

Environmental Significance Assessment																					
Project:		Origin Energy SESA Pipeline (South Australian section)																			
Assessor:		Stephen Milne (Ecos Consulting)																			
Reviewed:		Belinda Close (PIRSA)																			
Date:		17-Nov-04																			
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					SIZE	SCOPE	DURATION	FREQUENCY	STAKEHOLDERS	SIGNIFICANCE	AVOIDANCE	PROBABILITY	DURATION	SIZE AND SCOPE	CUMULATIVE EFFECTS	STAKEHOLDERS			SIGNIFICANCE		
<b>NATURAL ENVIRONMENT</b>																					
<i>Soil</i>																					
5.2	General construction activities		Soil contamination resulting from oil/fuel/chemical spills outside bunded area (refueling), exposure of acid sulphate soils to air	Poor vegetation regrowth, loss of soil fertility, risks to human health, risks to native fauna and livestock	M	H	H	H	H	2	No	Low	Short	Small	No	No	1	Procedures for minimising the risk of spills (e.g. storage in bunded areas, refuelling using drip trays and away from surface water), trench water disposal and construction in acid sulphate soils (ASS) will be included in CEMP. Soil testing prior to construction will determine if any areas of ASS are present.	Low		
5.2	Vehicle movement and access		Soil compaction	Poor vegetation regrowth on ROW and reinstated access tracks	M	H	H	H	H	2	No	Med	Short	Small	No	No	2	Compacted areas will be ripped during ROW restoration	Low		
5.2	Clear and grade		Lack of or incorrect stripping and stockpiling of topsoil	Loss of soil fertility, poor vegetation regrowth on ROW	H	H	H	M	H	2	Yes	Low	Short	Small	No	No	1	Topsoil will be stripped and stockpiled separately (specified in CEMP)	Low		
5.2			Erosion of the ROW by run-off and wind	Loss of topsoil and soil fertility, poor vegetation regrowth on ROW, gullying	M	H	H	M	H	2	No	Low	Short	Small	No	No	1	Control structures will be erected in any erosion prone areas (e.g. significant slopes). The terrain is relatively flat and soils are not high risk for erosion	Low		
5.2	Trenching		Soil contamination resulting from saline water from trench dewatering	Poor vegetation regrowth, loss of soil fertility, risks to human health, risks to native fauna and livestock	M	H	H	M	H	2	No	Low	Short	Small	No	No	1	Shallow groundwater in the region is not saline and is not expected to be intercepted by the trench.	Low		
5.2	Trenching, backfilling		Mixing or inversion of topsoil and spoil	Loss of soil fertility, poor vegetation regrowth on ROW	H	H	H	M	H	2	Yes	Low	Short	Small	No	No	1	Trench spoil and topsoil will be stockpiled separately (specified in CEMP) Care will be taken to ensure that mixing or inversion does not occur	Low		
5.2			Poor compaction of backfilled soil	Subsidence of soil along trenchline, gullying	H	H	H	M	H	2	Yes	Med	Short	Small	No	No	2	Backfilling will aim to compact the trench consistent with surrounding soils. Any subsidence will be quickly rectified.	Low		
5.2	Pressure testing		Soil contamination resulting from leaking during hydrotesting, disposal of test water	Poor vegetation regrowth, loss of soil fertility	M	H	H	M	H	2	Yes	Low	Short	Small	No	No	1	Procedures for disposal will be specified in the CEMP and may include disposal on-site if it meets appropriate ANZECC criteria, containment and treatment on-site or removal off-site	Low		
5.2, 3.6	Operation		Erosion of the ROW by run-off	Loss of topsoil, poor vegetation regrowth on ROW, gullying	M	H	H	M	H	2	Yes	Low	Short	Small	No	No	1	The ROW will be reseeded with crops/pasture or revegetated to promote stability. Terrain is relatively flat and erosion risk is low. The ROW will be regularly monitored and rectification carried out where required.	Low		
<i>Air</i>																					
5.6	General construction activities		Pollution of air via vehicle emissions	Lowered air quality	M	H	H	M	H	2	No	Med	Short	Small	No	No	2	Very minor impact. Vehicles will be kept in good working order.	Low		
5.6	Clear and grade, trenching, padding, backfill, restoration		Generation of dust	Nuisance to people living or working near ROW, third party injuries	M	H	H	M	H	2	No	Med	Short	Small	No	No	2	Area is not densely populated. Where dust may cause problems, dust suppression measures (e.g. watering, lower speed limits) will be used. Nearby residents will be liaised with.	Low		
5.6	Operation		Gas emissions during maintenance (from scraper stations during the loading and removal of pigs, and/or at meter and delivery stations during remote valve operation)	Lowered air quality, potential increase in greenhouse gas emissions	M	H	H	M	H	2	No	Low	Short	Small	No	No	1	Minor and infrequent emissions during maintenance operations (e.g. pigging - occurs every 10-15 years).	Low		
<i>Surface Water</i>																					
5.3	General construction activities		Contamination of surface water as a result of oil/fuel/chemical spills	Lowered water quality of surface waters	H	M	H	H	H	2	Yes	Low	Short	Small	No	No	1	Procedures to minimise risk of spills incorporated into CEMP. Construction will occur in dry conditions. No watercourses cross the alignment, refuelling will not occur near surface water.	Low		

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5.3			Release of sediment into watercourses/waterbodies during rainfall events	Increased sediment load and turbidity in surface waters	M	M	H	H	H	2	Yes	Low	Short	Small	No	No	1	No watercourses cross the alignment. Construction will occur in dry conditions. Erosion control structures and sediment fencing used near features which may collect surface water.	Low		
5.3			Interruption/alteration of surface waterflows by embankments/stockpiles	Downstream areas deprived of water resulting in detrimental effects upon aquatic ecology and 3rd party water users	M	H	H	M	H	2	Yes	Low	Short	Small	No	No	1	Care will be taken to ensure breaks are left in stockpiles at strategic locations. No watercourses crossed in SA.	Low		
5.3	Watercourse crossing		Release of sediment into watercourses during open-cut watercourse crossings	Increased sediment load and turbidity in watercourses	H	H	H	H	H	1	Yes	Low	Short	Small	No	No	1	Several small farm drainage ditches crossed, but no watercourses present.	Low		
5.3	Trench dewatering		Release of sediment, acid sulphate leachate, saline water into watercourses	Lowered quality of surface waters	H	H	H	M	H	2	Yes	Low	Short	Small	No	No	1	Discharge will be in accordance with EPA standards and minimise the risk of contamination of surface water bodies. Procedures to trap sediment, dispose of trench water and neutralise acid sulphate leachate (if present) contained in CEMP.	Low		
5.3	Pressure testing		Disposal of hydrostatic test water into surface waters	Lowered quality of surface waters	H	H	H	H	H	1	Yes	Low	Short	Small	No	No	1	Care will be taken to minimise the risk of contamination of surface waters. Procedures for disposal will be specified in the CEMP and may include disposal on-site if it meets appropriate ANZECC criteria, containment and treatment on-site or removal off-site	Low		
<b>Groundwater</b>																					
5.3	General construction activities		Contamination of groundwater as a result of oil/fuel/chemical spills	Lowered water quality of ground water	H	M	H	M	H	2	Yes	Low	Short	Small	No	No	1	Measures to prevent contamination of groundwater by spills will be included in the CEMP. See comments under <i>Soil</i> above for more detail.	Low		
5.3	Trenching, dewatering		Localised disturbance to flow patterns due to intersection of shallow groundwater by the open trench, and pumping of water from trench	Disruption of shallow groundwater flows, in particular the Comaum-Caroline Prescribed Wells area (proclaimed under the <i>Water Resources Act 1967</i> )	M	H	H	M	H	2	No	Low	Short	Small	No	No	1	The trench is not expected to intercept shallow groundwater. Any interruption would be of short duration and probably relatively minor.	Low		
5.1			Contamination of groundwater by leachate from acid sulphate soils	Lowered water quality of ground water	M	H	H	M	H	2	Yes	Low	Med	Small	No	No	1	Soil sampling will be undertaken to identify any areas of potential acid sulphate soils. Procedures for management of ASS (if present) will be included in the CEMP and may include keeping the soil wet and neutralisation with lime if required. Trenching is not expected to intercept the water table.	Low		
5.1	Pressure testing		Contamination of groundwater by chemicals in hydrotest water	Lowered quality of ground water	H	M	H	H	H	2	Yes	Low	Short	Small	No	No	1	Hydrotest water will preferably be fresh. An oxygen scavenger may be added which is not harmful to the environment once the water is aerated. It is unlikely that corrosion inhibitors or biocides are added. Procedures for testing and disposal will be included in the CEMP (see comments under <i>Soil</i> above for more detail).	Low		
5.1	Restoration, rehabilitation		Alteration of groundwater flows	Shallow groundwater may flow along the trenchline (if poorly compacted) or be blocked (if over compacted)	M	M	H	M	H	2	Yes	Low	Short	Small	No	No	1	Careful management of trench backfilling operations will be required to ensure that compaction is appropriate. Trench plugs may be used in some areas to prevent longitudinal flow.	Low		
<b>Vegetation</b>																					
5.4	General construction activities		Introduction and/or spread of weeds and plant diseases	Loss of biodiversity, loss of habitat, displacement of native fauna, loss of integrity of plant communities	M	M	H	M	H	2	Yes	Low	Short	Small	No	No	1	The alignment does not intersect any areas of intact vegetation where weed introduction is an issue. Symptoms of pathogens have not been detected on the alignment. Appropriate hygiene measures (e.g. cleaning of vehicles and equipment before entering the project area) will be incorporated in the CEMP.	Low		
5.4	Clear and grade		Loss of threatened flora, loss of remnant vegetation	Loss of biodiversity, loss of habitat, displacement of native fauna, loss of integrity of plant communities	H	H	H	M	H	2	No	Low	Short	Small	No	No	1	The alignment traverses cleared firebreaks and farming paddocks and does not intersect any areas of relatively intact vegetation. Native vegetation clearance will be extremely limited; a small number of isolated, small trees may be removed, and trimming of branches overhanging the ROW will be required in some locations.	Low		

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5.4	Restoration, rehabilitation		Poor recovery of native vegetation on cleared sections of the ROW	Aesthetic impacts, ongoing loss of native vegetation, barrier to small animal movement	H	H	H	H	H	1	Yes	Low	Short	Small	No	No	1	No significant clearance of native vegetation on the ROW will occur.	Low		
5.4	Welding		Loss of vegetation as a result of wildfire	Loss of biodiversity, loss of habitat, displacement of native fauna, loss of integrity of plant communities	M	M	H	M	H	2	Yes	Low	Short	Med	No	No	1	Procedures to minimise the risk of fire will be incorporated into the CEMP, including the provision of fire prevention and response equipment will on-site. Close liaison will be maintained with the CFS, forestry companies and landholders.	Low		
<b>Fauna</b>																					
5.4	General construction activities		Vehicles striking fauna	Loss of fauna or injury to fauna, endangering species	H	H	H	H	H	1	No	Low	Short	Small	No	No	1	There is little intact habitat along the route and consequently native fauna density is generally low. The risk of kangaroos being struck by vehicles may be slightly increased, otherwise the likelihood of fauna being struck is low.	Low		
5.4			Disturbance to native fauna including disruption of critical fauna lifestages	Emigration from local area, interruption of breeding cycles	H	H	H	H	H	1	Yes	Low	Short	Small	No	No	1	There is little intact habitat on the route and disturbance to native fauna will be insignificant. Increased noise and activity may cause temporary and minor disturbance to birds using scattered trees, but measures will be implemented to ensure disturbance to significant species breeding (e.g. Red Tailed Black Cockatoos) is not significant.	Low		
5.4			Disturbance to red-tailed black cockatoo	Endangering species, loss of biodiversity	H	H	H	H	M	2	Yes	Low	Short	Small	No	No	1	Red-tailed black cockatoo is an endangered species present in the south-east of SA. Pipeline alignment does not impact any significant remnants of feeding habitat and no potential nest trees will be removed.	Low		
5.4	Trenching, pipelaying activities		Entrapment of fauna in the open trench	Loss of fauna or injury to fauna, endangering species	H	H	H	M	H	2	No	Med	Short	Small	No	No	2	There is little intact habitat on the route and the likelihood of significant fauna entrapment in the trench is low. To minimise the risk of entrapment, the trench will be left open for minimal time, escape ramps left in place and open trenches will be checked daily and trapped fauna removed. Procedures will be included in the CEMP	Low		
<b>Sensitive Areas</b>																					
5.7			Impacts on conservation areas	Lowered conservation values of sensitive areas	H	H	H	H	H	1	Yes	Low	Short	Small	No	No	1	No sensitive areas on or near pipeline route (e.g. National/Conservation Parks, World Heritage areas, Ramsar wetlands).	Low		
<b>SOCIO-ECONOMIC ENVIRONMENT</b>																					
<b>Cultural Heritage</b>																					
5.5	Access, Clear and grade		Damage to indigenous and historical heritage sites	Loss of cultural heritage	H	H	H	M	H	2	Yes	Low	Short	Small	No	No	1	Heritage surveys have been conducted along the route and no sites were identified. The area is considered to be of low archaeological sensitivity. Procedures to cover discovery of sites during construction will be included in the CEMP.	Low		
5.5	Trenching, horizontal directional drilling		Damage to sub-surface indigenous heritage sites	Loss of cultural heritage	H	H	H	M	H	2	No	Low	Short	Small	No	No	2	Construction personnel will be made aware of their responsibilities regarding excavation of Aboriginal heritage items. Protocols for identifying and protecting items will be included in the CEMP.	Low		
<b>Visual Amenity</b>																					
5.8.2	General construction activities		The aesthetic impact of cleared vegetation and extensive earthworks during construction	Temporary loss of visual amenity, aesthetic disturbance to landholders, residents and tourists	H	H	H	H	H	1	No	High	Short	Small	No	No	2	Loss of visual amenity will be temporary and of relatively short duration.	Low		
5.8.2			Careless disposal of waste	Loss of visual amenity	H	H	H	H	H	1	Yes	Low	Short	Small	No	No	1	Waste management procedures will be incorporated in the CEMP and included in training and inductions. All waste will be removed off the ROW.	Low		
5.8	Reinstatement		Long term change to aesthetic appearance of natural environment due to unsuccessful reinstatement	Loss of visual amenity, aesthetic disturbance to landholders, residents and tourists	H	H	M	H	M	2	No	Low	Med	Small	No	No	1	May be a landowner concern.	Low		

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5.8.2	Operation		The aesthetic impact of aboveground infrastructure (eg. meter stations, marker signs)	Long term loss of visual amenity, aesthetic disturbance to landholders, residents and tourists	H	H	H	H	H	1	No	Med	Long	Small	No	No	3	Above ground infrastructure will be located inside the existing plant area at Katnook / Ladbroke Grove.	Low		
<b>Existing Land Use</b>																					
5.7	General construction activities		Disruption of agricultural land uses, eg. cropping, grazing and dairy farming, restriction in stock movement	Temporary loss of agricultural produce/crop, temporary disturbance to stock, temporary inconvenience to landholders	H	H	H	H	H	1	No	Med	Short	Small	No	No	2	Landholders will be closely consulted with to avoid or minimise conflicts. Formal easement agreements will be entered into, outlining each party's rights and obligations and landholders will be compensated for impacts (e.g. loss of production on ROW).	Low		
5.7, 5.4			Introduction, spread or colonisation of weeds, pathogens and/or agricultural diseases	Loss of crop productivity, detrimental effects on livestock	M	H	M	M	M	2	Yes	Low	Med	Small	No	No	3	Areas of weed infestation will be identified prior to construction and appropriate management specified in the CEMP. No weeds of high concern have been identified to date during inspections or landholder consultation. Post construction weed control will be carried out if required.	Low		
5.7	Welding		Wildfire from welding activities or other construction activities	Loss of infrastructure, crops, forests, livestock, agricultural productivity	M	M	H	M	H	2	Yes	Low	Short	Med	No	No	2	Procedures to minimise the risk of fire will be incorporated into the CEMP, including the provision of fire prevention and response equipment will on-site. Close liaison will be maintained with the CFS, forestry companies and landholders.	Low		
5.7	Restoration, rehabilitation		Poor regrowth of pasture grasses or crops on the ROW	Loss of long-term productivity	M	H	H	M	H	2	Yes	Low	Short	Small	No	No	1	The ROW will be rehabilitated in consultation with landholders to ensure that their requirements are addressed. Reseeding and fertiliser are likely to be used.	Low		
5.7	Operation		Long term restriction of land use	Inconvenience to landholders	H	H	H	H	M	2	No	High	Long	Small	No	No	3	Pipeline will be buried and easement rehabilitated to as near as practicable to the pre-construction state. The only activities that have the potential to cause harm to the pipeline or public will be restricted. Landholders will be compensated - Origin will undertake and fund pasture and crop reinstatement and restoration.	Low		
<b>Third Party Infrastructure</b>																					
5.8.3	General construction activities		Damage to cables, pipes or other utility services	Short term disruptions to services such as electricity, water and telecommunication networks	H	H	H	M	H	2	Yes	Med	Short	Small	No	No	2	Careful planning and close consultation with third parties will ensure that inconvenience to third parties or damage to infrastructure is avoided or minimised. Important infrastructure will be marked on line lists / alignment sheets and flagged on the ground.	Low		
5.8.3			Damage to private property eg. fences, gates, driveways	Inconvenience to landholders	H	H	H	M	M	2	Yes	Med	Short	Small	No	No	2	Avoided where practicable and reinstated if unavoidable. Origin will maintain close liaison with all affected landholders. Pre-construction agreement will be obtained on the type and extent of the impact to occur, and regarding rectification or compensation.	Low		
5.8.3	Construction access; trenching across roads		Damage to roads and other road transport infrastructure or networks	Inconvenience to public or landholders, loss of road integrity, localised traffic congestion or disruptions	H	H	H	H	H	1	No	Low	Long	Med	No	No	1	Existing roads used for access wherever practicable. Shuttle buses to transport personnel to worksites where practicable. Open cut roads will be reinstated to the satisfaction of the local authorities. Any damage to roads or bridges will be addressed.	Low		
<b>Public Safety &amp; Health</b>																					

