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Revised Environmental Risk Assessment

BYLONG COAL PROJECT
Environmental Impact Statement

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ENVIRONMENTAL CONSULTANTS

BYLONG COAL PROJECT
REVISED ENVIRONMENTAL RISK ASSESSMENT
for
KEPCO Bylong Australia Pty Ltd

Issue	Aspect	Impact	Preliminary Risk Assessment			Proposed Control Measures	Revised Risk Assessment		
			C	L	R		C	L	R
Subsidence	Surface disturbance associated with the subsidence of the land immediately above and adjacent the underground mining areas.	Disturbance of the natural environment	Serious	Likely	3, High	A Subsidence Impact Assessment has been completed for the Project by Mine Subsidence Engineering Consultants. The assessment identified any subsidence related issues associated with the project and recommended Management and Mitigation measures including: • Development of an Extraction Plan (as required by conditions of Development Consent) to manage the Project's subsidence impacts; • The Extraction plan will include monitoring of subsidence movements across the panels, restricted access (for people and stock) during active mining and safe visual inspections on all natural and built features • Visual monitoring of the surface in the active subsidence zone to identify the larger surface cracking and deformations to establish methods for surface remediation. Remediation may include infilling of surface cracks with soil or other suitable materials, or by locally regrading and compacting the surface. • Re-grading of the drainage lines in the	Mod.	Possible	0.3, Mod.
		Disturbance of the built environment	Serious	Likely	3, High		Mod.	Possible	0.3, Mod.
	Underground mining resulting in subsidence.	Unplanned movement of land surface resulting in environmental effects.	Serious	Likely	3, High		Mod.	Possible	0.3, Mod.

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						locations where adverse impacts occur as a result to manage ponding; and • Erosion protection measures as required to stabilise the steeper slopes in the longer term.			
Ecology	Vegetation clearing, drilling, blasting and topsoil stripping	Loss of biodiversity and disruption to threatened flora and fauna or likely habitats	Serious	Likely	3, High	An Ecological Impact Assessment has been completed for the Project by Cumberland Ecology in accordance with the relevant Government guidelines. This assessment has identified the potential impacts of the Project on flora and fauna (including listed threatened species and vegetation communities). Management and mitigation measures have been recommended and will include: • Mine plan and its operations were designed to limit the area of disturbance of native vegetation, particularly threatened species; • Prepare a Biodiversity Management Plan, including a monitoring program • Implement a Land Disturbance Protocol to minimise impacts on sensitive flora and fauna; • Development of a Biodiversity Offset Strategy that adequately compensates the potential impacts of the Project to areas of native vegetation and Threatened species habitat ; • Provide linkages and or crossing zones between isolated vegetation remnant	Serious	Possible	1, Mod.

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						patches, where feasible; • Regeneration of conservation areas to improve overall environmental outcomes; • Dust minimisation to reduce the indirect impacts on vegetation condition and the habitat quality for all native species; • Erosion and sediment controls, to maintain habitat integrity and function in areas adjacent surface infrastructure; • Management of noise to reduce the potential for disturbance of animals in habitat patches adjacent to the Project infrastructure; • Management of night lighting to reduce the potential for disturbance of nocturnal animals via night light emissions around the Project; • Due diligence inspections for proposed disturbance areas to limit vegetation and habitat loss and as far as practical and ensure safe removal of fauna as required prior to any disturbance occurring; • Removal (and salvage where practicable) of key habitat features such as tree hollows from the Project Disturbance Boundary with possible future use on rehabilitation areas • Prepare a detailed Mining Operations Plan in accordance with the relevant RDE guidelines incorporating progressive			

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						rehabilitation of disturbed areas; • Implementing a monitoring program and appropriate reference sites; and • Aquatic mitigation measures relating to subsidence effects and management of surface water, erosion and sedimentation.			
		Disturbance to State and Federally listed species, communities or habitat for species	Serious	Likely	3, High	The Project has been referred to the Commonwealth Department of the Environment according to the requirements of the *Environment Protection and Biodiversity Conservation Act 1999*. The Project has been deemed at 'Controlled Action' and is being assessed in accordance with the Bilateral Agreement under Part 4 of the EP&A Act. The Ecological Impact Assessment has considered the potential impacts to Commonwealth listed species, communities and their habitat.	Serious	Possible	1, Mod.
Historic Heritage	Vegetation clearing, drilling, blasting and topsoil stripping	Disturbance /indirect impacts to non-Indigenous heritage sites, including relocation of grave sites.	Serious	Almost Certain	10, High	A Historic Heritage Impact Assessment has been conducted for the Project by AECOM Australia Pty Ltd (AECOM). The Assessment includes a review of existing heritage assessment reports and a field survey of the Project area. Heritage significance has been assessed. A Research Design and Excavation Methodology was developed by Edward Higginbotham & Associates for items recommended for archaeological monitoring,	Mod.	Likely	0.9, Mod.

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						test excavation and potential salvage. KEPCO will develop a Historical Heritage Management Plan for the Project in consultation with the relevant authorities. The HHMP will include, but not be limited to, a photographic and archival recording of sites predicted to be impacted for the Project, provision of a Statement of Heritage Impact along with archival recording to establish a baseline for the ongoing monitoring of sites with the potential for indirect impacts. Conservation Management Plans (CMPs) will be prepared to guide the conservation of appropriate archaeological sites.			
Aboriginal Archaeology and Cultural Heritage	Vegetation clearing, drilling, blasting and topsoil stripping	Disturbance of Aboriginal artefacts, sites or places of cultural heritage significance	Serious	Almost Certain	10, High	An Aboriginal Archaeological and Cultural Heritage Impact Assessment has been conducted for the Project by RPS Environmental, in accordance with the relevant Guidelines and legislation The Assessment includes a desktop review, database and literature search of previously recorded Cultural Heritage information. In addition, a field survey assessment was conducted with members of the local Aboriginal community. Mitigation and management strategies have been developed in consultation with Registered	Mod.	Likely	0.9, Mod.

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						Aboriginal Parties. An Aboriginal Archaeological and Cultural Heritage Management Plan (AACHMP) will be developed to mitigate and manage any potential impacts. This will include detailed pre-mining and post-mining strategies for all Aboriginal archaeological sites and cultural features including salvage methodologies, archival recording, clearance processes and monitoring requirements.			
Air Quality	Vegetation clearing, drilling and topsoil stripping	Wind-blown dust, machinery exhaust fumes and ventilation exhaust contributing to elevated dust levels	Mod.	Almost Certain	3, High	An Air Quality and Greenhouse Gas Impact Assessment was conducted by Pacific Environment Limited (PEL) for the Project in accordance with the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (DEC, 2005). An Air Quality and Greenhouse Gas Management Plan will be developed for the Project in consultation with the relevant regulators. KEPCO will develop and implement a comprehensive Environmental Monitoring Program which will comprise Air Quality Monitoring for the Project. The existing meteorological and air quality monitoring includes a TEOM which continuously records concentrations of PM_{10} and $PM_{2.5}$ in the vicinity of the proposed open cut MIA. This will be	Mod.	Likely	0.9, Mod.
	Overburden Emplacement		Mod.	Almost Certain	3, High		Mod.	Likely	0.9, Mod.
	Uncovering of Coal		Mod.	Almost Certain	3, High		Mod.	Likely	0.9, Mod.
	Coal, overburden and reject haulage		Mod.	Almost Certain	3, High		Mod.	Likely	0.9, Mod.
	Coal stockpiles		Mod.	Almost Certain	3, High		Mod.	Likely	0.9, Mod.
	Coal processing and transport		Mod.	Almost Certain	3, High		Mod.	Likely	0.9, Mod.

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						relocated or augmented with (at least) one additional continuous monitor in Bylong Village and used for real-time dust management. Leading practice dust management will be implemented for the Project through the use of a real-time and proactive dust management system to minimise dust impacts at privately-owned receivers to the greatest practical extent.			
Greenhouse Gas	Combustion of diesel	Greenhouse gas emissions	Minor	Almost Certain	1, Mod.	The Air Quality and Greenhouse Gas Impact Assessment includes an assessment of greenhouse gas Scope 1, 2 and 3 emissions in accordance with the Australian Greenhouse Office's (AGO) *Factors and Methods Workbook* (AGO, 2006). Greenhouse Gas emissions from the Project will be managed and minimised, where possible. KEPCO will achieve this through monitoring of greenhouse gas emissions and energy use and review on a monthly basis, Energy efficiency and greenhouse gas emission targets being set across all aspects of the operation and installing electricity meters for key equipment and processes.	Minor	Likely	0.3, Mod.
	Electricity Use		Minor	Almost Certain	1, Mod.		Minor	Likely	0.3, Mod.
	Emissions from burning coal (external to the Project)		Mod.	Almost Certain	3, High		Minor	Likely	0.3, Mod.
Noise	Coal, overburden and reject haulage	Excessive noise generation at sensitive	Mod.	Almost Certain	3, High	A Noise Impact Assessment was conducted by PEL for the Project in accordance with the	Mod.	Likely	0.9, Mod.

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	Machinery operating in-pit and on overburden emplacement areas	receivers	Mod.	Almost Certain	3, High	*Industrial Noise Policy 2000* and other relevant guidelines and standards. The Assessment determined likely criteria for the Project and assessed impacts from construction, operational noise, blasting (including consideration of heritage items), train movements, low frequency vibration, and cumulative noise impacts (with other approved industry in the vicinity). KEPCO will develop and implement a Noise Management Plan for the Project in consultation with the relevant regulators. This will include a monitoring program including a system of real-time unattended and attended noise monitoring. In addition, the use of predictive meteorology is recommended to allow for operational alterations when adverse conditions are predicted Management controls will be implemented including mitigation of fixed and mobile plant sources, alteration of haul routes during adverse conditions and voluntary at-property mitigation rights for moderately impacted receivers	Mod.	Likely	0.9, Mod.
	CHPP operation and stockpiles		Mod.	Almost Certain	3, High		Mod.	Likely	0.9, Mod.
	Coal loading at rail loop		Mod.	Almost Certain	3, High		Mod.	Likely	0.9, Mod.
	Train movements on the rail loop and spur		Mod.	Almost Certain	3, High		Mod.	Likely	0.9, Mod.
	Increased traffic movements		Minor	Almost Certain	1, Mod.		Mod.	Likely	0.9, Mod.
Blasting	Coal and overburden blasting	Overpressure and ground vibration impacts at sensitive receivers	Mod.	Almost Certain	3, High	A Blasting Impact Assessment was conducted for the Project as part of the Noise Impact Assessment as described above. Mitigation measures were developed for blasting adjacent to sensitive receivers and heritage properties. A Blast Management Plan will be developed for the Project in consultation with the relevant	Mod.	Possible	0.3, Mod.

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						regulators for construction and operational activities associated with the Project. Mitigation measures will be developed for blasting adjacent to sensitive receivers and heritage structures, as required.			
Agricultural Productivity & Land Use	Vegetation clearing and topsoil stripping	Loss of agricultural land	Mod.	Almost Certain	3, High	An Agriculture Impact Statement was completed by Scott Barnett and Associates for the Project in accordance with relevant regulatory requirements including the *Agricultural Impact Statement Guidelines* (DP&I 2012) and Relevant Strategic Regional Landuse Plan (*Upper Hunter Strategic Regional Landuse Plan* (DP&I 2012). The assessment included the mapping of agricultural enterprises and agricultural domains and assessment of the potential impacts on the agricultural resources and enterprises within the Project Boundary. KEPCO will implement a Farm Management Plan to ensure the best agricultural use of adjacent non-mine lands to maximise this integration and to provide opportunities for ongoing agricultural productivity. A Rehabilitation Strategy has also been developed by KEPCO in consideration of the long and short-term rehabilitation objectives for the Project.	Minor	Likely	0.3, Mod.

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Visual and Lighting	Infrastructure	Visual impact to surrounding receivers	Mod.	Almost Certain	3, High	A Visual Impact Assessment was completed by JVP Visual Planning and Design to assess the potential visual impacts of the Project and identify mitigation and management measures, as appropriate. Management commitments will include the establishment of vegetation screens in key areas, progressive rehabilitation, revegetation strategy, final landform design, consideration to night lighting and implementation of effective operational measures.	Minor	Likely	0.3, Mod.
	Overburden emplacement areas		Mod.	Almost Certain	3, High		Minor	Likely	0.3, Mod.
	Exposed earthworks		Mod.	Almost Certain	3, High		Minor	Likely	0.3, Mod.
	Lighting from fixed and mobile equipment		Mod.	Possible	0.3, Mod.		Minor	Likely	0.3, Mod.
Surface Water	Topsoil stripping, haul roads, un-rehabilitated spoil	Dirty water runoff entering local waterways	Serious	Possible	1, Mod.	A Surface Water and Flooding Impact Assessment was conducted for the Project by WRM and includes surface water management strategies, mitigation measures and a high level water balance model for the life of the Project. The assessment investigates the water licencing requirements in accordance with the *NSW Aquifer Interference Policy* (AIP) the *Water Sharing Plan for the Hunter Unregulated and Alluvial Water Sources 2009* and the relevant requirements under the *Water Management Act 2000* and the *Water Act 1912*. The proposed mitigation and management measures will be documented in a Water	Mod.	Unlikely	0.09, Low
	Coal processing and production	Water demand for dust suppression and coal washing	Mod.	Almost Certain	3, High.		Mod.	Possible	0.3, Mod.
	Water take from or discharges into local waterways	Surface water contamination	Serious	Almost Certain	10, High		Mod.	Possible	0.3, Mod.
		Water take from the catchment	Mod.	Almost Certain	3, High.		Mod.	Possible	0.3, Mod.

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		Contaminated water from mining and infrastructure areas	Serious	Possible	1, Mod.	Management Plan for the approved Project which will include performance criteria, monitoring, reporting, corrective action, contingencies and responsibility for all management measures. This will include the development of: • A Mine Site Water Management System to control the flow and storage of water of different qualities across the site; • An Erosion And Sediment Control Plan to reduce sediment loads from disturbed area runoff; • A Surface Water Monitoring Program to continually assess environmental impacts and ensure that the site water management system is meeting its objectives of minimal impact on receiving waters; and • A Waterway Rehabilitation and Management Program to manage the potential impacts on watercourses, including potential subsidence effects within the Dry Creek catchment.	Mod.	Possible	0.3, Mod.
	Flooding	Flooding impact on mining operations, infrastructure	Serious	Likely	3, High		Mod.	Possible	0.3, Mod.
Groundwater	Coal extraction and overburden removal	Groundwater inflow into mining areas (underground and open cut)	Mod.	Almost Certain	3, High	The Groundwater Impact Assessment has been conducted for Project by AGE in accordance with the AIP, the *Water Sharing Plan for the Hunter Unregulated and Alluvial Water Sources 2009* and relevant requirements under the *Water Management Act 2000* and *Water Act 1912*.	Mod.	Possible	0.3, Mod.

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						The assessment includes a finite 3D, numerical simulation package (MODFLOW SURFACT) which was used to simulate the likely impacts of the Project on groundwater (including groundwater impacts on each identified privately owned bore). It also includes an analysis of cumulative assessment of adjacent mining impacts, assessment of post-mine groundwater impacts, and confirmation of the extent of mining impacts, as relevant. The Environmental Monitoring Program will include groundwater monitoring, to validate predictions from the EIS groundwater model. Trigger levels will be derived for water quality parameters as part of the development of the Water Management Plan to facilitate early identification of potential impacts. This will include an analysis of historical pre-mining water quality data.			
Socio-economics	Social	Demands on local infrastructure and services, impacts to demographics, impacts from the Accommodation facility.	Minor	Almost Certain	1, Mod.	The Social Impact Assessment (SIA) for the Project was prepared by Hansen Bailey with a consideration of the issues raised during the stakeholder engagement program and predicted impacts for the Project relevant to social matters. The impact assessment developed a range of measures to mitigate, offset and compensate for potential environmental, cultural and social impacts of the Project.	Minor	Possible	0.1, Low

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						A Social Impact Management Plan will be prepared for the approved Project to guide the implementation of the management strategies and actions described in the SIA.			
	Economic	Increased employees residing in the local area Increasing demands for services within the local area	Mod.	Almost Certain	3, High	An Economics Impact Assessment was completed for the Project by Gillespie Economics in accordance with *Guideline for the use of Cost Benefit Analysis in mining and coal seam gas proposals* (NSW Government 2012).	Mod.	Possible	0.3, Mod
Soils and Land Capability	Topsoil stripping and land preparation	Loss of productive topsoil (including BSAL)	Mod.	Likely	0.9, Mod.	A Soils and Land Capability Impact Assessment was completed by SLR Consulting Australia for the Project according to the relevant Government guidelines and standards, including the recently implemented Strategic Regional Land Use Policy. The assessment included a desktop review of previous relevant assessments, field surveys involving soil test pit excavations, soils assessments, pre and post mining land capability and classes assessment, pre and post mining agricultural suitability assessment, assessment of available topsoil resources, a description of the proposed mine rehabilitation process and suitable post-mining land uses. The assessment also suggested impact	Mod.	Possible	0.3, Mod.
		Deterioration of land capability	Mod.	Likely	0.9, Mod.		Mod.	Possible	0.3, Mod.

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						mitigation measures. Prior to the commencement of mining, a Topsoil Management Plan as well as a Biophysical Strategic Agricultural Land (BSAL) Reinstatement Plan will be developed and documented in the approved MOP.			
Rehabilitation and Final Landform	Rehabilitation	Loss of BSAL	-	-	-	A Rehabilitation Strategy has been developed by SLR in consideration of the short, medium and long term rehabilitation objectives for the Project. The proposed mine plan and ultimate final landform for the Project is planned to maintain an free-draining and stable landform consistent with the surrounding environment, as far as practical. Rehabilitation will be undertaken progressively to ensure the total area of disturbance at any one time is minimised to reduce the potential for wind-blown dust, visual impacts and increased sediment-laden runoff. Final rehabilitation objectives and quality include: • Where practical, return the land to its pre-mining land capability and land use such that the post-mining landform is consistent with the character and landscape of the Bylong Valley. • Limit impacts on BSAL and minimise the total quantity of BSAL foregone within the Project Boundary.	Mod.	Possible	0.3, Mod.
		Erosion	Mod.	Likely	0.9, Mod.		Minor.	Possible	0.1, Low
		Weed and feral animal invasion	Mod.	Likely	0.9, Mod.		Mod.	Possible	0.3, Mod.
	Final Landform	Unstable landform	Mod.	Likely	0.9, Mod.		Minor.	Possible	0.1, Low
		Poor drainage	Mod.	Likely	0.9, Mod.		Minor.	Possible	0.1, Low
		Erosion	Mod.	Likely	0.9, Mod.		Minor.	Possible	0.1, Low

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						• Return land subject to temporary disturbance to pre-mining condition. • Return a similar quantity of good quality land, (including BSAL) for land directly and permanently impacted by mining related activities.			
Geochemistry	Overburden emplacement	Potentially acid forming materials affecting soil and water resources	Mod.	Likely	0.9, Mod.	A Geochemical Assessment of Overburden / Interburden and Potential Coal Reject Materials was completed for the Project by RGS Environmental Pty Limited. The assessment included identification of any potentially acid forming materials. Best practice management measures will be undertaken to prevent acid forming materials affecting soil and water resources. The Assessment also determined management and mitigation measures to handle any potentially acid forming materials including the development of a Mine Waste Management Plan, Spontaneous Combustion and Monitoring Management Plan and a Water Management Plan detailing water monitoring program for surface run-off and seepage from the coal stockpile and mine waste storage areas for a range of recommended parameters.	Mod.	Possible	0.3, Mod.
		Acid Rock Drainage	Mod.	Likely	0.9, Mod.		Mod.	Unlikely	0.09, Low

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Spontaneous Combustion	Spontaneous combustion	Release of harmful emissions Visual impact associated with the release of gases	Mod.	Possible	0.3, Mod.	The Air Quality & Greenhouse Gas Impact Assessment and the Geochemical Impact Assessment address potential impacts arising from spontaneous combustion, and identified mitigation measures for potential impacts.	Minor	Unlikely	0.03, Low
Road & Rail Traffic and Transport	Increased vehicle movements from employees, deliveries and train loading	Increased traffic movements	Mod.	Almost Certain	3, High	A Traffic and Transport Impact Assessment was completed for the Project by Parsons Brinckerhoff in accordance with (at least) the '*Guide to Traffic Generating Developments*' (RTA 2002). The Assessment included a review of the capacity of the affected road and rail network to cater for differing traffic volumes due to the proposed change in traffic and rail flows. Various road works proposed by the Project have shown to provide reasonable upgrades to the road network.	Minor	Likely	0.3, Mod.
	Road Upgrades, closure, realignment, impacts to level crossing etc	Public Perception	Mod.	Possible	0.3, Mod.		Minor	Likely	0.3, Mod.
Waste & Contamination Management	Generation of General waste	Land contamination	Minor	Possible	0.1, Low	A Waste Management System will be developed and implemented for the Project, which shall provide management procedures to ensure the environmentally responsible disposal, tracking and reporting of all waste generated on site.	Minor	Unlikely	0.03, Low
	Generation of Sewage	Water contamination	Mod.	Possible	0.3, Mod.		Minor	Unlikely	0.03, Low

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	Rejects Management		Mod.	Possible	0.3, Mod.		Minor	Unlikely	0.03, Low
Hazardous materials	Storage and Handling	Soil and water contamination	Mod.	Possible	0.3, Mod.	A Hazard Assessment was completed for the Project in accordance with SEPP 33, although it is not anticipated that large quantities of hazardous materials will be required for storage at the Project. All hazardous materials will be managed in accordance with the relevant hazardous materials management procedures.	Mod.	Unlikely	0.09, Low.
	Bushfire	Fire Hazard	Serious	Unlikely	0.3, Mod.	A Bushfire Hazard Assessment has been undertaken for the Project and included relevant mitigation defined as required. A Bushfire Management Plan will be developed to monitor and maintain areas and equipment where bushfire hazards are present to prevent and minimise the potential outbreak of bushfire, control any outbreak of fire, and minimise the risk of bushfires spreading from the Project to adjacent private properties.	Mod.	Unlikely	0.09, Low.
Cumulative Impacts			Serious	Possible	1, Mod.	All studies have incorporated cumulative impacts assessments with the limited number of approved mining operations and other industry in the vicinity of the Project, where sufficient information was available.	Mod.	Unlikely	0.09, Low.

BYLONG COAL PROJECT

KEPCO Bylong Australia Pty Ltd Risk Assessment Tools

Risk Assessment Matrix

Probability Matrix

LIKELIHOOD DESCRIPTORS (Continuous Exposure)	**Benchmark**	**Indicative Probability**
ALMOST CERTAIN		0.97 (1 in 1)
LIKELY	Human Error (Stressed)	0.3 (1 in 3)
POSSIBLE	Engineering SIL1 (Probability of failure on demand (PFD))	0.1 (1 in 10)
UNLIKELY		0.03 (1 in 30)
RARE	Human Error (routine task omission) Engineering SIL 2 (PFD)	$0.01 / 10^{-2}$ (1 in 100)
IMPROBABLE	Human Error (checklist procedure provided) Engineering SIL 3 (PFD)	$0.001 / 10^{-3}$ (1 in 1000)
	Motor vehicle fatality	$0.0001 / 10^{-4}$ (1 in 10,000)
	Engineering SIL 1 Rated (Continuous operation (CO))	$0.00001 / 10^{-5}$ (1 in 100,000))
	Engineering SIL 2 Rated (CO)	$0.000001 / 10^{-6}$ (1 in 1,000,000)
	Engineering SIL 3 Rated (CO), e.g. Lighting strike fatality	$0.0000001 /10^{-7}$ (1 in 10,000,000)

Consequence Severity Matrix

Focus on high severity risk issues

SEVERITY TYPE	CONSEQUENCE SEVERITY (Severity Factor)				
	Minor (1)	**Moderate (3)**	**Serious (10)**	**Major (30)**	**Catastrophic (100)**
HEALTH & SAFETY	Low level symptoms requiring first aid treatment only	Medical treatment injury	Serious injury and / or severe permanent disability or impairment to one or more persons	Single fatality events Severe permanent health impacts to >10 persons	Multiple fatalities from single event or long term health effects Severe permanent health impacts to >50 people
ENVIRONMENT	Limited damage to a localised area. No lasting effects	Localised short to medium term damage to an area of minor local significance	Localised medium term damage to an area of local value	Wide spread long to medium term damage to valued area	Significant, extensive detrimental long term impact affecting sustainability of an ecosystem
REPUTATION	Local public concern / complaints. Minor technical non-compliance	Negative publicity and attention from local media. Moderate breach of regulations	Attention from media, negative regional publicity. Serious breach of regulations with fine.	Significant negative attention, national publicity. Major breach of regulation. Reputation tarnished	Negative international publicity. Very serious litigation. Reputation severely tarnished. Company value may be affected
FINANCIAL LOSS/ GAIN ($US)	< $0.5M	$0.5M to $5M	$5M to $50M	$50 to $500M	>$500M
IRRECOVERABLE BUSINESS PLAN PRODUCTION LOSS	< 3 hrs	3hrs to 1 day	1 to 10 days	10 to 100 days	> 100 days
PROJECT DELAY (NPV Impact)	<8 hrs	8 hrs to 3 days	3 to 30 days	30 days to 1 year	> 1 year
LEGAL	Minor non-compliances and breaches of regulations	Minor legal issues, moderate non-compliances and breaches of regulations	Serious breach of regulation with prosecution or moderate fine possible	Major breach of regulation. Major litigation	Significant prosecution and fines. Very serious litigation including class action or government action
OPPORTUNITIES (As per Financial, reputation as stated)	Low Value contribution. Benefit to local reputation but limited for the Corporation	Minor contribution to Project. Large benefit to local reputation and some minor Corporate image benefit	Attractive value to Project. Discernable enhancement of Corporate reputation amongst peers	Very attractive value to The Corporation. Enhanced Corporate national public reputation	Exceptional value to The Corporation. Significant enhanced Corporate global enhanced reputation

Downside Risk Matrix

LIKELIHOOD (Exposure x Probability)	CONSEQUENCE SEVERITY (Severity Factor)				
	Minor (1)	**Moderate (3)**	**Serious(10)**	**Major (30)**	**Catastrophic (100)**
Almost Certain (≥0.97)	1	3	10	30	100
Likely (0.3)	0.3	0.9	3	9	30
Possible (0.1)	0.1	0.3	1	3	10
Unlikely (0.03)	0.03	0.09	0.3	0.9	3
Rare (0.01)	0.01	0.03	0.1	0.3	1
Improbable (≤0.001)	<0.001	0.003	0.01	0.03	0.1

Risk Acceptability Criteria (downside risk)

Risk Category	Risk Rating	HSE Risk Treatment	Non-HSE Risk Treatment
Critical	>10	HSE risks in this range shall not be tolerated under any circumstances. Operation in the affected area/ process shall not commence/ proceed until the HSE risk has been reduced to an acceptable level by the implementation of robust controls.	Financial and reputational risks in this range are inconsistent with Corporate expectations and shall only be accepted with written Board approval.
High	≥3 and ≤10	HSE risks in this range are highly undesirable and should not be tolerated. Operation in the affected area/ process should not continue unless the HSE risk has been proven to be reduced to an acceptable level by the implementation of intensive management controls authorised by the Senior Executive for a limited period of time.	Financial and reputational risks in this range are inconsistent with Corporate values and can only be accepted with written CEO approval.
Moderate	≥0.3 and <3	Potential catastrophic and major severity HSE risks in this range shall be verified through formal governance programs.	Financial and reputational risks in this range must be managed by formal systems.
Low	<0.3	Risks occurring in this area acceptable to The Corporation provided control systems are operating effectively.	