PROJECT CHINA STONE

Draft Environmental Impact Statement

ADDENDUM TO THE SUPPLEMENT

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MACMINES AUSTASIA

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1 INTRODUCTION

MacMines Austasia Pty Ltd (the proponent) is proposing to develop Project China Stone (the project), a large-scale coal mine on a greenfield site in Central Queensland. A draft Environmental Impact Statement (EIS) was prepared for the project and placed on public exhibition between 25 July and 7 September 2015. During this time, stakeholders were invited to lodge a submission on the draft EIS.

A Supplement to the Draft EIS (the supplement) was subsequently prepared by Hansen Bailey on behalf of the proponent and submitted to the Office of the Coordinator General in August 2017. The supplement provided the proponents response to the submissions that were received from members of the public and advisory agencies regarding the draft EIS. Input to the supplement was provided by the proponent, as well as EIS technical specialists including Hansen Bailey, Australasian Groundwater and Environmental Consultants (AGE), Cumberland Ecology, Cardno (Qld), Gordon Geotechniques, and Katestone Environmental.

This document is an Addendum to the Supplement to the Draft EIS. This addendum provides additional information requested by the Office of the Coordinator General to be provided as part of the assessment of the Draft EIS, following the review of the supplement. This additional information includes an update on the proposed timing of project development (Section 2), further information on the proposed power station (Section 3) and an estimated cost to backfill the final void (Section 4). The additional information has been prepared by the proponent.

2 PROJECT TIMING

The proposed timing of the project at the time of preparing the draft EIS assumed that, subject to gaining the necessary project approvals, the Project Year 1, being the first year of construction, was anticipated to be 2016. It was anticipated that open cut coal production and longwall mining would both commence in Project Year 3 (2018) after the progression of the necessary initial mine development work during the construction period.

Based on the current status of the environmental approvals and subject to gaining the necessary government approvals, the construction of the project is currently scheduled to commence in 2020, with coal production commencing in 2022.

3 POWER STATION INFORMATION

3.1 PURPOSE OF POWER SUPPLY

As indicated in the draft EIS, MacMines is not seeking approval through the current EIS process to supply electricity other than for mining activities to be conducted on the mining lease. MacMines understands that the approval for a power station under the mine Environmental Authority (EA) can only be for mining purposes and is not seeking a Generation Authority for the power station under the *Electricity Act 1994*.

3.2 POWER DEMAND FOR MINING ACTIVITIES

Table 3-1 shows the breakdown of power demands for mining activities which confirm the potential peak power demand for the project is 388 MW i.e. approximately 400 MW.

Table 3-1 Power Demands

Mining Case 6 (IPCC)	Load Description	Electrical Power: Absorbed Power MW	Electrical Power: Maximum Demand kW	Electrical Power: Maximum Demand kVA	Energy Usage: Load Factor %	Energy Usage: Annual Utilisation %	Energy Usage: Annual Op Hrs Hrs	Energy Usage: Annual Energy GWhrs	with contingency 12.5%
1.0	**Non-Mining Loads**	**64.50**	**58.05**	**64.50**				**375.3**	**422.2**
1.1	**Mine Industrial Area Facilities**	**53.60**	**48.24**	**53.60**				**320.3**	**360.3**
	Raw coal handling	9.00	8.10	9.00	95%	80%	6,989	53.8	60.5
	Coal preparation plant (1000tph module)	27.50	24.75	27.50	95%	80%	6,989	164.3	184.9
	Product stockpile	7.50	6.75	7.50	95%	80%	6,989	44.8	50.4
	Train loadout (TLO)	1.60	1.44	1.60	95%	80%	6,989	9.6	10.8
	Typical industrial facilities	5.00	4.50	5.00	95%	80%	6,989	29.9	33.6
	Typical operations facilities	3.00	2.70	3.00	95%	80%	6,989	17.9	20.2
1.2	**Accommodation and Access**	**5.90**	**5.31**	**5.90**				**23.2**	**26.1**
	Accommodation village - rooms	5.00	4.50	5.00	50%	100%	8,736	19.7	22.1
	Accommodation village - cooking	0.15	0.14	0.15	50%	100%	8,736	0.6	0.7
	Accommodation village - entertainment	0.25	0.23	0.25	50%	100%	8,736	1.0	1.1
	Air field	0.50	0.45	0.50	50%	100%	8,736	2.0	2.2
1.3	**Miscellaneous Systems**	**5.00**	**4.50**	**5.00**				**31.8**	**35.8**
	Industrial water management	5.00	4.50	5.00	90%	90%	7,862	31.8	35.8
			0.00						
1.4	**Spare**	**0**	**0**	**0**				**0.0**	**0.0**
		0.00	0.00	0.00	90%	95%	8,299	0.0	0.0
			0.00						
2.0	**Mining Loads**	**226.68**	**177.25**	**200.37**				**1287.4**	**1448.3**
2.1	**Opencut Mining**	**98.00**	**80.06**	**92.38**				**803.6**	**904.1**
	Draglines	19.04	14.09	15.15	90%	70%	6,115	77.6	87.3
	IPCC Systems	78.96	65.96	77.22				363.0	408.4
	Rope Shovel	5.76	3.74	4.02	90%	70%	6,115	20.6	23.2
	Sizer/Crusher	11.20	9.52	11.20	90%	70%	6,115	52.4	58.9
	Conveyor system	48.00	40.80	48.00	90%	70%	6,115	224.6	252.6
	Spreader	12.00	10.20	12.00	90%	70%	6,115	56.1	63.2
	Ancilliary loads	2.00	1.70	2.00	90%	70%	6,115	9.4	10.5
2.2	**Underground Mining**	**109.13**	**80.61**	**89.56**				**405.6**	**456.3**
	Longwall Panel	29.60	20.72	23.02	65%	75%	6,552	88.2	99.3
	Development Panels	18.67	11.20	12.45	65%	75%	6,552	47.7	53.7
	UG Conveyors	38.76	31.01	34.45	65%	75%	6,552	132.1	148.6
	UG Services	22.10	17.68	19.64	90%	99%	8,649	137.6	154.8
		0.00	0.00	0.00	90%	95%	8,299	0.0	0.0
		0.00	0.00	0.00	90%	95%	8,299	0.0	0.0
		0.00	0.00	0.00	90%	95%	8,299	0.0	0.0
		0.00	0.00	0.00	90%	95%	8,299	0.0	0.0
		0.00	0.00	0.00	90%	95%	8,299	0.0	0.0
2.3	**Materials Handling**	**10.05**	**8.04**	**8.93**				**33.9**	**38.2**
	Raw Coal overland conveyor 1	2.40	1.92	2.13	70%	69%	6,028	8.1	9.1
	Stockpile 1 feeder system	1.50	1.20	1.33	70%	69%	6,028	5.1	5.7
	Stockpile 2 feeder system	1.50	1.20	1.33	70%	69%	6,028	5.1	5.7
	Stockpile 1 tunnel fans	0.25	0.20	0.22	70%	69%	6,028	0.8	0.9
	Stockpile 2 tunnel fans	0.25	0.20	0.22	70%	69%	6,028	0.8	0.9
	Raw Coal overland conveyor 2	2.40	1.92	2.13	70%	69%	6,028	8.1	9.1
	Stockpile feeder system	1.50	1.20	1.33	70%	69%	6,028	5.1	5.7
	Stockpile tunnel fans	0.25	0.20	0.22	70%	69%	6,028	0.8	0.9
2.4	**Miscellaneous Systems**	**9.50**	**8.55**	**9.50**				**44.2**	**49.8**
	Mine water management	5.00	4.50	5.00	80%	90%	7,862	28.3	31.8
	Bathhouse	4.50	4.05	4.50	50%	90%	7,862	15.9	17.9
			0						
TOTALS		**291.18**	**235.30**	**264.87**				**1663**	**1871**
	Total unfactored GWh/yr							1663	
	Total unfactored MWh/yr							1,662,699	
	Contingency					**1000**	**12.5%**	1,870,536	MWh/yr
	Power required if operatinng from the Grid							310	MW
	Peak demand factor							25%	
								388	peak
	Annual hours of operation per unit							**6,028**	
	Hours in a year							8760	
	Annual power unit operating hours %							68.8%	
							Max MW	**Peak MW**	
	Case 6 study						310	**388**	
	Net Power from a 350 MW generating unit							**315**	**MW**

3.3 POWER STATION DESIGN AND CAPACITY

The preferred generating units for the power station are 350 MW super critical generators designed in China and will be supplied by MacMines business partner. The cost of these units are in the order of 50% of the cost of units provided from other sources. Given the large cost differential, no further study into other sources or types of power generators was conducted.

3.3.1 Minimum Viable Operating Capacity

The 350 MW generating units can efficiently operate at half of their maximum output capacity (net power approximate 90% of design), delivering approximately 315 MW net.

3.3.2 Further Information Regarding Redundancy

As explained in Section 4.10 of the draft EIS, two 350 MW super critical generating units are required to supply sufficient power for the potential maximum peak mine power demand of 388 MW. A third generating unit will be provided as redundancy, due to the remote location of the site and to ensure a reliable power supply for mining operations.

The smallest super critical power units available in China are 350 MW. New 600 MW units are also being trialled, but if selected, would still require redundancy to be included in the design capacity for the mine.

3.4 ALTERNATIVES TO ONSITE ELECTRICITY GENERATION

As part of the pre-feasibility study, MacMines assessed options to provide power to the mine including connection to the Queensland electricity network and an onsite power station. It was assessed that electricity supplied from the grid would have a cost (including capital recovery) of approximately $112/MWh. This is based on an estimated tariff which could be obtained for the electricity market of $80/MWh.

In comparison, the cost for capital recovery and operating cost of the onsite power station was calculated to be $16.30/MWh. The very large difference in cost is primarily a function of the use of onsite fuel for the power station. The onsite power station results in a reduction of approximately 10% in mine operating costs.

In addition, as the project will produce a very large quantity of washery rejects, with the coarse reject fraction having an energy level of 2000 kcal/kg, it was recognized early in the development of the energy plan that using the coarse reject fraction would be resource beneficial and energy efficient. The majority of this reject will be provided by the washery unit treating Seam B. This is a high ash seam but it can be high graded and is ideal for use in the power station.

3.5 PROPOSED EMISSIONS PROFILE

Section 15 and Appendix L of the draft EIS provide a comprehensive analysis of the predicted air quality impacts of the project, including emissions from the power station.

4 FINAL VOID BACKFILLING COST ESTIMATE

A review of the open cut spoil quantities has been carried out in order to estimate the cost of backfilling the open cut final void. The approach has been to summarize the total out of pit spoil (i.e. prime material which does not include any rehandle), excluding topsoil, which will be accumulated over the life of the open cut operation, approximately 30 years. Table 4-1 shows that there will be approximately 3.6 billion cubic metres of prime material loaded out of the pit. A swell factor of 30% has been applied giving approximately 4.6 billion cubic metres of out of pit material. The swell factor accounts for the volume of coal which will be removed from the open cut.

Table 4-1 Prime Waste Quantities

PRIME WASTE	QUANTITY (BANK CUBIC METRE)
In pit prime waste	1,105,961,986
Out of pit prime waste	3,570,196,137
Total prime waste	**4,676,158,123**

Assuming that all of this out of pit spoil material will be relocated back to the open cut to backfill the final void, at an estimated cost of A$3 per cubic metre in today's [2018] money, the total cost to return the spoil to the void will be in the order of A$14 billion (Table 4-2).

Due to the extremely deep highwall, it is not expected that backfilling could safely take place until the final coal has been removed. Thus at the end of the coal extraction period, backfilling could commence. The out of pit material, with swell factor applied, is equal to the total prime material excavated (Table 4-1). It will take 30 years to remove this material from the open mining area and therefore it is reasonable to assume that it would take 30 years to put it back, if backfilling was to commence at the end of mining.

There is an opportunity after year 6 or 7 of the project to direct the pre-strip material back to the open cut void for about 6 years. At this point, the box cut and initial strip's void surface would be brought back to natural ground level. This would have the impact of reducing the return of out of pit material and the cost by approximately 20%; that is, over 20 years to complete the void backfilling at a cost of over A$10 billion (Table 4-2).

It can be clearly seen from these quantities and the rationale applied, that to impose a minimum +A$10 billion end of mine cost (in today's money) to be expended over an additional 20 years would render this project economically unviable.

Table 4-2 Final Void Backfilling Cost Estimate

SCENARIO	TOTAL QUANTITY OF PRIME OUT OF PIT MATERIAL	TIMING	COST ESTIMATE
Backfilling from end of mine life only	4,641,254,978	30 years after mining ceases	AUD $14 B
Backfilling during mining for six years, then remainder from end of mine life	3,713,003,982	20 years after mining ceases	AUD $10 B