DOC25/683750

Ms Melanie Hollis
Principal Planning Officer, Resource Assessments
Department of Planning, Housing and Infrastructure

By email: melanie.hollis@planning.nsw.gov.au

Dear Ms Hollis

Subject: Metropolitan Mine Mod 4 Longwalls 317 and 318

Thank you for your request via the NSW Planning Portal dated 28/7/2025 to the Conservation Programs, Heritage and Regulation Group (CPHR) of the NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW) inviting comments on Modification 4 of the Metropolitan Coal Mine consent.

The original consent was approved on 22 June 2009. This Modification is to allow a northern extension of Longwall 317 (LW317) and addition of Longwall 318 (LW318) to the west. The Modification also includes a proposal to relocate the approved (but not yet constructed) Ventilation Shaft 4 and to continue developing (first workings) of the mine to the west to allow access to a future coal resource.

NSW DCCEEW has reviewed the Modification Report and Biodiversity Development Assessment Report (BDAR) in accordance with the *Biodiversity Conservation Act 2016* (BC Act) and the Biodiversity Assessment Method (2020) (BAM).

The Modification includes first workings which are for the purpose of accessing a new mine area to the west, which does not appear to be related to the Modification being sought for LW317-318. We note that the first workings extend beyond the existing development approval and current mine lease. The documentation does not justify how access to a new mine area is substantially the same development to warrant inclusion in the Modification. We note that the northern end of the proposed LW318 extends beyond the Metropolitan mine approved extraction area (and into another Exploration Lease area).

We have the following concerns with the proposal:

- There is potential for greater than negligible impacts to at least six Coastal Upland Swamps, listed as endangered under the BC Act and the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act), noting the:
  - conservation significance of these swamps
  - magnitude of potential impact and
  - condition of consent for the existing development approval which has a Performance Measure requiring there be only a “negligible impact” to Threatened Ecological Communities (TECs)
- additional cumulative impacts to Coastal Upland Swamps above existing approved longwalls, including the large swamps S76 and S77, have not been assessed and should be done so in

accordance with the Department of Planning, Housing and Infrastructure (DPHI) Cumulative Impact Guidelines[1]

- the likely loss of baseflow and surface water in streams will lead to adverse impacts on important habitat for threatened amphibians, including Littlejohn's Treefrog (*Litoria littlejohni*), Giant Burrowing Frog (*Heleioporus australiacus*) and Red-crowned Toadlet (*Pseudophryne australis)*
- development of 317-318 longwalls, particularly 318, are likely to lead to Serious and Irreversible Impacts (SAII) to Coastal Upland Swamps and Giant Dragonfly, and the proponent has not adequately demonstrated that they have made efforts to avoid and mitigate the impacts
- further survey effort for Large-eared Pied Bat and Large Bent-wing Bat is required to determine if a SAII to these species is likely
- further assessment of Littlejohn's Treefrog against SAII Principles 3 and 4 is required
- the maximum predicted offset liability has not been assessed in accordance with the Addendum to NSW Biodiversity Offsets Policy for Major Projects: Upland swamps impacted by longwall mining subsidence (Upland Swamps Offsets Policy) 2016, which means the offset liability in biodiversity credits is significantly underestimated
- prescribed impacts have not been adequately assessed, including possible impacts on groundwater and swamp S92 from constructing the Ventilation Shaft, and
- the location of the monitoring piezometers is inappropriate as they are not located in swamps.

To better avoid or minimise environmental impacts, we suggest:

- the proposal is modified (mine layout and geometry) to avoid impacts to Coastal Upland Swamps and associated waterways, including S106, S76, S77 and S92, given the latter three swamps may be cumulatively affected by both current and previous approvals
- subsidence thresholds for impact consequences are identified and used to adjust mine layouts, so that impacts to significant biodiversity are avoided and a better balance between coal extraction and environmental impact is achieved
- the proposal is referred to the Independent Expert Advisory Panel for Mining (IEAPM) to advise on adequacy of impact assessment in relation to:
    - impacts to Swamp 92 due to the Ventilation Shaft
    - potential impacts on Swamp 106 and Honeysuckle Creek
    - cumulative impacts to threatened amphibians and Coastal Upland Swamps across Metropolitan mine approval area
    - subsidence exceedances across Metropolitan mine approval area
    - the seepage model and water losses estimated for the Modification application
- the proponent address matters raised in this submission and provide an updated BDAR and BAM-Calculator (BAM-C) assessment, including a summary of all changes to the BDAR explaining how matters were addressed, at the Response to Submissions stage.

Our recommendations are provided in **Attachment A**. Our detailed comments on the BDAR and other reports are in **Attachment B**, and advice on SAII is in **Attachment C**. Our previous advice on groundwater monitoring locations is in **Attachment D**.

Given the limited time we have had to comment, we will need to provide information on additional matters not addressed in this submission in a supplementary response. This includes review of the BAM-C indirect impact assessment which has not yet been provided to us, adequacy of species polygons, and proposed conservation measures for prescribed impacts within the BDAR.

[1] https://www.planning.nsw.gov.au/sites/default/files/2023-03/cumulative-impact-assessment-guidelines-for-ssp.pdf

If you have any further questions about this matter, please contact Ms Vanessa Allen, Senior Conservation Planning Officer, South East, Regional Delivery, on 02 4224 4186 or at Vanessa.Allen@environment.nsw.gov.au.

Yours sincerely

2/09/2025

Michael Saxon
Director South East
Regional Delivery
Conservation Programs, Heritage and Regulation

Attachment A – Summary of Recommendations
Attachment B – Detailed review of the BDAR
Attachment C – Advice on Serious and Irreversible Impacts
Attachment D – Previous CPHR advice on swamp monitoring locations

Attachment A

CPHR's Summary of Recommendations

The following is a summary of recommendations from Attachment B. Refer to Attachment B for detailed justification for each recommendation.

These recommendations should be addressed in an updated BDAR and BAM-C assessment and provided to CPHR at the Response to Submissions stage. A summary of all changes to the BDAR, explaining how matters were addressed, should be included.

BDAR

1.1 The following impacts should be assessed in the BDAR:

- potential impacts to groundwater aquifer due to the Ventilation shaft construction, particularly on swamp S92
- cumulative impacts to Coastal Upland Swamps and streams in areas which are above already approved longwalls, including the large swamps S76, S77 and S92.

2.1 Where surveys have not been carried out in accordance with Guidelines, and suitable habitat exists, assume presence or obtain an expert report in accordance with Section 5.2.4 of the BAM.

2.2 Complete targeted surveys for Glossy Black Cockatoo and Gang-gang Cockatoo (breeding habitat) in the direct impact development footprint, assume presence or obtain an expert report in accordance with Section 5.2.4 of the BAM.

2.3 Complete further survey to determine if the indirect impact area contains breeding Large-eared Pied Bats to inform the SAII assessment. Otherwise, breeding must be assumed.

2.4 Provide the BOAMS Case and BAM-C Case for indirect impacts to CPHR for review.

2.5 Given the Green and Golden Bell Frog and Stuttering Frog are not vagrants and are known to occur in the Sydney Cataract IBRA Region, amend the BDAR to state these species are excluded based on the Expert Report, not based on vagrancy.

3.1 Review Tables in Section 5 of the BDAR, and the BAM-C to check information is accurate and consistent.

3.2 Complete targeted survey, assume presence or provide an Expert Report for the Giant Burrowing Frog and Red-crowned Toadlet in the development footprint area, include the species in further assessment and update the BAM-C accordingly.

4.1 Consider further avoidance of impacts to Coastal Upland Swamps and associated streams, in accordance with the BAM.

4.2 Identify subsidence thresholds and use these to adjust the mine layout so that impacts to significant biodiversity are avoided and a better balance between coal extraction and environmental protection is achieved.

4.3 Assess options to adjust mine layouts to reduce environmental consequences including:

- remove LW318 from the proposal altogether (or retain only the northern section) to protect Honeysuckle Creek, S106, and cumulative impacts from multiple longwalls in other swamps (e.g. S119)
- shorten LW317 so that it does not go directly beneath S74 and reduce cumulative impacts in other swamps (e.g. S76)
- narrow the width of the longwall panels to reduce risk
- further increase the width of the longwall pillars to reduce risk
- lower the height of extraction to reduce risk.

5.1 Include Glossy Black Cockatoo and Gang-gang Cockatoo in further assessment (they are excluded in Table 5.3 of the BDAR and the BAM-C), as suitable tree hollows are present within the direct impact footprint.

5.2 Determine if species polygons for these cockatoos are required.

5.3 Clarify timeframes for noise and light spill impacts for construction and operation of the Ventilation Shaft.

6.1 Provide evidence supporting the statement "*there will be minor reductions to habitat connectivity for threatened amphibians*".

7.1 Provide a revised mining layout that further avoids impacts to Coastal Upland Swamps.

7.2 Refer the proposal to the Independent Expert Advisory Panel for Mining (IEAPM) to advise on adequacy of the impact assessment in relation to:

- impacts to Swamp 92 due to the Ventilation Shaft
- potential impacts on S106
- cumulative impacts to Coastal Upland Swamps across Metropolitan mine approval area.

7.3 Assess the cumulative impacts[2] to swamps occurring above previously approved longwalls, particularly swamps S76 and S77, as prescribed impacts in the BDAR, in accordance with Section 8 of the BAM.

7.4 Update mapping of swamps to be offset (Figure 12 of the BDAR) to include all swamps that are likely to have a greater than negligible impact, including those swamps which occur above already approved longwalls.

8.1 Recalculate the Coastal Upland Swamps offset liability in BAM-C in accordance with the BAM and the Upland Swamps Offsets Policy; that is, assuming full loss of the ecological community.

8.2 Review and discuss the relatively low Vegetation Integrity (VI) score for Plant Community Type (PCT) 3924 in the BDAR.

9.1 Provide more detail in the BDAR on rocky areas and relevant threatened species which use this habitat within the indirect impact area.

9.2 Include an assessment of "likelihood and consequences" for the Large Bent-wing Bat in the indirect impact area in Table 8.8 of the BDAR.

10.1 Consider further avoidance of impacts to threatened amphibian habitat in an amended mining layout.

10.2 Refer the proposal to the IEAPM to advise on adequacy of the impact assessment in relation to:

- potential impacts on S106 and Honeysuckle Creek
- cumulative impacts to threatened amphibians across Metropolitan mine approval area
- the seepage model and water losses estimated for the Modification application.

[2] https://www.planning.nsw.gov.au/sites/default/files/2023-03/cumulative-impact-assessment-guidelines-for-ssp.pdf

10.3 Refer to the work of Klop-Toker (2025) regarding impacts of iron flocculant on threatened amphibians.

11.1 Integrate existing monitoring required for S76, 77 and S92 as part of the LW 312-316 Extraction Plan approval with proposed swamp monitoring for this Modification to assess cumulative impacts to Coastal Upland Swamps.

11.2 Review swamp monitoring locations to ensure piezometers have been installed in appropriate locations to monitor impacts to swamps.

12.1 Provide further assessment of SAII as follows:

- Undertake further survey to rule out the presence of breeding individuals of Large-eared Pied Bat, assume presence or obtain an expert report, in accordance with Section 5.2.4 of the BAM.
- Revise the BDAR to include a SAII assessment of the Large Bent-wing Bat, as required by Section 9 of the BAM.
- Provide further information to assess the Littlejohn's Treefrog against SAII Principle 3 (limited geographic distribution) and SAII Principle 4 (species unlikely to respond to measures to improve its habitat and therefore its members are not replaceable).

12.2 Search for the Slaty Leek Orchid in the indirect impact area. If it is located it needs to be included in the monitoring program within the Adaptive Management Plan (AMP)/Biodiversity Management Plan (BMP).

13.1 Undertake surveys/assessment for additional threatened species mentioned in Issues 2 and 3 in Attachment B, and if required, update the BAM-C to determine any additional offsets that may be required as a result of additional assessment.

16.1 Review the BAM-C case and confirm Gang-gang Cockatoo and Glossy Black Cockatoo as confirmed candidate species, and document in an updated BDAR/BAM-C case.

16.2 Submit the BOAMS/BAM-C case for indirect impacts to CPHR.

Adaptive Management Plan (AMP)

17.1 Refer to recommendations in our previous letter dated 14 April 2025 (Attachment D) regarding suggested locations for swamp groundwater monitoring.

17.2 Clarify that surveys for the Giant Dragonfly have not been completed in swamps within the Modification Area and presence assumed. Should approval be granted, ensure baseline surveys for Giant Dragonfly are undertaken for a minimum of two years prior to mining.

17.3 Incorporate evidence from previous research at Dendrobium mine on water quality impacts to threatened amphibians.

17.4 Incorporate advice from the IEAPM on amphibian monitoring and TARPS, and update TARPS to reflect this advice.

17.5 Include a section on addressing limitations and uncertainties within the monitoring program. This should include, but not be limited to, adequacy of monitoring data, inconclusive outcomes and application of the precautionary principle in determining impacts.

17.6 Clarify if water level monitoring is to be undertaken at Honeysuckle Creek, and if not, provide a justification.

17.7 Include all swamps to be impacted in TARP Performance Indicators, including S74, S75, S106, S117, S119, S130, as well as S76, S77, S91, S113, S114, S115, S139.

17.8 Clarify if the Giant Dragonfly measurement parameter of "relative abundance" is necessary, or whether "abundance" is more appropriate, and update if required.

17.9 Undertake further assessment to determine if the Ventilation Shaft construction will impact S92.

17.10 Should approval be granted we recommend that conditions of consent require that changes to listing status of threatened entities be considered when assessing Performance Measures and offsetting.

Other matters

18.1 Provide information that determines the first workings/gate roads enabling a new mine area to the west is “substantially the same development” as that approved.

18.2 Clarify the legality of mining activity in an Exploration Lease in the absence of an approved development application.

19.1 Update the Groundwater Report (and the BDAR) to address potential groundwater aquifer effects of the Ventilation Shaft 4 on Coastal Upland Swamps S92, S93 and S101.

19.2 If impacts are possible, and there is a risk that the Performance Measure could be exceeded for S92, relocate the Ventilation Shaft to avoid S92.

20.1 Identify subsidence thresholds for impact consequences and use these to adjust mine layouts so that impacts to significant biodiversity are avoided and a better balance between coal extraction and environmental impact is achieved.

20.2 Clarify subsidence exceedances and refer matter to the IEAPM if necessary.

Attachment B

CPHR Review of the Biodiversity Development Assessment Report (BDAR) and additional matters

Acronyms

Acronym	Full Form
AMP	Adaptive Management Plan
BAM	Biodiversity Assessment Method
BAM-C	Biodiversity Assessment Method Calculator
BC Act	*Biodiversity Conservation Act 2016*
BDAR	Biodiversity Development Assessment Report
BOAMS	Biodiversity Offsets and Agreement Management System
CPHR	Conservation Programs, Heritage and Regulation Group
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DPHI	Department of Planning, Housing and Infrastructure
DPIE	Department of Planning, Industry and Environment
EEC	Endangered Ecological Community
EPBC	*Environment Protection and Biodiversity Conservation Act 1999*
GIS	Geographic Information System
IBRA	Interim Biogeographic Regionalisation for Australia
IEAPM	Independent Expert Advisory Panel for Mining
LW	Longwall
MNES	Matters of National Environmental Significance
NSW	New South Wales
NSW DCCEEW	NSW Department of Climate Change, Energy, the Environment and Water
OEH	Office of Environment and Heritage
PCT	Plant Community Type
SAII	Serious and Irreversible Impacts
SSD	State Significant Development
TARP	Trigger Action Response Plan
TEC	Threatened Ecological Community
VI	Vegetation Integrity

Issue no.	Reference	Issue and recommendation
CPHR Review - BDAR		
Stage 1 – Biodiversity assessment		
1	BDAR Section 1.4 Excluded impacts	The BDAR states that no potential impacts resulting from the proposed modification have been excluded. We disagree with this statement. Further information is provided in Issues 19 and 20 below. **Recommendation:** 1.1 The following impacts should be assessed in the BDAR: • potential impacts to groundwater aquifer due to the Ventilation shaft construction, particularly on swamp S92 • cumulative impacts to Coastal Upland Swamps and streams in areas which are above already approved longwalls, including the large swamps S76, S77 and S92.
2	BDAR Section 2.5.3 Field Surveys	*Direct impact development footprint (the proposed ventilation shaft)* It is unclear why targeted surveys were not undertaken for Glossy Black Cockatoo and Gang-gang Cockatoo as there are many suitable breeding hollows within this area. Amphibian surveys did not meet the minimum survey effort and coverage requirements specified in the NSW Survey Guide for Threatened Frogs (DPIE 2020) or the Commonwealth Survey guidelines for Australia's threatened frogs (DEWHA 2010).

		Indirect impact area Surveys efforts for the indirect impacts area were not in accordance with survey guidelines and appear to be mainly done as baseline surveys for monitoring habitat in areas where mining is already approved. Section 2.5.3.2 of the BDAR describes the surveys undertaken within the indirect impact area, that is, the area which may be impacted by prescribed impacts only. It is noted that microbat survey was limited by equipment failure and did not meet minimum requirements (DPIE 2021). Survey effort for threatened flora within some of the swamps was minimal. This section also addresses the survey approach to Giant Dragonfly. Targeted survey was undertaken in S77 and S92. Other swamps do not appear to have been surveyed, although the BDAR states that "visual surveys have been conducted within swamps throughout the study area and surrounds". It is unclear what this means. The GIS data provided does not indicate that adequate survey was carried out in swamps containing potential habitat for this species. Table 5.7 indicates the species is assumed present. This section states that some species were excluded on the basis of "vagrancy". These species include Green and Golden Bell Frog and Stuttering Frog. In the BAM, a vagrant species refers to occasional records of species in NSW that are outside their normal distribution or habitat, including escaped animals and planted specimens. It also refers to species that are recorded outside their IBRA region. **Recommendations:** 2.1 Where surveys have not been carried out in accordance with Guidelines, and suitable habitat exists, assume presence or obtain an expert report in accordance with Section 5.2.4 of the BAM. 2.2 Complete targeted surveys for Glossy Black Cockatoo and Gang-gang Cockatoo (breeding habitat) in the direct impact development footprint, assume presence or obtain an expert report in accordance with Section 5.2.4 of the BAM. 2.3 Complete further survey to determine if the indirect impact area contains breeding Large-eared Pied Bats to inform the SAII assessment. Otherwise, breeding must be assumed. 2.4 Provide the BOAMS Case and BAM-C Case for indirect impacts to CPHR for review. 2.5 Given the Green and Golden Bell Frog and Stuttering Frog are not vagrants and are known to occur in the Sydney Cataract IBRA Region, amend the BDAR to state these species are excluded based on the Expert Report, not based on vagrancy.

3.	BDAR Section 5 Habitat suitability for threatened species. Table 5-3 Predicted candidate fauna species	Review of the BDAR tables found several inconsistencies within and between the tables. For example: • Table 5-2 states the Thick-leaf Star-hair *Astrotricha crassifolia* was excluded based on targeted survey in the development footprint. However, Table 5-6 says targeted survey was done in the direct impact footprint and it was not present. Table 5-8 says there were no surveys completed in the development footprint and has no survey timing information and no development footprint effort values either. The BAM-C says the survey was carried out in October. The data needs to be consistent for us to conclude sufficient or otherwise. This species was identified in the EPBC SEARs and is a SAII entity. • Tables 5-8 and 5-9 have similar errors with several species having no development footprint surveys carried out, however the tables have person hours allocated to development footprint surveys for them. See Brown Pomaderris, Slaty Leek Orchid, Glossy Black Cockatoo and Gang-gang Cockatoo. The BDAR states the Giant Burrowing Frog is excluded from the direct impact development footprint as no suitable aquatic habitats to support the species was identified during survey. The NSW Survey Guide for Threatened Frogs states that surveys should be completed along transects running through areas of native vegetation located within 300m of suitable breeding habitat. Suitable habitat exists within 300m of the development footprint within Swamp 92. The Expert Report indicates the species polygon should encompass the direct impact area. The BDAR states the Red-crowned Toadlet is excluded from the direct impact development footprint as no suitable aquatic habitats to support the species were identified during survey. The NSW Survey Guide for Threatened Frogs states that surveys must be completed within areas of potential habitat which includes ephemeral streams or pools located within areas of native vegetation on Triassic sandstones, and native vegetation within 100 metres of suitable breeding habitat. Suitable habitat exists within 100m of the development within Swamp 92 (tributary P). The Expert Report indicates the species polygon should encompass the direct impact area. Table 5-3 says these species were excluded from further assessment in the direct impact footprint. The BAM-C indicates that both these species were surveyed but not found in the direct impact footprint.

		Recommendations: 3.1 Review Tables in Section 5 of the BDAR, and the BAM-C to check information is accurate and consistent. 3.2 Complete targeted survey, assume presence or provide an Expert Report for the Giant Burrowing Frog and Red-crowned Toadlet in the development footprint area, include the species in further assessment and update the BAM-C accordingly.
Stage 2: Impact assessment		
4	BDAR Section 7 Avoid and minimise impacts	*Avoidance of direct impacts* The BDAR describes measures taken to avoid impacts including relocation of the ventilation shaft and reduction of the development footprint from 4.2 ha to 3.8 ha, after design refinements. However, the original site was located in disturbed, cleared land which means the new location results in a substantial increase to vegetation clearance of high condition vegetation, inside the Woronora Special Area. *Avoidance of prescribed impacts* The BDAR states that Longwall 317 has been shortened by 67m at the southern end which will assist in reducing impacts to S106. Wider pillars within the longwall are proposed to reduce the severity of subsidence impacts on swamps, streams, rocky habitats and associated biota. While there has been some avoidance of impacts demonstrated in the BDAR, the proposed development is still likely to result in impacts to important biodiversity within the indirect impact area. Predicted subsidence is likely to drain important swamps (which are an Endangered Ecological Community) and streams and further avoidance is required to adequately demonstrate the proposal meets BAM requirements. This is particularly important for Coastal Upland Swamps, where subsidence impacts can be irreversible; and streams, where subsidence impacts are difficult to mitigate or repair and can be ongoing (e.g. water quality changes caused by increased iron). Coastal Upland Swamps are also an SAII entity, and assessment of SAII is detailed further at Attachment C. The BAM states that impacts can be avoided by locating the proposal in areas: a. lacking biodiversity values

		b. where the native vegetation or threatened species habitat is in the poorest condition (i.e. areas that have a low vegetation integrity score) c. that avoid habitat for species with a high biodiversity risk weighting or land mapped on the important habitat map, or native vegetation that is a TEC or a highly cleared PCT. d. outside of the buffer area around breeding habitat features such as nest trees or caves. It is noted that panels under the Woronora Reservoir have reduced longwall dimensions (133m longwall widths and 70m wide pillar widths) to protect the dam from subsidence impacts. The BDAR should equally consider these options to be relevant to avoid serious impacts to biodiversity (and water resources) in a sensitive water catchment area. Optimally, this would include a longwall layout which avoids undermining threatened swamps and other significant features including streams that provide threatened species habitat. **Recommendations:** 4.1 Consider further avoidance of impacts to Coastal Upland Swamps and associated streams, in accordance with the BAM. 4.2 Identify subsidence thresholds and use these to adjust the mine layout so that impacts to significant biodiversity are avoided and a better balance between coal extraction and environmental protection is achieved. 4.3 Assess options to adjust mine layouts to reduce environmental consequences including: • remove LW318 from the proposal altogether (or retain only the northern section) to protect Honeysuckle Creek, S106, and cumulative impacts from multiple longwalls in other swamps (e.g. S119) • shorten LW317 so that it does not go directly beneath S74 and reduce cumulative impacts in other swamps (e.g. S76) • narrow the width of the longwall panels to reduce risk • further increase the width of the longwall pillars to reduce risk • lower the height of extraction to reduce risk.

5	BDAR Section 8 Impact Assessment	*Residual direct impacts* The proposal will result in direct impacts to 3.8 hectares of PCT 3590 Southern Sydney Scribbly Gum Woodland. Table 8-1 of the BDAR states that 13 hollow bearing trees will be removed from the development footprint. The BDAR does not address the avoidance of these hollow-bearing trees. Candidate species which require tree hollows have been excluded from the direct impact development footprint as 'no suitable nesting or breeding habitat to support the species was identified during survey". These include Glossy-black Cockatoo and Gang-gang Cockatoo. *Residual indirect impacts* The proposal could potentially cause reduced viability of adjacent habitat due to noise and vibration. Drilling is likely to occur 24 hours a day for a period of 14 months. Microbats are particularly susceptible. The proposal also has the potential for reduced viability of adjacent habitat due to light spill. The BDAR indicates "temporary surface works are unlikely to involve extended periods outside daylight hours and are likely to be limited or negligible", however if light spill is to occur for the same period as drilling, this is unlikely to be negligible. **Recommendations:** 5.1 Include Glossy Black Cockatoo and Gang-gang Cockatoo in further assessment (they are excluded in Table 5.3 of the BDAR and the BAM-C), as suitable tree hollows are present within the direct impact footprint. 5.2 Determine if species polygons for these cockatoos are required. 5.3 Clarify timeframes for noise and light spill impacts for construction and operation of the Ventilation Shaft.
6	BDAR Section 8.3 Prescribed Impacts - Connectivity	This section states that hydrological alterations resulting from subsidence will lead to minor reductions to habitat connectivity for threatened amphibians. These impacts may be more severe than described in the BDAR. Changes to hydrological regimes are known to be particularly damaging to persistence of these species, and little is currently known about the extent and resilience of existing populations and how these move across the landscape.

		Recommendation: 6.1 Provide evidence supporting the statement "*there will be minor reductions to habitat connectivity for threatened amphibians*".
7	BDAR Section 8.3 Table 8-4 Prescribed Impacts- Water bodies, water quality and hydrological processes	*Impacts to Coastal Upland Swamps* The total area of Coastal Upland Swamps within the indirect impact footprint is 68 hectares. The BDAR states there is a "moderate risk of fracturing upper Hawkesbury sandstone and associated water decline" which results in a "low risk of greater than negligible environmental consequences" for six swamps (S74, S75, S106, S117, S119, S130). The total area in this category is 29.3 ha. The BDAR states there will be a "negligible risk" for around 24 swamps which occur within the area. Seven swamps are described as having "negligible risk – no subsurface or hydrological impacts associated with this Modification". *CPHR Comment:* While an increase in pillar width will have some effect in reducing total subsidence, the change is insufficient to prevent adverse impacts and consequences to Coastal Upland Swamps above and to the sides of the longwalls. Based on predicted subsidence, tensile and compressive stress, upsidence and closure, many swamps are still predicted to suffer adverse consequences (i.e. fracture and drainage), including all 4 large swamps S92, S76, S77 and S106. Swamp S106 is predicted to experience 750 mm of subsidence (MSEC 2025), a significant (15-fold) increase on the predicted subsidence in the revised LW311-316 EP (of 50mm). Tilt is now predicted to be 3.5 mm after LW317 & LW318 are extracted, although S106 will potentially experience much higher transitive tilts and tensile and compressive strains as the mining progresses. Upsidence predictions for S106 after the proposed LW317 & LW318 is 50mm. Closure predictions for S106 after the proposed LW317 & LW318 is 20 mm. These upsidence and closure levels appear unrealistically low given the upsidence and closure estimates for other directly undermined swamps and the incision of the drainage line in S106. It is noted that MSEC (2025) did not provide any subsidence estimates for the Honeysuckle Creek tributary that contains/drains from S106. It therefore appears that potential upsidence and closure levels for Swamp S106 have been significantly underestimated.

		Swamps S76 & S77 are likely to be impacted by both the approved LW311-316 Extraction Plan (EP) and cumulative subsidence effects from the proposed LW317-318 EP (if approved). There remains a potential for S92 to also be impacted (fractured and drained), particularly at its downstream end[3]. If this occurs, water is likely to eventually drain downwards into the fracture network leading to desiccation in Swamp S92. Based on predicted subsidence, tensile and compressive stress, upsidence and closure, swamps likely to suffer adverse consequences include: S74, S75, S76, S77, S91, S92, S106, S113, S114, S115, S119, S130 & S139. Swamps S74, S75, S117, S118, S119, are particularly at risk and were identified as likely impacted swamps by ATC Williams (2025) based on subsidence predictions. The following swamps also have sufficiently high subsidence, tilt and stresses to result in adverse consequences: S116, S117, S118, S121, S128. Given S120, S127, and S129 lie directly above either the edges or corners (where stresses are likely to be high) of longwalls 317 & 318, they too are at risk of adverse consequences. If the Modification is approved, Metropolitan Mine operations could potentially see cumulative impacts on Coastal Upland Swamps up to 40-45 ha. This number excludes the areas of Flatrock Swamp, to the south of the current mine operation, S92 and S106. **Recommendations:** 7.1 Provide a revised mining layout that further avoids impacts to Coastal Upland Swamps. 7.2 Refer the proposal to the Independent Expert Advisory Panel for Mining (IEAPM) to advise on adequacy of the impact assessment in relation to: • impacts to Swamp 92 due to the Ventilation Shaft • potential impacts on S106 • cumulative impacts to Coastal Upland Swamps across Metropolitan mine approval area.

[3] And the upstream end if the Ventilation Shaft relocations affects its aquifers.

		7.3 Assess the cumulative impacts[4] to swamps occurring above previously approved longwalls, particularly swamps S76 and S77, as prescribed impacts in the BDAR, in accordance with Section 8 of the BAM. 7.4 Update mapping of swamps to be offset (Figure 12 of the BDAR) to include all swamps that are likely to have a greater than negligible impact, including those swamps which occur above already approved longwalls.
8	BDAR Section 8.3.4.2 BDAR Table 8-5	This section proposes the application of "partial loss" for Vegetation Integrity scores in the BAM-C to address the requirements of the Upland Swamps Offset Policy. *Partial loss* Partial loss is described in the BAM, including section 8.1.1 which states that the future value of attributes may be amended to reflect the impacts from partially clearing a vegetation zone, including areas such as asset protection zones and easements. The BAM also states that if it is likely that vegetation will continue to degrade, full loss should be assumed. *Upland Swamps Offset Policy* The Upland Swamps Offset Policy states that when predicting the offset liability, it is the loss of the upland swamp ecological community, including the threatened species that rely on that community, which must be calculated to determine the offset liability. The loss of swamps is likely to lead to loss of several threatened species populations. The Policy states that *"Upland swamps are features of high environmental value that are at high risk of impact from mining related subsidence which, once expressed, are permanent and irreversible."* The Policy states that the offset liability should be assessed as a potential maximum (i.e. worst case scenario). This is consistent with the precautionary principle. We consider the worst-case scenario is full loss of all swamps which are predicted to have a risk of greater than negligible consequences. That is, full conversion of swamp PCTs to non-swamp PCTs and therefore, full loss of the Coastal Upland Swamps TEC. The BDAR states that vegetation within swamps may be impacted to the point that it could transition to a different vegetation type, however, then suggests that partial loss is an appropriate method for addressing

[4] https://www.planning.nsw.gov.au/sites/default/files/2023-03/cumulative-impact-assessment-guidelines-for-ssp.pdf

		the maximum predicted offset liability. This approach does not recognise the unique ecological values the swamps contain, nor the permanent and irreversible damage that can occur as a result of longwall mining. As such, we do not agree with the proposed method of calculating partial loss to determine offsets. The overall Vegetation Integrity (VI) score for PCT 3924 is 58.2. This seems low given the swamp vegetation is in high condition. This may have implications for accurate credit calculations. We have not been supplied with the BAM-C case for indirect impacts, so have been unable review this data further. **Recommendations:** 8.1 Recalculate the Coastal Upland Swamps offset liability in BAM-C in accordance with the BAM and the Upland Swamps Offsets Policy; that is, assuming full loss of the ecological community. 8.2 Review and discuss the relatively low Vegetation Integrity (VI) score for Plant Community Type (PCT) 3924 in the BDAR.
9	BDAR – Prescribed impacts BDAR Section 8.3.1 Karst, caves, crevices, cliffs, rocks, or other geological features	The BDAR provides minimal information on impacts to caves, crevices, cliffs and rocks, all of which occur throughout the indirect impact area. Only Cliff *COH19* was considered in the prescribed impacts assessment. Rocky areas throughout the subject area provide important habitat for candidate species including the SAII listed species: Broad-headed Snake, Large Bent-wing Bat, Large-eared Pied Bat. **Recommendations:** 9.1 Provide more detail in the BDAR on rocky areas and relevant threatened species which use this habitat within the indirect impact area. 9.2 Include an assessment of “likelihood and consequences” for the Large Bent-wing Bat in the indirect impact area in Table 8.8 of the BDAR.
10	BDAR - Prescribed impacts BDAR Section 8.3.4.3 Potential impacts to waterbodies	The BDAR states that tributaries R, S, U and Honeysuckle Creek are predicted to experience valley closure and upsidence, particularly where they intersect the proposed LW 317-318 and loss of water and impacts to water quality are anticipated. ATC Williams (2025) states “*these effects may result in reduced surface water quality and availability, dewatering of pools, and alterations to local hydrology, with potential downstream ecological consequences*.” Smaller tributaries are also susceptible.

	Table 8-8 Summary of prescribed impacts	*CPHR comment:* *Threatened amphibians* Giant Burrowing Frog, Littlejohn's Treefrog and Red-crowned Toadlet have all been recorded within the indirect impact area. Indirect impacts to threatened amphibian habitat are expected through changes to water quality, and hydrology, including loss of water for breeding habitat. Honeysuckle Creek is a 3rd order stream under the Strahler system which joins Woronora Reservoir approximately 1km north of the proposed LW317 & 318. The uppermost reaches of Honeysuckle Creek are contained within Swamp 14. Swamp S106 is in the headwaters of a 1st order tributary of Honeysuckle Creek which, together with Swamp S14, is likely to be the major contributing sources of baseflow to Honeysuckle Creek. Honeysuckle Creek is extremely important for threatened frogs, especially Littlejohn's Tree Frog, Giant Burrowing Frog and Red-crowned Toadlets which have been recorded in or near the creek. The Giant Burrowing Frog sub-population in the Woronora catchment is significant as the area was not burnt in 2019-2020, while most other known localities in the Sydney Basin were. The sub-population in Woronora is of a large size and currently part of a long-term study being done by DCCEEW and the University of Wollongong using genetics from frogs found in Honeysuckle and Bee Creeks. Despite having similar median flows to the upper Woronora River, Honeysuckle Creek often provides more water to Woronora Reservoir than the upper Woronora River does. Under the approved layout, Honeysuckle Creek would not have been impacted with subsidence, upsidence and valley closure levels <20mm. However, under the proposed LW317 & 318 layout, subsidence in Honeysuckle Creek will increase to 225mm; upsidence in Honeysuckle Creek will increase to 150mm; and closure in Honeysuckle Creek will increase to 350mm. At these very high levels of upsidence and valley closure it is likely that large areas of Honeysuckle Creek will be fractured and drained. It is noted that MSEC (2025) did not provide any subsidence estimates for the Honeysuckle Creek tributary that contains/drains from S106 If the ATC Williams' (2025) reduction in net baseflow contribution figure of 21 ML/year (~0.06 ML/d) is considered, then this represents 8% of the median flow in Honeysuckle Creek. If Cairns et al (2024) figure of 61/ML/year (~0.167 ML/d) is considered a more appropriate estimate of loss, then this would equate to ~24% of the median flow in Honeysuckle Creek. The potential loss of up to a quarter of the median flow in such an important stream as Honeysuckle Creek is likely to lead to a much greater frequency of zero flow

		days. This will have serious ramifications for the ecology of the creek, especially threatened frogs. It will also likely represent a significant loss of water for Woronora Reservoir. The potential impacts of changes in water quality are mentioned in the BDAR but are understated. The work of Klop-Toker et al. (2025) on impacts of iron flocculant on threatened amphibians is not discussed. *Giant Dragonfly* Giant dragonfly has been recorded in S92 and S77. The BDAR concludes that impacts are likely to be minor and will be addressed through compensatory measures. Given the lack of survey for the dragonfly within swamps in the Modification area, and the potential for swamp drainage (as described above in Issue 7), we disagree with this conclusion. Furthermore, hydrological impacts to the Giant Dragonfly's breeding habitat are irreversible which means compensatory measures will not reduce the loss of local populations, or the risk of extinction for this species. Further detail is provided in Attachment C – SAII Assessment. **Recommendations:** 10.1 Consider further avoidance of impacts to threatened amphibian habitat in an amended mining layout. 10.2 Refer the proposal to the IEAPM to advise on adequacy of the impact assessment in relation to: • potential impacts on S106 and Honeysuckle Creek • cumulative impacts to threatened amphibians across Metropolitan mine approval area • the seepage model and water losses estimated for the Modification application. 10.3 Refer to the work of Klop-Toker (2025) regarding impacts of iron flocculant on threatened amphibians.
11	BDAR Table 8-10 Terrestrial biodiversity monitoring and adaptive responses	This table refers to preparation of a Swamp monitoring program and lists swamps S74, S75, S106, S117 and S119. The adaptive management response for the swamp monitoring program states that "proven and effective corrective actions will be implemented in accordance with the trigger response levels outlined in the TARPs". *CPHR comment:* There is no evidence that Coastal Upland Swamps can be remediated once impacted through longwall coal mining. Remediation is not a viable management response in the proposed Swamp monitoring program.

		We provided advice to DPHI on swamp monitoring locations for this Modification in our letter dated 14/4/2025, our reference DOC25/297371 (Attachment D). We are unaware of any actions taken to address the concerns in this letter which relate to inappropriate locations where swamp monitoring stations have been set up to monitor the swamps. Piezometer 106b is not actually within Swamp S106 and piezometer 106c is on the very edge of the swamp. As stated in our letter, inappropriate site locations for monitoring swamp impacts will result in very poor assessment of hydrological impacts of mining. S130 is missing from this list, despite being one of the swamps at risk of greater than negligible consequences. **Recommendations:** 11.1 Integrate existing monitoring required for S76, 77 and S92 as part of the LW 312-316 Extraction Plan approval with proposed swamp monitoring for this Modification to assess cumulative impacts to Coastal Upland Swamps. 11.2 Review swamp monitoring locations to ensure piezometers have been installed in appropriate locations to monitor impacts to swamps.
12	BDAR Section 9 Appendix L Serious and Irreversible Impacts	The BDAR assessed one Threatened Ecological Community (Coastal Upland Swamps), nine threatened flora and three threatened fauna for SAII. The Large Bent-wing Bat was not assessed, despite being a listed SAII entity which has been recorded in the Modification area. CPHR assessment indicates: • A SAII is likely for Coastal Upland Swamps and Giant Dragonfly. • A SAII is uncertain for the Large Bent-wing Bat and the Large-eared Pied Bat. Further assessment is required. • A SAII is uncertain for the Eastern Underground Orchid due to lack of information on the species. • A SAII is unlikely for the Slaty Leek Orchid, however, if it is recorded in baseline surveys, monitoring should be established which specifically assesses impacts to hydrology on this species.

		• A SAII is unlikely for all other assessed flora species including *Genoplesium baueri, Melaleuca deanei, Gyrostemon thesioides, Persoonia hirsuta, Rhodamnia rubescens, Pomaderris adnata and Astrotricha crassifolia.* • There is potential that a SAII may occur for Littlejohn's Treefrog. Further information is required to assess the species against Principle 3 (limited geographic distribution) and Principle 4 (species unlikely to respond to measures to improve its habitat and therefore its members are not replaceable). As per section 7.16(4) of the BC Act, additional and appropriate measures for entities where SAII is likely can be provided at the RTS stage. We can provide further advice on this matter once the additional SAII assessment matters requested below have been provided. **Recommendations:** 12.1 Provide further assessment of SAII as follows: • Undertake further survey to rule out the presence of breeding individuals of Large-eared Pied Bat, assume presence or obtain an expert report, in accordance with Section 5.2.4 of the BAM. • Revise the BDAR to include a SAII assessment of the Large Bent-wing Bat, as required by Section 9 of the BAM. • Provide further information to assess the Littlejohn's Treefrog against SAII Principle 3 (limited geographic distribution) and SAII Principle 4 (species unlikely to respond to measures to improve its habitat and therefore its members are not replaceable). 12.2 Search for the Slaty Leek Orchid in the indirect impact area. If it is located it needs to be included in the monitoring program within the Adaptive Management Plan (AMP)/Biodiversity Management Plan (BMP).
13	BDAR Section 10 Impact Summary	The BDAR states that 79 ecosystem credits will be required for direct impacts to PCT 3590 – Southern Sydney Scribbly Gum Woodland. The Eastern Pygmy Possum generated 105 credits, the Powerful Owl, 105 credits and the Giant Dragonfly, 158 credits for direct impacts. Table 10.1.3 of the BDAR provides a range of options for "additional conservation measures" for indirect and prescribed impacts. These are suggested for Coastal Upland Swamps, Giant Burrowing Frog, Giant Dragonfly, Littlejohn's treefrog, Prickly Bush-pea, Red-crowned Toadlet and Southern Myotis. We are reviewing these options with internal experts and will provide further information in supplementary advice.

		Recommendation: 13.1 Undertake surveys/assessment for additional threatened species mentioned in Issues 2 and 3 in Attachment B, and if required, update the BAM-C to determine any additional offsets that may be required as a result of additional assessment.
14	BDAR Section 11 Biodiversity credit report	We have only reviewed the BOAMS and BAM-C case for direct impacts. We have requested the BOAMS/BAM-C case be submitted for review and will provide any comments in supplementary advice.
15	BDAR - species polygons	Some species polygons may change as a result of further assessment. We are reviewing species polygons and will provide further information in supplementary advice and at the Response to Submissions stage.
16	BAM-C	We have only reviewed the BOAMS and BAM-C case for direct impacts. We have requested the BOAMS/BAM-C case for indirect impacts be submitted for review and will provide any comments in supplementary advice. *BAM-C for direct impacts:* • Tab 5, Habitat suitability: Candidate. Gang-gang Cockatoo. It is not clear why the habitat constraints "hollow bearing trees and Eucalypt tree species with hollows at least 3m above the ground and with a hollow diameter of 7cm or larger" were not checked when these occur on site. The Gang-gang cockatoo (Breeding) should be a "confirmed candidate species" in this tab. Clarify if species was surveyed, as per CPHR comments in Issues 2 and 3 above. • Tab 5, Habitat suitability: Candidate. Glossy Black Cockatoo. It is not clear why the habitat constraints "hollow bearing trees and Living or dead tree with hollows greater than 15cm diameter and higher than 8m above ground" were not checked when these occur on site. The Glossy Black Cockatoo (Breeding) should be a "confirmed candidate species" in this tab. Clarify if species was surveyed, as per CPHR comments in Issues 2 and 3 above. **Recommendations:** 16.1 Review the BAM-C case and confirm Gang-gang Cockatoo and Glossy Black Cockatoo as confirmed candidate species, and document in an updated BDAR/BAM-C case. 16.2 Submit the BOAMS/BAM-C case for indirect impacts to CPHR.
17	BDAR Appendix N	Section 8.5 of the BAM states that an Adaptive Management Plan (AMP) can be used to address impacts that are infrequent or difficult to measure and must be developed to address any remaining impacts where

	Adaptive Management Plan	mitigation measures have not been proposed in the Biodiversity Development Assessment Report (BDAR). The BAM also states that the AMP must be in line with the Upland Swamps Offsets Policy. The AMP provided in the BDAR requires revision, with many aspects unsatisfactorily addressed, or requiring further development. At this stage our key issues are: • The AMP includes details on groundwater monitoring locations. It is noted from previous inspections by CPHR that piezometer 106b is not within Swamp S106 and piezometer 106c is on the very edge of the swamp. • The AMP states that the swamps at risk of greater than negligible environmental consequences are not swamps that support known occurrences of the giant dragonfly, however no surveys have been undertaken in these swamps. Furthermore, additional incremental increases to subsidence in swamp 77 which contains records of the giant dragonfly is expected. • Table 1, Summary of prescribed impacts, does not describe the potential for water quality impacts to Littlejohn's Treefrog and Giant Burrowing Frog. There is evidence that Littlejohn's Treefrog is impacted by water quality changes resulting from subsidence (Klop-Toker et al 2025) and impacts to Giant Burrowing Frog are unknown. The Independent Expert Advisory Panel for Mining (IEAPM) recommended that iron flocculent deposition in suitable breeding pools be monitored and incorporated into the triggers for the Large Swamp Amphibian Monitoring TARP.[5] • Section 4.5 states that water level monitoring will be conducted at pools located along Waratah Rivulet, Eastern Tributary, Woronora Reservoir and Woronora River, but not Honeysuckle Creek which is the most significant creek in proximity to the Modification subject area. • Additional impacts to swamps above approved longwalls 311-316 are expected to occur as a result of this Modification and should be included in Performance Indicators to ensure the cumulative impacts of mining are assessed. • The Giant Dragonfly TARP refers to a "relative abundance" parameter. It is not clear that relative abundance is required. • The Giant Dragonfly TARP states that Swamp 92 is outside the Modification area and not subject to potential impact assessment under this Adaptive Management Plan. Further information on the potential for groundwater impacts at S92 as a result of the Ventilation Shaft construction is required before this can be confirmed. • The AMP includes "Swamp Remediation Measures". There is no evidence that swamp remediation is effective[6] and is therefore an unsuitable mitigation measure to prevent greater than negligible

[5] https://www.planning.nsw.gov.au/sites/default/files/2025-06/ieapm-metropolitan-coal-mine-20250331.pdf

		environmental consequences. The only way of ensuring the integrity and ecosystem processes of Coastal Upland Swamps is by avoidance of subsidence related impacts in the first place. • Section 9 of the AMP states the AMP will be subject to ongoing reviews and revisions incorporating emerging knowledge, technology and management techniques to inform mitigation, contingency and the TARP process. This section should also include updates to the AMP as a result of statutory changes such as threatened species listing status. **Recommendations:** 17.1 Refer to recommendations in our previous letter dated 14 April 2025 (Attachment D) regarding suggested locations for swamp groundwater monitoring. 17.2 Clarify that surveys for the Giant Dragonfly have not been completed in swamps within the Modification Area and presence assumed. Should approval be granted, ensure baseline surveys for Giant Dragonfly are undertaken for a minimum of two years prior to mining. 17.3 Incorporate evidence from previous research at Dendrobium mine on water quality impacts to threatened amphibians. 17.4 Incorporate advice from the IEAPM on amphibian monitoring and TARPS, and update TARPS to reflect this advice. 17.5 Include a section on addressing limitations and uncertainties within the monitoring program. This should include, but not be limited to, adequacy of monitoring data, inconclusive outcomes and application of the precautionary principle in determining impacts. 17.6 Clarify if water level monitoring is to be undertaken at Honeysuckle Creek, and if not, provide a justification. 17.7 Include all swamps to be impacted in TARP Performance Indicators, including S74, S75, S106, S117, S119, S130, as well as S76, S77, S91, S113, S114, S115, S139. 17.8 Clarify if the Giant Dragonfly measurement parameter of “relative abundance” is necessary, or whether “abundance” is more appropriate, and update if required. 17.9 Undertake further assessment to determine if the Ventilation Shaft construction will impact S92. 17.10 Should approval be granted we recommend that conditions of consent require that changes to listing status of threatened entities be considered when assessing Performance Measures and offsetting.

CPHR Review – additional matters		
18	Modification Report Figure ES-2	The Modification includes first workings for a new mine to the west of the current mine lease without any environmental assessment. It also identifies that the northern end of the proposed longwall (LW) 318 extends beyond the Metropolitan mine approved extraction area and into an Exploration Lease area. The proposed modification must be "substantially the same development" as that approved as required under s4.55 of the EP&A Act. This includes both "quantitative" changes, as in increases or decreases to the overall extraction footprint and ROM coal to be extracted, as well as "qualitative" changes relating to the nature of the proposed use (Moto Projects (No 2) Pty Ltd V North Sydney Council [1999] NSWLEC 280). The proposed new longwalls 317 and 318 are generally consistent with the approved mine development in terms of both their location and contiguous extension of the existing mining domain. However, the new first workings/headers proposed by the Modification appear to relate to and facilitate a new mine area development, in an area covered only by Exploration Lease (rather than a mining lease) west of the existing mining domains. It is also noted that Peabody's letter of 12 October 2023 initially requesting the Modification states, "*The Modification would seek approval for the continued development of the 300-series mains to the west to allow for access to future coal resources subject to separate mine planning, environmental assessment and approval processes*". The Planning agency reply of 14 November 2023 made no mention of accessing a new mine area being part of the Modification despite identifying three other aspects of the Modification. There was also no response to our further enquiry on seeking to understand this matter in April 2024. Enabling this Modification to access a large new future coal resource in an area administratively separate to and well beyond the current approval requires greater transparency as to how it is "substantially the same development". The proposed first workings for accessing a new mine area appear to be unrelated to the approved development. **Recommendations:** 18.1 Provide information that determines the first workings/gate roads enabling a new mine area to the west is "substantially the same development" as that approved. 18.2 Clarify the legality of mining activity in an Exploration Lease in the absence of an approved development application.

19	Modification Report Section 3.4	The 2009 Metropolitan Coal Project Approval (08_0149) included a provision for Ventilation Shaft 4. This was to be located in largely cleared/disturbed land adjacent to the Old Princes Highway. A major component of the Modification is to relocate the approved (but not yet constructed) Ventilation Shaft 4 inside the Woronora Special Areas in close proximity to Swamps S92 and S93. This represents a major increase in vegetation impacts compared to the mine plan approved in 2009. The relocated Ventilation Shaft 4 footprint will now be subject to direct impacts (e.g. vegetation clearance) of 3.8 ha of largely pristine native vegetation inside the Woronora Special Areas. The BDAR states that the Development Footprint for Ventilation Shaft 4 had been "*reduced"* from the original area of 4.2 ha to 3.8 ha (a reduction of 0.4 ha, or approximately 9.5%), however this is misleading as the relocation of Ventilation Shaft 4 is from largely cleared/disturbed land adjacent to the Old Princes Highway to areas which are largely native bushland inside the Woronora Special Areas. The BDAR does not identify that the boundary of the ventilation shaft area is ~35m from Coastal Upland Swamp S92; ~25m from Coastal Upland Swamp S93; and ~100m from Coastal Upland Swamp S102. As identified earlier, S92 is a particularly significant and important swamp which has a performance measure of *negligible environmental consequence*. There is no assessment or discussion of potential groundwater impacts in relation to the ventilation shaft in the BDAR (Niche 2025) or the Groundwater Report. Mine shafts have the potential to impact aquifers and/or induce cones of groundwater depressions around them, with water from the surrounding aquifers moving down into the shaft voids. **Recommendations:** 19.1 Update the Groundwater Report (and the BDAR) to address potential groundwater aquifer effects of the Ventilation Shaft 4 on Coastal Upland Swamps S92, S93 and S101. 19.2 If impacts are possible, and there is a risk that the Performance Measure could be exceeded for S92, relocate the Ventilation Shaft to avoid S92.
20	Modification Report Subsidence Report (MSEC 2025) Subsidence assessment	Detailed review of CPHR's subsidence assessment can be provided at request of DPHI. The following is a summary of our assessment, focusing on likely environmental consequences to swamps.

		Subsidence impacts to swamps and quantification of impacts <u>Swamp 76</u> Swamp S76 will see an increase in subsidence due to the cumulative effect of LW317 & 318 over and above that approved for the revised LW311-316 EP. At the very high levels of subsidence, upsidence and closure predicted for S76, it is highly likely that the bedrock under S76 will be fractured, and the swamp drained. There are also 3 lineaments mapped as passing through or near S76 which could exacerbate subsidence impact consequences. <u>Swamp 77</u> At the very high levels of subsidence, tilt, upsidence and closure predicted for S77, it is highly likely that the bedrock under S77 will be fractured and the swamp drained. There are also 2 lineaments mapped as passing through the middle of S77 which could also exacerbate subsidence impact consequences. <u>Swamp 92</u> S92 is a particularly significant and important swamp which has a performance measure of *negligible environmental consequence*. As a result of changes to the proposed mine layout in the revised LW311-316 EP, which removed longwalls from mining directly beneath S92, the environmental outcome for S92 is highly uncertain. Swamp S92 will still experience significantly high tilts, stresses, upsidence and closure. It is therefore possible that the bedrock under the northern end of S92 will be fractured and the swamp drained. There is a lineament mapped as passing directly through/underneath the middle of S92 which could also exacerbate subsidence impact consequences. Swamp S92 is also at risk from groundwater depressurisation from the proposed Ventilation Shaft 4. <u>Swamp 106</u> The environmental outcome for S106 is highly uncertain. S106 is expected to experience relatively high subsidence, tilts, stresses, upsidence and closure. It is possible that the bedrock under S106 will be fractured and the swamp drained. There are also 2 lineaments mapped as passing through the middle of S106 (intersecting each other directly above LW318) which could also exacerbate subsidence impact consequences. MSEC (2025) did not provide any subsidence estimates for the incised Honeysuckle Creek tributary that contains/drains from S106. It appears that potential upsidence and closure levels for S106 have potentially been significantly underestimated. <u>Other swamps likely to be impacted by LW 312-316</u>

		Based on the predicted subsidence, tensile and compressive stress, upsidence and closure given for swamps in MSEC (2024; original LW311-316 EP), other swamps likely to suffer adverse consequences (i.e. fracture and drainage) as a result of the approved LW311-316 longwall mining include: S78a&b, S79, S80, S81, S82, S83, S86, S89a&b, S90a&b & S91 <u>Other swamps likely to be impacted by LW 317-318</u> Based on predicted subsidence, tensile and compressive stress, upsidence and closure given for swamps in MSEC (2025; see Appendix 1), other swamps likely to suffer adverse consequences (i.e. fracture and drainage) as a result of the proposed mining include: S74, S75, S91, S113, S114, S115, S119, S130 & S139. Six swamps (Swamps 74, 75, 106, 117, 119, and 130) are identified to have a low potential risk of greater than negligible environmental consequences). These swamps collectively comprise 29.3 ha of PCT 3924 and support a range of threatened species. It is noted that Niche (2025) do not define the term “low”. In addition, the following swamps also have relatively higher subsidence, tilt and stresses (see Appendix 1) which also may result in impacts and adverse consequences: S128, S121, S118, S117, S116. Given S120, S127, S128, and S129 lie directly above either the edges or corners of LW317 & 318, they are also considered particularly at risk of adverse consequences due to high stress levels. <u>Quantification of potentially impacted swamps</u>: If the LW317 & 318 EP is approved, the Metropolitan Mine operations could potentially see cumulative impacts on the Coastal Upland Swamp EEC go up to 40-57 Ha. This number excludes the areas of Flatrock Swamp, S92 and S106. <u>Subsidence exceedances</u> MSEC’s presentation of subsidence exceedances (Fig 3.9) specifically excludes highly relevant subsidence exceedances at Metropolitan mine and therefore could understate the true level of subsidence likely to be experienced for LW317 and 318 in their Subsidence Impact Assessment. The Subsidence Report (MSEC 2025) Section 3.7. *Reliability of the Predicted Conventional Subsidence Parameters,* includes a graph which provides comparisons between maximum observed incremental subsidence and maximum predicted incremental subsidence for the previously extracted longwalls in the Southern Coalfield. It is noted that there are significant discrepancies between this graph of observed

versus predicted subsidence values compared to previous MSEC documents (e.g. the Metropolitan Coal Annual Review 2020 and Metropolitan Mine – 2021 Annual Review Report Subsidence Monitoring Results reports).

MSEC Figure 3.9

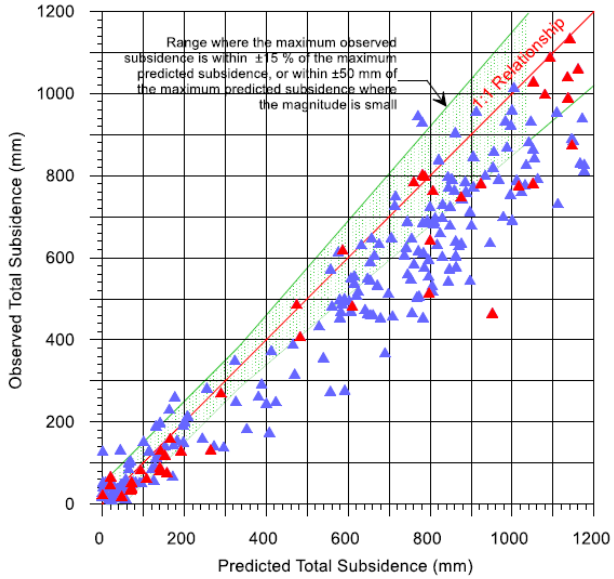

Fig. 3.9 **Comparisons between Maximum Observed Incremental Subsidence and Maximum Predicted Incremental Subsidence for the Previously Extracted Longwalls in the Southern Coalfield**

Recommendations:

20.1 Identify subsidence thresholds for impact consequences and use these to adjust mine layouts so that impacts to significant biodiversity are avoided and a better balance between coal extraction and environmental impact is achieved.

20.2 Clarify subsidence exceedances and refer matter to the IEAPM if necessary.

Appendix 1 CPHR Subsidence calculations

Swamp	Area[1] (Ha)	Max Subsidence PPL	Max subsidence EP 311-316	Swamp after LW317 &318	Max subsidence EP 317-318	Max tilt EP 317-318t	Max curvature hogging EP 317-318	Max Curvature sagging EP 317-318	Max Tensile Strain[59] EP 317-318	Max Compressive Strain[60] EP 317-318	Max upsidence EP 317-318	Max closure EP 317-318
S14	9.3	*10*	10	S14	10	0.25	0.005	0.005	0.075	0.075	10	20
S62	0.46	*500*	10									
S74	~0.85	*40*	175	S74	950	4	0.03	0.06	0.45	0.9	0	0
S75	~0.9	*175*	750	S75	1100	2	0.04	0.04	0.6	0.6	0	0
S76	6	*975*	1300	S76	1250	1.5	0.03	0.03	0.45	0.45	175	125
S77	11.4	*1150*	1450	S77	1450	4.5	0.04	0.04	0.6	0.6	325	325
S78a	~1.4 a & b combined	*1100*	1450									
S78b		*1050*	1450									
S79	~0.7	*1150*	1500									
S80	~0.2	*1050*	1450									
S81	0.73	*825*	1450									
S82	1.44	*600*	1300									
S83	0.2	*825*	1350									
S84	0.26	*475*	700									
S86	0.21	*500*	925									
S88	0.16	*450*	475									
S89a	1.98 a & b combined	*825*	1450									
S89b		*1050*	1200									
S90a	~0.62 a & b combined	*1050*	1500									
S90b		*1000*	1450									
S91	~0.2	*1100*	1050	S91	1050	6	0.03	0.03	0.45	0.45	0	0
S92	9.9	*1200*	1350	S92	575	5	0.03	0.02	0.45	0.3	175	80
S93	~0.7	*40*	20	S93	20	0.25	0.005	0.005	0.075	0.075	10	10
S94	2.57	*60*	80									
S102	~0.7	*10*	10	S102	10	0.25	0.005	0.005	0.075	0.075	0	0
S103	0.09	*10*	10	S103	10	0.25	0.005	0.005	0.075	0.075	0	0
S104	0.14	*10*	10	S104	10	0.25	0.005	0.005	0.075	0.075	0	0
S105	0.31	*10*	10	S105	80	1	0.005	0.005	0.075	0.075	0	0
S106		*175*	50	S106	750	3.5	0.03	0.02	0.45	0.3	50	20
S107	0.43	*600*	150	S107	350	3.5	0.03	0.005	0.45	0.075	0	0
S108	0.16	*550*	100	S108	225	2	0.03	0.005	0.45	0.075	0	0
S109	0.46	*10*	10	S109	80	1	0.01	0.005	0.15	0.075	0	0
S113	0.12	*225*	175	S113	975	2.5	0.02	0.02	0.3	0.3	0	0
S114	0.12	*450*	325	S114	1050	2	0.02	0.02	0.3	0.3	0	0
S115	0.26	*300*	275	S115	1050	1.5	0.02	0.02	0.3	0.3	0	0
S116	0.16	*20*	10	S116	550	3	0.01	0.02	0.15	0.3	0	0
S117	0.5	*50*	30	S117	775	3	0.01	0.02	0.15	0.3	0	0
S118	0.11	*10*	10	S118	575	3	0.01	0.02	0.15	0.3	0	0
S119	1.7	*125*	150	S119	975	3	0.01	0.03	0.15	0.45	0	0
S120	0.37	*10*	10	S120	325	3	0.02	0.005	0.3	0.075	0	0
S121	0.83	*10*	10	S121	625	3	0.01	0.02	0.15	0.3	0	0
S122	0.04	*10*	10	S122	150	1.5	0.01	0.005	0.15	0.075	0	0
S123	0.15	*10*	10	S123	100	1	0.01	0.005	0.15	0.075	0	0
S124	0.09	*10*	10	S124	70	1	0.005	0.005	0.075	0.075	0	0
S125	2.07	*10*	10	S125a	20	0.25	0.005	0.005	0.075	0.075	0	0
S126	0.45	*10*	10	S126a	10	0.25	0.005	0.005	0.075	0.075	0	0
S127	3.42	*10*	10	S127	375	3.5	0.03	0.005	0.45	0.075	0	0
S128	1.74	*30*	325	S128	750	3.5	0.02	0.05	0.3	0.75	0	0
S129	0.02	*10*	30	S129	100	1	0.005	0.005	0.075	0.075	0	0
S130	0.04	*60*	500	S130	1000	2	0.03	0.04	0.45	0.6	0	0
S131	0.38	*10*	30	S131	30	0.25	0.005	0.005	0.075	0.075	0	0
S132	0.1	*10*	90	S132	30	0.25	0.005	0.005	0.075	0.075	0	0
S135		*10*	10	S135	250	2.5	0.02	0.005	0.3	0.075	0	0
S136		*10*	10	S136	10	0.25	0.005	0.005	0.075	0.075	0	0
S139	~1.7	*950*	1200	S139	1250	2	0.04	0.07	0.6	1.05	0	0
Bee Ck	38.6			Bee Ck	10	0.25	0.005	0.005	0.075	0.075	10	10
S99				S99	10	0.25	0.005	0.005	0.075	0.075	0	0
S101	0.7			S101	10	0.25	0.005	0.005	0.075	0.075	0	0
S110	0.04			S110	10	0.25	0.005	0.005	0.075	0.075	0	0
S111a				S111a	10	0.25	0.005	0.005	0.075	0.075	0	0
S111b	0.88			S111b	10	0.25	0.005	0.005	0.075	0.075	0	0
S112	0.13			S112	10	0.25	0.005	0.005	0.075	0.075	0	0
S138				S138	10	0.25	0.005	0.005	0.075	0.075	0	0
S140	0.8			S140	60	0.5	0.005	0.005	0.075	0.075	0	0

[59] Calculated as 15*hogging curvature.
[60] Calculated as 15*sagging curvature.

Table A1. Subsidence predictions for swamps from LW311-316 EP and proposed LW317&318 MOD.

Red = subsidence>700 mm; or tilt >4 mm; or Tensile Strain >0.5 mm/m; or Compressive Strain >2 mm/m; or upsidence >60 mm; or closure>80 mm.

Orange = subsidence>600 mm; or tilt >3.5 mm; or Tensile Strain >0.4 mm/m; or Compressive Strain >1 mm/m.

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Attachment C

CPHR advice on Serious and Irreversible Impacts

We have reviewed Appendix L of the BDAR which contains the applicant's consideration of SAII for the following SAII entities within the direct impact development footprint and the indirect impact area.

The BDAR must present information relating to SAII entities in accordance with section 6.12 of the *Biodiversity Conservation Act 2016* (BC Act) and section 9.1 of the BAM. The '*Guidance to assist a decision-maker to determine a serious and irreversible impact'* (the Guidance) identifies that it is the role of the decision-maker to determine whether or not a proposal is likely to result in SAII. CPHR provides specialist advice on SAII for the decision-maker to consider in their assessment of the project, based on review of the information presented in the BDAR.

Based on assessment against the principles at clause 6.7 of the Biodiversity Conservation Regulation 2017 and relevant supporting guidance and evidence, the advice below indicates whether in our opinion the proposed development is likely or not likely to result in a SAII on those entities.

Table 1. Summary of BCS SAII advice and recommendations

Risk of SAII as evaluated by CPHR	SAII Entity	SAII Principle	Total SAII (ha)
Likely	Coastal Upland Swamps in the Sydney Basin Bioregion	P4	29.3
Likely	Giant Dragonfly	P4	29.3
Unlikely	Broad-headed Snake		N/A
Uncertain – further assessment required	Large-eared Pied Bat	P4	To be determined
Uncertain – further assessment required	Large Bent-wing Bat	P4	To be determined
Uncertain	*Eastern Underground Orchid Rhizanthella slateri*	P2	41.3
Unlikely	Flora: • *Genoplesium baueri* • *Melaleuca deanei* • *Gyrostemon thesioides* • *Persoonia hirsuta* • *Rhodamnia rubescens* • *Prasophyllum fuscum* • *Pomaderris adnata* • *Astrotricha crassifolia*	 P2, P3 P4 P2, P3 P2 P1, P4 P2, P3 P3 P2, P3, P4	N/A

Table 2. SAII assessment for Coastal Upland Swamps Endangered Ecological Community (EEC)

SAII Entity: Coastal Upland Swamps EEC P4		
	Steps [as per section 3.2 of DPIE 2019]	**Comments and Recommendations**
1	Identify relevant entities at risk of SAII	The BDAR has assessed the risk of a SAII to Coastal Upland Swamps EEC against section 9.1.1 of the BAM.
2	Evaluation of the current extinction risk of the impacted entities	The BDAR assesses Coastal Upland Swamps EEC at risk of SAII against Principle 1 (community which is currently in a rapid rate of decline), Principle 2 (community with a very small population size), Principle 3 (evidence of restricted distribution) and Principle 4 (evidence that the TEC is unlikely to respond to management). The BDAR states that Coastal Upland Swamps qualify for SAII under Principle 4 as it is considered irreplaceable due to its reliance on abiotic habitats (Hawkesbury Sandstone aquifers, waterlogged peat substrates) and uncertainties around its response to management. The BDAR also provides evidence of a swamp which, despite persistent impacts in the substrate water levels, species richness and diversity have improved. Stream remediation activities have been undertaken following longwall mining impacts, with some pools successfully remediated.
3	Detail measures taken to avoid impacts on the entity	The SAII assessment in the BDAR provides details on the actions the proponent has taken to avoid and minimise impacts within the scope of the proposed project including: • Shortening LW 317 boundaries (75m north, 67m south) • implementing wider pillars. CPHR acknowledge that without these measures, environmental consequences due to subsidence impacts will be higher. However, CPHR's view is that these measures do not go far enough, and a number of swamps are expected to be fractured and drained based on subsidence predictions. The BDAR states that "*to further minimise impacts, a suite of long-term conservation and management actions have been proposed…including adaptive management, hydrological and ecological monitoring, crack sealing, targeted revegetation, erosion control measures, and collaborative research partnerships*". However, none of these will reduce residual impacts as there is no evidence that impacts can be prevented/fixed once mining has begun/occurred, and several proposed actions do not have a direct connection to the impact or on-ground outcomes.

		Further information on avoidance measures for Coastal Upland Swamps can be found in Section 7 and 9.1.1.2 of the BDAR, with detailed CPHR comments presented in Issue 4 of Attachment B.
4	Evaluate the impacts from the proposal	The BDAR states that six swamps, (29.3 ha) have been identified as having a low risk of greater than negligible environmental consequence, and despite the persistence of some flora, the typical character of these swamps may decline over time. The area of Coastal Upland Swamps that has already been impacted at Metropolitan mine has been estimated at between 5.6 ha (ATC Williams 2025) and 8.7 ha (Krogh 2024).[7] Approved mining within the LW 311-316 Extraction Plan area would represent an increase of 24 ha (including large swamps S76 and S77, and smaller swamps above these longwalls) of impacted Coastal Upland Swamps. Overall, if LW317 and 318 are approved, Metropolitan mine operations could potentially see cumulative impacts on the Coastal Upland Swamps EEC between 40-57 ha. S106 is a large swamp (21 ha in size) predominantly above LW318. The importance of the large swamps (including S76, S77 and S92) has been discussed in detail in our previous submission for the LW312-316 Extraction Plan[8], IEAPM advice for the LW311-316 Extraction Plan and by the Planning Assessment Commission (PAC 2009). WaterNSW have estimated that up to 60% of Coastal Upland Swamps are undermined across their range and almost all Coastal Upland Swamps on the Woronora Plateau are subject to existing underground mining leases. Coastal Upland Swamps is subject to uncontrollable threats such as climate change and bushfire (Cairns et al 2025; Keith et al 2010; Krogh et al 2022). The proposal has the potential to fragment Coastal Upland Swamps within the landscape. Coastal Upland Swamps naturally occur in small patches and have a restricted geographic distribution[9]. Loss of one or more of these patches could lead to loss of connectivity that may place component species, including the threatened Giant Dragonfly, Littlejohn's treefrog, Giant Burrowing Frog and Red-crowned Toadlet, at risk of local extinction. The SAII assessment does not acknowledge there can be a lag between groundwater impacts and vegetation changes. Ecosystem collapse within impacted swamps can occur following catastrophic events such as bushfire or drought (Krogh et al 2022; Mason et al 2020). Furthermore, there is no evidence that any swamp impacted by mining subsidence has ever been successfully remediated (Cairns et al 2024; Commonwealth of Australia 2014).

[7] Not including Flat Rock Swamp which is outside the current approval area, this swamp is around 5.5 ha, and severely degraded.
[8] Our reference DOC24/583146
[9] EPBC Conservation advice: https://www.environment.gov.au/biodiversity/threatened/communities/pubs/140-conservation-advice.pdf

		Given the time-lag between mining and measurable impacts, there is little scope for adaptive management once mining begins. Impacts from longwall mining can be uncertain. The Swamps Offset Policy and BAM provide guidelines for assessing these types of impacts. This SAII assessment takes the approach used in the Swamps Offsets Policy which refers to a "maximum predicted offset liability". In this situation, the precautionary principle is also relevant, consistent with the Swamps Offset Policy, Section 1.3 of the BC Act and the principles of ecologically sustainable development: *"the precautionary principle—namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation."* 6(2) *Protection of the Environment Administration Act 1991*. CPHR consider that the loss of 29 ha may be an underestimate, however, even so, it is a substantial area which is likely to significantly contribute to the risk of extinction for this entity. Coastal Upland Swamps are features of high environmental value that are at risk of impact from mining related subsidence which, once expressed, are permanent and irreversible. If the predicted impacts occur, these will be serious and irreversible. This is based on the extent and type of residual impacts after efforts of avoidance and minimisation have been applied.
5	Determine whether the impacts are SAII	On the basis of the information set out in this table, CPHR considers that a SAII is likely for Coastal Upland Swamps. That is, there is a real chance (as opposed to more probable than not) the proposed Modification will be a significant contributor to the ecological community becoming extinct. Specific advice on additional and appropriate measures that could be taken to minimise SAII can be provided at a later stage, if requested, however broad avoidance recommendations 4.1, 4.2 and 4.3 in Attachment A should be prioritised.

Table 3. SAII assessment for Giant Dragonfly

SAII Entity: Giant Dragonfly *Petalura gigantea* (P4)		
	Steps [as per section 3.2 of DPIE 2019]	**Comments and Recommendations**
1	Identify relevant entities at risk of SAII	The BDAR has assessed risk of SAII to Giant Dragonfly against section 9.1.1 of the BAM.
2	Evaluation of the current extinction risk of the impacted entities	The BDAR sets out the extinction risk against Principles 1-4 in DPIE 2019. This species is listed under Principle 4 of the SAII Guidelines (DPIE 2019).
3	Detail measures taken to avoid impacts on the entity	Further information on avoidance measures for Giant Dragonfly can be found in Section 7 and 9.3.2.2 of the BDAR, with detailed CPHR comments presented in Issue 4 of Attachment B.
4	Evaluate the impacts from the proposal	*Direct impacts* The proposal will directly impact 3.8 ha of foraging/dispersal habitat. This is unlikely to increase fragmentation, and this habitat would not be used for breeding. *Indirect impacts* There has been no survey for the Giant Dragonfly within the Modification subject area. The species was recorded in nearby swamps (S77 and S92) by Niche, and eDNA records were obtained from S14 and Bee Creek by NSW DCCEEW. The BDAR states that the swamps which may be impacted are "*not likely to support known occurrences of the Giant Dragonfly (dense heath)*" without providing evidence of how this conclusion was reached. Note the swamps that NSW DCCEEW recently found eDNA evidence of Giant Dragonfly are swamps which contain similar "dense heath" to those which may be impacted. The proposal may have cumulative effects on S77, with subsidence increasing above levels approved for the LW312-216 Extraction Plan. The proposal has not adequately assessed impacts to groundwater aquifers in S92 due to development of the ventilation shaft. Without survey evidence to rule out the Giant Dragonfly, presence is assumed. 29.3 ha of potential breeding habitat (Coastal Upland Swamps) is predicted to be at risk of "greater than negligible impacts", however CPHR considers this area figure may be underestimated. See Issue 7 in Attachment B for detail. At this stage, impacts to Giant Dragonfly breeding habitat are uncertain (see impact evaluation in the Coastal Upland

		Swamps SAII assessment above). If they do occur, they will be serious and irreversible as the swamp hydrology which constitutes the species' breeding habitat, will be permanently altered and unsuitable for the species' requirements. There is evidence of the loss of breeding habitat and subsequent loss of the species from individual swamps at Dendrobium mine (Invertebrate Identification Australasia 2022). The loss of 29.3 ha is a substantial loss of breeding habitat which has the potential to fragment populations. Even the loss of one of these swamps could extirpate a local population (or the only population). There is no evidence that swamps can be remediated following drainage caused by longwall mining and given the time-lag between mining and measurable impacts, there is little scope for adaptive management once mining begins.
5	Determine whether the impacts are SAII	On the basis of the information set out in this table, CPHR considers that a SAII is likely for Giant Dragonfly. That is, there is a real chance (as opposed to more probable than not) it will be a significant contributor to the species becoming extinct. Specific advice on "additional and appropriate measures" that could be taken to minimise SAII can be provided, if required, at a later stage, however broad avoidance recommendations 4.1, 4.2 and 4.3 in Attachment A should be prioritised.

Table 4. SAII assessment for Broad-headed Snake

SAII Entity: Broad-headed snake (P4)		
	Steps **[as per section 3.2 of DPIE 2019]**	**Comments and Recommendations**
1	Identify relevant entities at risk of SAII	The BDAR has assessed risk of SAII to Broad-headed Snake against section 9.1.1 of the BAM.
2	Evaluation of the current extinction risk of the impacted entities	The BDAR sets out the extinction risk against Principles 1-4 in DPIE 2019. This species is listed under Principle 4 of the SAII Guidelines (DPIE 2019).
3	Detail measures taken to avoid impacts on the entity	Further information on avoidance measures for Broad-headed Snake can be found in Section 7 and 9.3.1.2 of the BDAR, with detailed CPHR comments presented in Issue 4 of Attachment B.

4	Evaluate the impacts from the proposal	The proposal will directly impact 3.8 ha of Scribbly Gum Woodland (PCT 3590) which contains a number of tree hollows that may be used by the species during warmer months. This is not key habitat as it does not include rocky areas and is not a preferred vegetation type. A large number of hollows occur in adjoining areas, including sandstone gully forest (PCT 3595) which is preferred habitat for the species when utilising hollows (Bionet TBDC). The species was recorded in the mid-western (above LW 317) and north-western section (180m NW of LW 318) of the indirect impact area. The BDAR states that predicted subsidence is not likely to change the risk of rockfalls in the area where the species was recorded. While impacts to the abiotic habitat of this species may occur, it is unlikely they would result in the actual loss of those features. The dispersed nature of these impacts would not be of a magnitude that would have a serious and irreversible impact on the species within the subject area, or broader local area.
5	Determine whether the impacts are SAII	On the basis of the information set out in this table, CPHR considers that SAII is unlikely.

Table 5. SAII assessment for Large-eared Pied Bat

SAII Entity: Large-eared Pied Bat (*Chalinolobus dwyeri*) (P4)		
	Steps **[as per section 3.2 of DPIE 2019**	**Comments and Recommendations**
1	Identify relevant entities at risk of SAII	The BDAR has assessed the risk of a SAII to Large-eared Pied Bat against section 9.1.1 of the BAM.
2	Evaluation of the current extinction risk of the impacted entities	The BDAR sets out the extinction risk against Principles 1-4 in DPIE 2019. This species is listed under Principle 4 of the SAII Guidelines (DPIE 2019).
3	Detail measures taken to avoid impacts on the entity	Further information on avoidance measures for Large-eared Pied Bat can be found in Section 7 and 9.3.3.1 of the BDAR, with detailed CPHR comments presented in Issue 4 of Attachment B.
4	Evaluate the impacts from the proposal	The BDAR states that the Large-eared Pied Bat was not recorded within the direct impact area and no direct impacts to habitat are likely. CPHR considers that the direct impact area may be used for foraging only. Direct impacts to non-breeding habitat are not likely to be serious or irreversible. No individuals of this species were recorded within the study area, and no maternity roosts have been identified. CPHR notes that bat survey was limited; two bat detectors were established in Honeysuckle Creek with one failing. Only 16

		detection nights were recorded (out of an attempted 64 nights) in the indirect impact area (which is 472 ha in size). The survey effort does not meet the Threatened Bat Survey Guidelines which require 16 hours per ≤50 ha for passive acoustic detection. Furthermore, in accordance with survey guidelines, if only bat detectors are used to survey the species, then all records derived must assume the species is breeding. The Large-eared Pied Bat has been recorded in the nearby Royal National Park. Microbat surveying in the Water Catchment is likely to be limited due to lack of development pressure and inaccessibility. This means there is insufficient information to confirm if the species is present in the area. MSEC (2025) found that cliff COH19 is likely to experience rockfall as a result of mining induced subsidence. The BDAR states this cliff does not appear to provide suitable roosting habitat for the Large-eared Pied Bat. CPHR is not convinced there is adequate evidence to assume this, and other suitable maternity roosts may occur in the rocky areas elsewhere within the Modification area. Further surveys are required to rule out the presence of breeding bats. Alternatively, assume presence or obtain an Expert Report. If breeding bats are present and subsidence impacts a breeding location, application of the precautionary principle would indicate a SAII is likely.
5	Determine whether the impacts are SAII	On the basis of the information set out in this table, CPHR considers that SAII is unlikely for direct impacts to the subject area. SAII is uncertain for indirect impacts caused by subsidence within the broader study area. Further surveys are required to confirm the area does not contain breeding habitat for this species.

Table 6. SAII assessment for Large Bent-wing Bat

SAII Entity: Large-eared Pied Bat (*Miniopterus orianae oceanensis*) (P4)		
	Steps [as per section 3.2 of DPIE 2019	**Comments and Recommendations**
1	Identify relevant entities at risk of SAII	The BDAR has not assessed the risk of SAII to Large Bent-wing Bat. SAII assessment required.
2	Evaluation of the current extinction risk of the impacted entities	Required This species is listed under Principle 4 of the SAII Guidelines (DPIE 2019).
3	Detail measures taken to avoid impacts on the entity	Required

4	Evaluate the impacts from the proposal	Required
5	Determine whether the impacts are SAII	CPHR requires assessment of the Large Bent-wing Bat to determine if a SAII is likely.

Table 7. SAII assessment for threatened flora

SAII Entities: Flora (SAII principles, in accordance with DPIE 2019 listed in brackets) - *Genoplesium baueri (P2,P4), Melaleuca deanei (P4), Rhizanthella slateri (P2), Gyrostemon thesioides (P2, P3), Persoonia hirsute (P2), Rhodamnia rubescens (P1, P4), Prasophyllum fuscum (P2, P3), Pomaderris adnata (P3), Astrotricha crassifolia (P2, P3, P4)*		
	Steps [as per section 3.2 of DPIE 2019]	**Comments and Recommendations**
1	Identify relevant entities at risk of SAII	All of the above flora species.
2	Evaluation of the current extinction risk of the impacted entities	The BDAR sets out the extinction risk against Principles 1-4 in DPIE 2019.
3	Detail measures taken to avoid impacts on the entity	None of the above species were recorded in the direct impact area. The SAII assessment describes measures to avoid direct and indirect impacts. Further detail on avoidance measures can be found in Section 9.2 of the BDAR.
4	Evaluate the impacts from the proposal	None of the species were recorded within the direct impact area. All of the species were assumed present in the indirect impact area, however *Genoplesium baueri, Melaleuca deanei, Gyrostemon thesioides, Pomaderris adnata, Rhodamnia rubescens, and Astrotricha crassifolia* are unlikely to be impacted by longwall mining as they do not have specific hydrological (or other abiotic) habitat requirements. For the Slaty Leek Orchid *Prasophyllum fuscum,* minor impacts may occur. However, these are unlikely to be of a magnitude that would cause a SAII and the species would be able to tolerate the predicted changes to local hydrology. While this species is associated with moist environments, it has also been recorded in dry sclerophyll forest (AVH Record: NSW 1124323). This species should be included in monitoring studies, should it be recorded during baseline vegetation surveys. The Eastern Underground Orchid (*Rhizanthella slateri*) may be impacted through reduced soil moisture loss as a result of hydrological changes. There is insufficient information known to evaluate impacts on this species.
5	Determine whether the impacts are SAII	On the basis of the information set out in this table, CPHR considers that SAII is unlikely for *Genoplesium baueri,*

		Melaleuca deanei, Gyrostemon thesioides, Pomaderris adnata, Rhodamnia rubescens, and Astrotricha crassifolia. Given the lack of information about the Eastern Underground Orchid, it is uncertain whether there will be a SAII for this species. SAII is unlikely for *Prasophyllum fuscum*, however if it is recorded in baseline surveys, monitoring should be established which specifically assesses impacts to the species through changed hydrology.

Attachment D

CPHR - previous advice on swamp monitoring locations

Department of Climate Change, Energy, the Environment and Water

DOC25/297371

Ms Jessie Evans
Director, Energy & Resource Assessment Underground
Department of Planning, Housing and Infrastructure

By email: Jessie.Evans@dpie.nsw.gov.au

Dear Jessie

Subject: Metropolitan Mine Swamp Monitoring

I am writing to you in relation to the Metropolitan Coal approval (MP08_0149), the upcoming Metropolitan mine Modification 4 – Longwalls 317-318 and monitoring of swamps for longwall mining impact assessment.

The project approval requires preparation of a Biodiversity Management Plan to manage environmental consequences of mining on aquatic and terrestrial flora and fauna, with a specific focus on swamps (Schedule 3 Condition 6(f)). The Biodiversity Management Plan for Longwalls 311-316 includes details of swamp monitoring. We have not received or reviewed the Biodiversity Management Plan for Modification 4 – Longwalls 317-318.

During a recent field inspection (8/4/2025), DCCEEW and Water NSW officers visited several swamp monitoring locations in the vicinity of large swamp 106 and observed that some of these were poorly located either outside the swamp or on the very edge of the swamp. The monitoring locations for S106b, S106c, and S113a are not suitable for monitoring and assessing impacts.

Piezometer S106b is located within dry sclerophyll forest and will be monitoring sclerophyll forest soil characteristics and not swamp peat/organic soil characteristics. Image below. Soil moistures will, under most circumstances, be much lower in dry sclerophyll forest soils compared to swamp peat/organic enriched soils and soil water levels are likely to recede faster than in swampy areas. The placement of piezometers out on the drier edges of the swamp (like S106c) will also provide a very poor assessment of hydrological impacts of mining if they occur.
The best places to monitor swamp hydrology are in the sediment filled drainage lines and towards the end of the swamp (before it discharges to the creek system). These areas are likely to have a deeper depth of peat/organic soils (because they are waterlogged longer) and have more sustained swamp groundwater levels and higher soil moistures.

We recommend that the proponent review all swamp monitoring locations and move any poorly placed monitoring equipment to more suitable locations as soon as possible to ensure required baseline data is collected. Appropriately trained personnel (eg. swamp ecologist, hydrologist) should ensure that all future monitoring equipment is installed in the most appropriate place for meaningful impact assessment. Furthermore, all clearing for monitoring purposes, including tracks

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and installation of equipment, should be to the minimum extent necessary, particularly given the sensitive nature of this threatened vegetation in a protected water catchment area.
We are available to attend a joint site inspection to review this matter with DPHI, and/or the proponent if requested. I also request that you provide me with updates on this matter, including actions taken by both DPHI and the proponent to improve current and future swamp monitoring.

Photo 1: monitoring equipment installed in dry sclerophyll forest at S106B

If you have any further questions about this issue, please contact Ms Vanessa Allen, Senior Conservation Planning Officer, Conservation Programs, Heritage and Regulation, on 0242244186 or at Vanessa.Allen@environment.nsw.gov.au.

Yours sincerely

14/04/2025

Lorraine Oliver
A/Director South East
Regional Delivery
Conservation Programs, Heritage and Regulation

cc. Juri Jung, Water NSW