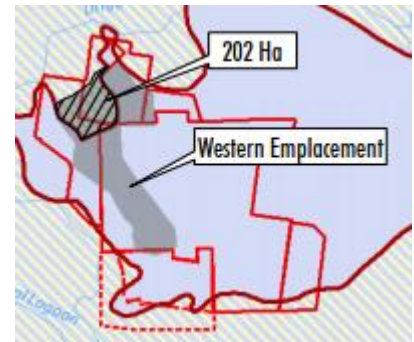


## EXPERT ADVICE - VEP WESTERN EMPLACEMENT

ATTENTION:	Mr Steve O'Donoghue, NSW Dept of Planning Infrastructure and Environment	
FROM:	Hugh Middlemis, Principal Groundwater Engineer, HydroGeoLogic	
REFERENCES:	12 March 2020	DPIE ref: Vickery Extension Project Groundwater Assessment
	HGL job#: 61.073	
SUBJECT:	Vickery Extension Project groundwater assessment - Western Emplacement	

As requested, this brief memo provides expert groundwater advice in relation to potential seepage from the Western Emplacement into the Namoi Alluvium embayment at the north-western part of the Vickery Extension Project (VEP) area.



For context, DPIE Water indicated in a letter to DPIE dated 11 March 2020 that it 'does not consider emplacement of out of pit spoil on top of the alluvial aquifer associated with the Namoi Zone 4 alluvium groundwater source as negligible risk'.

Having reviewed the groundwater assessment documents, I concur with DPIE Water that the risk is not negligible, but I consider the residual risk to be quite low, for the following reasons:

- assuming that closure will involve a final void at the south-eastern corner of the VEP, the modelled water table at 100 years after the end of mining shows that the long term final void groundwater 'capture zone' extends across the Western Emplacement over the alluvium embayment (VEP Submissions Report, August 2019, Figure 8b); this means that seepage from the Western Emplacement would indeed flow towards the final void sink rather than towards the alluvium.
- the potential seepage flux and water quality has been adequately assessed as a low risk to the beneficial use category for the alluvium (HydroSimulations VEP Groundwater Assessment, August 2018, Sections 5.5.3, 6.1.4; Tables 19, 20).
- the embayment alluvium underlying the Western Emplacement has already been impacted by the existing Canyon Coal Mine final void, as Whitehaven Coal point out, but the potential compaction impacts on the 'clay-dominated' (compressible) alluvium has not been assessed specifically.

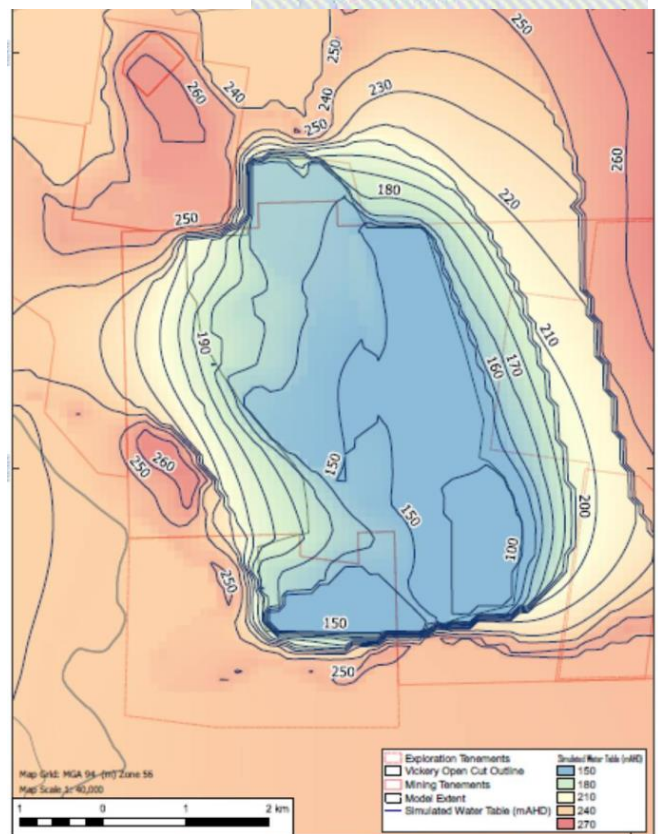


Figure 8b: Simulated Water Table at the End of 100 Years' Recovery (1% Rainfall Recharge of Waste Emplacement)  
 (Source: HydroSimulations)

Yours sincerely, **Hydrogeologic Pty Ltd**

**Hugh Middlemis (Principal Groundwater Engineer)**