ACTIVITY:	Petroleum Production - Environmental Significance Assessment																	
PROJECT:	Acrasia Field, Stuart Petroleum																	
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DATE:	October 2003			PREDICTABILITY						MANAGEABILITY								
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	Natural Environment Impacts																	
	Soil Impacts																	
1.4, 2.2, Table 1		Construction and operation activities (including vegetation clearance).	Physical damage to soil. Exposure of soil to wind and water erosion. Possible start-up of long term irreversible erosion on gibber slopes >2%.	M	H	H	H	H	2	No	High	Short				2	The bulk of the facility utilises the existing Acrasia#3 lease area, and existing road and related facilities. Borrow taken from existing pits or from sources checked for low erosion hazard.	**LOW**
1.4, Table 1		Road construction over gibber mantle.	Possible start-up of long term irreversible erosion on gibber slopes >2%. Water interception problems, gullying.	H	H	H	H	H	1	No	High	Long	Confined	No	No	3	Existing tracks used where possible. Road formation on gibber surface to be developed by laying clay directly over gibber mantle without cutting the mantle, to avoid drain-initiated gullying. Shallow spoon drains provided to minimise redirection of overland flow by road formation.	**LOW**
1.4		Construction of clay pads on gibber surfaces.	Possible start-up of long term irreversible erosion on gibber slopes >2%	H	H	H	H	H	1	No	High	Short				2	Pads required for jet pump, storage tanks and power generation areas. Slopes at tank pad construction locations <2%. Pads will be approximately 30cm constructed from local clay borrow.	**LOW**
1.4		Laying of flowlines on gibber surface.	Possible start-up of long term irreversible erosion on gibber slopes >2%	H	H	H	H	H	1	No	High	Short				2	No ground preparation required. Pipelaying vehicles will be able to move across the gibber surface without permanent damage, provided laying is undertaken in dry conditions.	**LOW**
1.4		Construction of interceptor ponds.	Possible start-up of long term irreversible erosion on gibber slopes >2%	H	H	H	H	H	1	No	High	Short				2	Proposed to scrape and stockpile gibber and surface soil before commencing main excavation.	**LOW**
1.4, 3.3.5, 3.3.6, 3.3.9, Table 1		Spills resulting from failure of flowlines and storage facilities.	Soil contamination.	M	H	M	M	H	2	No	Low					1	Flowlines and jet pump lines laid above ground, supported and not in contact with soil. Bunding used for secondary containment, with capacities sufficient to contain more than a full road train compartment. Major spills retained by clay lining and bund, and salvaged by pumping into process stream. Specific procedures will be developed and implemented as part of POM to mitigate tank storage and bund compound overflow risks.	**LOW**
1.5, 3.3.9, Table 1		Spills associated with transport of oil.	Soil contamination.	M	H	H	M	H	2	No	Med	Short				2	For oil transport, 2-3 loaded, 3 unloaded double train movements per day. Limitations placed on road train movements, such as no transport during wet conditions. Small spills in gibber area left to bio-remediate. Large spills on flat surfaces could be land-farmed in place, or contaminated soil removed for landfarming or disposal elsewhere. On sloping surfaces, remediation is likely to have more impact than the original spill. For a large spill on a sloping gibber surface, separation ponds downslope will be used to catch contaminated runoff. Systems, procedures and training for tanker drivers.	**LOW**
3.3.6, Table 1		Spills associated with tanker load-out.	Soil contamination.	H	H	H	H	H	1	Yes						1	Tanker loading bay wil have a non-permeable clay floor. Minor spillages at loading point to be left to evaporate and bio-remediate.	**LOW**
3.4.3		Process water disposal by evaporation (if infiltration becomes insufficient).	Greater surface impact, soil contamination.	H	H	H	H	H	1	No	Low					1	A combined evaporation and infiltration disposal process may be required in the future. As the porportion of water produced increases, infiltration rates may slow due to the buildup of the disposed water plume. Evaporation ponds require greater surface area and disturbance. This is not expected to be necessary due to the "leakiness" of the sediments and stone immediately below the clay mantle.	**LOW**
	Ground and Surface Water Impacts																	
3.3.8, 3.4.2		Formation water disposal with hydrocarbons present (insufficient cleaning process).	Contamination of ground and surface water with hydrocarbons.	M	M	M	H	H	2	No	Low					1	No local near-surface groundwater present. Formation water cleaned to no visible oil (approx <30 ppm HC) before disposal. Interceptor ponds have oil skimming. Produced water to be kept out of surface drainage. Drainage systems have no connection to the Cooper Creek system to the south. Possible interference with livestock.	**LOW**

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3.4.2		Disposal of formation water via infiltration, leading to a groundwater plume.	Disposed water becomes subsurface and re-appears in the downslope drainage between Acrasia #2 and #3. Movement of groundwater plume toward defined drainage.	H	M	H	H	H	2	No	Low					1	No local near-surface groundwater present. Infiltration of produced water will create a groundwater mound which will disappear after the field is exhausted. Installation of a downslope peizometer to check for possible movement of groundwater plume toward defined drainage. If groundwater movement from disposal detected, evaporation required.	**LOW**
1.4.2, Table 1		Spills in periods or locations where oil can be easily spread, such as wet areas and flowing watercourses.	Contamination of ground and surface water with hydrocarbons.	M	M	M	M	H	2	No	Low					1	Road train movement limitations in wet conidtions to minimise risk of spill during transportation. Flowlines and jet pump fluid lines anchored where defined drainage is crossed. Continuous pipeline without threaded joints used at crossings. Apart from immediate crossings, over most of the lease roads the carriageway is sufficiently distant from drainage lines to prevent even a complete road train spill reaching watercourses.	**LOW**
	Vegetation Impacts																		
Table 1		Access upgrades, borrow for maintenance.	Physical damage to vegetation and habitat.	H	H	H	H	H	1	No	Low					1	Use of existing tracks limits scope for impact. Maintenance and upgrade will reduce the risk of off-easement movement. Borrow taken from either existing pits, or from sources checked for low erosion hazard, vegetation and habitat.	**LOW**
1.5, Table 1		Spills associated with transport of oil.	In medium-term can prevent re-establishment of vegetation on spill area.	M	H	H	M	H	2	No	Med	Short				2	For oil transport, 2-3 loaded, 3 unloaded double train movements per day. Limitations placed on road train movements, such as no transport during wet conditions. Systems, procedures and training for tanker drivers. Upgrade of access to reduce risk of transportation accidents resulting in spillages. No high biological value areas within lease access.	**LOW**
3.3.6, Table 1		Spills associated with tanker load-out.	In medium-term can prevent re-establishment of vegetation on spill area.	H	H	H	H	H	1	Yes						1	Tanker loading bay wil have a non-permeable clay floor. Minor spillages at loading point to be left to evaporate and bio-remediate.	**LOW**
3.3.7, Table 1		Fires at well or in transit. Secondary fires resulting from transportation fires.	In medium-term can prevent re-establishment of vegetation on fire area.	M	M	M	H	H	2	No	Low					1	Primary strategy is containment and isolation. Adequate earthing of process facility components to limit ignition potential. Manual shutoff/ isolation of fuel possible, even with a fire in progress. First attack extinguishers present at high risk areas. Fires will be left to burn out where first attack has failed. Procedures in place to limit the spread of fires associated with spills,	**LOW**
3.4.1		Process water entering normal surface drainage.	Opportunistic plant growth (water-reliant native species or aliens).	M	H	H	H	H	2	No	Low					1	Keep process water out of normal surface drainage.	**LOW**
	Fauna Impacts																		
1.4		Flowline construction	Impediment of fauna movement.	H	H	H	H	H	1	No	High	Short				2	Flowlines will be supported on sleepers, and only cover short distances.	**LOW**
1.5, Table 1		Spills associated with transport of oil.	Disturbance to rare, endangered, vulnerable species.	M	H	H	M	H	2	No	Low					1	For oil transport, 2-3 loaded, 3 unloaded double train movements per day. Limitations placed on road train movements, such as no transport during wet conditions. Systems, procedures and training for tanker drivers. Upgrade of access to reduce risk of transportation accidents resulting in spillages. No rare, endangered or vulnerable species known to be present along access within lease area. If present, associated with common habitat and can be expected to be widespread in district.	**LOW**
3.3.6, Table 1		Spills associated with tanker load-out.	Disturbance to rare, endangered, vulnerable species.	H	H	H	H	H	1	Yes						1	Tanker loading bay wil have a non-permeable clay floor. Minor spillages at loading point to be left to evaporate and bio-remediate.	**LOW**
Table 1		Secondary fires from transportation fires.	Disturbance to rare, endangered, vulnerable species.	M	M	M	M	H	2	No	Med	Short				2	No rare, endangered or vulnerable species known to be present along access within lease area. If present, associated with common habitat and can be expected to be widespread in district.	**LOW**
3.4.1		Process water entering normal surface drainage.	Increased concentrations of water-dependent fauna.	M	H	H	H	H	2	No	Low					1	Keep process water out of normal surface drainage.	**LOW**

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3.3.8, Table 1		Pollution of stock water due to formation water disposal with hydocarbons and/or emulsion breakers/biocides present.	Ingestion of contaminants by native fauna or stock.	M	H	M	M	H	2	No	Low					1	Facility and all associated open water bodies stock-fenced. Pastoral leaseholder routinely informed of oil movement timetables. Formation water separated and cleaned thoroughly. Formation water only released when no visible oil (<30ppm).	**LOW**
1.4		Presence of interceptor ponds and borrow pits.	Injury or death of stock/fauna, dispersal of watering points and redistribution of animal movements resulting in inadvertant damage to vegetation and habitats.	H	H	H	H	H	1	No	High	Med	Confined			3	Use of already existing borrow pits with management procedures in place.	**LOW**
	Sensitive Area Impacts																	
2.1		Disturbance of Innamincka Regional Reserve.	Loss of conservation value.	H	H	H	H	H	1	Yes						1	Primary land use of Innamincka Regional Reserve area is livestock grazing. Tourism is limited to transit along the Innamincka-Cordillo Downs public road. All areas lie outside the boundaries defining the Coongie Lakes Wetlands of International Importance. No areas of high wilderness of biological value in lease area.	**LOW**
	Social Environment																	
	Community Resource Impacts																	
Table 1		Change in visual appearance of the area due to construction and long-term persistence of facility and access.	Reduction in aesthetic value.	H	H	H	H	H	1	No	High	Long	Confined			3	Access already exists. Facility is out of sight and most access is masked from the Innamincka-Cordillo downs Rd.	**LOW**
1.5, 3.3.10		Vehicular use of the Innamincka-Cordilla Downs public road.	Degradation of public road through heavy vehicle use.	H	H	H	H	H	1	No	High	Long	Confined			3	For oil transport, 2-3 loaded, 3 unloaded double train movements per day. 3 light vehicles per day. Greater road traffic during construction, but this will be short term. Road maintenance to be paid by Stuart. Possibilities of major damage limited by prohibition of movements in wet conditions.	**LOW**
	Cultural & Heritage Impacts																	
2.6, 3.3.11, 3.3.12, Table 1		Access upgrades and maintenance. General construction and operation activities.	Intrusion or physical site damage to areas of Aboriginal and non-indigenous heritage significance.	H	H	H	H	H	1	Yes						1	Use of existing access limits scope for impact. Facility location, borrow material, formation water disposal areas and flowline easements formally cleared for use by signatories to the CO-98E Native Title agreement. No known non-indigenous heritage sites near facility or access on PEL 90.	**LOW**
	Community Health & Safety																	
3.3.7, Table 1		Fire at storage or loading facility or during transportation.	Public and third party injury	M	M	M	M	H	2	No	Low					1	Primary strategy is containment and isolation. Adequate earthing of process facility components to limit ignition potential. Manual shutoff/ isolation of fuel possible, even with a fire in progress. First attack extinguishers present at high risk areas. Fires will be left to burn out where first attack has failed. Procedures in place to limit the spread of fires associated with spills,	**LOW**
1.5, 3.3.10, Table 1		Access track connection to Innamincka-Cordillo Downs Rd.	Public vehicle collision with trucks using access road.	H	H	H	H	H	1	No	Low					1	Adherence to legislation governing transportation provides main risk mitigation. Signage on rig road/ public road intersection prohibiting entry, warning against tresspassing, and warning of dangers associated with petroleum activity and truck movements. Limitations placed on road train movements.	**LOW**

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Table 1		Dust generation by vehicle movement	Decreased visibility, vehicle accident.	H	H	H	M	H	2	No	Low					1	Roads will be maintained. Signs in place to alert the public of activities.	**LOW**
	Economic Environment																	
	Existing Land Use Impacts																	
2.1		Construction and operation	Disturbance of pastoral activity.	H	H	H	H	H	1	No	Low					1	Facility and all associated open water bodies stock-fenced. Pastoral leaseholder routinely informed of oil movement timetables.	**LOW**