

INDEPENDENT EXPERT ADVISORY PANEL FOR MINING

ADVICE RE:

**MOOLARBEN COAL COMPLEX OC3
Extension Project:**

**Technical Review – Proponent
Groundwater Dependent Ecosystems
Responses to Groundwater Comments in
IEAPM Advice**

28 August 2025

Report No: IEAPM 202508-2

EXECUTIVE SUMMARY

On 31 July 2025, the NSW Department of Planning, Housing and Infrastructure (DPHI) requested technical advice from the Independent Expert Advisory Panel for Mining (IEAPM – the Panel) regarding whether the Panel supports the conclusions made in the additional information provided by Moolarben Coal Operations (MCO) about the level of risk to groundwater dependent ecosystems (GDEs) along Moolarben/Murdering Creek and at higher elevations at the base of the Triassic sandstone.

The Panel supports the summary conclusion in the main technical report (Driscoll 2025) that the potentially groundwater dependent Plant Community Type (PCT) 281 woodland community located off the Moolarben/Murdering Creek alluvium on the lower slopes is not groundwater dependent and the community beneath the alluvial flats is possibly groundwater dependent. However, the Panel disagrees with the conclusion that the trees at the creek edges (primarily riparian vegetation) are unlikely to be groundwater dependent.

The Panel has specifically concluded:

1. There remains a moderate risk that shallow groundwater beneath the alluvial flats will be dewatered or become ephemeral in some areas along Moolarben Creek that could potentially affect facultative GDEs. This loss of shallow groundwater could occur for an extended period, as it will take time to reestablish a permanent water table in the reinstated mine voids, and for recharge processes to recover a shallow water table in the alluvium.
2. There is a low to negligible risk that spring discharges from the Triassic sandstone or Tertiary basalt will be impacted and affect any locally dependent vegetation, because this groundwater is perched and should not be impacted by declines in the regional water table in the underlying Permian strata.

Should the Project be approved, the Panel recommends that approval conditions include requirements for:

1. Monitoring and management of potential terrestrial GDEs outside of the disturbance extent within the Project Area, particularly those within the buffer area of Moolarben and Murdering Creeks that are potentially more susceptible to drawdown in the alluvial groundwater system. This monitoring should be supported by an appropriate alluvial groundwater monitoring network (as recommended in IEAPM 2025) that provides early warning of declining water levels.

The risk to facultative GDEs could be effectively managed under such a condition if it includes a requirement for updated management plans to be submitted for approval with appropriate water level triggers and management responses to protect these GDEs.

2. Updating and recalibrating of the groundwater model within 18 months of site-specific data being available from the new monitoring bore network so that there are improved drawdown and recovery level predictions within the reinstated spoil areas and alluvial groundwater system.

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1.0 INTRODUCTION

On 31 July 2025, the NSW Department of Planning, Housing and Infrastructure (DPHI) requested technical advice from the Independent Expert Advisory Panel for Mining (IEAPM – the Panel) regarding whether the Panel supports the conclusions made in the additional information provided by Moolarben Coal Operations (MCO) about the level of risk to groundwater dependent ecosystems (GDEs)¹ along Moolarben/Murdering Creek and at higher elevations at the base of the Triassic sandstone. The additional information is in support of the approval for the Moolarben OC3 Extension Project (the Project).

The additional information supplied by MCO for review comprised:

- A cover letter dated 16 July 2025 with three enclosures:
 - Enclosure 1 – Review of Risk to Groundwater Dependent Vegetation (Driscoll 2025)
 - Enclosure 2 – Response to Groundwater Comments in IEAPM Advice Report (AGE 2025)
 - Enclosure 3 – Groundwater Model Conceptualisation and Predictions (Dundon Consulting 2025)

This technical advice only focuses on GDE matters raised in each of the three technical enclosures and primarily the conclusions of Driscoll 2025.

The Panel for this advice was drawn from the Panel members for the Moolarben OC3 Panel advice (IEAPM 2025) and comprised:

- Em. Professor Bruce Hebblewhite – Moolarben OC3 Extension Project Panel Convenor
- John Ross – Groundwater and GDEs
- Lucy Reading – Groundwater and GDE technical reviewer

Briefings from DPHI were via email. The Panel teleconferenced on 15 August 2025 to discuss the draft advice, to resolve minor issues and to proceed with finalising the advice.

2.0 PREVIOUS STUDIES AND THE PANEL'S PREVIOUS 2025 ADVICE

Potential GDEs were identified across the OC3 extension area in Yancoal 2022, AGE 2022 and Niche 2022. No high priority GDEs were identified, however terrestrial vegetation (particularly the Plant Community Type (PCT) 281 vegetation community) was considered a potential GDE along the creek lines together with potentially small areas associated with valley-side spring discharges. These potential GDEs are supported by:

- Shallow groundwater in the Quaternary alluvium and possibly the palaeochannel sediments adjacent to Moolarben and Murdering Creeks.

¹ Groundwater Dependent Ecosystems (GDEs): Ecosystems that require access to groundwater on a permanent (obligate) or intermittent (facultative) basis to meet all or some of their water requirements so as to maintain their communities of plants and animals, ecological processes and ecosystem services. GDEs include terrestrial vegetation, wetlands (swamps, lakes and rivers) and ecosystems in aquifers and caves (Doody 2019).

- Perched groundwater discharges (springs) at the base of the Triassic sandstone, generally at the contact with the underlaying Permian overburden sediments or within or at the base of Tertiary basalt caps and vents.

The Panel's opinion is that it is highly unlikely there are any GDEs dependent on groundwater in areas underlain by the Permian overburden strata or the underlying Ulan Seam.

In its earlier advice for the Project, the Panel (IEAPM 2025) concluded:

“there is a moderate to high risk that shallow groundwater could be dewatered or become ephemeral in some alluvial areas along Moolarben Creek, thereby reducing the volume of groundwater available for riparian vegetation, and

other GDEs are likely to occur at slightly higher elevation at the base of the Triassic sandstone where there is a contact with the underlain Permian overburden and where groundwater is discharging as seeps and springs”.

3.0 REVIEW OF RECENT TECHNICAL REPORTS

This updated advice is based on a review of the content and conclusions of Driscoll 2025, with supporting information gleaned from AGE 2024, AGE 2025 and Dundon Consulting 2025.

3.1. ALLUVIAL GDES

A shallow alluvial groundwater system underlies the alluvial flats and is probably connected with shallow groundwater in an alluvial palaeochannel that occurs adjacent to the present-day Moolarben Creek on the southern side of the valley.

It is this groundwater system that intermittently sustains some trees within the PCT 281 community. Any depletion of shallow groundwater would reduce the volume of shallow groundwater available for this vegetation community and locally threaten this ecosystem.

The specific conclusions in Driscoll 2025 are reproduced below. The Panel's comments are in bold:

- Areas of PCT 281 within the Project area are considered facultative, rather obligate GDEs².

The Panel agrees.

- No impacts were observed to vegetation equivalent to PCT 281 near previous and current open cut mining at Moolarben.

Noted but inspections have been relatively recent after an extended high rainfall period (Niche 2022 and Driscoll 2025). The Panel understands there has been no long-term monitoring of this vegetation community.

Driscoll (2025) stated that his report follows the general approach for assessing groundwater-dependant ecosystems recommended by Doody (2019). However, the Panel's review reveals that the risk assessment did not follow key

² Facultative Dependence: refers to those GDEs that use groundwater intermittently, optionally or opportunistically rather than solely.

Obligate Dependence: refers to those GDEs that are entirely dependent on groundwater.

recommendations from Doody (2019) including: *“multiple lines of evidence are to be used to determine groundwater dependence where possible”* and management plans are needed which *“include specific monitoring protocols to assess the effectiveness of mitigation strategies or identify expected impacts”*.

The adopted approach is simplistic rather than comprehensive and aligned with best practice.

Groundwater hydrographs of alluvial and paleochannel water levels in monitoring bores across the whole MCO site (Appendix A AGE 2022) suggest water level trends are mostly climate-related and have been largely unaffected by mining (even though the Permian strata have been depressurised and there are extensive regional water table drawdowns in bedrock aquifers).

However, the alluvium in the OC3 extension area downstream of the confluence with Murdering Creek is a little different in that it will be isolated by open cut pits either side of Moolarben Creek. During mining and for some time after open cut pits are backfilled, side slope recharge to the alluvium (via overland flow) will be reduced. Less recharge to the alluvium and deep adjacent mine pits has the potential to drain the small groundwater storage in the alluvial sediments.

- The relatively flat terrain and alluvial soils associated with areas of PCT 281 woodland near Moolarben and Murdering Creek means that rainfall percolates directly into the soil with negligible overland flow. The water requirements of the trees adjacent to the creeks are likely to be primarily or exclusively accessing baseflow water along with soil moisture from direct precipitation.

The Panel agrees that direct rainfall infiltration to the alluvium is high but there would also be some overland flow across the weathered Permian bedrock areas contributing to recharge. This recharge maintains a shallow alluvial water table with down valley sub-surface flow. Large trees within the terrestrial vegetation community would be tapping both soil moisture and occasionally shallow groundwater, especially during drier seasons. If there were stream baseflows these would be discharges from an elevated alluvial water table. Dependence of riparian trees on the baseflow water implies groundwater dependence.

- Rainfall records indicate that in any of nine months of the year maximum rainfall may exceed 100 mm. Close examination of annual totals indicates that ≥ 100 mm generally occurs in two separate months of the year, events that would result in deep soil infiltration.

The Panel agrees these would be major recharge events and would normally sustain a shallow alluvial groundwater system. Side slope recharge to the alluvium is expected to be less during mining operations.

- During mining:
 - For areas of PCT 281 which are considered less or not at all susceptible to groundwater drawdown, open cut mining is proposed on only one side of these areas, maintaining downhill catchment areas (to sustain soil moisture) and connection to baseflow and/or the regional water table (where/if accessed). However, increased elevation combined with a dip in the water table means a proportion of these PCT areas are not currently accessing groundwater.

It is the Panel’s understanding that mining in the upper Moolarben Creek area will only occur on the south-western side of the mapped PCT 281 woodland area (the OC3_06 area) (as shown in Figure 3 of Driscoll 2025 and Figure 4.1 of AGE

2025). The alluvium is likely to be thinner in this area and terrestrial vegetation is less likely to be facultative groundwater dependent and more likely rainfall and runoff dependent. The Panel agrees there is a lesser risk to PCT 281 vegetation in this upper catchment area.

Figure 6 of Driscoll 2025 suggests that PCT 281 in this upstream area is more susceptible to impacts from groundwater drawdown. The figure does not align with the report conclusion that this area is ‘less susceptible to impacts from groundwater drawdown’. The Panel considers this is either a deficiency in the analysis or in the reporting. No methodology is presented in the report on how “potentially less susceptible” and “potentially more susceptible” areas to groundwater drawdown were derived.

The Panel considers this inconsistency between the text and the mapped areas is not a significant issue in formulating its advice.

- *For areas of PCT 281 which are considered potentially more susceptible to groundwater drawdown (i.e. adjacent to Moolarben Creek), trees would have continued access to baseflow and rainfall recharge given the 200 m setback of open cut mining from Moolarben and Murdering Creek.*

It is the Panel’s understanding that mining across the OC3 extension area will occur on both sides of the mapped PCT 281 woodland area below the confluence with Murdering Creek (as shown in Figure 3 of Driscoll 2025) and that the proposed 200m buffer from the creek will protect the alluvial flats. The regional water table in the Permian strata will be depressed across the whole OC3 extension area and the drawdown in the alluvium is predicted to be less than 6m at the ‘end of mining’ within and adjacent to the PCT 281 area (Figure 5 in AGE 2024 reproduced in this advice as Figure 1). The Panel believes that drawdowns in excess of 6m could potentially occur in the alluvium adjacent to each open pit during mining and prior to each pit being backfilled.

AGE (2024) predicts groundwater recovery and some mounding in the former Ulan Seam and reinstated spoil areas post-mining at the ‘end of the recovery period’ but predicts no recovery of the shallow water table in the alluvium and palaeochannel areas (Figure 9 in AGE 2024 reproduced in this advice as Figure 2). The recovery period is not defined in either AGE 2022 or AGE 2024.

The Panel has concerns about these model predictions are highlighted by the fact that:

- The recovery period is not defined (water level recovery periods are likely to be quite different for the Ulan Seam and spoil versus the shallow alluvium, palaeochannel and spoil areas).
- There is no recovery predicted in the alluvium and palaeochannel areas (see Figure 2). This figure is the same as the ‘drawdown at the end of mining’. AGE 2024 states that “*open cuts would be backfilled, which would restore pre-mining hydraulic gradients and allow water levels to recover.*” This statement is inconsistent with no predicted recovery in alluvial water levels post-mining.

For the reasons stated in the Panel’s previous advice for the OC3 extension project (IEAPM 2025), the Panel has low confidence in the model predictions at a local scale due to inadequate hydrogeological characterisation, lack of baseline data, and deficiencies in the regional groundwater model. There is an

elevated risk to facultative GDEs both during and post mining as shallow groundwater impacts in the alluvium could be greater than predicted.

In its previous advice (IEAPM 2025), the Panel stated:

“It is critical that the installation of new monitoring bores to collect baseline data occurs prior to the commencement of the first open cut pit in Stage 1. The Panel recommends that all new monitoring sites be installed at least 12 months in advance of the commencement of mining in the Stage 1 area to capture sufficient baseline information.”

Once sufficient baseline data is available, updated numerical modelling is required to improve drawdown and recovery predictions for all groundwater systems across the OC3 extension area, particularly the alluvial groundwater system that supports potential GDEs. The Panel reiterates its recommendation to:

“Update and recalibrate the groundwater model within 18 months of site-specific data being available for the extension project area”

Long-term drawdown of 5-6m could dewater the alluvium and remove the availability of this groundwater to the facultative GDEs along the creek lines. It is uncertain whether the larger trees within this vegetation community could be sustained by just rainfall and soil moisture, especially during extended dry periods. There will be no ‘baseflow’ if water levels decline and shallow groundwater drains.

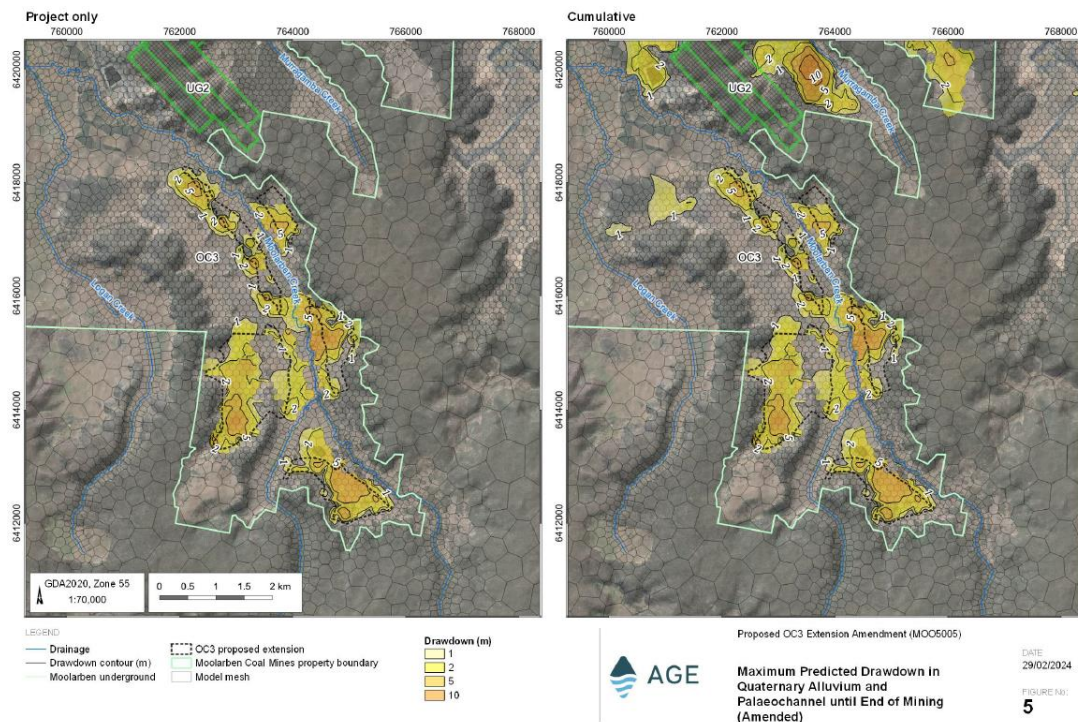


Figure 1: Maximum Predicted Drawdown in the Quaternary Alluvium and Palaeochannel until end of Mining (Figure 5 from AGE 2024)

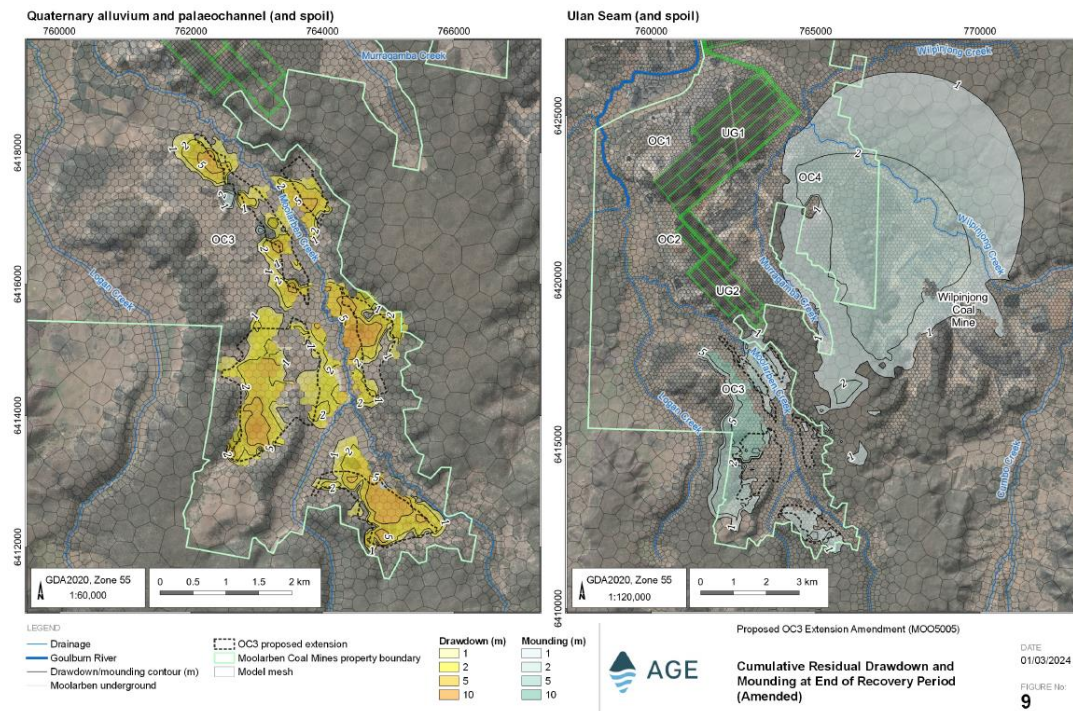


Figure 2: Cumulative Residual Drawdown and Mounding at the End of Recovery Period (Figure 9 from AGE 2024)

There is no new or additional commentary in AGE 2025 on potential GDEs. The conclusions of Driscoll 2025 are repeated in their report.

Panel comments on the GDE conclusion of Dundon Consulting (2025) are:

- Having briefly reviewed the conclusions of Colin Driscoll’s report (Hunter Eco, 2025) regarding the presence/absence of GDEs, and my understanding of the dependence of the GDEs identified on the groundwater, I am of the opinion that the potential for adverse impact on GDEs from the proposed OC3 Extension Project is minimal.

The Panel maintains there is a moderate risk that shallow groundwater beneath the alluvial flats will be dewatered or become ephemeral in some areas along Moolarben Creek that could potentially affect facultative GDEs for the reasons stated above.

Insufficient site-specific information has been collected so far to adequately assess the nature of groundwater dependence for the identified potential GDEs or the potential impacts on these GDEs. GDE monitoring programs “*may take years to produce sufficient data to reduce uncertainty about how dependant GDEs are on groundwater or to quantify the relevant thresholds of change in groundwater condition that will affect GDEs*” (Doody 2019).

If the project is approved, the Panel recommends an approval condition that requires monitoring and management of potential terrestrial GDEs outside of the disturbance extent within the Project Area, particularly those within the buffer area of Moolarben and Murdering Creeks that are potentially more susceptible to drawdown in the alluvial groundwater system. This monitoring should be supported by an appropriate alluvial groundwater monitoring network (as recommended in IEAPM 2025) that provides early warning of declining water levels.

The risk to facultative GDEs could be effectively managed under such a condition if it includes a requirement for updated management plans to be submitted for approval with appropriate water level triggers and management responses to protect these GDEs.

3.2. TRIASSIC SANDSTONE GDES

A number of springs have been identified in the upper catchments of Moolarben and Murdering Creeks. These are most likely discharges from porous layers or fractures in the Triassic sandstone at the contact with the underlying Permian strata or are associated with Tertiary basalt caps and vents. They occur at elevations ranging between 610 and 620 mAHD. Four springs are shown in AGE 2025 (Figure 4.1). They are all located on the southern or western flank of the catchment and are:

- Pine Mount Spring (located closest to the OC3 extension area – pit OC3_02)
- Coonaroo Spring
- Spring/Ferns
- MGNR Spring (most remote from the OC3 extension area)

No springs have been identified on the northern flank of the catchment except for one ‘regional groundwater feature’ (Figure 8.1 in AGE 2024). Vegetation was inspected close to this site (Site 15 in Driscoll 2025) and found no evidence of groundwater dependent vegetation. Given no perched groundwater discharges were evident, and the expected depth to the regional water table is tens of metres, these areas are not considered groundwater dependent.

Pine Mount Spring and Coonaroo Spring were visited in May 2025 (Driscoll 2025) and found to support ferns in the vicinity of each spring. The report is silent on whether any of the adjacent trees are facultative or obligate dependent GDEs.

Driscoll’s specific conclusion is:

- Forest areas that occur above the Permian/Triassic interface are not groundwater dependent and therefore would not be impacted by potential loss of water from perched aquifers, being dominated by White Box (*Eucalyptus albens*), Narrow-leaved Ironbark (*Eucalyptus crebra*) and Grey Gum (*Eucalyptus punctata*).

The Panel agrees that most forested areas located on the Permian overburden and immediately above the Permian/Triassic interface are not groundwater dependent.

However, the few spring areas known on the southern flank of the catchment locally support small areas of dependent vegetation from perched groundwater discharges from either the Triassic sandstone or Tertiary basalt. These should be unaffected by the extension project.

The Panel concludes there is a low to negligible risk that spring discharges from the Triassic sandstone or Tertiary basalt will be impacted and affect any locally dependent vegetation.

3.3. SUMMARY CONCLUSION

Driscoll’s summary conclusion is that the groundwater dependence of the trees in the PCT 281 woodland community at the base of the valley is unlikely at the creek edges, to possible for those trees across the adjoining flats, to not at all for those trees on the lower slopes of the surrounding ranges.

The Panel agrees with this conclusion in relation to the PCT 281 woodland located off the Moolarben/Murdering Creek alluvium on the lower slopes (being not dependent) and beneath the alluvial flats (being possibly dependent). However, the Panel believes that the trees at the creek edges (primarily riparian vegetation) could also be groundwater dependent because of shallow groundwater levels in the underlying alluvium and the lack of permanent streamflow.

The Panel's conclusions regarding potential GDE impacts are:

1. There is a moderate risk that shallow groundwater beneath the alluvial flats will be dewatered or become ephemeral in some areas along Moolarben Creek that could potentially affect facultative GDEs. This loss of shallow groundwater could occur for an extended period, as it will take time to reestablish a permanent water table in the reinstated mine voids, and for recharge processes to recover a shallow water table in the alluvium.
2. There is a low to negligible risk that spring discharges from the Triassic sandstone or Tertiary basalt will be impacted and affect any locally dependent vegetation because this groundwater is perched and should not be impacted by declines in the regional water table in the underlying Permian strata.

4.0 CONCLUSIONS

After a review of the following technical reports:

- Enclosure 1 – Review of Risk to Groundwater Dependent Vegetation (Driscoll 2025)
- Enclosure 2 – Response to Groundwater Comments in IEAPM Advice Report (AGE 2025)
- Enclosure 3 – Groundwater Model Conceptualisation and Predictions (Dundon Consulting 2025)

the Panel has concluded the level of risk to GDEs along Moolarben/Murdering Creek and at higher elevations at the base of the Triassic sandstone is as follows:

1. There remains a moderate risk that shallow groundwater beneath the alluvial flats will be dewatered or become ephemeral in some areas along Moolarben Creek that could potentially affect facultative GDEs.
2. There is a low to negligible risk that spring discharges from the Triassic sandstone or Tertiary basalt will be impacted and affect any locally dependent vegetation.

5.0 RECOMMENDATIONS

In respect of monitoring and protecting GDEs within and adjacent to the Moolarben OC3 extension area, the Panel recommends that if the project is approved, approval conditions should include conditions that require:

1. Monitoring and management of potential terrestrial GDEs outside of the disturbance extent within the Project Area, particularly those within the buffer area of Moolarben and Murdering Creeks that are potentially more susceptible to drawdown in the alluvial groundwater system. This monitoring should be supported by an appropriate alluvial groundwater monitoring network (as recommended in IEAPM 2025) that provides early warning of declining water levels.

The risk to facultative GDEs could be effectively managed under such a condition if it includes a requirement for updated management plans to be submitted for approval with appropriate water level triggers and management responses to protect these GDEs.

2. Updating and recalibrating of the groundwater model within 18 months of site-specific data being available from the new monitoring bore network so that there are improved drawdown and recovery level predictions within the reinstated spoil areas and alluvial groundwater system.

REFERENCES

AGE (2022). *Moolarben Coal Complex OC3 Extension Project – Groundwater Impact Assessment*. Version 2.01 dated November 2022.

AGE (2024). *Moolarben Coal Complex OC3 Extension – Groundwater Amendment*. Version 2.01 dated March 2024.

AGE (2025). *Moolarben OC3 Extension Project – Response to Groundwater Comments in IEAPM Advice Report*. Enclosure 2 of Yancoal 2025 dated 11 July 2025.

Doody TM, Hancock PJ, Pritchard JL (2019). *Information Guidelines explanatory note: Assessing groundwater-dependent ecosystems. Report prepared for the Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development through the Department of the Environment and Energy*, Commonwealth of Australia 2019.

Driscoll (2025). *Moolarben OC3 Extension Project – Review of Risk to Groundwater Dependent Vegetation*. Enclosure 1 of Yancoal 2025 dated 8 July 2025.

Peter Dundon Consulting (2025). *Moolarben OC3 Extension Project – Groundwater Model Conceptualisation and Predictions*. Enclosure 3 of Yancoal 2025 dated 14 July 2025.

IEAPM (2025). *Advice Re: Moolarben Coal Complex OC3 Extension Project (SSD-330833580)*. IEAPM Report – IEAPM 202504-01 dated 17 April 2025.

Niche (2022). *Moolarben Coal Complex OC3 Extension Project – Biodiversity Assessment Report*. Report dated 4 November 2022.

Yancoal (2022). *Moolarben Coal Complex OC3 Extension Project – EIS Appendix S Groundwater Dependent Ecosystem Assessment*.

Yancoal (2025). *Cover Letter - Moolarben OC3 Extension Project – Additional Response to Advice from the Independent Expert Advisory Panel for Mining*. Letter dated 16 July 2025.

APPENDIX A – REQUEST FOR ADVICE

From: Gen Lucas <Gen.Lucas@planning.nsw.gov.au>
Sent: Thursday, July 31, 2025 11:49 AM
To: Karl Fetterplace <Karl.Fetterplace@dpie.nsw.gov.au>
Cc: Steve O'Donoghue <Stephen.ODonoghue@planning.nsw.gov.au>
Subject: Request for targeted advice re: GDEs - MCO OC3

Hi Karl

As discussed yesterday, the Department has refined the request to the panel regarding additional information submitted by Moolarben. The request is as follows:

Please can the groundwater experts on the panel review the additional information attached (GDE GW Advice dated July 2025).

Notwithstanding that the panel's recommendations from its advice report will be incorporated into any recommended conditions of consent, the Department is seeking to understand whether the panel supports conclusions made in the additional information provided by Moolarben about the level of risk to groundwater dependent ecosystems along Moolarben/Murdering Creek and at higher elevations at the base of the Triassic sandstone?

The panel should feel free to provide any other advice in response to this information.

Please let me know if you have any questions.

Thanks

Gen

Gen Lucas

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I acknowledge the traditional custodians of the land and pay respects to Elders past and present. I also acknowledge all the Aboriginal and Torres Strait Islander staff working with NSW Government at this time.

APPENDIX B – PANEL BIOGRAPHIES

Emeritus Professor Bruce Hebblewhite (Panel Convener for this advice)

Bruce Hebblewhite is an Emeritus Professor and was formerly the Professor of Mining Engineering at the University of New South Wales (UNSW) until his retirement from UNSW in 2020. He has over 45 years of international mining experience, specialising in the fields of underground mining systems, geomechanics, mine safety and risk management. He has held senior positions with Australian Coal Industry Research Laboratories (ACIRL Ltd), has served 25 years at the UNSW including 12 years as the Head of Mining Engineering, and was also the Secretary General of the international Society of Mining Professors. He was also the Chair of the NSW Independent Panel for the Southern Coalfield Inquiry (2008).

John Ross

John Ross is a Senior Principal Hydrogeologist with over 40 years' experience specialising in water resource, site contamination, infrastructure, mining and natural resource impact assessment and management. His specialty is sedimentary basin hydrogeology, particularly the Great Artesian Basin, Sydney-Gunnedah and Gloucester basins here in NSW. John has held specialist management roles in public and private corporations and environmental consultancies. He has a Bachelor of Science (Geology) and a Certificate in Engineering Hydrology and Groundwater Hydrology.

John provides technical hydrogeological expertise and advice across the spectrum of water resource development, environmental/water planning, assessment and management projects, including environmental impact assessments, environmental audits and technical peer reviews, monitoring programs, remedial action plans, modelling and groundwater licensing matters. John also has extensive experience in community and regulatory consultation across the eastern seaboard.

Associate Professor Lucy Reading

Lucy Reading is an Associate Professor of Hydrogeology at the Queensland University of Technology (QUT). She has completed a Bachelor of Applied Science (Honours) at QUT and a Doctor of Philosophy in Environmental Engineering at the University of Queensland. Dr Reading now specialises in setting up groundwater monitoring networks with communities, assessing groundwater and surface water resources (quantity and quality) and assessing impacts of mining activities on groundwater. Lucy has over 20 years of experience in groundwater investigations, including roles with the University of Queensland and the Queensland Government.

Emeritus Professor Jim Galvin (IEAPM Chair) – Ex-officio

Professor Galvin is an Emeritus Professor (University of New South Wales) in Mining Engineering and former member of the NSW Planning Assessment Commission. He has professional qualifications in science, engineering and mine management and extensive international experience in mining and geotechnical engineering, risk management and workplace health and safety. Professor Galvin is one of the world's foremost experts on underground coal mining and ground subsidence. He was a member of the Independent Panel for the Southern Coalfield Inquiry (2008), several subsequent reviews of mining projects in the Southern Coalfield and most recently, Chair of the Independent Expert Panel on Mining in the Catchment.