

14 March 2025

Department of Planning, Housing and Infrastructure

Attention: Stephen O'Donoghue, Director Resource Assessments

Dear Stephen,

RE: MOOLARBEN OC3 EXTENSION PROJECT – RESPONSE TO CPHR AND NPWS RECOMMENDATIONS

On 25 November 2024, Moolarben Coal Operations Pty Ltd (MCO) lodged its response to agency Requests for Information on the Moolarben OC3 Extension Project (SSD 33083358) (the Project). On 12 February 2025, the Conservation Programs, Heritage and Regulation Group (CPHR) (within the NSW Department of Climate Change, Energy, the Environment and Water) and NSW National Parks and Wildlife Service (NPWS) provided an additional response in the form of recommendations for the Project, including recommended approval conditions.

MCO considers that the majority of the 39 recommendations provided by CPHR and NPWS could be addressed through conditioning of the Project in a Development Consent.

The CPHR and NPWS recommendations are considered to be either generally consistent with conditions of approval for the existing Moolarben Coal Complex operation and/or reflect commitments made by MCO for the Project. Enclosure 1 of this letter provides a response to each recommendation from CPHR and NPWS (i.e. Attachment A of the CPHR 12 February 2025 letter), including suggested amendments where required to align wording with the Project as proposed and any requirements of relevant legislation, guidelines and policies.

Enclosure 2 of this letter provides a revised version of Table G-1.2 from the *Reconciliation of Bilateral Assessment Requirements* (provided as Attachment G of the *Response to Recommendations from BCS and NPWS* [MCO, 2024]) to incorporate additional information as requested by CPHR in Recommendation 39 of the letter.

Should the Department have any queries regarding the information provided in this letter, please do not hesitate to contact the undersigned.

Yours sincerely,



Michael Moore
Group Manager – Approvals
Yancoal Australia Ltd

List of Enclosures

Enclosure 1: Response to CPHR/NPWS Recommendations (Attachment A of CPHR/NPWS Advice Letter).

Enclosure 2: Revised Table G-1.2 from Reconciliation of Bilateral Assessment Requirements (Attachment G of MCO Response to Recommendations from BCS and NPWS [MCO, 2024]).

ENCLOSURE 1

**RESPONSE TO CPHR/NPWS RECOMMENDATIONS
(ATTACHMENT A OF CPHR/NPWS ADVICE LETTER)**

MOOLARBEN OC3 EXTENSION PROJECT
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No.	Recommendation	Response
Recommendations on Residual Matters		
1	<i>The consent authority consider NSW DCCEEW advice on the impact to SAI entities when considering project approval.</i>	MCO agrees with CPHR that it is the role of the decision maker to determine whether the residual impacts of a development (i.e. considering proposed avoidance and mitigation measures) are serious and irreversible impacts (SAI), and to determine whether there are any additional and appropriate measures that will minimise those impacts.
2	<i>Evaluate the high biodiversity values being impacted, and opportunities to further avoid and minimise impacts, in considering whether to approve the project.</i>	The Project has demonstrably included reasonable avoidance, minimisation and mitigation of biodiversity values in accordance with Section 10 (3a) of the <i>NSW Biodiversity Assessment Method</i> (DPIE, 2020) (the BAM). Further information has been provided in the Submissions Report (MCO, 2024a), Amendment Report (MCO, 2024b) and Consolidated Response to Agency RFI (MCO, 2024c). The <i>Biodiversity Assessment Method 2020 Operational Manual – Stage 2</i> (DPE, 2023) states: <i>Reasonable measures will vary with the circumstances of each proposal and may be somewhat subjective. This provides decision-makers with discretion to consider each proposal on merit.</i> Accordingly, it is the role of the determining authority to assess whether the avoidance incorporated for the Project is reasonable. When compared to the EIS (which already incorporated significant avoidance), the Project achieves the following: • Avoidance of any mining-related disturbance within at least 100 m of the Munghorn Gap Nature Reserve (in most areas disturbance is greater than 100 m from the boundary). • Avoidance of clearance of any mapped rocky habitat and breeding habitat associated with threatened bat species (i.e. Large-eared Pied Bat and Eastern Cave Bat) and the Broad-headed Snake. • Approximately 59% (i.e. 50 ha) less disturbance of the woodland component of Box-Gum Woodland CEEC compared to the Project EIS. • Approximately 56% (i.e. 103 ha) less disturbance of Regent Honeyeater Important Habitat Mapping compared to the Project EIS. • A revised conceptual post-mining land use which incorporates additional areas of native woodland (from approximately 325 ha to 535 ha) and an increase to the proposed Habitat Enhancement Area extent (from approximately 160 ha to 188 ha) (additional to meeting the required biodiversity offset obligation).

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No.	Recommendation	Response
3	<i>If the project is approved, include consent conditions requiring preparation and implementation of a site-specific blast management plan. The blast management plan should include measures to mitigate blast related impacts to threatened species and their habitats, and include conditions that:</i> <i>a. Set an upper limit Peak Particle Velocity (PPV) based on the most sensitive geological structures/ poorest quality rock identified at the rocky habitat to ensure that the level of damage to geological features within the nature reserve would be indistinguishable from natural processes.</i> <i>b. Establish a regular monitoring and reporting schedule for any blast-related and vibration impacts to rocky habitat.</i> <i>c. Require adaptive management measures with a quantifiable and measurable trigger, action, response plan addressing impacts to rocky habitat.</i> <i>d. Implement immediate stop work actions in the event that major damage to the rocky habitat occurs, including detailed management measures for all threatened species to address the impact of the damage to their habitat.</i> <i>Commitments to addressing the above items should be made prior to consent and in consultation with NSW DCCEE.</i>	MCO considers that this recommendation could be addressed through conditioning in a Development Consent for the Project. It is proposed the existing Moolarben Coal Complex Blast Management Plan would apply to initial Project operations where there is no potential for impacts to sensitive geological features (i.e. open cut mining areas directly adjacent to the existing OC3 mining area). A Project-specific Blast Management Plan and Bat Monitoring Programme (to be included as a subcomponent of the existing Moolarben Coal Complex Blast Management Plan in a future revision) would be prepared and approved prior to blasting within 500 m of mapped sensitive geological features.
4	<i>If the project is approved, a commitment must be made prior to consent which secures additional and appropriate measures for Box Gum Woodland CEEC and regent honeyeater.</i>	Additional and appropriate measures are only relevant if it is determined impacts are SAIL. Advice from independent experts Dr Colin Driscoll and Dr Stephen Debus concluded the Project is not likely to significantly contribute to the extinction of Box-Gum CEEC or Regent Honeyeater, and therefore should not be regarded as SAIL.

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No.	Recommendation	Response
5.1	<i>Explain how the potential presence of Box Gum Woodland CEEC has been considered within the land categorisation method (for the remaining land mapped within the BDAR as Category 1 – Exempt). This explanation should clearly assess whether the CEEC is present or absent with reference to the NSW Scientific Committee final determination. In particular, the explanation against the final determination should rectify currently identified deficiencies in the assessment including by:</i> <i>a. Presenting relevant analysis of the floristic data from all contemporary assessments on the site (ELA summer 2022, Niche winter 2023, Niche spring 2024, BAM data, and any other relevant context available from the threatened flora surveys and rapid data point information). The supporting data should be provided in Excel form with corresponding GIS shapefiles with consistent plot/transect naming.</i> <i>b. Demonstrating consideration of the landscape context of the outstanding areas and the adjoining PCT and CEEC mapping.</i>	Dr Colin Driscoll has considered the potential presence of Box-Gum Woodland CEEC within grassland areas against the Final Determination and confirmed the areas of mapped Category 1 – Exempt Land within the Project area do not contain Box-Gum Woodland CEEC. Following review of additional floristic data against the BioNet database, Final Determination, and the consideration of first-hand accounts from previous landowners of extensive ploughing, cropping and application of fertilisers within these areas, Dr Driscoll concluded: <i>.. the exotic grassland in the Target areas bears no resemblance to the DNG form of either PCT 281 or Box-Gum Woodland CEEC, as a consequence of having been subject to continuous agricultural production and conversion to cropping since as early as 1950.</i> As Dr Driscoll concluded no Box-Gum Woodland CEEC was present within the 'exotic' grassland areas, the <i>Interim Grasslands and other Groundcover Assessment Method</i> (Office of Environment and Heritage, 2017) was available to assess the conservation value of the grassland which confirmed the previous conclusion that the areas are Category 1 – Exempt Land. Niche's (2024) conclusions for Category 1 - Exempt Land mapping within the Project area generally conform with the Draft Native Vegetation Regulatory Map, which maps large areas of the Moolarben Valley as Category 1 – Exempt Land. Further information is provided in Attachments C and D of the RFI Response to BCS/NPWS from November 2024 (Niche, 2024) (Driscoll, 2024).
5.2	<i>Detail how the consolidated available floristic data and land use history has been used to excise parts of the site from the project Box Gum Woodland CEEC mapping, with justification against the final determination.</i>	
5.3	<i>Where absence of Box Gum Woodland CEEC cannot be determined, or presence is assumed, assess the land in accordance with the BAM.</i>	As detailed above, Dr Colin Driscoll has confirmed the areas of mapped Category 1 – Exempt Land within the Project area do not contain Box-Gum Woodland CEEC. No further assessment required.
6.1 (Also 33.2a)	<i>Apply a standard 500 metre buffer from the outer boundary of the MOC 3 Extension to Munghorn Gap Nature Reserve to ensure adequate protection of land reserved under the National Parks and Wildlife Act 1974.</i>	A 500 m buffer is not necessary to provide suitable protection to the Munghorn Gap Nature Reserve. Refer to Recommendation 6.2 below which outlines alternative recommendation.

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No.	Recommendation	Response
6.2 (Also 33.2b)	<i>Alternatively, if the consent authority decides to grant the MCO extension the 100 metre minimum buffer, the approval be conditioned:</i>	
	a. <i>to establish and maintain the minimum 100 metre buffer, but allow for variable buffer applications where permitted, ensuring no encroachment of any MCC OC3 operations into the established 100 metre buffer, and</i>	MCO considers that this recommendation could be addressed through conditioning in a Development Consent for the Project.
	b. <i>to require as part of the Trigger Action Response Plan (TARP) set criterion regarding detected impacts to Munghorn Gap Nature Reserve, immediate notification to NPWS, and where an adverse, or significant impact is detected, immediate implementation of the 500 metre buffer, affecting all future staged operations at the MCC MOC3 Extension.</i>	MCO would accept a condition for the Project requiring preparation and implementation of a Trigger Action Response Plan (TARP) for potential impacts to sensitive geological features (e.g. as a result of blasting) when mining within 500 metres of the Munghorn Gap Nature Reserve, including notification of NPWS for specified trigger levels/events, in addition to other appropriate response and investigation actions. A 500 m buffer is not necessary to provide suitable protection to the Munghorn Gap Nature Reserve. Any TARP would be prepared with multiple trigger levels to provide sufficient early warning of potential impacts greater than predicted, triggering appropriate investigation and review.
6.3	<i>Include the approved buffer zone within the new habitat enhancement area, allowing for the restoration and management of the plant community types adjoining Munghorn Gap Nature Reserve to improve the effectiveness of the buffer and reduce the impacts of MCC operations on Munghorn Gap Nature Reserve.</i>	MCO considers that this recommendation could be addressed through conditioning in a Development Consent for the Project. It is noted that these areas would be subject to ongoing management to maintain and/or improve native vegetation and habitat in accordance with the existing Moolarben Coal Complex Biodiversity Management Plan, which is proposed to be updated to incorporate the Project.

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6.4	<i>Revise the MCC Biodiversity Management Plan, to include the agreed:</i> <i>a. Habitat Enhancement Area as a subplan. The Habitat Enhancement Area should deliver on the revegetation of derived native grassland/cleared land to Box-Gum Woodland CEEC along Moolarben and Murdering Creek supporting the ecological restoration of the woodland to achieve the 535 hectare or greater increase.</i> <i>b. Pest management program/s (weeds and animal pests) to cover the habitat enhancement area and the Munghorn Gap Nature Reserve buffer zone, co-ordinating program delivery with NPWS Mudgee Area.</i> <i>c. Noisy Miner (Manorina melanocephala) monitoring and management program, including the habitat enhancement area and the Munghorn Gap Nature Reserve buffer zone, to address this key threatening process.</i> <i>d. Exclusion fencing, but only if required to protect the Pomaderris cotoneaster populations. Any fencing along the Munghorn Gap Nature Reserve interface is to accord with the NPWS (2020) Boundary Fencing Policy (https://www2.environment.nsw.gov.au/topics/parks-reserves-and-protected-areas/parkpolicies/boundary-fencing) and not adversely affect the values of Munghorn Gap Nature Reserve. No access or clearing is permitted on Munghorn Gap Nature Reserve unless authorised by NPWS under the NPW Act.</i>	MCO considers that this recommendation could be addressed through conditioning in a Development Consent for the Project. It is noted that the 535 ha area mentioned in 6.4(a) has been incorrectly quoted by CPHR as associated with the Habitat Enhancement Area. The Project proposes to rehabilitate <u>535 ha of the final landform</u> to native woodland, and revegetate <u>135 ha of the Habitat Enhancement Area</u> to native woodland. MCO agrees to continue coordinating with NPWS on pest and weed management programs within adjoining land.
6.5	<i>Apply the National Light Pollution Guidelines for Wildlife, DCCEEW, Canberra, May 2023 (Cth DCCEEW 2023,) for lighting design and standards for the MOC3 Extension (https://www.dcceew.gov.au/environment/biodiversity/publications/national-light-pollutionguidelines-wildlife).</i>	MCO considers that this recommendation could be addressed through conditioning in a Development Consent for the Project. MCO has committed to implementing ‘good-lighting principles’ for the Project, where practicable and without compromising operational safety.
7.1	<i>Monitoring of noise and vibration impact affecting Munghorn Gap Nature Reserve, as:</i> <i>a. construction and operational noise at publicly accessible areas on Munghorn Gap Nature Reserve as Moolarben Picnic Area, Castle Rocks Walking Track and Honeyeater Flat, and</i> <i>b. blasting activity noise as it affects publicly accessible areas on Munghorn Gap Nature Reserve, and</i> <i>c. construction, operational and blasting activity at the interface of Munghorn Gap Nature Reserve, and at key habitat and cultural sites to ensure impacts are adequately monitored to inform the Tarp.</i>	MCO considers that this recommendation could be addressed through conditioning in a Development Consent for the Project. Attended noise monitoring would continue to occur at the nearest publicly accessible area, the Moolarben Picnic Area, for the Project (consistent with existing operations) and MCO would accept a condition requiring implementation of additional monitoring at other publicly accessible areas within the Munghorn Gap Nature Reserve, where practicable and subject to NPWS granting access. Installation of any additional monitors adjacent to the Munghorn Gap Nature Reserve is subject to further assessment, consultation with NPWS (considering potential access restrictions, environmental impacts and safety considerations) and, where relevant, land access being secured.

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7.2	<i>Background noise levels affecting Munghorn Gap Nature Reserve are to accord with residential area in a conservation zone under the Noise Policy for Industry (NSW EPA, 2017) setting thresholds as daytime.</i> ... <i>NPWS retains the position that all lands reserved and acquired under the NPW Act are for a conservation purpose (protection of natural, cultural, and social values significant to the State of NSW) and should be identified as a sensitive receiver, especially where visitor precincts (camp areas) are present with respect to the Noise Policy for Industry (NSW EPA, 2017). In the NPFI application the preferred comparison is to a residential area forming part of a conservation zoning under a local environmental plan which sets the background noise levels (daytime) as < 40dB(A) and (nighttime) as <30dB(A) LAeq(15min).</i>	MCO considers that this recommendation could be addressed through conditioning in a Development Consent for the Project. In relation to noise, the NPWS Guideline <i>Developments adjacent to National Parks and Wildlife Service lands: Guidelines for consent and planning authorities</i> (NPWS, 2020) provides that potential noise from a development should not affect the ‘amenity or public enjoyment’ of adjacent NPWS land. This is addressed in the NSW EPA’s (2017) <i>Noise Policy for Industry</i> (the NPfi), which provides a recommended amenity noise trigger level of 50 dB(A) $L_{Aeq}(15min)$ for ‘areas specifically reserved for passive recreation (e.g. national park)’ when in use. (i.e. publicly accessible areas reasonably expected to be used by people within the Munghorn Gap Nature Reserve). The closest publicly accessible areas of the Munghorn Gap Nature Reserve to the Project are the Moolarben Picnic Area, Castle Rocks Walking Track and Honeyeater Flat (all located greater than 800 m from the Project footprint). The noise trigger level for passive recreation areas specified in the NPfi is consistent with criteria in existing Project Approval conditions for the Moolarben Coal Complex. The Project (cumulatively with the Moolarben Coal Complex) is predicted to comply with the 50 dB(A) limit at all publicly accessible areas of the Munghorn Gap Nature Reserve. NPWS states that the noise trigger level for the Munghorn Gap Nature Reserve should be set at typical <u>background</u> levels for a ‘rural residential receiver’ as per the NPfi. This is a misapplication of the NPfi which provides a noise trigger level of 5 dB(A) <u>above</u> background noise levels. Potential indirect impacts to biodiversity from noise is outside the scope of the NPfi. These matters have been addressed in the BDAR (Niche, 2024). A noise level of 50 dB(A) is considered less than a ‘normal conversation’ and would not likely be disruptive to wildlife. Existing operations at the Moolarben Coal Complex and Wilpinjong Coal Mine are approved beyond the life of the Project (i.e. until 2038), and therefore noise levels consistent with the NPfi and Moolarben Coal Complex Project Approval limits for the Munghorn Gap Nature Reserve will continue irrespective of the Project. A wide range of fauna, including threatened species, have been recorded directly adjacent to operating mining areas following the commencement of Wilpinjong Coal Mine and Moolarben Coal Complex, indicating fauna have continued to inhabit the surrounding land despite this approved operational noise from mining activities.

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7.3	<i>Trigger Action Response Plan (TARP) noise thresholds as it affects Munghorn Gap Nature Reserve shall include escalation and reporting based on exceedance of thresholds and detected levels of impact. Where impacts are deemed adverse or significant, the TARP action to initiate a greater buffer zone (500 metres preferred).</i>	Refer to response to Recommendation 6.2b.
8.1	<i>Restrict the threshold criteria to an upper vibration limit of 50 millimetres per second (mm/s) peak particle velocity (PPV) for good quality rock, and 25 mm/s for poor quality rock, and ensure no damage occurs to sensitive geological features.</i>	MCO considers that this recommendation to protect mapped rocky habitat and sensitive geological features within the Project area and the Munghorn Gap Nature Reserve could be addressed through conditioning in a Development Consent for the Project.
8.2	<i>Restrict blasting activity to the damage category of “indistinguishable” on Munghorn Gap Nature Reserve applying performance criteria “no impact on or to the landscape within Munghorn Gap Nature Reserve, with no visible change in condition or visible change to defect apertures and a person at the site at the time of blasting would not observe or hear material falling off the slopes.”</i>	MCO considers that this recommendation could be addressed through conditioning in a Development Consent for the Project. A performance measure of "no damage that is distinguishable from natural processes" for the Munghorn Gap Nature Reserve and mapped rocky habitat is proposed for the Project.
8.3	<i>Prepare a site-specific blast management plan for the MOC3 Extension Project to:</i> a. <i>state objectives, set out blast design, execution, controls and enable adaptive management to reduce impacts and risks to Munghorn Gap Nature Reserve, adhering to performance criterion,</i> b. <i>confirm standards applied to assessment and management of blasting activity overpressure and vibration,</i> c. <i>define, identify, map, and set criterion around what constitutes good or poor-quality rock, rocky habitat, and culturally sensitive sites (Aboriginal rock shelters, providing an overall map showing distance from the MOC3 Extension Area (Operational Area),</i> d. <i>identify environmental and safety risks attached to blasting activities and apply suitable mitigation measures, and</i> e. <i>set the monitoring framework for noise and vibration, as agreed under Residual Matter 7.1 and the Bat monitoring program covering geological formations which form part of the large-eared pied Bat and eastern cave bat identified habitat. Identify monitoring locations and allow for direct data transfer to allow for immediate adjustments to blasting parameters if thresholds are exceeded.</i>	MCO considers that this recommendation could be addressed through conditioning in a Development Consent for the Project. A Project-specific Blast Management Plan and Bat Monitoring Programme (to be included as a subcomponent of the existing Moolarben Coal Complex Blast Management Plan in a future revision) would be prepared and approved prior to blasting within 500 m of sensitive geological features (i.e. cliffs, minor cliffs and rock face features, as per the definition on the Moolarben Stage 2 Project Approval [08_0135]) and mapped rocky habitat.

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No.	Recommendation	Response
8.4 (Also 32.1f)	<i>Include in the TARP blasting activity actions for Munghorn Gap Nature Reserve, where exceedance of thresholds occurs in Residual Matter 8.1 or non-compliance with performance criterion from Residual Matter 8.2. Include detailed analyses of any incidents, corrective actions, and notification protocols to ensure NPWS is informed. As per Residual Matter 7.3, include escalation linked to measurable impacts to Munghorn Gap Nature Reserve, with a TARP action to initiate a greater buffer zone (500 metres preferred).</i>	Refer to response to Recommendation 6.2b.
Recommendations on the RFI		
1.3	If the project is approved, ensure that the 405 species credits calculated for prescribed impacts to pink-tailed legless lizard are included in the consent conditions.	MCO considers that this recommendation could be addressed through conditioning in a Development Consent for the Project.
3.3c	<i>If the project is approved, include consent conditions that:</i> <i>Define a performance measure of indistinguishable damage on sensitive geological features.</i> <i>Set an upper blast vibration limit based on the Peak Particle Velocity threshold criteria for sensitive geological structures.</i> <i>Set an airblast overpressure maximum limit that effectively mitigates airblast impacts on threatened species and their habitats outside the development footprint.</i> <i>Require a blast management plan that includes pre-blast and post-blast monitoring, recording, and reporting along with a quantifiable and measurable trigger, action, response plan.</i>	MCO considers that this recommendation could be addressed through conditioning in a Development Consent for the Project. A performance measure of "no damage that is distinguishable from natural processes" for the Munghorn Gap Nature Reserve and mapped rocky habitat is proposed for the Project. It is noted that potential blast impacts from the Project would be mitigated by the proposed blast vibration limits and monitoring program, in accordance with industry best practice and standards. An airblast overpressure maximum limit is not considered to be required in addition to the blast vibration limit. A Project-specific Blast Management Plan and Bat Monitoring Program would be prepared as described above.
4.1c	<i>If approved, include consent conditions requiring:</i> <i>Monthly visual inspections of mapped rocky habitat closest to blast locations before and after the associated blasts to determine whether blast-related impacts have occurred. Document these inspections with georeferenced photographic evidence.</i> <i>The blast management plan is to be prepared in consultation with CPHR.</i>	MCO considers that this recommendation could be addressed through conditioning in a Development Consent for the Project. The Project-specific Blast Management Plan would outline the proposed monitoring program for key representative mapped rocky habitat features within a reasonable extent of Project operations, including real-time vibration monitoring and visual inspections (on a minimum 6-monthly basis).
5.1a	<i>If approved, impose noise criteria conditions at Munghorn Gap Nature Reserve and Goulburn River National Park limiting noise levels in accordance with the NSW EPA Noise Policy for Industry (EPA, 2017).</i>	MCO considers that this recommendation could be addressed through conditioning in a Development Consent for the Project. The NSW EPA NPfI provides noise criteria relevant to National Parks and Nature Reserves (i.e. 'recreational areas'). The existing Moolarben Coal Complex operates in accordance with these criteria for the Munghorn Gap Nature Reserve and Goulburn River National Park, and it is anticipated the Project would also be subject to these criteria.

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No.	Recommendation	Response
15.1a	<i>Investigate and provide details of any Commonwealth-funded/LLS projects covering draft NVR map Category 2 – Regulated land within the development site.</i>	As described in the advice document, the Central Tablelands Local Land Services (LLS) advised CPHR that relevant Lot/DPs within the Project area were subject to a Commonwealth-funded post-fire vertebrate pest control project, which was managed by the LLS (with consent from MCO as the landowner). On this basis, the Category 2 – Regulated Land criteria do not apply as the land does not contain native vegetation that was grown or preserved with the assistance of Commonwealth funding. Upon the request of CPHR MCO also contacted the Central Tablelands LLS to confirm these activities, which occurred over approx. 74,000 ha of bushfire affected land in the Central Tablelands region. This indicates that a number of areas mapped as Category 2 – Regulated Land in the draft Native Vegetation Regulatory (NVR Map) within the Central Tablelands region are also subject to reconsideration/assessment as the Category 2 criteria may not apply. The response from Central Tablelands LLS to MCO has been provided to CPHR.
17.1a	<i>Revise the project to reduce the impacts on groundwater dependent ecosystems, springs and creeks within the development footprint and Munghorn Gap Nature Reserve. Alternatively, provide mitigation measures to address these impacts.</i>	Given the limited extent of predicted impacts, it is not feasible or reasonable to revise the Project to further ‘reduce impacts’ to potential terrestrial groundwater dependent ecosystems (GDEs), spring/seep features and/or creeks within the disturbance extent or the Munghorn Gap Nature Reserve. 1. Within Development Footprint MCO would offset impacts to potential terrestrial GDEs within the Project disturbance extent as ecosystem credits for associated PCTs in accordance with the BAM. The Project has already avoided major drainage lines within the Moolarben Valley via setback of open cut mining by at least 200 m from the high bank of Moolarben and Murdering Creeks. 2. Outside Development Footprint Less than 2 m drawdown is predicted at the mapped location of the majority of potential terrestrial GDEs within the Project area (but outside the disturbance extent). Approximately 6 ha of potential terrestrial GDEs are predicted to experience between 2 m and 6 m of drawdown. These potential terrestrial GDEs are wholly within Moolarben-owned land (i.e. not associated with the Munghorn Gap Nature Reserve). At the location of maximum drawdown (i.e. 6 m) the modelled baseline groundwater level is already approximately 10 m below the surface.

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No.	Recommendation	Response
		The majority of potential terrestrial GDEs predicted to experience greater than 2 m drawdown are located within the Project Habitat Enhancement Area, which would be subject to ongoing enhancement and management measures. In the absence of the Project, these areas would have no formal biodiversity protection or management. MCO would accept an approval condition to monitor and manage areas of potential terrestrial GDEs outside the disturbance extent and within the Project area. The Project would not result in a long-term reduction in water availability for terrestrial vegetation along Moolarben Creek and associated low-lying areas, as mining areas would be rapidly backfilled to restore pre-mining hydraulic gradients and allow water levels to recover. Given the 200 m buffer between open cut mining and both sides of Moolarben Creek (and Murdering Creek), natural surface water flows would not be disrupted during operations. 3. Within Munghorn Gap Nature Reserve The Project is highly unlikely to impact water-dependent assets (i.e. perched features) in the Munghorn Gap Nature Reserve. As the regional groundwater table (i.e. within the Permian strata and principally within the coal seams) is inferred to be up to 100 m below the surface of the Munghorn Gap Nature Reserve, the perched features are not likely to be connected to the regional groundwater system. Conceptual cross-sections at the locations shown on Figure 1 are provided on Figure 2 and 3. These cross-sections intersect the existing OC3 open cut pit, proposed OC3 Extension pits and the Munghorn Gap Nature Reserve. AGE has considered groundwater data from monitoring bores within the Moolarben Valley (i.e. PZ003 and PZ221) as well as east of the Project (i.e. PZ137 and PZ112B) which indicates that the regional groundwater level within the permian overburden is up to 100 m below the surface of the Munghorn Gap Nature Reserve (Figures 2 and 3). Figure 1 also demonstrates the surface elevation at the closest spring and seep features in the southern extent of the Project area, which are greater than 100 m above the surface elevation at the monitoring bores. There is no drawdown predicted at the closest spring and seep features.

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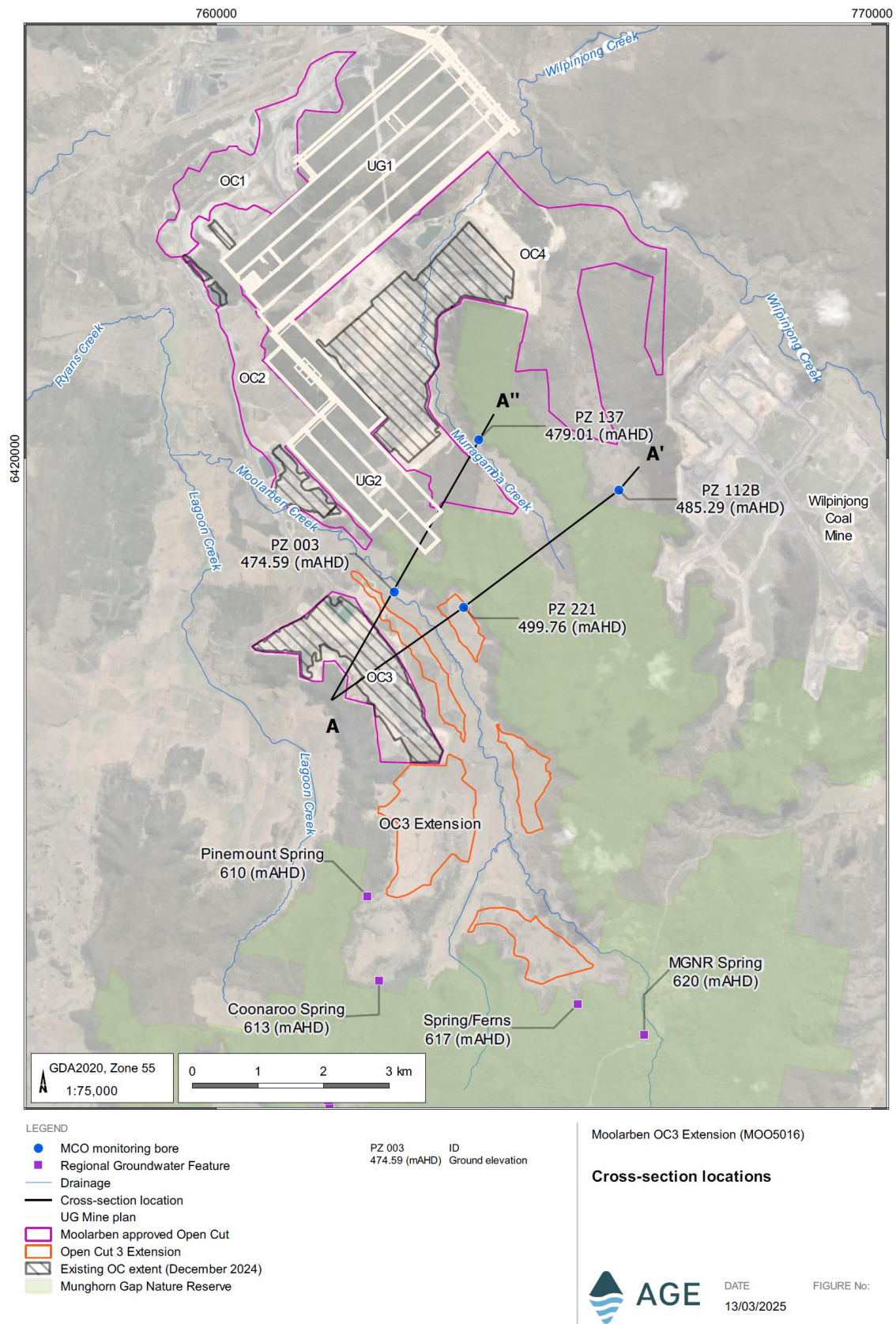
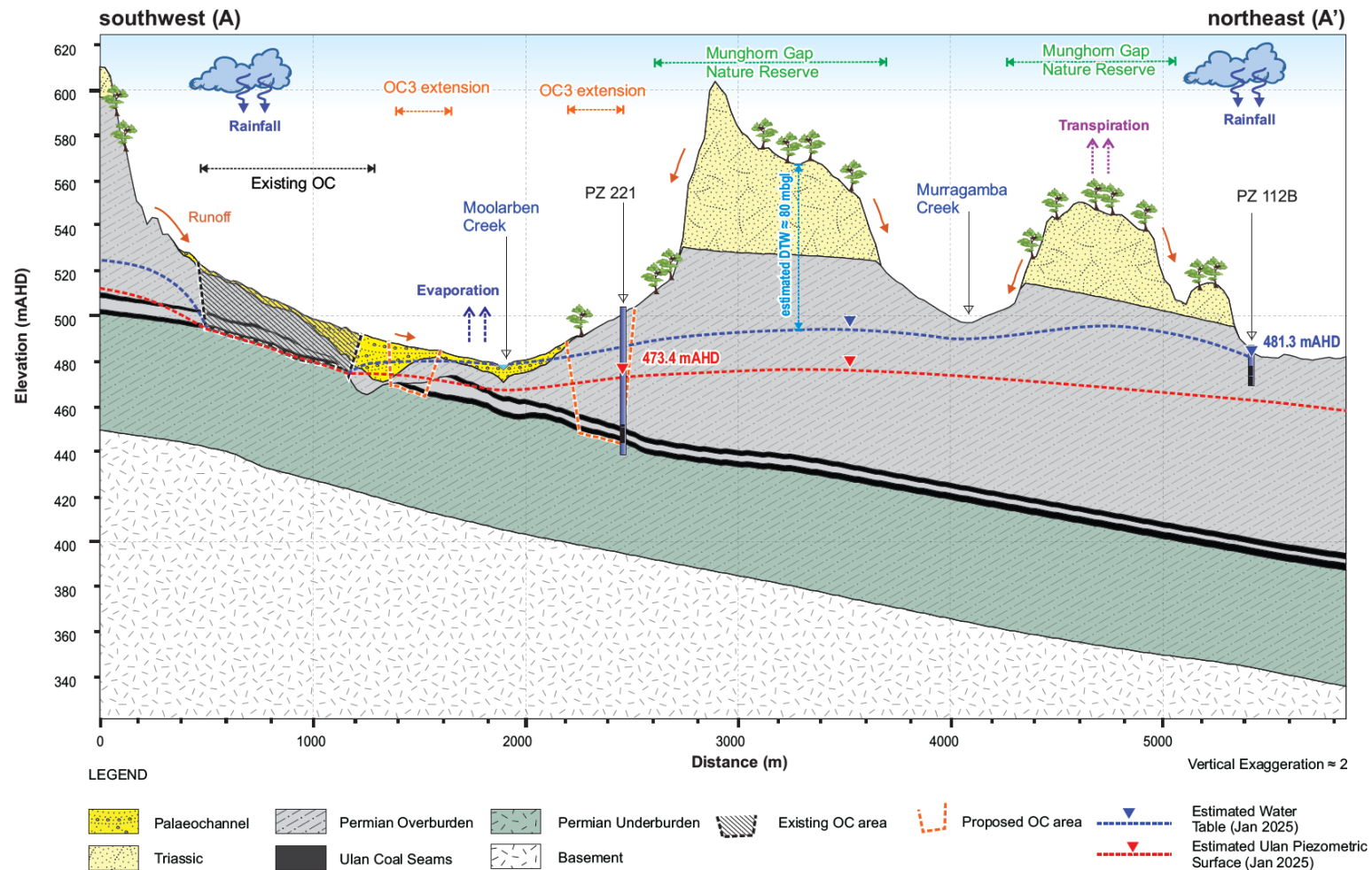


Figure 1: Conceptual Hydrogeological Cross-section Locations (Source: AGE, 2025)

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Hydrogeological Conceptual Section A - A'

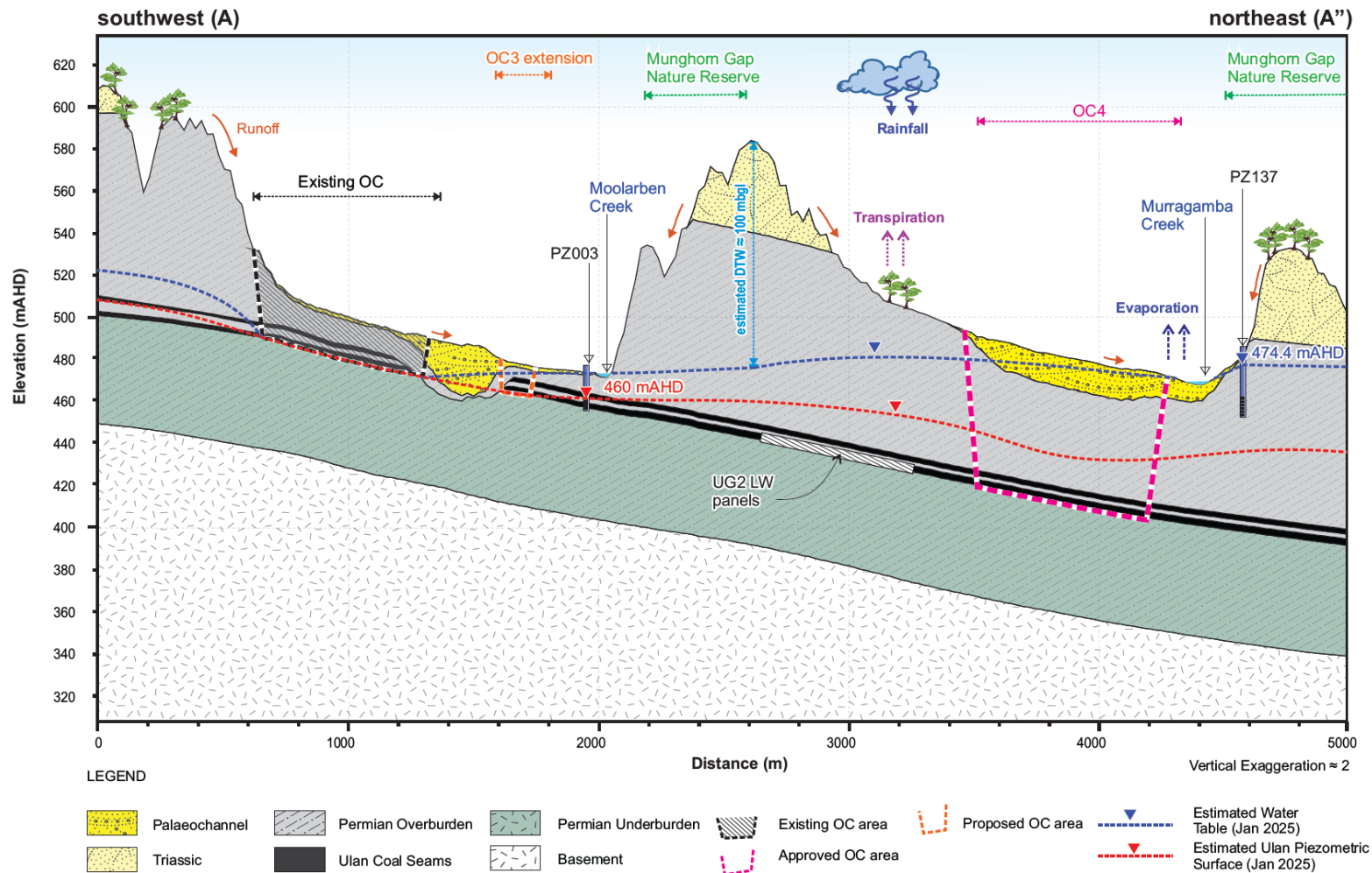
Moolarben OC3 Extension (MOO5016.001)

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Figure 2: Conceptual Hydrogeological Cross-section A-A' (Source: AGE, 2025)

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Hydrogeological Conceptual Section A - A''

Moolarben OC3 Extension (MOO5016.001)

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Figure 3: Conceptual Hydrogeological Cross-section A-A'' (Source: AGE, 2025)

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No.	Recommendation	Response
17.1b	<i>Increase monitoring efforts to ensure accurate ongoing groundwater monitoring of groundwater dependent ecosystems, springs and creeks in the development footprint can occur.</i>	MCO considers that this recommendation could be addressed through conditioning in a Development Consent for the Project. The proposed groundwater monitoring network for the Project includes a number of monitoring bores within/adjacent to potential terrestrial GDEs along Moolarben Creek and adjacent to local spring/seep features to monitor for potential impacts to perched features, including between the open cut pits and the Munghorn Gap Nature Reserve. It is generally not feasible to install monitoring bores at locations between the Project open cut pits and the Munghorn Gap Nature Reserve due to steep terrain, additional disturbance required within native woodland and associated access restrictions. Notwithstanding, MCO will investigate potential additional monitoring sites where practicable.
20.1a	<i>Provide evidence to justify that the BAM plots located outside the development footprint are representative of Vegetation Zones ‘1610 High’ and ‘1629 High’.</i>	This information was provided to CPHR by Dr Amanda Griffith in the Response to the BCS/NPWS RFI form November 2024. BAM plots for PCT 1610 and PCT 1629 were originally located within the disturbance extent for the Project as proposed in the EIS. Due the Project amendments implemented to address recommendations from CPHR on the EIS, these BAM plots ended up being located outside of the amended Project disturbance extent. Dr Griffith describes that the change in the amended Project disturbance extent <u>does not affect</u> the validity of the vegetation mapping or classification undertaken.

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No.	Recommendation	Response
29.2f	Revise the groundwater assessment to:	Revision of the Groundwater Assessment is not considered to be required. The groundwater model has been peer reviewed by Brian Barnett, DPHI – Water assessed the model as acceptable and the IESC concluded the model was appropriate for understanding regional scale impacts (including cumulatively with other mining operations). It is considered there is a very low risk of impacts to groundwater resources at the local scale greater than those predicted by the regional groundwater model. Although the IESC requested clarification regarding the local scale performance of the groundwater model, the three-dimensional (3D) calibrated numerical groundwater model is the only suitable model to simulate the potential impacts of the Project to groundwater at the local scale. The groundwater model has undergone extensive regulatory review, including by DPE – Water, whose submission states: <i>All the SEARs relevant to groundwater impact have been satisfactorily addressed in the Groundwater Assessment report. The impact of the project on groundwater and its receptors was estimated using Modflow-USG groundwater model that was independently peer reviewed as fit for the purpose. Nevertheless, DPE Water assessed the groundwater model as acceptable with 66% rating. DPE Water agrees with the selection of proposed monitoring sites and the proposal to update the approved WMP for MCC once baseline information of the proposed monitoring sites are analysed.</i> The model was also peer reviewed by Brian Barnett (Co-author of the <i>Australian Groundwater Modelling Guidelines</i> [Barnett et al., 2012]) who concluded: <i>The Report provides a summary of the groundwater modelling work described in the Appendix. Important groundwater modelling outcomes are clearly described and illustrated through a series of easily digested maps, charts and tables. The level of reporting is of a high standard and meets all requirements of the Australian Groundwater Modelling Guidelines (Barnett et al., 2012).</i> ... <i>The groundwater assessment and supporting groundwater modelling work described in the Report and Appendix have been carried out in a professional and rigorous manner and meet current industry standards. The modelling work has been completed in line with the Guiding Principles included in the Australian Groundwater Modelling Guidelines and I have not identified any fundamental flaws in the work, both in terms of the approaches and assumptions that have been adopted and the interpretation of the outcomes.</i>

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No.	Recommendation	Response
		<i>I have concluded that the model is fit for the purpose of impact quantification and assessment and, in particular, it is able to meet the modelling objectives as defined in the Report and Appendix.</i> The potential impacts of the Project to groundwater are limited due to the extensive unsaturated areas in the vicinity of the Project, the subcrop of the Ulan Seam west of the Project, the general northerly dip of the Ulan Seam toward already mined and dewatered areas, and erosion of the Ulan Seam and overburden beneath Moolarben Creek (AGE, 2024). The Project also avoids open cut mining within 200 m of the high bank of Moolarben Creek and Murdering Creek, further minimising the potential for impacts to these key features and any associated groundwater resources. The shallow depth of the target Ulan Seam (average depth of 34 m within the Project mining areas) facilitates the timely extraction and subsequent backfilling of the Project open cut mining areas, which reduces the length of time the Project open cut pits remain open as localised groundwater sinks (AGE, 2024). At the local scale, the calibrated numerical groundwater model predicts no impacts to private groundwater bore users (e.g. no drawdown greater than 2 m), no impacts to natural springs and negligible reductions in Moolarben Creek baseflow in consideration of both estimated and modelled baseflow and measured stream flow in Moolarben Creek. Figure C4.3 of Appendix C of the Groundwater Assessment (AGE, 2023) (reproduced below as Figure 4) shows the resolution of the groundwater model cells within the Project area. Specific parameters are able to be applied to each cell within the model which allows for a sufficient level of detail in 'regional' modelling results, and therefore a 'local' scale model is not required. The sensitivity analysis shows predicted impacts due to drawdown, pit inflows and baseflow are generally consistent with the base case predictions for the Project and are not significant in comparison to the predicted and observed impacts as a result of approved mining operations in the region. Further information is provided in the Project Submissions Report (page 116, response to Items 8 and 9 from the IESC).¹

¹ Moolarben Coal Complex OC3 Extension Project Submissions Report

(<https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=EXH-50540708%2120240317T220728.238%20GMT>)

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LEGEND

- Moolarben underground
- Moolarben open cut (approved)
- Moolarben open cut (proposed)
- Model mesh

Moolarben (G1622F)

Project Model Mesh



DATE
02/11/2022

FIGURE No:
C 4.3

Figure 4: Project Groundwater Model Mesh Resolution (Source: AGE, 2023)

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No.	Recommendation	Response
	i. <i>Include information which clarifies if groundwater mounding will occur, and if impacts will occur to groundwater flow associated with Munghorn Gap Nature Reserve.</i>	The drawdown and mounding referred to by NPWS under the Munghorn Gap Nature Reserve is associated with the deeper strata (i.e. Ulan Seam). The deeper strata has already experienced significant depressurisation due to approved/existing mining in the region. This deeper strata is inferred to be up to 100 m below the surface of the Munghorn Gap Nature Reserve, such that the 3 m of predicted mounding during recovery of groundwater levels within this strata would not impact on the Nature Reserve. Depressurisation of this deeper strata or recovery post-mining is not predicted to impact surface water flows (including springs and seeps) in the Munghorn Gap Nature Reserve.
	ii. <i>Include information which can confirm if the movement of contaminants will be facilitated as part of the MCO3 Extension and if this will affect either Munghorn Gap Nature Reserve or Goulburn River National Park.</i>	The Munghorn Gap Nature Reserve is materially higher in elevation than the Project and therefore it is not physically possible for the Project to result in contaminant transport pathways to the Munghorn Gap Nature Reserve. The Project is not predicted to impact groundwater quality or availability in the Munghorn Gap Nature Reserve or Goulburn River National Park. Refer to response to Recommendation 17.1a for further detail.
	iii. <i>Assess and report on cumulative impacts associated with the UG2 Modification.</i>	Potential cumulative effects associated with the approved UG2 Modification have been assessed for the Project. Refer to the Project Submissions Report for further detail (page 48, response to Recommendation 29.1 from BCS/NPWS)¹.
29.2g	<i>If approved, include a consent condition requiring no drawdown of groundwater, variation to groundwater quality, or affects on groundwater dependent ecosystems on Munghorn Gap Nature Reserve or Goulburn River National Park are to occur as part of the MCO3 Extension Project</i>	NPWS claims that groundwater resources beneath the Munghorn Gap Nature Reserve are legislatively protected under the <i>National Parks and Wildlife Act 1974</i> are not valid. MCO has provided legal advice from MinterEllison that informs this position. Notwithstanding, drawdown from the Project in the deeper strata is not predicted to impact perched features within the ridgelines of the Munghorn Gap Nature Reserve, as the deeper strata is inferred to be up to 100 m below the surface of the Munghorn Gap Nature Reserve.

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No.	Recommendation	Response
29.2h	<i>If approved, include a consent condition requiring the proponent to revise the Groundwater Management Plan to:</i> <i>i. Update the number of (new) piezometers, ensuring the number and locations ensure the MCO3 Extension groundwater monitoring program is adequate to detect impacts to Munghorn Gap Nature Reserve. Include additional monitoring sites to cover the Triassic (aquifer) eastern side, Tertiary paleochannel and Quaternary alluvial deposits associated with waterways proximate to Munghorn Gap Nature Reserve and the Ulan Seam.</i> <i>ii. Establish monitoring bores as recommended by the Australasian Groundwater and Environment Consultants Pty Ltd (AGE) (2022). Include a bore between OC3B pit and Munghorn Gap Nature Reserve to monitor the extent of groundwater drawdown and quality impacts.</i> <i>iii. Provide raw groundwater data to NPWS for independent assessment and review.</i>	MCO considers that this recommendation could be addressed through conditioning in a Development Consent for the Project. The proposed groundwater monitoring network for the Project includes a number of monitoring bores within/adjacent to potential terrestrial GDEs along Moolarben Creek and adjacent to local spring/seep features to monitor for potential impacts to perched features, including between the open cut pits and the Munghorn Gap Nature Reserve. It is not feasible to install monitoring bores at some locations between the Project open cut pits and the Munghorn Gap Nature Reserve due to steep terrain and associated access restrictions. Review of groundwater monitoring data and adequacy of management measures for the Project would be reported in the Annual Review, consistent with the existing Moolarben Coal Complex. Annual Review reporting is publicly available on MCO's website.
31.2a	Revise the MCC wide Bushfire Management Plan to include the MCO3 Extension and specific measures.	MCO considers that this recommendation could be addressed through conditioning in a Development Consent for the Project. Refer to Consolidated Response to Agency Advice (page 43, response to Recommendation 31.2 from NPWS).
31.2d	<i>Monitor dust both ambient air quality measurements and criteria (i.e. PM2.5, PM10 and Total Suspended Particulate Matter [TSP]), and dust deposition as particulate matter on surfaces with respect to health and amenity of the Munghorn Gap Nature Reserve visitor precincts (where air quality or public safety can be placed at risk), and at significant Aboriginal cultural sites on Munghorn Gap Nature Reserve to ensure adverse effects of dust deposition are detected.</i>	There is no mechanism of impact to potential Aboriginal Cultural Heritage sites within the Munghorn Gap Nature Reserve from the predicted level of dust from the Project. Due to their infrequent use, visitors or employees accessing the Munghorn Gap Nature Reserve were not considered at risk of impacts to health or amenity due to air quality impacts from the Project (considering EPA's Approved Methods). It is noted NPWS has not provided any details on the location or characteristics of Aboriginal cultural heritage sites within the Munghorn Gap Nature Reserve that are considered to require the recommended monitoring.

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No.	Recommendation	Response
32.1e	<i>TARP blasting activity and Aboriginal cultural heritage actions, where thresholds are exceeded and impacts are detected, an analyses of any incidents, notification protocols, corrective actions, conservation planning, and approvals are to be included. As per NSW DCCEEW Residual Matter 7.3, include escalation linked to measurable impacts to Munghorn Gap Nature Reserve, with a TARP action to initiate a greater buffer zone (500 metres preferred).</i>	There is no mechanism of impact to potential Aboriginal Cultural Heritage sites within the Munghorn Gap Nature Reserve from the predicted level of blast vibration from the Project. Refer to response to Recommendation 6.2b regarding preparation of a TARP. It is noted NPWS has not provided any details on the location or characteristics of Aboriginal cultural heritage sites within the Munghorn Gap Nature Reserve that are considered to require the recommended monitoring.
32.1f (Also 8.3/8.4)	<i>Accord with the Blast Management Plan as per NSW DCCEEW Residual Matter 8.3 in Attachment B and TARP actions as per Items NSW DCCEEW Residual Matter 8.4 in Attachment B and Recommendation 32.1d.</i>	As described above, MCO considers that Recommendations 8.3 and 8.4 could be addressed through conditioning in a Development Consent for the Project. Refer to response to Recommendation 6.2b regarding preparation of a TARP.
33.2a (Also 6.1)	<i>Apply a standard 500 metre buffer from the outer boundary of the MOC 3 Extension to Munghorn Gap Nature Reserve to ensure adequate protection of land reserved under the National Parks and Wildlife Act 1974.</i>	A 500 m buffer is not necessary to provide suitable protection to the Munghorn Gap Nature Reserve. Refer to Recommendation 33.2b below which outlines an alternative recommendation.
33.2b (Also 6.2)	<i>(Alternative) If DPHI – Planning as the consent authority decides to grant the MCO proposed 100 metre minimum buffer, the approval be conditioned:</i>	
	<i>a. to establish and maintain the minimum 100 metre buffer, but allow for variable buffer applications where permitted, ensuring no encroachment of any MCC OC3 operations into the established 100 metre buffer, and</i> <i>b. to require as part of the TARP set criterion regarding detected impacts to Munghorn Gap Nature Reserve which require escalation requiring mitigation measures and notification to NPWS. Where a significant impact is detected NPWS TARP action to initiate a greater buffer zone (500 metres preferred).</i>	MCO considers that this recommendation could be addressed through conditioning in a Development Consent for the Project. Refer to response to Recommendation 6.2b.
33.2c (Also 8.4, 31.2d)	<i>Apply Monitoring as per residual matter 8.4 and Recommendation 31.2d above with respect to Aboriginal cultural heritage values (rock shelters, art, and engraving sites) on Munghorn Gap Nature Reserve.</i>	There is no mechanism of impact to potential Aboriginal Cultural Heritage sites within the Munghorn Gap Nature Reserve from the predicted level of dust or proposed blast vibration levels from the Project. It is noted NPWS has not provided any details on the location or characteristics of Aboriginal cultural heritage sites within the Munghorn Gap Nature Reserve that are considered to require the recommended monitoring.

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No.	Recommendation	Response
34.1c	<i>Prepare in consultation with NPWS a Munghorn Gap Nature Reserve Monitoring SubPlan which set out all the required access, monitoring type, and installation requirements of the equipment on Munghorn Gap Nature Reserve and Goulburn River National Park as part of the MCO3 Extension monitoring program.</i>	As outlined above, the avoidance and minimisation measures incorporated for the Project, extensive monitoring network proposed (including blasting, air quality, noise, groundwater and surface water, among other aspects), associated monitoring criteria (e.g. blast vibration limit) and preparation of a TARP for potential impacts to sensitive geological features from blasting (with requirement to notify NPWS in response to certain trigger levels/events) would provide adequate protection of the Munghorn Gap Nature Reserve during operations. These measures would be implemented in accordance with relevant management plans for the existing Moolarben Coal Complex, which would be updated to incorporate the Project. On this basis a specific Munghorn Gap Nature Reserve Monitoring Plan is not considered to be required. It is noted the Goulburn River National Park is not within the vicinity of the Project.
34.1d	<i>Include as part of the TARP and any management plan prepared for the MCO3 Extension notification protocol to NPWS Mudgee Area where activities are scheduled on, or proximate to the Munghorn Gap Nature Reserve boundary.</i>	Refer to response to Recommendation 6.2b.

ENCLOSURE 2

**REVISED TABLE G-1.2 FROM RECONCILIATION OF BILATERAL ASSESSMENT REQUIREMENTS
(ATTACHMENT G OF MCO RESPONSE TO RECOMMENDATIONS FROM BCS AND NPWS [MCO, 2024]).**

Table G-1.2. Impact and offset summary for all MNES threatened species and communities

Threatened Species / Community listed under EPBC Act	PCTs associated with the ecosystem credit species / ecological community (if applicable)	Area of Impact (ha)	Credits Required	Offsetting Approach	Reference (EIS/BDAR)
Cotoneaster Pomaderris (<i>Pomaderris cotoneaster</i>)	Species Credit Species	0.07*	2 species credits	Retire biodiversity credits based on the like-for-like provisions in the BC Regulation	Section 8.7 of the Updated BDAR (Niche, 2024)
Pink-tailed Legless Lizard (<i>Aprasia parapulchella</i>)	Species Credit Species	207.14	4,147 species credits^		
Regent Honeyeater (<i>Anthochaera phrygia</i>)	PCTs 266, 281, 1610, 1655, 1656, 1661, 1711~	80.5	3,410 species credits, 11,175 ecosystem credits		
Swift Parrot (<i>Lathamus discolor</i>)	PCTs 266, 281, 1629, 1655	105.52	3,343 ecosystem credits		
Koala (<i>Phascolarctos cinereus</i>)	Species Credit Species	113.02	3,425 species credits		
Large-eared Pied Bat (<i>Chalinolobus dwyeri</i>)	Species Credit Species	113.02	5,137 species credits		
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	PCTs 266, 281, 483	401.12	9,610 ecosystem credits		
Central Hunter Valley Eucalypt Forest and Woodland	PCTs 1655	15.5	372 ecosystem credits		
TOTAL			16,121 species credits, 24,500 ecosystem credits		

* 0.07 ha loss associated with the 30 m buffer around the area of suitable habitat where the species was observed. No individuals would be impacted.

^ Including 405 credits for impacts to habitat on Category 1 – exempt land.

~ Including PCTs mapped within the Development Footprint that intersect with the species Important Habitat Mapping.