Delta coal

CHAIN VALLEY COLLIERY

Consolidation Project

SCOPING REPORT

MARCH 2021

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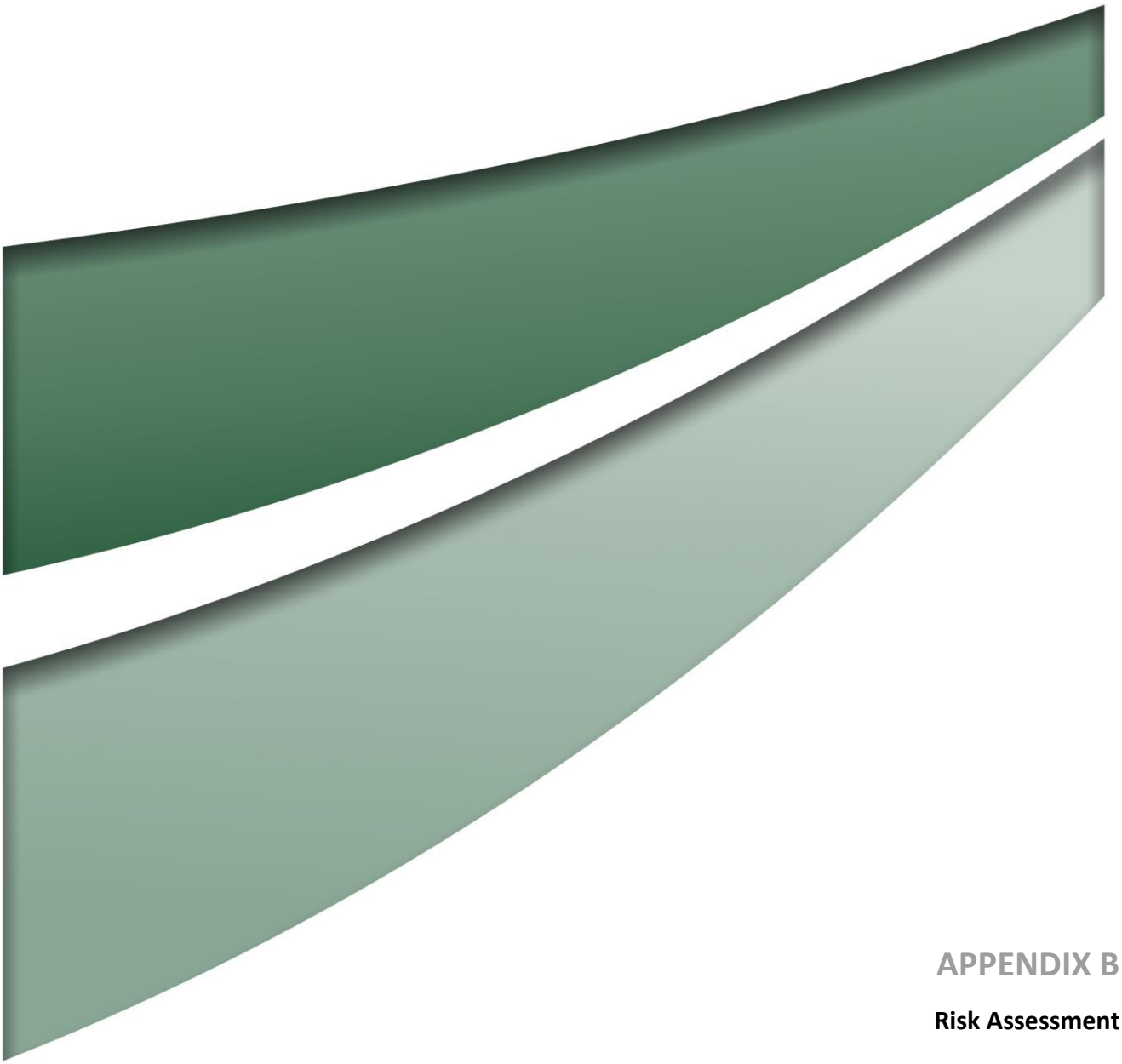

APPENDIX B

Risk Assessment

Preliminary Environmental Risk Analysis

To assist in identifying the key environment and social issues that require detailed assessment as part of the Environmental Impact Statement (EIS), a preliminary environmental risk analysis has been completed for the Project. The preliminary environmental risk analysis has been undertaken in general accordance with the principles outlined in Australian Standard AS/NZS ISO 31000:2009. Note that the risk assessment has been prepared on the basis that standard project controls and design features are implemented. The environmental and social risks have been categorised with a Risk Ranking of High to Low; there were no Critical risks identified in the analysis.

Table 1 –Risk Matrix

Risk Matrix

HEIRACHY OF CONTROL	
Elimination	Is there a way to avoid having to do project element potentially causing impact?
Substitution	Is there any other way to undertake project/project component?
Redesign/Engineer	Can the project be undertaken in a manner to avoid the impact?
Pollution control/ Exclusion fencing	Will pollution control measures or barriers help?
Administration	Will a written procedure and/or training help?

LIKELIHOOD			
A	Almost certain to happen	FREQUENCY	1 per week to 1 per month
B	Likely to happen at some point		1 per month to 1 per year
C	Moderate, possible; heard of so it might happen		1 per year to per 10 years
D	Unlikely, not likely to happen		1 per 10 years to 1 per 100 years
E	Rare, practically impossible		Less than 1 per 100 years

MAXIMUM REASONABLE CONSEQUENCE

CONSEQUENCE	INJURY (I)	ENVIRONMENTAL (E)	LOSS (L)
5 – CRITICAL	Could kill, permanently disable	Regional environmental impact/ecosystem damage, impact causing mine or business closure, E.g. Major release off-site with long term detrimental effect.	Could cause very major damage >$3M
4 – HIGH	Could cause serious injury (Major LT)	Substantial detrimental damage which could result in major financial loss and/or prosecution. E.g. Off-site release resulting in local ecosystem damage.	Could cause major damage $500K - $3M
3 – MEDIUM	Could cause typical MTC/LTI	Substantial temporary or minor long-term damage, release immediately contained with outside assistance E.g. A minor water discharge or large hydrocarbon spill. Legal non-compliance.	Could cause moderate damage $100K - $500K
2 – LOW	Could cause first aid injury	Temporary or minor damage, non-compliance with internal environmental target, no legal breach, E.g. Minor spill.	Could cause damage $20K - $100K
1 – INSIGNIFICANT	Couldn't cause injury	No detrimental effect, low financial loss, negligible environmental impact.	Couldn't cause damage, or <$20K damage

RISK SCORE	RISK	WHAT SHOULD I DO?
23 to 25	Critical	STOP WORK Immediate action required, inform senior management
16 to 22	High	Risk Assessment required. Action plan required, senior management attention needed
15 to 11	Medium	Specific monitoring of procedures required management responsibility must be specified
1 to 10	Low	Managed through routine procedures

Risk Score Matrix

CONSEQUENCE	A - Certain	B - Likely	C - Moderate	D - Unlikely	E - Rare
5 - Critical	25	24	22	19	15
4 - High	23	21	18	14	10
3 - Medium	20	17	13	9	6
2 - Low	16	12	8	5	3
1 - Insignificant	11	7	4	2	1

LIKELIHOOD

Least Effective

Most Effective

Table 2 – Consolidation Project - Preliminary Environmental Risk Analysis

Aspect	Potential Environmental Impact	Change relative to Currently Approved Operations	Status and Proposed Control	Risk Assessment			Further Assessment Required	Further Assessment Requirements
				C	L	R		
Noise	Noise from MC Pit Top activities (conveyor haulage) exceed relevant assessment criteria	No change other than extension to life of operations	Implementation of existing controls Current cessation of coal handling activities at CVC Commitment to underground crushing Road haulage in emergencies only via proposed internal haul road	3	C	13	Yes	Noise Impact assessment – must consider all CVC and MC noise impacts. Currently assessed as separate operations. SIA
	Noise from CVC pit top exceeds relevant assessment criteria	Noise levels likely to be lower than currently approved operations due to use of conveyor for coal handling. Use of underground crushing will reduce noise relative to historical levels.	Use of conveyor for coal transfer between CVC and VPPS Underground crushing Road haulage in emergencies only	3	C	13	Yes	Noise Impact assessment – must consider all CVC and MC noise impacts. Currently assessed as separate operations. SIA
	Cumulative operational noise from CVC and MC exceed relevant criteria	Dependent on timing of overlapping pit top activities. Unlikely to be higher than currently approved operations – likely reduction in noise impacts relative to approved due to improvements to be implemented at CVC and recent improvements at MC pit top facilities to reduce noise levels at MC.	Use of conveyor for coal transfer between MC/CVC and VPPS Underground crushing Limited duration of concurrent operation.	3	C	13	Yes	Noise Impact assessment – must consider all CVC and MC noise impacts. Currently assessed as separate operations. SIA
	Road traffic noise associated with emergency road haulage from MC exceed relevant criteria	Potentially increased noise impacts associated with loading operations and truck movements. Traffic noise unlikely to exceed criteria as won't pass any sensitive receivers.	TBC – Dependent on haulage route and potential impacts Timing of road movements.	3	D	9	Yes	Noise impact assessment
	Noise from new ventilation fans exceed relevant assessment criteria	No change	Existing controls	3	E	6	Yes	Noise Impact Assessment
	Operational traffic results in additional road traffic noise that exceeds assessment criteria	No change relative to existing operations other than extension of life of operations Reduction in road haulage noise impacts	Existing controls	3	D	9	Yes	Noise impact assessment
	Construction employee traffic results in additional road traffic noise that exceeds assessment criteria	No change – managed within existing employee numbers	Existing Controls Traffic Management Plan for delivery of construction materials	1	E	1	No	
	Cumulative noise impacts from CVC/MC and other sources exceed relevant cumulative impact criteria	Increase relative to approved operations associated with extended LOM and concurrent pit top operation	TBC – considered as part of reasonable and feasible measures.	3	D	9	Yes	Noise Impact Assessment - Cumulative
Blasting	Impacts at surface and safety implications associated with blasting undertaken for inter seam shaft sinking and drift activities	No Change	Existing management measures and safety controls will continue to be implemented	1	D	2	Yes	Supported by approved operations/management controls and subsidence/Geotech assessments
Vibration	Unlikely to be detectible			1	D	2	No	
Air Quality	Increased particulate emissions associated with increased coal handling results in exceedance of assessment criteria – TSP, $PM_{2.5}$ and PM_{10} and Depositional Dust	Potential increased impacts from MC due to increased throughput but reduced from CVC if no coal handling Overall reduction from approved combined production rate Potentially elevated impacts from emergency coal haulage (24 hr assessment only)	Existing controls Commitment to underground crushing	3	D	9	Yes	Air Quality Assessment
	Increased particulate emissions – depositional/nuisance dust) exceedance causes nuisance issues for community	No change from approved other than extended life of operation Potential lower impacts from CVC relative to approved due to move to proposed conveyor transfer arrangements and underground crushing	Existing controls Conveyor transport from CVC Commitment to underground crushing	3	C	13	Yes	Air Quality Assessment
	Emissions from ventilation Fans results in exceedance of assessment criteria	No Change from existing approved operations	Existing controls	3	E	6	Yes	Air Quality Assessment
	Cumulative Impacts (VPPS + other operations) results in exceedance of assessment criteria	Limited change relative to approved operations other than extension of life of operations		3	C	13	Yes	Air Quality Assessment

Aspect	Potential Environmental Impact	Change relative to Currently Approved Operations	Status and Proposed Control	Risk Assessment			Further Assessment Required	Further Assessment Requirements
				C	L	R		
Odour	Unlikely to be an issue			1	D	2	No	
Microclimate	Not Applicable			1	E	1		
Surface Water – Water Quality	Runoff from disturbed areas has potential to increase turbidity	Only minor disturbance required	Blue Book controls Early revegetation of disturbed areas. Mine Water Management System	3	C	13	Yes	Surface Water Assessment Identify potential activities. Identify Controls.
	Runoff from areas in contact with coal, or workshops has the potential to affect water quality	Minor changes, increased temporary stockpile areas associated with increased production/ contingency	Implementation of existing management practices	3	C	13	Yes	Surface Water Assessment
	Proposed mining within the approved and Eastern Mining Areas are unlikely to result in any changes to surface flows above workings	No change	Monitoring TARPs	1	E	1	No – other than confirmation through geotech	Subsidence /Geotech
	Additional GW inflow to UG operations results in water management system exceeding capacity and requiring offsite discharge (in accordance with EPL)	Potential minor increase in GW inflows associated with proposed mining in Great Northern Seam. Unlikely to require a change to approved discharge arrangements (quantity) – existing mine dewatering includes water from GNS	Subject to water quality	2	B	12	Yes	GW inflow predictions Site Water Balance
	Discharges from site exceed relevant criteria	Increased GW inflows are likely to increase discharge requirements. Water quality (particularly rom GW inflows) likely to be different to receiving waters in Lake Macquarie and this may require treatment and/or licensing	Dependent on-site water balance assessment. Likely to be consistent with approved operations	3	C	13	Yes	Groundwater Assessment Surface Water Assessment Site Water Balance
	Discharges exceed current licence conditions on volume and/or quality	No change to approved discharge arrangements	Existing surface water management controls	3	C	13	Yes	Groundwater Assessment Surface Water Assessment Water Quality Testing
Surface Water - Water Availability	Increased GW inflows associated with extension of mining in GNS will affect water balance and may require additional discharges	Likely increase in GW inflows relative to existing operations (although likely to be low given existing depressurisation of seams)	Potential redesign of above ground water management system UG storage?	3	C	13	Yes	Groundwater Impact Assessment (inflows) Site water balance
	Increased potable water demand associated with Moonee Extension (Stage 1)	Potential for increased clean water demand for UG operations.	Source additional potable supply	2	C	8	Yes	Site Water Balance Groundwater Impact Assessment to understand inflows to Stage 1 workings
Water Balance	Excess water due to increased GW inflows and risk of spill	Increased GW inflows are likely to increase discharge requirements. Water quality (particularly rom GW inflows) likely to be different to receiving waters in Lake Macquarie and this may require treatment and/or licensing	Dependent on results of Site Water Balance. Likely to be consistent with existing operations Potential for UG storage to be investigated. Increase on-site storage	3	C	13	Yes	Groundwater Assessment Surface Water Assessment Site Water Balance
Groundwater - quantity	Extension of mining into Eastern Mining Area reduces water table affecting private bores	New Impact	Mine Planning to avoid areas of risk Monitoring TARPs Water replacement	2	D	5	Yes	Groundwater Assessment
	Depressurisation associated with underground mining induces reductions in stream baseflow or flows to wetlands	Cumulative impact including changes to recovery.	Monitoring Updating modelling to include new monitoring data	2	D	5	Yes	Groundwater Assessment
	Depressurisation of groundwater systems in target seams affects groundwater inflow to other operations	Unlikely. Any impact is likely to be positive No change relative to closure – may delay recovery.		1	D	2	Yes	Groundwater Assessment
	Groundwater inflow exceed existing licence allocations	TBC	Acquire additional licences Investigate utilising underground storage to minimise net take.	3	D	9	Yes	Groundwater Assessment

Aspect	Potential Environmental Impact	Change relative to Currently Approved Operations	Status and Proposed Control	Risk Assessment			Further Assessment Required	Further Assessment Requirements
				C	L	R		
Groundwater Quality	Subsidence induced cracking results in groundwater mixing of aquifers	TBC	Mine Planning to avoid areas of risk Monitoring TARPs Water replacement	3	D	17	Yes	Groundwater Assessment
Agricultural Lands	Project is unlikely to impact Agricultural lands – no subsidence impacts under agricultural areas and unlikely to have significant bore impacts No impacts on Agricultural transport linkages	Potential reductions in bore flows	Monitoring Water Replacement	3	E	6	Yes	Groundwater Assessment Bore User identification for assessment Ag Impact Statement unlikely to be required – deal with as part of Groundwater Assessment only.
Aboriginal Cultural Heritage and archaeology	Potential impact to Aboriginal Heritage sites associated with surface disturbing activities	Subsidence impacts currently limited to submerged areas – This is a new potential impact	Liaise with Knowledge holders to understand any sensitive sites and management requirements Salvage of artefacts identified as being impacts Avoid disturbance or mining which may require surface remediation in highly sensitive sites that may be harmed Monitoring TARPs	4	D	14	Yes	Aboriginal Cultural Heritage Assessment
Historic Heritage/ Built Heritage	Potential impacts to historical heritage features from subsidence impacts	Subsidence impacts currently limited to submerged areas – This is a new potential impact	Monitoring Avoid subsidence under high significance heritage items that may be sensitive to subsidence Salvage	3	E	20	Yes	Heritage Survey and study
Natural Heritage	Potential impacts to Lake Macquarie and conservation values of SCA	Subsidence impacts currently limited to submerged areas	Mine design first workings only under land areas Monitoring	3	D	17	Yes	Subsidence/Geotech Groundwater Assessment Biodiversity Assessment Surface water Assessment
Visual Amenity	Aesthetics of mining operations and surface facilities.	No change	Use of neutral colours in any cladding or externally visible infrastructure	1	D	2	No	Qualitative assessment of potential visual impacts only
Greenhouse Gas	Scope 1 Fugitive emission of greenhouse gases from continued mining operations	Similar to existing operations – extended life of mine.	Options depend on gas emissions and type	2	A	16	Yes	Greenhouse Gas and Energy Assessment
	Scope 1 Fuel use on site will contribute to greenhouse gas emissions	Similar to existing operations – extended life of mine	Fuel efficiency	1	A	11	Yes	Greenhouse Gas and Energy Assessment
	Scope 2 emissions from construction activities and energy supply (fuel and electricity)	Similar to existing operations for operational Scope 2 impacts Relatively small Scope 2 emissions from construction activities	Energy efficiency Close to source of electricity so minimal transmission losses.	N/A	N/A	N/A	Yes	Greenhouse Gas and Energy Assessment
	Scope 3 emissions associated with coal combustion	Increased production relative to approved operations and extended LOM	Sale to VPPS will be subject to domestic GHG emissions regulatory policies Reduces transport related emissions for coal used by VPPS	N/A	N/A	N/A	Yes	Greenhouse Gas and Energy Assessment
Traffic	Employee Road Traffic impacts exceed road and intersection capacity	No change other than extended life of operations and impacts associated with natural traffic growth	Intersection Design Scheduling of emergency road haulage Continued shift scheduling to avoid peak periods Traffic Management Plan	3	D	9	No	
	Construction related traffic (in addition to employee traffic) exceed road and intersection capacity	No Change -managed within existing employee numbers.	Continued shift scheduling to avoid peak periods Traffic Management Plan	3	D	9	No	
	Emergency road haulage of ROM from MC to VPPS exceed road and intersection capacity	Currently no emergency coal haulage from MC	Emergency haulage to VPPS via internal haul road only	3	D	9	No	

Aspect	Potential Environmental Impact	Change relative to Currently Approved Operations	Status and Proposed Control	Risk Assessment			Further Assessment Required	Further Assessment Requirements
				C	L	R		
Access to property	Subsidence impacts (and associated mitigation works) can impact on access to property	No change	No change	2	D	5	Yes	Subsidence Assessment
Access to utilities	Potential impacts of project on access to utilities (associated with subsidence impacts and mitigation measures)	No change	No change Mine design – first workings only under land areas Relocation or protection of sensitive infrastructure	3	D	9	Yes	Subsidence Assessment
Offsite Parking	Not holding sufficient parking for workforce during construction and operation	No change to employee workforce from CVC Mod 4	Construction of adequate on-site parking	1	E	1	No	
Public Safety (Traffic)	Traffic impacts associated with employee movements and emergency ROM coal transport via road	No change to traffic impacts other than extended period of operation. Project involves less trucks than currently approved operations	Traffic Management Plan Proposed MC road haulage via internal haul road only	4	E	3	No	
Built features	Potential impact on built features and facilities (including roads and other infrastructure) from subsidence impacts	No change	Mine Design – first workings only under land areas	4	D	21	Yes	Subsidence/Geotech Assessment.
Land Capability	N/A- Proposed mining methods will use long term stable pillar design.	No Change	Mine Design – avoidance of subsidence impacts under land areas	1	E	1	Yes	Subsidence/Geotech.
Land capability	Impact on land capability from subsidence related impacts and associated changes to groundwater regimes	Approved operations do not cause subsidence, project design is unlikely to significantly impact on land capability due to minimal surface disturbance.	Project design – first workings only	5	E	25	Yes	Subsidence assessment
Biodiversity – Native Vegetation	Impact flora and vegetation communities including threatened species and Threatened Ecological Communities (TECs), Endangered Ecological Communities (EECs) and Endangered Populations from surface disturbance activities	TBC	Project design – avoidance/reduce scale of disturbance Monitoring and remediation (TARPs) Offsetting	2-3	C	13-18	Yes	Biodiversity Assessment Report
	Temporary or permanent inundation of plants associated with terrain changes kill vegetation	No change	Mine Design – first workings only under land areas Monitoring and remediation (TARPs)	4	C	18	Yes	Biodiversity Assessment Report Subsidence/Geotech Surface Water Assessment
Biodiversity – Native Fauna	Potential impact on native fauna including threated species from surface disturbance activities	TBC	Project design – avoidance/reduce scale of disturbance Monitoring and remediation (TARPs) Offsetting	3-4	C	13-18	Yes	Biodiversity Assessment Report
	Noise, dust and light impacts may impact on fauna in proximity to operations	As per existing operations	As per existing controls	1	C	4	Yes	Biodiversity Assessment Report
Biodiversity – Water Dependent Ecosystems	Potential impact on stygofauna, hyporheic fauna and riparian vegetation dependant on near surface groundwater if subsidence induces changes in groundwater regime	No change	Mine design – first workings only under land areas Monitoring	2	D		Yes	Groundwater Impact Assessment Biodiversity Assessment (mapping of potential GDEs) Stygofauna Assessment
	Potential impacts on aquatic flora and fauna from discharge from site	No Change from current operations.	Monitoring	3	C	13	Yes	Water quality testing GW quality sampling Groundwater Assessment Surface Water Assessment Site Water Balance
Bushfire	Project involves continuation of activities close to bushland	No increase in bushfire risk associated with activities	Existing Asset Protection Zones to be maintained	4	D	14	Yes	Bushfire Assessment
Housing	Lack of availability of accommodation in the local area associated with employment from CVC	No change to employee numbers which could place increased pressure on housing Project unlikely to trigger acquisition right.	No controls proposed	1	E	1	No	

Aspect	Potential Environmental Impact	Change relative to Currently Approved Operations	Status and Proposed Control	Risk Assessment			Further Assessment Required	Further Assessment Requirements
				C	L	R		
Undermining	The Project includes the continuation of existing approved mining methods with potential to cause subsidence under Lake Macquarie	No change to CVC Mining Area – CVC subsidence management Zones extended to MC and Proposed Eastern mining areas	As per other specific risks associated with subsidence	N/A	N/A	N/A	No	No change to existing operations
Coastal Hazards	Impact of coastal hazards on Project	No Change. Mining methods managed to ensure no subsidence >20 mm in coastal foreshore areas.	Avoid subsidence in coastal hazard zone	2	E	2		No change to existing operations Subsidence/Geotech
Socio-economic	The Project has the potential to result in a range of social and economic impacts, both positive and negative including sterilisation of coal resources if Project does not proceed	As for existing operation – continued employment.	TBC				Yes	Economic Assessment Social Impact Assessment
Community - Health	Particulate matter is known to be associated with various public health impacts (refer to Air Quality above)	Consistent with approved operations	As per approved operations	2	D	5	Yes	Air Quality Assessment

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