

From: [Brian Cole](#)
To: [Kane Winwood](#)
Cc: [Steve O'Donoghue](#); [Phillipa Duncan](#); [Paul Freeman](#)
Subject: FW: Vickery - Aquifer Increase in Density from Waste Emplacement and Clarification of Flooding Impacts
Date: Wednesday, 6 November 2019 3:14:33 PM
Attachments: [image001.png](#)
[image6dde6c.PNG](#)
[WHC-15-33_DPIE_IR_Figure1.pdf](#)
[Vickery GW Assessment - Fig 19.pdf](#)
[WHC-15-33_RTS Figure 15.pdf](#)

Hi Kane,

Please find below responses to additional queries from DPIE – Water.

Aquifer Increase in Density from Waste Emplacement

- Approximately 202 ha of the proposed waste emplacement will overlap a thin clay-dominated alluvium embayment (approx. 30 m thick) to the north-west of the open cut and adjacent to Canyon Coal Mine (refer attached Figure 1).
- This equates to approximately 0.2% of the total area of the Upper Namoi Zone 4 alluvium groundwater source.
- The alluvium that the emplacement would overlap has been impacted by the existing Canyon Coal Mine final void.
- Any increase in density of the aquifer which would be minimal in any event would occur in the area bordering the Maules Creek Formation and would not have a material effect on the remaining Zone 4 alluvium.
- Therefore effects of the overlapping emplacement to regional groundwater storage or flow would be negligible (refer Figure 19 [attached] from the Groundwater Assessment for the regional groundwater flow contours).

Rail Embankment at Main Line

- At the point where the elevated Project rail spur joins the Main Line embankment there will be a short transition zone (approximately 50 m) before the rail spur is elevated on pylons.
- This short embankment section has been included in the flood modelling and results presented in the Submissions Report (refer Section 6.4.3 of the Submissions Report).
- Differences in flooding impacts as a result of the short embankment section are predicted to be negligible (refer Figure 15 from the Submissions Report – attached for reference).

Collygra Creek Flooding

- Collygra Creek is an ephemeral watercourse that has been intersected by the Main Line rail embankment.
- When flow occurs in Collygra Creek, it passes (from west to east) through existing culverts beneath the Main Line before continuing to flow in a northerly direction clear of the Project rail spur.
- Flood modelling of the 1 in 100 year regional flood event has been undertaken for flood peaks of local catchments (which includes the Collygra Creek catchment):
 - occurring independently of the Namoi River flood peak; and
 - coinciding with the Namoi River flood peak.
- The difference in flood level impacts are imperceptible given Namoi River flood flows are significantly larger than local catchments.
- The Project rail spur will be designed to be elevated above the design 1 in 100 year (regional) flood event.
- Where a local flood event occurs in Collygra Creek independently of a flood event in the Namoi River, the resulting flood levels would be well below the design flood event used

to inform the rail spur elevation.

- Any impacts to flows from the existing Main Line embankment where Collygra Creek passes through via culverts are not relevant to the assessment of the Project.

Please do not hesitate to contact me if you have any queries.

Regards,

Brian Cole

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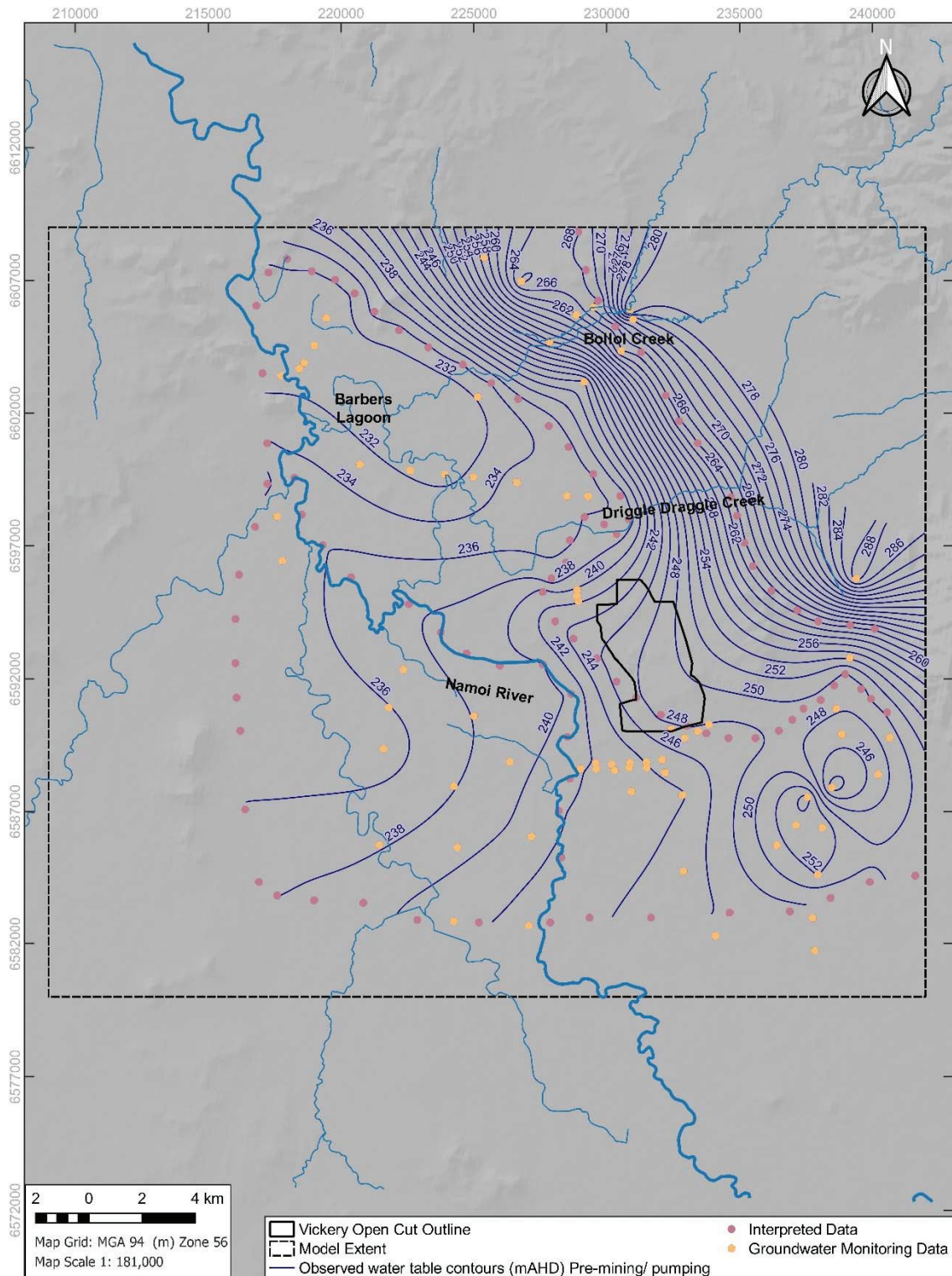


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 Mining Tenement Boundary (ML and CL)
 Exploration Licence Boundary (EL)
 Mining Lease Application (MLA)
 Water Sharing Plan for the Upper and Lower Namoi
 Groundwater Sources 2003
 Alluvial Groundwater Source
 Water Sharing Plan for the NSW Murray Darling Basin
 Porous Rock Groundwater Sources 2011
 Gunnedah-Oxley Basin MDB Groundwater Source
 Water Sharing Plan for the NSW Murray Darling Basin
 Fractured Rock Groundwater Sources 2011
 New England Fold Belt MDB Groundwater Source


WHITEHAVEN COAL

Figure 1



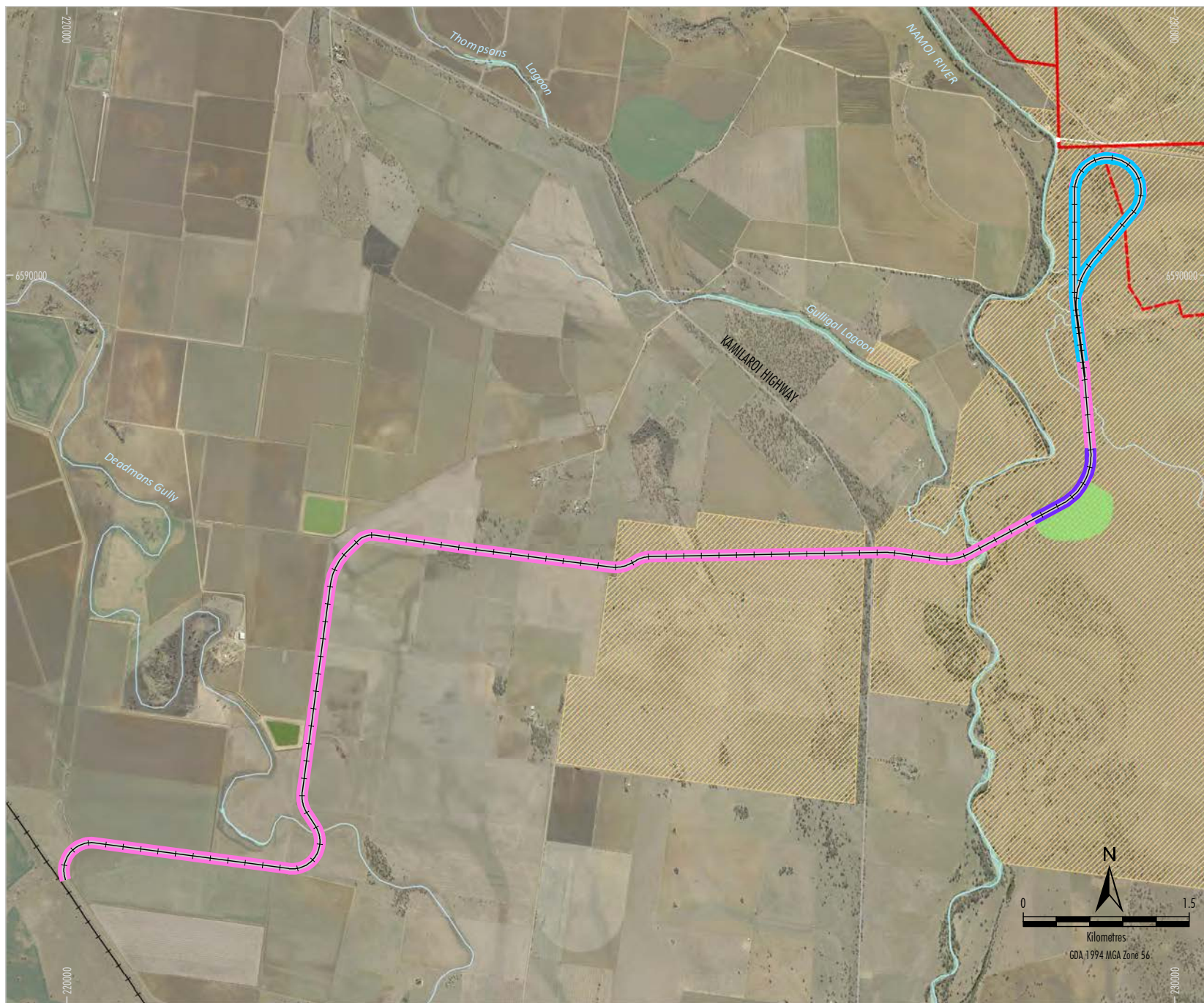
**HYDR
SIMULATIONS**

Vickery Extension Project
Regional observed water table contours (mAHD) pre-mining/pumping

Figure 19

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Figure 19 Regional Observed Water Table Contours (mAHD) Pre-Mining/Pumping




VICKERY EXTENSION PROJECT
 Revised Conceptual Project Rail Spur Design
 Predicted Flooding Impacts
 (Coincident Flooding)

Figure 15