

11 December 2019

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**By email:** [Lauren.Evans@planning.nsw.gov.au](mailto:Lauren.Evans@planning.nsw.gov.au)

Dear Lauren,

**RE: SUBMISSIONS REPORT REVIEW FOR THE MAXWELL PROJECT (SSD-9526)**

I refer to the Environment Protection Authority's (EPA's) review of the Submissions Report for the Maxwell Project (SSD-9526) provided to the Department of Planning, Industry and Environment (dated 4 December 2019).

The EPA's review included a request for additional information, relating to predicted overflows from the Rail Loop Dam and Access Road Dam.

WRM Water and Environment (WRM) has prepared a response to address the supplementary request from the EPA (Enclosure 1).

WRM's response clarifies that the reference to a 1% probability (in any one year) of an overflow from Rail Loop Dam and Access Road Dam means that these dams are predicted to overflow in only 1 of the 103 historical climate sequences that were modelled (i.e. effectively once in 100 years).

Please do not hesitate to contact the undersigned should you wish to discuss.

Yours sincerely,



Bill Dean  
General Manager – Projects  
**Malabar Coal Limited**

ENCLOSURE 1

WRM WATER AND ENVIRONMENT LETTER  
MAXWELL PROJECT SURFACE WATER ASSESSMENT – RESPONSE TO EPA COMMENTS

# Maxwell Project Surface Water Assessment

## Response to EPA comments

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Malabar Coal Limited

1383-03-C, 11 December 2019

For and on behalf of WRM Water & Environment Pty Ltd  
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Matthew Briody  
Principal Engineer

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# 1 Introduction

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In early 2019, WRM prepared a Surface Water Assessment for the Maxwell Project (the Project) on behalf of Malabar Coal Limited (Malabar), as part of the overall Environmental Impact Statement (EIS) submission.

As part of the EIS assessment process, the NSW Environment Protection reviewed the EIS and provided a submission (dated 1 October 2019).

The EPA Submission was addressed by Malabar as part of the *Maxwell Project Submissions Report* (Malabar, 2019). Subsequently, the EPA provided a supplementary query to the NSW Department of Planning, Industry and Environment (DPIE) regarding the Project.

The purpose of this report is to address the supplementary query provided by EPA.

## 2 Response to EPA Query

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### 2.1 EPA QUERY

The EPA's supplementary letter to the DPIE (dated 4 December 2019) states:

*The EPA has reviewed the Submissions Report and determined that the proponent must provide a detailed assessment of the environmental impact of discharges from the Rail Loop and Access Road dams on the receiving environment. The EPA is unable to recommend Conditions of Approval without this assessment.*

*The EPA's submission requested a detailed assessment of any discharges from any dams, including Rail Loop Dam and Access Road Dam, including an assessment of mixing zones and an evaluation of mitigation measures.*

*While the Submissions Report indicates that there will be no controlled discharges from these dams, it states that there is a "1% probability (in any one year) that Rail Loop Dam and Access Road Dam could overflow to Ramrod Creek". This appears to indicate that these dams are predicted to overflow three to four days each year on average. Table 3.9 on page 39 of the Environmental Impact Statement's Surface Water Assessment dated 9 July 2019 (Appendix C), indicates that the water in these dams has an electrical conductivity (EC) of up to 8,180 microsiemens per centimetre ( $\mu\text{S}/\text{cm}$ ).*

*Under the Protection of the Environment Operations (Hunter River Salinity Trading Scheme) Regulation (2002), saline water is defined as any water with an EC greater than  $400\mu\text{S}/\text{cm}$ .*

### 2.2 WRM RESPONSE

Section 6.3.3 of the Surface Water Assessment for the Project states the following (WRM, 2019):

- There were no modelled overflows from Mine Entry Area (MEA) Dam, Treated Water Dam and Savoy Dam during any of the model realisations over the life of the Project.
- There is a 1% probability (in any one year) that Rail Loop Dam and Access Road Dam could overflow to Ramrod Creek. The predicted overflow volume ranges from 20 to 30 megalitres (ML). However, overflows from these storages would only occur during extreme rainfall events. The water within the dams during these events would be heavily diluted by catchment inflows and any overflows would be further diluted by significant flows in Ramrod Creek.

It appears the EPA's primary concern relates to their interpretation of the overflow probability (1% probability in any on year) as meaning "*these dams are predicted to overflow three to four days each year on average*". However, it is important to clarify that the above reference to a 1% probability (in any one year) of an overflow from Rail Loop Dam and Access Road Dam means that these dams are predicted to overflow in only 1 of the 103 historical climate sequences that were modelled (i.e. effectively once in 100 years).

Notwithstanding, we have undertaken additional quantitative analysis of the predicted Rail Loop Dam and Access Road Dam overflows to confirm the assessment of potential impacts on the receiving environment (Ramrod Creek) during overflow events.

### 2.2.1 Flow Volumes

The site water balance model for the Project provides a statistical analysis of the water management system's performance encompassing 103 separate simulations representing a full range of historical climatic sequences. The simulations are based on measured rainfall data dating as far back as 1889, with the first run based on rainfall data from 1889 to 1915, the second using data from 1890 to 1916 and so on.

The Rail Loop Dam and Access Road Dam are predicted to overflow in only 1 of the 103 historical climate sequences that were modelled.

The current catchment area of Ramrod Creek to the Hunter River confluence is approximately 3,500 hectares (ha). The Project OPSIM water balance model has been used to estimate the flow in Ramrod Creek during the periods of predicted overflows from the Rail Loop Dam and Access Road Dam and calculate the available dilution ratio. The outcomes are as follows:

- During the modelled Rail Loop Dam overflows, a dilution ratio of at least 200:1 within Ramrod Creek is predicted.
- During the modelled Access Road Dam overflows, a dilution ratio of at least 30:1 within Ramrod Creek is predicted.

This indicates that the modelled overflows to Ramrod Creek would only represent between 0.5% and 3.3% of the flow in the receiving environment (at the Hunter River confluence). That is, the predicted overflows would have a negligible volumetric impact on Ramrod Creek.

### 2.2.2 Water Quality

Table 3.8 of the Surface Water Assessment shows the historical water quality within Ramrod Creek at the BHP gauges, as follows:

- At the upstream monitoring site (SW09), the median electrical conductivity (EC) is 6,260 microSiemens per centimetre ( $\mu\text{S}/\text{cm}$ ), with 80% of the 33 samples being above 4,138  $\mu\text{S}/\text{cm}$ .
- At the downstream monitoring site (SW12), the median EC is 5,120  $\mu\text{S}/\text{cm}$ , with 80% of the 137 samples being above 4,504  $\mu\text{S}/\text{cm}$ .
- This water quality data indicates that Ramrod Creek is typically saline, with the vast majority of samples have an EC of greater than 4,000  $\mu\text{S}/\text{cm}$ .

The predicted salinity of modelled overflows from Rail Loop Dam and Access Road Dam is between 1,750 and 4,500  $\mu\text{S}/\text{cm}$ . This indicates that the salinity of overflows from Rail Loop Dam or Access Road Dam would likely be similar or better quality than the receiving waters.

In addition, given the expected dilution ratios within the receiving waters during overflows, any overflows from these dams would have a negligible impact on the water quality in Ramrod Creek.

Further, it is noted that the water balance model is run on a daily time step, which may overpredict the likelihood of overflows. Should an overflow be imminent, Malabar could rapidly increase the pumping capacity in Access Road and Rail Loop Dams to reduce the likelihood of an overflow.

### 3 References

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Malabar Coal, 2019

WRM, 2019

*Maxwell Project - Submissions Report.*

*Surface Water Assessment - Maxwell Project*, Report No. 1383-02-J5, prepared for Malabar Coal Limited by WRM Water and Environment Pty Ltd, 9 July 2019.