Appendix

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Revised Environmental Risk Assessment

CONTINUATION OF BOGGABRI COAL MINE PROJECT
REVISED ENVIRONMENTAL RISK ASSESSMENT

for
Boggabri Coal Pty Limited

Issue	Aspect	Impact	Preliminary Risk Assessment			Proposed Control Measures	Revised Risk Assessment		
			C	L	R		C	L	R
Ecology	Vegetation clearing and topsoil stripping	Loss of biodiversity and disruption to threatened flora and fauna or habitats	3	A	6 (H)	A Biodiversity Impact Assessment has been completed by Parsons Brinkerhoff in accordance with the DECC *Draft Guidelines for Threatened Species Assessment* (DEC, 2005b). The assessment has identified the impacts of the Project on flora and fauna (including listed threatened species and vegetation communities). Mitigation measures have been identified and include: • Limit disturbance of Native Vegetation; • Prepare a Biodiversity Management Plan; • Implement a two stage clearing protocol; • Prepare a detailed rehabilitation and revegetation management plan; • Develop a flora and fauna monitoring program; • Prepare a sediment and erosion control plan; • Develop a Biodiversity Offsets Strategy that adequately compensates for the impacts caused by the Project. This includes 'like for like' Box Gum Woodland and additional native vegetation areas.	3	D	17 (M)
		Disturbance to Federally listed species	3	A	6 (H)				

Issue	Aspect	Impact	Preliminary Risk Assessment			Proposed Control Measures	Revised Risk Assessment		
			C	L	R		C	L	R
Cultural Heritage	Vegetation clearing, topsoil stripping drilling and blasting	Disturbance of Aboriginal artefacts, sites or places of cultural significance	3	B	9 (H)	An Aboriginal Archaeological Impact Assessment for the Project has been conducted by Insight Archaeology in accordance with the Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation (DECC, 2005a). All archaeological sites identified will be salvaged prior to ground disturbance.	4	B	14 (S)
		Disturbance of Non Aboriginal Heritage sites	4	C	18 (M)	Chris Carter from Archaeology Australia has conducted a Non-Aboriginal Cultural Heritage Assessment in accordance with the standards required by the Heritage Office of NSW. No significant Non Aboriginal Heritage sites were identified within the Project Boundary that would be impacted by the Project, therefore no controls are required.	5	D	24 (L)
Water Management	Topsoil stripping, haul roads, un-rehabilitated spoil	Dirty water runoff entering local waterways	3	A	6 (H)	A Groundwater Impact Assessment has been conducted for the Project by Australasian Groundwater and Environmental Consultants (AGE). A finite difference, 3D, numerical simulation package (MODFLOW) to identify the impacts of the Project on groundwater (including alluvial aquifers and any surrounding private boreholes) has been used. Groundwater will continue to be monitored and managed by Boggabri Coal in accordance with the approved Water Management Plan. A Surface Water Impact Assessment has been conducted for the Project by Parsons Brinckerhoff. The assessment has included the preparation of a water balance and identification of water demands and management requirements for the Project. Boggabri Coal will continue to manage surface water in accordance with the approved Water Management Plan which prescribes the system to effectively source, capture, divert, store, monitor, utilise	3	C	13 (S)
	Coal Extraction and overburden removal	Additional groundwater inflow into pit	4	C	18 (M)		4	C	18 (M)
		Drawdown of aquifers on surrounding water users	4	C	18 (M)		4	D	21 (L)
		Cumulative impacts with surrounding users	4	D	21 (L)		4	D	21 (L)
	Increase in production, coal processing and intensification of operations	Additional water demand for dust suppression and coal washing	5	B	19 (M)		5	A	15 (S)
	Water discharges into local waterways	Surface water contamination	3	C	13 (S)		3	D	17 (M)

Issue	Aspect	Impact	Preliminary Risk Assessment			Proposed Control Measures	Revised Risk Assessment		
			C	L	R		C	L	R
		Contaminated water from wash down bays, etc	3	C	13 (S)	and reticulate water on site. A flood water impact assessment has been conducted by WRM. The assessment investigated the influence of infrastructure works including the rail bridge, on flood levels and afflux above and below the Project Boundary. All infrastructure will be designed to ensure no material impacts on flood flows.	3	D	17 (M)
	Flooding	Increased flood levels and erosion of River Chanel	3	D	17 (M)		4	D	21 (L)
Acoustics	Coal, rejects and overburden haulage	Excessive Noise generation	4	C	18 (M)	An Acoustic Impact Assessment (incorporating noise and blasting) has been conducted for the Project by Bridges Acoustics in accordance with the Industrial Noise Policy 2000 (INP). The assessment identified the potential noise impacts of the Project, infrastructure, traffic noise and rail noise. The EA has also considered the cumulative noise impacts of the Project with surrounding mining operations and industry. The EA has identified and recommend the implementation of all reasonable and feasible mitigation measures. Current noise management controls will continue for the Project, including a range of mine planning, operational and engineering measures to be applied to the Project.	4	D	21 (L)
	Plant and equipment working in-pit and on overburden dumps		2	C	8 (H)				
	Train movements on rail loop and spur		4	C	18 (M)				
	CPP operation and stockpiles		4	C	18 (M)				
	Coal loading at rail loop		4	C	18 (M)				
	Product Coal Transport		4	B	14 (S)				
	Increased traffic movements		5	B	19 (M)				
	Blasting	Overpressure and ground vibration impacts at near neighbours and heritage properties	4	C	18 (M)	An acoustic impact assessment (including noise and blasting) has been conducted for the Project by Bridges Acoustics. Noise and blasting will continue to be conducted and managed in accordance with current environmental management and monitoring programs.	4	D	21 (L)

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			C	L	R		C	L	R
Visual	Overburden stockpile dumps	Visual	4	A	10 (S)	A Visual Impact Assessment has been completed for the Project by Integral Architecture and Planning, which has assessed the visual impacts of the Project and identified mitigation and management measures, as appropriate.	4	C	18 (M)
	Exposed earthworks		4	A	10 (S)				
	Lighting from mobile and fixed equipment		4	C	18 (M)				
Air Quality	Vegetation clearing, drilling and topsoil stripping	Wind blown dust and machinery exhaust fumes contributing to elevated dust levels	3	A	6 (H)	An Air Quality Impact Assessment has been conducted for the Project by PAE Holmes in accordance with the '*Approved Methods and Guidance for the Modelling and Assessment of Air Pollutants in New South Wales*' (DEC, 2001). Dust control measures will continue to be implemented in accordance with the existing Boggabri Coal management controls. Dust management at Boggabri Coal Mine involves the integration of operational procedures, meteorology and a comprehensive air quality monitoring network. Additional operational commitments in relation to dust control will be applied to the Project to ensure monitored levels at adjacent private property remain within acceptable criteria.	4	C	18 (M)
	Overburden emplacement		3	A	6(H)				
	Uncovering of coal		3	B	9 (H)				
	Coal, rejects and overburden haulage		3	C	13 (S)				
	Coal processing and transport		3	C	13 (S)				
	CPP operation and stockpiles		4	C	18 (M)				
	Combustion of diesel fuel	Greenhouse gas emissions	4	C	18 (M)	The Air Quality Impact Assessment determined greenhouse gas Scope 1, 2 and 3 emissions in accordance with the Australian Greenhouse Office's (AGO) '*Factors and Methods Workbook*' (AGO, 2005). It further confirmed that the Project in itself will have a negligible impact on global warming. Boggabri Coal will continue to manage and minimise Greenhouse Gas emissions where possible.	4	C	18 (M)
	Electricity use		4	C	18 (M)				
	Downstream Impacts from the Burning of Coal		4	A	10 (S)				

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			C	L	R		C	L	R
	Spontaneous combustion	Heating, vegetation scalding, emissions to air, odours	4	D	21 (L)	Assessments and previous experience has identified that the coal resource at Boggabri Coal does not have a propensity for spontaneous combustion. Boggabri Coal will continue to manage coal and waste handling to ensure spontaneous combustion is avoided.	4	D	21 (L)
	Blasting	Greenhouse gas emissions, fume and dust Generation	3	C	13 (S)				
Mine Rehabilitation	Topsoil Stripping and land preparation	Loss of productive topsoil	3	C	13 (S)	A Soil Survey and Land Resource Impact Assessment has been completed for the Project by GSS Environmental. The assessment mapped the soil types within the Project Boundary, identified any soil materials with potentially adverse quality (e.g. acid sulphate generating) and identified the suitability of topsoils for use as topdressing material and identified mitigation and management measures for the Project.	3	C	13 (S)
		Deterioration of land capability	3	C	13 (S)		3	C	13 (S)
	Rehabilitation	Erosion	4	D	21 (L)	The proposed mine plan for the Project will allow the development of an undulating, free-draining and stable landform generally consistent with the surrounding environment. Rehabilitation at Boggabri is designed to be compatible with the surrounding landform, stable and able to support final land use(s). To ensure a stable final landform, the majority of overburden emplacement slopes are shaped to 10 degrees or less. Progressive rehabilitation at Boggabri Coal Mine will continue to be undertaken in accordance with the Landscape and Revegetation	4	D	21 (L)
		Invasion of weed species	5	C	22 (L)				
		Invasion of feral animals	5	C	22 (L)				
	Final Landform	Acid Rock Drainage	2	D	12 (S)		2	E	16 (M)
		Unstable landform	4	D	21 (L)		4	D	21 (L)

Issue	Aspect	Impact	Preliminary Risk Assessment			Proposed Control Measures	Revised Risk Assessment		
			C	L	R		C	L	R
		Poor drainage	4	D	21 (L)	Management Plan, focusing on the regeneration of Box Gum Woodland. The long-term rehabilitation strategy will be revised for the Project.	4	D	21 (L)
		Erosion	4	C	18 (M)		4	C	18 (M)
Leard State Forest	Forest use Recreational use	Restricted access	4	D	21 (L)	The mine plan was revised to ensure as much of Leard State Forest would remain accessible for recreational users. The Leard State Forest will remain accessible (to the north) via Harparary Road. The Leard State Conservation Area will be expanded to provide additional land for recreational users as part of the Boggabri Coal Biodiversity Offset Strategy.	4	D	21 (L)
Traffic and Transport	Increased vehicle movements from employees, deliveries and train loading	Increased traffic movements	5	C	22 (L)	A Traffic Impact Assessment has been completed for the Project by Parsons Brinkerhoff in accordance with the Guide to Traffic Generating Developments (RTA, 2002). The assessment has reviewed the capacity of the affected road network to cater for differing traffic volumes due to the proposed change in traffic flows from the Project. Road enhancements and mitigation measures have been incorporated into a VPA with Narrabri Shire Council. Noise impacts from traffic were assessed in the acoustical impact assessment described above. Mitigation measures have been identified and will be instigated as part of the Project.	5	C	22 (L)
	Leard Forest Road closure	Socio-Economic	3	A	6 (H)		4	D	21 (L)
	Product coal transport via rail	Traffic delays at low level rail crossings	4	C	18 (M)	A Train Operation Traffic Impact Study has been completed for the Project by Parsons Brinckerhoff. The assessment has reviewed the capacity of the existing at grade crossings in Boggabri, Curlewis and Gunnedah and found them to be adequate.	4	C	18 (M)
Waste	General waste management	Land contamination	5	D	24 (L)	The Boggabri Coal Waste Management System provides a detailed procedure to ensure the environmentally responsible disposal,	5	D	24 (L)

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			C	L	R		C	L	R
	Rejects management	Water contamination	4	C	18 (M)	tracking and reporting of all waste generated on site. The Waste Management System will continue to be applied to the Project and will be enhanced as required. An initiative of the Project has been to negate the need for the construction of an out of mine tailings dam.	4	C	18 (M)
	Sewage management	Water contamination	4	D	21 (L)		4	D	21 (L)
Hazardous materials	Storage and Handling	Soil and water contamination	4	D	21 (L)	All hazardous materials will continue to be managed in accordance with the relevant hazardous materials management procedures. It is not anticipated that large and additional quantities of hazardous materials will be required for the Project.	4	D	24 (L)

IDEMITSU AUSTRALIA RESOURCES

IAR CORPORATE BUSINESS RISK MATRIX

Rating	Consequence **Note: Consequence may consist of a single event or may represent a cumulative impact over a period of 12 months**						Likelihood				
							A **Certain**	**B** **Probable**	**C** **Possible**	**D** **Remote**	**E** **Improbable**
	Impact to Annual Business Plan	Personal Injury (PI)	Business Interruption (BI)	Legal (L)	Reputation (R)	Environment (E)	**"Common"**	**"Has Happened"**	**"Could Happen"**	**"Not Likely"**	**"Practically impossible"**
1. Catastrophic	>$50m	Multiple Fatalities	> 1 month	Prolonged litigation, heavy fines, potential jail term	Prolonged International media attention	Long term impairment habitats/ ecosystem	**1 (E)**	**2 (E)**	**5 (H)**	**7 (H)**	**11 (S)**
2. Major	$10m - $50m	Single Fatality	1 week to 1 month	Major breach/ major litigation	International media attention	Long term effects of ecosystem	**3 (E)**	**4 (E)**	**8 (H)**	**12 (S)**	**16 (M)**
3. Moderate	$1m - $10m	Serious/ Disabling Injury	1 day to 1 week	Serious breach of regulation. prosecution/ fine	National media attention	Serious medium term environmental effects	**6 (H)**	**9 (H)**	**13 (S)**	**17 (M)**	**20 (L)**
4. Minor	$100k - 1m	Lost Time Injury	12 hrs to 1 day	Non-compliance, breaches in regulation	Adverse local public attention	Minor effects to physical environment	**10 (S)**	**14 (S)**	**18 (M)**	**21 (L)**	**23 (L)**
5. Insignificant	<$100k	First Aid Treatment Only	< 12 hrs	Low level compliance issue	Local complaints	Limited physical damage	**15 (S)**	**19 (M)**	**22 (L)**	**24 (L)**	**25 (L)**

Risk Rating	Risk Category		Generic Management Actions
1 to 4	**E**	**Extreme**	Immediate intervention required from senior management to eliminate or reduce this risk
5 to 9	**H**	**High**	Imperative to eliminate or reduce risk to a lower level by the introduction of control measures. Management planning required at senior levels
10 to 15	**S**	**Significant**	Corrective action required, senior management attention needed to eliminate or reduce risks
16 to 19	**M**	**Moderate**	Corrective action to be determined, management responsibility must be specified
20 to 25	**L**	**Low**	Monitor and manage by corrective action where practicable.