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Melanie Hollis
Planning Group
NSW Department of Planning, Housing and Infrastructure (DPCI)
Email: melanie.hollis@planning.nsw.gov.au

28 August 2025

Subject: Metropolitan Coal Longwalls 317 and 318 Modification 4 (MP08_0149) – Modification Report

Dear Melanie Hollis,

I refer to your request for advice sent on 28 July 2025 to the NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW) Water Group about the above matter.

NSW DCCEEW Water Group has reviewed the Modification Report and has significant concern about the potential for irreversible impacts to high priority groundwater dependent ecosystems and impacts to the ecological and hydrological functioning of watercourses within Sydney's drinking water catchment. The proponent's assertion that ecological impacts are fully recoverable is insufficiently supported and inconsistent with the outcomes of subsidence related fracturing impacts in similar mining scenarios. There is a high risk of detrimental consequences due to the lack of viable remediation methods.

DCCEEW Water seeks further information on these matters, recommends additional assessments in regard to the tributary from Swamp 106, the relocation of Ventilation Shaft 4, and details on water licensing.

Please see Attachment A for more detail.

Should you have any further queries in relation to this submission please do not hesitate to contact the Water Assessments team at water.assessments@dpie.nsw.gov.au.

Yours sincerely



Mitchell Isaacs
Executive Director, Water Knowledge
NSW Department of Climate Change, Energy, the Environment and Water

Attachment A

Detailed advice to DPHI Planning & Assessment regarding the Metropolitan Coal LW 317 & 318 Modification 4 – Modification Report

1.0 Groundwater and surface water impact assessment and management

1.1 Recommendation – pre-determination

Department of Planning, Housing and Infrastructure (DPHI) requests the proponent to provide further justification and/or adjust the mining layout to demonstrate the impacts of the proposed modification will not:

- Result in more than negligible impacts to the hydrological, ecological or geomorphological functioning of watercourses.
- Prevent the long-term viability of Swamp 106, a high priority groundwater dependent ecosystem listed under the Water Sharing Plan for the Greater Metropolitan Groundwater Sources 2023.

Explanation

DCCEEW Water's assessment of this modification, as prescribed by the NSW Aquifer Interference Policy (2012), is to assess the rigour of impact predictions and the suitability of proposed mitigation, prevention or avoidance strategies. Where there are no suitable or practical mitigation prevention options, recommendations to avoid the impacts by modifying the proposed activity may be required.

Longwall coal mining presents a significant risk by disrupting the subsurface hydrology of upland swamps. Subsidence from longwall extraction can fracture the bedrock beneath swamps, leading to groundwater loss and a subsequent lowering of swamp water tables (Krogh 2022). Where such impacts have occurred, documented remediation efforts to mitigate the groundwater drawdown and continued leakage from pools and reduced baseflows have been unsuccessful (IEPMC 2019). Where surface flows re-emerge after passing through subsidence-induced fracture networks, they are likely to have impaired water quality (e.g. elevated iron and manganese concentrations, reduced dissolved oxygen), further degrading ecological function downstream. The inflow of poorer quality water can cause irreversible damage to swamps and associated watercourses due to changes in pH, nutrient availability and the accumulation of metals.

While no surface-to-seam fracturing is predicted and the height of complete groundwater drainage (Tammetta 2013) for Longwalls 317 and 318 does not reach the surface (estimated at 144–146 m), the potential for impacts remains. Subsidence impacts for Longwall 317 and 318 are predicted to significantly increase at Honeysuckle Creek and Stream U, with 205 mm of additional vertical subsidence, 130mm of upsidence and 330mm of additional closure at Honeysuckle Creek, and an additional 735mm of subsidence, 285mm of upsidence and 275mm of closure at Stream U. Subsidence predictions at Swamp 106 also indicate a significant increase with 400 mm of additional vertical subsidence. The groundwater modelling predictions state an additional 1.8 m of drawdown in S106 and the uncertainty analysis indicates >2 m drawdown is very likely in the area of S106 overlying LW318. The magnitude of predicted subsidence is identified in the Surface Water Assessment (Appendix

C) to have a range of impacts, including a moderate risk of causing fracturing of the upper Hawkesbury Sandstone; a high potential risk for stream bed cracking of watercourses near LW317-318; and water decline in S106 due to increased downward leakage.

Swamp 106 which overlies LW318 is the largest swamp in the Metropolitan Coal project area and is classified as a high priority groundwater dependent ecosystem under the Water Sharing Plan for the Greater Metropolitan Groundwater Sources 2023. Groundwater drawdown in the underlying regolith in excess of 1m (>10% variation in the water table) is a Level 2 impact defined under the NSW Aquifer Interference Policy (AIP). This requires appropriate studies to demonstrate the impacts will not prevent the long-term viability of the dependent ecosystem. The studies provided are not adequate to address this requirement with key areas of concern including:

- The predictions of drawdown and fracturing of the upper Hawkesbury Sandstone, which is likely connected to the substrate of S106, represents an impact of greater than negligible consequence as defined in the Biodiversity Development Assessment Report (Appendix D). Such an impact is recognised in Appendix D to result in a reduction in hydrophilic flora and associated ecological functioning and management actions cannot fully compensate for the loss of ecosystem processes.
- It is unclear that the stated temporary impact to Swamp 106, which is hydrologically connected to Honeysuckle Creek, is supported by existing studies on smaller swamps. An assessment of comparative impacts and recovery of similar types of swamps is required, noting DCCEEW Water considers S106 to also have in-valley characteristics.

Overall, the impacts predicted could result in significant changes to swamps and watercourses situated above and downstream of the panels. The impacts threaten the integrity of the stream bed of watercourses and the shallow perched groundwater systems on which the swamps are dependent. The full extent and its consequences for natural flow paths, swamp moisture and the watercourses and swamps ecological and hydrological functions remains uncertain. DCCEEW Water therefore seeks to ensure the impact assessment and recovery predictions are adequately supported to demonstrate long term ecosystem viability and downstream water availability.

Where full recovery cannot be demonstrated, the mining design should be modified such that subsidence is negligible, or to avoid sensitive features such as swamps and watercourses.

1.2 Recommendation – pre-determination

That DPHI requests the proponent to provide subsidence predictions and an ecological and hydrological assessment of mining impacts on the tributary that flows from Swamp 106. The assessment needs to address the requirements of the NSW Aquifer Interference Policy.

Explanation

An assessment of subsidence impact on the tributary that flows from Swamp 106 has not been provided.

Swamp 106 which feeds a tributary to Honeysuckle Creek is vital in supporting the creek's baseflow. Swamps act like sponges, slowly releasing water and helping to regulate both flow and water quality. Although Honeysuckle Creek and the upper Woronora River have similar

median flows, the creek can at times deliver more water to Woronora Reservoir than the river itself. A specific subsidence assessment and related assessment of hydrological, geomorphological and ecological impacts is required for the tributary from Swamp 106 and downstream impacts. The broader subsidence predictions for Swamp 106 of 750 mm indicates this tributary is likely to have significant subsidence effects and related impacts.

Further information and assessment is required to understand the potential impacts, and where relevant the licensing requirements, to enable appropriate advice to be provided.

1.3 Recommendation – pre-determination

That DPHI requests the proponent to provide further assessment of the groundwater take and impacts from construction and operation of the new location of ventilation shaft 4. The assessment needs to address the requirements of the NSW Aquifer Interference Policy.

Explanation

The impact assessment of the relocated Ventilation Shaft 4 is inadequate.

Ventilation shafts require excavation through the full depth of overburden and can directly intersect groundwater systems that sustain surrounding swamps. Depending on their placement, shafts can act as preferential pathways for vertical drainage, lowering local water tables and reducing the capacity of adjacent swamps to maintain saturation. This risk is particularly acute where shafts are situated near groundwater-dependent ecosystems, yet the current assessment does not adequately consider the implications for nearby upland swamps, particularly S92.

Further information and assessment is required to understand the potential impacts, and where relevant the licensing requirements, to enable appropriate advice to be provided.

1.4 Recommendation – post-determination

That DPHI requests the proponent to update the Water Management Plan to:

- Include maps of predicted and observed subsidence levels to define areal extent of subsidence impact and inform management and mitigation.
- Include an enhanced monitoring program comprising installation nested bore pairs to monitor high priority GDEs (upland swamps, swamp alluvium, and immediately adjacent shallow groundwater systems) within the LW317 -LW 318 area and a 600 m buffer zone.
- Revise the trigger levels to define maximum allowable water level declines based on seasonally adjusted baseline levels, in line with aquifer types specified in the NSW AIP (2012).
- Extend the monitoring and Trigger Action Response Plan (TARP) implementation period for 10 years after mining ends.
- Require validation and update of the groundwater model two years after approval, and every three years thereafter for a total of five updates.

Explanation

- Maps of subsidence level are required to define the areal extent of subsidence impact and ensure fitness for purpose for proposed management and mitigation.
- Additional monitoring bores are needed to monitor the alluvium and shallow groundwater systems associated with; high priority GDEs (i.e., upland swamps) in the LW317 - LW 318 area and within a 600 m buffer; and surface water features like downstream discharge from swamp 106, and adjacent Honeysuckle Creek.
- Trigger Level Criteria should be refined based on seasonally adjusted baseline static water levels, consistent with aquifer types defined in the NSW AIP (2012).
- Monitoring and the Trigger Action Response Plan should continue for 10 years post-mining to detect and address delayed and cumulative impacts.
- Given the reliance on geotechnical and groundwater modelling, which is inherently uncertain and based on limited data, regular validation and updates of the groundwater model are essential. This ensures that:
 - predicted impacts remain realistic;
 - actual impacts are within expected ranges, and
 - appropriate mitigation measures can be implemented if needed.

2.0 Water licensing

2.1 Recommendation – pre-determination

That DPHI requests the proponent to:

- Review the maximum annual water take from water sources based on Figure 7 in the Guidelines for Groundwater Documentation for SSD/SSI Projects (DPE 2022) (Groundwater Guidelines) accessible at the following link: [Guidelines for Groundwater Documentation for SSD/SSI Projects](#)
- Clarify how the net reduction in discharge to surface water sources is calculated and confirm the maximum annual water take, noting there is no provision for return flows to offset or negate the original water take volume.

Explanation

The proponent's analysis of water take from the mining activities due to changes in baseflow from groundwater depressurisation appear to be classifying this as surface water take which is inconsistent with the approach described in the Groundwater Guidelines, meaning it could be classified as groundwater take.

The surface water assessment includes references to a predicted reduction in net discharge to surface water features. However it is unclear how the net figure has been calculated and what the total water take volumes from individual water sources are that require licensing.

2.2 Recommendation – pre-determination

That DPHI requests the proponent to clarify the water sources and water take from “other river water sources” referred to in Tables 7.6 and 7.7 of the Groundwater Impact Assessment.

Explanation

Insufficient information is provided to determine the water take from all impacted water sources. The proponent has predicted loss of water from “other river water sources” of up to 25 ML/yr during mining operations and 36 ML/yr post mining operations, however the specific water sources that this comprises and the respective volumes has not been identified. This information is required to enable an accurate assessment of the licensing requirements for the project.

2.3 Recommendation – pre-determination

That DPHI requests the proponent to demonstrate sufficient water entitlement is held or can be obtained prior to water take occurring to account for the maximum potential water take in all impacted water sources.

Explanation

Insufficient information has been provided to determine if sufficient entitlement is held or can be obtained to account for maximum predicted take from the project and the associated modification.

The ‘other river water sources’ referenced in Table 7.6 & 7.7 referred to in Recommendation 2.1 above will need assessment of the ability to obtain entitlement where it is not already held.

The proponent intends to take water from both the Lower and Upper Management Zones of the Woronora River Water Source which has no trading history in the past 5 water years and a total of 98 shares allocated within only 4 Water Access Licences. This indicates that there is not an active water trading market within the water source meaning it could be difficult to obtain additional entitlement.

DCCEEW Water advises that the Access Licence Dealing Principles (Special Areas No. 2) Amendment Order 2023 made under s.71Z of the *Water Management Act 2000*, provides a mechanism for the proponents of Metropolitan Mine to trade with WaterNSW to obtain water allocation within the Woronora Special Area from WaterNSW. The proponent must consult with license holders in the Woronora River Water Source to identify those willing and able to trade.

3.0 Works on waterfront land

3.1 Recommendation – post-determination

That DPHI requests the proponent to ensure works on waterfront land are undertaken in accordance with the Guidelines for Controlled Activities on Waterfront Land (2022).

Explanation

Access tracks and on-going stabilisation and revegetation works are proposed on waterfront land at Camp Gully, Helensburgh. The scope of works undertaken at this site is not clear, and should be undertaken in accordance with all relevant Guidelines for Controlled Activities on Waterfront land (2022). These guidelines are accessible at: <https://water.dpie.nsw.gov.au/our-work/licensing-and-approvals/controlled-activity-approvals#guidelines-for-controlled-activity-approvals>

References

IEPMC, 2019. Part 1 - Review of specific mining activities at the Metropolitan and Dendrobium coal mines.

Krogh, M., Gorissen, S., Baird, I.R. and Keith, D.A., 2022. Impacts of the Gospers Mountain Wildfire on the flora and fauna of mining-impacted Newnes Plateau Shrub Swamps in Australia's Eastern Highlands. *Australian Zoologist*, 42(2), pp.199-216.

Tammetta, P., 2013. Estimation of the height of complete groundwater drainage above mined longwall panels. *Groundwater*, 51(5), 723-734. <https://doi.org/10.1111/gwat.12003>

End Attachment A