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

1MW Geothermal Power Plant at Innamincka

28 August 2008

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 of low, medium or high environmental impact.

The classification must be made on the basis of:

- The prepared EIR;
- Criteria established for classifying the level of environmental impact of regulated activities, a copy of which is found on the PIRSA Petroleum and Geothermal Group (PIRSA) web page:

  (http://www.pir.sa.gov.au/__data/assets/pdf_file/0008/27728/sigactv6.pdf; and
- Comment received from relevant Government departments in accordance with established administrative arrangements between these departments and PIRSA.

This document summarises the classification made by PIRSA on the proposed 1MW Geothermal Power Plant at Innamincka within GRL 3 in the Cooper Basin. This classification is based on information provided in the original EIR prepared by Parsons Brinckerhoff (August 2008).

SUMMARY OF CLASSIFICATION

1) From an analysis of the environmental significance of the events and potential impacts associated with the proposed activities against the classification criteria referred to above (assessment provided as Attachment 1), these regulated activities have been classified as **low environmental impact**.
2) The majority of events associated with the proposed construction and operation of the 1MW Geothermal power plant were assessed to be of low environmental significance. This is due to the small-scale of the proposed activities, and the fact that appropriate management measures will be implemented by Geodynamics to avoid or mitigate any potential environmental consequences.
3) For a low environmental impact classification, PIRSA is required to consult with Department for Environment and Heritage (DEH) and the Environment Protection Authority (EPA) in accordance with the administrative arrangement dated 11 November 2005 and 21 November 2005 respectively.
4) Comments received from DEH and EPA on 21 August 2008 agreed with the low environmental impact classification.

Pursuant to delegated powers, I hereby classify this regulated activity as **low environmental impact**.

Barry Goldstein
Director Petroleum & Geothermal
Delegate of the Minister for Mineral Resources Development

ACTIVITY: Environmental Significance Assessment
PROJECT: Geodynamics - 1MW Power Plant

ABBREVIATIONS: H = High certainty; M = Medium certainty; L = Low certainty

				PREDICTABILITY						MANAGEABILITY								
REF	TYPE OF IMPACT	EVENT(S)	POTENTIAL CONSEQUENCES	SIZE	SCOPE	DURATION	FREQUENCY	STAKEHOLDERS	SIGNIFICANCE	AVOIDANCE	PROBABILITY	DURATION	SIZE AND SCOPE	CUMULATIVE EFFECTS	STAKEHOLDERS	SIGNIFICANCE	COMMENTS	Environmental significance
	Natural Environment Impacts																	
	Soil Impacts																	
5.3, 7.3		Vegetation clearance due to building and other infrastructure construction	Exposure of soil to wind and water erosion	H	H	H	H	H	1	No	High	Short				2	Minimise the extent of exposed areas susceptible to wind erosion. Minimise the time of exposure of cleared land (ie. undertaking clearing immediately prior to development). Storm water runoff from roof surfaces will be collected in rainwater tanks and any overflow discharged by sub-surface piping to the exisitng lined dams.	**LOW**
Table 6.4		Vegetation clearance due to building and other infrastructure construction	Soil compaction, soil inversion	H	H	H	H	H	1	No	High	Short				2	Proof roll gibber areas that are proposed as equipment and construction material lay down areas. Place excavated soils in stockpiles adjacent to the excavations based on soil characteristics to minimise mixing. Soil horizons are replaced in the same order th they were removed, with soil reused as close as possible to its poir of origin.	**LOW**
		Disturbance to gibber	Erosion and sedimenation of gibber area	H	H	H	H	H	1	No	High	Short				2	Excavate gibber and subsoil only from those areas that are required for foundations using mobile equipment appropriate to task. Appropriate siting and implementation of temporay and permanent sediment control devices, including: sediment control perimenter bunds, silt traps and silt fences. Excess gibber re-used to fill depressions on the existing footprint and proof rolled.	**LOW**
5.4		Movement of heavy machinery and vehicles	Soil compaction, soil inversion	H	H	H	H	H	1	No	High	Short				2	Access to the site is via the unsealed Dillons Highway. The existing site access will be upgraded if required within the 'current footprint' There will be no general public access to the site. Controlled access to the site through dedicated points of entry and exit for construction and operation of vehicles and equipment.	**LOW**
7.7		Spills or leaks associated with chemical and fuel storage and handling	Soil contamination	H	H	H	H	H	1	No	Low					1	Storage in accordance with EPA Guidelines, Australian Standards and Best Practice Management. Establishment of appropriate emergency spill practices. Regular inspection of storage areas to ensure integrity, good house keeping and correct use.	**LOW**
7.8		Storage and disposal of waste materials	Soil contamination	H	H	H	H	H	1	No	Low					1	Waste stored on site for short period in single storage area. No burial or burning of waste. Cover loads of waste when transporting to waste depot.	**LOW**
5.2.4		Spills or leaks associated with disposal and treatment of sewage	Soil contamination	H	H	H	H	H	1	No	Low					1	Grey and black water will be treated on site using an approved system. System maintained in accordance with manufacturers manual and Department of Health Regulations.	**LOW**
	Groundwater Impacts																	
4.6.2, 5.5.3, 7.4		Development of onsite potable water supply bore	Reduction in groundwater level and availability	H	H	H	H	H	1	No	Med	Long	Confined			3	Potable water is required for the facility which will be sourced from a local bore. A minor amount of water is also required for the 'closed loop system'. Extraction and use of groundwater in accordance with allocation and conditions of approval. Monitoring of extraction volume during pilot plant operations in accordance with conditions approval.	**LOW**
7.7		Spills or leaks associated with chemical and fuel storage and handling	Shallow aquifer contamination	H	H	H	H	H	1	No	Low					1	Storage in accordance with EPA Guidelines, Australian Standards and Best Practice Management.Establishment of appropriate emergency spill practices. Regular inspection of storage areas to ensure integrity, good house keeping and correct use. Periodic review and practice of emergency response procedures.	**LOW**
5.2.4		Spills or leaks associated with disposal and treatment of sewage	Shallow aquifer contamination	H	H	H	H	H	1	No	Low					1	Wastewater system and installation approved by Department of Health. Treated wastewater will be discharged via a sub-surface infiltration system. Sludge from the treatment plant will be collected periodically for appropriate disposal to an EPA licensed landfill.	**LOW**
7.8		Storage and disposal of waste materials	Groundwater contamination	H	H	H	H	H	1	No	Low					1	Waste storage area to be located well away from drainage areas o floodplain. Waste stored on site for a short period in single storage area.	**LOW**
	Surface Water Impacts																	
Tabke 6.4		Sediment release from construction and operation activities	Surface water contamination	M	M	H	H	H	2	No	Low					1	Restrict area of clearance to minimise amount required. Installation of appropriate silt control measures. Inspect the site after heavy rainfall.	**LOW**
5.3		Earthmoving activities during construction of facilities	Disturbance to natural drainage lines	H	H	H	H	H	1	Yes						1	The proposed operations will not affect site runoff, given the size o the project and surface geography. The project site does not intersect any drainage lines and as a result no surface water diversion is required.	**LOW**
7.7		Spills or leaks associated with chemical and fuel storage and handling	Surface water contamination	H	H	H	H	H	1	No	Low					1	Storage in accordance with EPA Guidelines, Australian Standards and Best Practice Management.Establishment of appropriate emergency spill practices. Regular inspection of storage areas to ensure integrity, good house keeping and correct use. Periodic review and practice of emergency response procedures.	**LOW**
5.2.4		Spills or leaks associated with disposal and treatment of sewage	Surface water contamination	H	H	H	H	H	1	No	Low					1	Wastewater will be collected from the visitor centre complex and treated in a package wastewater treatment plant that will be manufactured off-site for assembling on site. The plant will treat both grey and black water which has been approved by the Department of Health.	**LOW**
7.8		Storage and disposal of waste materials	Surface water contamination	H	H	H	H	H	1	No	Low					1	Waste storage area to be located well away from drainage areas o floodplain. Waste stored on site for a short period in single storage area.	**LOW**
	Vegetation Impacts																	
7.1, 7.2		Construction activities	Introduction of weeds	H	M	M	M	H	2	No	Low					1	All interstate or higher risk vehicles or equipment shall be checked and cleaned prior to commencing work. Regular inspections of area surrounding the operations to identify any new weeds. Restricting access to site and on site vehicle movements.	**LOW**
7.1, 7.3		Dust suppression using saline water	Adverse effect on vegetation adjacent to site	H	M	M	M	H	2	No	Low					1	Contractors will be made aware of the requirements for reporting unauthorised clearing or overspraying of saline water for dust suppression.	**LOW**
4.7, 7.1		Vegetation clearance due to building and other infrastructure construction	Loss of vegetation; Loss of biodiversity	H	H	H	H	H	1	No	High	Short				2	Geodynamics has previously undertaken drilling and testing activities at the proposed site. The proposed area will be inspected for vegetation prior to clearance occurring. Contractors will be inducted to inform them of restricted areas and prohibition of additional clearance.	**LOW**
7.7		Spills or leaks associated with chemical and fuel storage and handling	Loss of vegetation; Loss of biodiversity	H	H	H	H	H	1	No	Low					1	Storage in accordance with EPA Guidelines, Australian Standards and Best Practice Management.Establishment of appropriate emergency spill practices. Regular inspection of storage areas to ensure integrity, good house keeping and correct use. Periodic review and practice of emergency response procedures.	**LOW**
	Fauna Impacts																	
7.5		Construction activities	Loss of fauna habitat	H	H	H	H	H	1	No	Low					1	Clearance of vegetation to be in accordance with the specified areas. Adherence to strict site rules to minimise off-road driving and access to non-designated work areas. Contractor induction sessions to be undertaken to promote the awareness of fauna species within the project area and their reliance on undisturbed habitat.	**LOW**
7.5		Construction activities	Injury/death of fauna/stock in construction zone	H	H	H	H	H	1	No	Low					1	Adherance to strict site rules to minimise off-road driving and access to non-designated work areas. Maintenance of site fencing to avoid, minimise and manage impacts associated with grazing animals.	**LOW**
7.5		Traffic movement on site	Species loss due vehicle collisions	H	H	H	H	H	1	No	Low					1	Contractor induction sessions to be undertaken to promote the awareness of fauna species within the project area and their reliance on undisturbed habitat.	**LOW**
7.5		Storage of domestic waste at facility	Scavenging by native and pest species and pest outbreaks	H	H	H	H	H	1	No	Low					1	All wastes to be stored in lidded drum and removed at least weekly to reduce potential food sources for introduced pests and vermin.	**LOW**

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				PREDICTABILITY						MANAGEABILITY								
REF	TYPE OF IMPACT	EVENT(S)	POTENTIAL CONSEQUENCES	SIZE	SCOPE	DURATION	FREQUENCY	STAKEHOLDERS	SIGNIFICANCE	AVOIDANCE	PROBABILITY	DURATION	SIZE AND SCOPE	CUMULATIVE EFFECTS	STAKEHOLDERS	SIGNIFICANCE	COMMENTS	**Environmental significance**
	Sensitive Area Impacts																	
4.7, 8.2		Disturbance to Innamincka Regional Reserve	Loss of conservation value	H	H	H	H	H	1	Yes	Low	Long	Confined			3	Geodynamics' GRL's are located within the Innamincka Regional Reserve. Consultation will be undertaken with DEH, DWLBC and other relevant stakeholders with regards to minimising the identified potential impacts of geothermal production on the reserve. Following the completion of production operations the affected areas will be rehabilitated to an appropriate standard.	**LOW**
	Air impacts																	
9.3, 9.4		Explosion or fire at the facility	Atmospheric pollution	M	M	M	H	H	2	No	Low					1	Plant established in accordance with best practice. Operation and management of plant in accordance with operational procedures and emergency response plans.	**LOW**
	Social Environment																	
	Community Resource Impacts																	
7.5		Change in visual appearance of the area due to construction and long-term persistence of facilities and access	Reduction in aesthetic value	H	H	H	H	H	1	Yes	Low	Long	Confined			3	Design and construct facilities with materials that minimise visual impact.	**LOW**
Table 6.4		Use of public roads during construction and operation.	Degradation of public roads through heavy vehicle use	H	H	H	H	H	1	Yes	Low	Long	Confined			3	Regular education and training of drivers. Speed restriction on unsealed roads. No transportation during wet conditions. Restriction of transportation at night. Establishment of traffic management procedures for vehicles entering and leaving site.	**LOW**
	Cultural & Heritage Impacts																	
4.13, 7.6		Construction earthworks, movement of heavy machinery and vehicles	Disturbance to cultural heritage sites	M	M	H	H	H	2	Yes						1	Infrastructure and operations located well away from known sites. Clearance obtained from native title holders before construction activities commence. Relocation of infrastructure if required. Compliance with Aboriginal Heritage Act and Heritage Places Act if artefacts discovered.	**LOW**
	Community Health & Safety																	
9.3, 9.4		Explosion or fire at the facility	Danger to health and safety of employees, contractors and the public	M	M	M	M	H	2	No	Low					1	Plant established in accordance with best practice. Operation and management of plant in accordance with operational procedures and emergency response plans.	**LOW**
4.10.1, 9.3		Radiation exposure at the facility	Danger to health and safety of employees, contractors and the public	M	M	M	M	H	2	No	Low					1	The plant will be operated as a closed loop to minimise emission of low level radioactive substances and radon gas. In the event of any accidental geofluid escape, the instantaneous amount of dissolved radon in the water has been modelled in open systems to be below the maximum permissible level for drinking water. Emergency control and management procedures in place.	**LOW**
4.12		Noise associated with construction and operation of facility.	Disturbance to local community	H	H	H	H	H	1	No	Low					1	Facility operated in compliance with the EPA Noise Policy. Equipment and noise control measures will be regularly serviced.	**LOW**
4.11, 7.3		Dust generation created from vehicle movements	Disturbance to local air quality	H	H	M	M	H	2	No	Low					1	Minimise area of disturbance. Use dust suppression methods as required. Restrict access to site and on site vehicle movements.	**LOW**
7.5, 7.8		Storage and disposal of waste	Odourous emissions and risk to human health	H	H	H	H	H	1	No	Med	Short				2	All wastes to be stored in lidded drum and removed at least weekly to reduce potential food sources for introduced pests and vermin. No burial or burning of waste onsite. Cover waste loads when transporting to EPA licensed landfill.	**LOW**
	Economic Environment																	
	Existing Land Use Impacts																	
7.1		Construction and operation activities.	Disturbance to land use (eg. grazing and recreation)	H	H	M	M	H	2	No	Low					1	Geodynamics has previously undertaken drilling and testing activities at the proposed site. Prohibition of additional vegetation clearance/access outside of the proposed areas.	**LOW**