, G-2 and G-5	Hydro Testing pipeline	Spill of hydro testing water into groundwater.	Contamination of groundwater (potable or non potable)	M	M	M	M	M	3	No	Low					1	Due to hydrotesting procedures such spills will be rare and minor and pose no threat to aquifers.	Low
7.1.2	Pipeline Operation	Leak into groundwater resulting from an explosion or fire along pipeline.	Contamination of groundwater by hydrocarbon	L	H	H	M	H	4	No	Low					1	Unlikely to contaminate potable aquifers due to depths of these aquifers.	Low
7.1.2		Oil or condensate leak into groundwater as a result of pipeline failure.	Contamination of groundwater by hydrocarbon	M	H	H	M	H	2	No	Low					1	Unlikely to contaminate potable aquifers due to depths of these aquifers.	Low
7.1.2		Oil or condensate leak into groundwater as a result of nodal compressor failure.	Contamination of groundwater by hydrocarbon	M	H	H	M	H	2	No	Low					1	Spills in dry environments are generally localised and of insufficient volume to be of threat to aquifers.	Low
		Flora Impacts																
4.2.1, 7.1.1 table 7-2, table G-1	Pipeline Construction General Construction activities	Heavy machinery and vehicle traversing over native vegetation.	Damage to or loss of native vegetation	M	M	L	M	H	4	Yes	Low	Short	Small	Low	Low	1	It is not clear as to the areal extent of this type of impact, but procedures such as using previously disturbed sites (eg existing easements) , minimising vegetation disturbance reduce the risk rating through adequate management.	Low
table 7-2, table G-1			Introduction and/or spread of weeds/diseases	M	M	M	M	H	3	No	Low					1	Vehicle washdown procedures are in place, and conducted prior to commencing work.	Low
table 7-2, 8.2.15, table G-4		Ignition of fire from construction activities	Loss of native vegetation	M	L	M	M	H	4	No	Low					1	Managed through no lighting of open fires and no smoking on the worksite. Safe work permits issued for the type of operations that could spark a fire on site. Emergency response procedures in place.	Low

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table 7-2, Table G-3	Clear and Grade	Clearing and re-instating of ROW.	Loss of native vegetation	H	H	M	M	H	2	No	Med	Long	Small	Low	Low	3 Route selection is chosen to minimise impact on vegetation. Vegetation stockpiled for respreading after construction. Weave around significant vegetation to obstruct line of sight.	Low
	Pipeline Operation																
7.1.2, Table 7.3, table G-6 and G-7.		Explosion or fire on oil or gas pipeline	Loss of native vegetation	M	M	M	M	H	2	Yes						1 Pipelines are constructed and operated to AS2885 pipeline standards, to minimise risk of pipeline incidents.	
		Fauna Impacts															
4.2.1, 7.1.1	Pipeline Construction																
table 7-2, table G-1	General Construction activities	Vehicle movement along ROW	Injury or death of native fauna	L	H	H	M	H	4	No	High	?	Confin ed	?	No	2 This activity has been identified as having the consequence of injury or death to native fauna, but no discussion on the issue or management measures have been presented in the EIR.	Medium
table 7-2, table G-4		Ignition of fire from construction activities	Loss of faunal habitat	M	L	M	M	H	4	No	Low					1 Managed through no lighting of open fires and no smoking on the worksite. Safe work permits issued for the type of operations that could spark a fire on site. Emergency response procedures in place.	Low
7.1.1, table 7-2, table G-5	Clear and Grade	Clearance and re-instatement of faunal habitat on ROW.	Damage to or loss of native fauna habitat. Impeded faunal movement through construction zone.	M	L	M	M	H	4	No	High	Long	Confin ed	Low	Low	3 Clearance of fauna habitat restricted to width of ROW, usually 15 to 25m for buried lines and 10 m for surface laid lines and adjacent to creek crossings and within coolibah woodlands is restricted to less than 8m. Route selection will play a role in avoiding sensitive land systems, and minimising vegetation disturbance by avoiding vegetated areas. There is no information in the EIR to allow an informed judgement on the consequences of loss of vegetation habitat to native species.	Medium
7.1.1, Table 7-2, Appendix F, table G-4	Trenching (buried pipeline)	Open trench in path of fauna movement.	Injury or entrapment of fauna	M	H	H	M	H	2	No	Med	Short	Small	Low	Low	2 Trenches will be checked twice daily and escape routes provided for fauna trapped in the trench. Keeping trench open for the shortest time possible to mitigate impact.	Low
	Pipeline Operation																
7.1.2, table 7-3, table G-6 and G-7		Explosion or fire along pipeline	Loss of faunal habitat	M	M	M	M	H	2	Yes						1 Pipelines are constructed and operated to AS2885 pipeline standards, to minimise risk of pipeline incidents.	Low

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				SIZE	SCOPE	DURATION	FREQUENCY	STAKEHOLDERS	SIGNIFICANCE	AVOIDANCE	PROBABILITY	DURATION	SIZE AND SCOPE	CUMULATIVE EFFECTS	STAKEHOLDERS			SIGNIFICANCE	
7.1.2, table 7.3, 8.2.10		Oil leak associated with pipeline failure in a creek bed	Contamination of riparian systems	M	L	L	M	M	4	No	Low							1 Santos are currently undertaking an oil spill study into the potential effects of crude or condensate on this environment as there are currently uncertainties. This study is to ensure that appropriate mitigation measures are being implemented in cases of pipeline failure. Pipeline design and operational standards reduce the probability of these spills occurring.	Low
		IMPACTS ON SENSITIVE AREAS																	
5.5.3	National Parks																		
Table G-1	Pipeline Construction and Operation	Disturbance to Conservation features of Parks/Regional Reserves.	Loss of conservation value	M	H	M	M	H	2	No	Low							1 Managed through Management plans Operating according to the relevant Statutes.	Low
		Increased public access to remote areas as a result of operation infrastructure.	Loss of conservation value	M	M	H	M	H	2	No	Low							1 Signage to keep the public away from the areas, and rehabilitation of ROW to remove evidence of tracks and maintain conservation value of the region. Should only be an issue immediately after construction and during rehabilitation period.	Low
	World Heritage Areas																		
	National /International Register Areas	Disturbance to Coongie Lakes Wetland values of International Importance	Loss of register/convention values	M	M	M	M	H	2	No	Low							1 Any activities proposed within Coongie Lakes Control Zone require specific assessment and approval in particular referral for assessment under the EPBC Act.	Low
		SOCIAL IMPACTS																	
		Community Resource Impacts																	
	Pipeline Construction																		
5.5.4	General Construction activities	Movement of heavy vehicles and machinery on unsealed public roads	Degradation of roads	M	H	M	M	H	2	No	High	Long	Confin ed	High	Low			4 Most roads used by operators are constructed and maintained by the operator. The use of public roads is minimal and any effect petroleum industry vehicles have on such roads would be a fraction of the impact made by all road users, including community service vehicles and tourist vehicles. Strict wet weather road use policies are in place. Not covered in EIR	Medium

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7.1.1, table 7-2, Table G-3.		Change visual attributes of the area	Reduction in aesthetic and recreational value of the area	M	H	M	M	H	2	No	Med	Med	Confin ed	Low	Low	3 Restoring natural contours of ROW to as near as possible to their natural state, and undertaking monitoring programs to return land to its natural state, also observing land system specific route selection, to manage any reduction in aesthetic impact . Most areas of pipeline work should avoid public areas. Management of recreational value impacts not considered in this version of the EIR. Assessment only reflects aesthetic values.	Low
		Cultural/Heritage Impacts															
	Pipeline Construction																
5.5, table 5-3 Table G-1 , G-3.	General Construction activities	Disturbance of cultural heritage sites	Damage to or loss of sites of cultural significance	M	H	H	M	H	2	No	Low					1 Activities planned to avoid Aboriginal and non-aboriginal heritage prior to construction activities being undertaken, and procedural guidelines observed for the protection of these sites. Many sites of non-aboriginal heritage significance are listed on the National Heritage Register.	Low
		Community Health Impacts															
8.2.14	General Construction activities	Vehicle accidents with third parties due to presence of heavy vehicles and machinery and dust generation on unsealed public roads.	Injury or death of third parties.	M	M	M	M	M	3	No	Low					1 Santos policies in place for dirt road driving, such as driving with lights on at all time, 80 km speed restriction, and no overtaking in dust cloud (instant dismissal). The above comments were not included in the EIR, but are standard for all Santos employees. A general section on safety systems and features is included in the EIR.	Low
7.1.2, table 7-3, Table G-6 and G-7	Pipeline Operation	Explosion or fire along pipeline	Injury or death of employees, contractors and/or public	M	H	H	M	H	2	No	Low					1 Pipeline constructed and operated to AS2885 standards significantly reduces the likelihood of this hazardous event.	Low
		Third party damage to pipeline.	Injury or death of third party	H	H	M	M	H	2	No	Low					1 Under AS2885 pipeline construction standards, the pipeline should be designed in a manner that reduces any threats to as low as reasonably practicable. This should be highlighted in Appendix H.	Low
		ECONOMIC IMPACTS															
		Other Land User Impacts															

REF in EIR	ACTIVITY	POTENTIAL HAZARDOUS EVENTS	POTENTIAL CONSEQUENCES	PREDICTABILITY						MANAGEABILITY						COMMENTS	ENVIRONMENTAL SIGNIFICANCE	
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Table 7-2, table G-1, G-2, G-3	Pipeline construction	Pipeline construction activities interfere with other land users.	Disruption to land use, damage to third party infrastructure	H	M	M	M	H	2	No	Low						1 Other landholders consulted prior to construction activities undertaken on site management issues. Emergency response measures in place to deal with emergency scenarios. Spills managed in cooperation with land owners on organic certification properties.	Low
7.1.2, table 7-3, Table G-6 and G-7	Pipeline Operation	Fire as result of pipeline operations	Disruption to land use (eg grazing)	M	H	M	M	H	2	No	Low						1 The low likelihood of a fire and sparse cattle presence makes such a risk highly unlikely.	Low
7.1.2, table 7-3, Table G-8 and G-10		Spill or leak from pipeline or due to nodal compressor failure, onto grazing land.	Disruption to land use, loss of Organic Beef Certification.	M	H	M	M	H	2	No	Med	Short	Small	Low	Low		2 Increasingly the properties in the Cooper Basin are applying for organic beef certification. Oil spills on their properties can threaten this rating. The issue will be managed through fencing any spills to isolate them from stock.	Low