

Independent Planning Commission

Mount Pleasant Optimisation Project

(SSD – 10418)

Surface water issues

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Project surface water issues

Questions to the IESC as asked by:

- NSW Department of Planning, Industry and Environment
- Commonwealth Department of Agriculture, Water and the Environment

“To what extent can decision makers have confidence in the predictions of potential impacts on surface water resources provided in the EIS, having regard to potential stream flow losses, water quality, controlled releases, uncontrolled discharges and flooding?”

1. *Has an appropriate water balance model been selected and used by the Applicant? Are the assumptions used in the model reasonable?*
2. *Has the model been validated with sufficient monitoring data to provide meaningful predictions, including worst-case impacts on surface water resources?*
3. *Has an appropriate sensitivity analysis been undertaken, including consideration of the potential impacts of climate change?”*

(emphasis added)

Q1. *Has an appropriate water balance model been selected and used by the Applicant? Are the assumptions used in the model reasonable?*

Is selected model software appropriate? Yes.

- Goldsim can perform water balance calculations
- AWBM can simulate rainfall/runoff.

Are assumptions reasonable? Unknown.

- No evidence of calibration – as noted by the IESC:

“the water balance model appears not to have been calibrated or validated to monitoring data”
and that:

“several areas require further data and clarification.”

- As such, it’s not possible to say whether the assumptions are reasonable as there is no evidence to show that they simulate real-world behaviours.
- In effect “Trust us”.

Q2. *Has the model been validated with sufficient monitoring data to provide meaningful predictions, including worst-case impacts on surface water resources?*

Has the model been validated to provide meaningful predictions? No.

In their response to IESC advice, MACH Energy responded (22 April 2021) that:

“Site-specific calibration of the site water balance model was not considered appropriate, given:

- *The Mount Pleasant Operation water management system has been progressively developed since construction began in October 2016 and the various water storages and their catchments evolved rapidly during this commencement phase.*
- *A prolonged drought significantly reduced the opportunity to gather additional site-specific runoff and catchment data sets.”*

This justification is concerning for a number of reasons, including:

- All mining projects ‘evolve’ and change –the model should be able to represent this
- Drought conditions are of direct relevance to understanding ‘worst-case’ impacts
- 5+ years of site-specific data should exist since MACH took ownership of the Project plus wealth of other useful information.

Q3. Has an appropriate sensitivity analysis been undertaken, including consideration of the potential impacts of climate change?"

Does surface water assessment consider climate change over the Project life. No.

- Climatic inputs limited to historical data for period 1895-2012.
- All Project water supply and water management predictions assume a climate that is unchanged and unchanging
- Does not represent conditions that Project will experience and be required to operate under between now and 2050

**Table 1 - East Coast Climate Futures (2050, RCP 4.5)
(Source: CSIRO Climate Change in Australia website)**

		Annual Time In Drought (%)				
		Large Decrease < -30.00	Small Decrease -30.00 to -10.00	Little Change -10.00 to 10.00	Small Increase 10.00 to 30.00	Large Increase > 30.00
Annual Rainfall (%)	Much Wetter > 15.00		1 of 30 (3%)			
	Wetter 5.00 to 15.00	2 of 30 (7%)		1 of 30 (3%)		
	Little Change -5.00 to 5.00	3 of 30 (10%)	3 of 30 (10%)	3 of 30 (10%)	5 of 30 (17%)	3 of 30 (10%)
	Drier -15.00 to -5.00				1 of 30 (3%)	6 of 30 (20%)
	Much Drier < -15.00					2 of 30 (7%)

Why does it matter?

An example: Drought and supply risk

Project reporting indicates that the water supply system is predicted to fail (i.e. the Project would be forced to shut-down) with reported predictions of:

- average three (3) months without sufficient water to operate; and
- up to two (2) years of “lost operation”

Noting that:

- Recent climatic conditions have been highly variable and there is a strong likelihood of this variability increasing - as projected within IPCC reporting
- Within this context, the risks as reported are almost certainly under-estimated.

Are the above risks accounted for in reported Project assessment?

- Economic reporting implies an assumption of uninterrupted operation over the full proposed life of the Project.

Equally have they been accounted for in environmental impact assessment?

- Assessment compares impacts against pre-2012 hydrological conditions – What is the impact of increasing demands on declining streamflows?

Review outcomes

- We still can't be sure what the real impacts would be:
 - Uncalibrated/unvalidated model means we have no evidence that the predictions are reliable;
 - Use of dated climatic/hydrologic data & an assumption of no climate change means we are looking at results for a climate which almost certainly won't be relevant for the Project
 - And even under the limited climatic assumptions assessed, there are modelled and reported risks which are effectively ignored.
- Put simply, we are being asked to accept predicted Project behaviours, calculated risks and estimates of impacts that are just not real.

Water use and availability in the Hunter are critical and the information cannot be relied upon to support a well-founded decision on the Project

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