

Advice to decision maker on coal mining project

IESC 2024-152: Saraji Mine Grevillea Pit Continuation Project (EPBC 2023/09757) – Expansion

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| Requesting agency | The Australian Government Department of Climate Change, Energy, the Environment and Water |
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| Advice stage | Assessment |

The Independent Expert Scientific Committee on Unconventional Gas Development and Large Coal Mining Development (the IESC) provides independent, expert, scientific advice to the Australian and state government regulators on the potential impacts of unconventional gas and large coal mining proposals on water resources. The advice is designed to ensure that decisions by regulators on unconventional gas or large coal mining developments are informed by the best available science.

The IESC was requested by the Australian Government Department of Climate Change, Energy, the Environment and Water to provide advice on BHP Mitsubishi Alliance Coal Operations Pty Ltd's Saraji Mine Grevillea Pit Continuation Project in Queensland. This document provides the IESC's advice in response to the requesting agency's questions. These questions are directed at matters specific to the project to be considered during the requesting agency's assessment process. This advice draws upon the available assessment documentation, data and methodologies, together with the expert deliberations of the IESC, and is assessed against the IESC Information Guidelines (IESC 2024).

Summary

The Saraji Mine Grevillea Pit Continuation Project (the 'project') is a proposed extension to the existing Grevillea open-cut pit within Saraji Mine (SRM), located 25 km north-east of Dysart in the Bowen Basin, Queensland. The project will disturb 220 hectares (ha) of land within Mine Lease Application 700021 (the MLA) (BMA 2024, p. 14) and will extract approximately 55 million tonnes (Mt) of metallurgical Run-of-Mine (ROM) coal over 30 years (BMA 2024, p. 17).

The project is a continuation of current open-cut mining activities, and includes removal of vegetation, topsoil, overburden and interburden, and continued extraction of ROM coal using dragline, truck and shove/excavation methods (BMA 2024, p. 17). The project is proposed to use existing SRM

infrastructure, including the coal handling and preparation plant (CHPP), train load-out facility, tailings storage facilities, coal stockpiles, water management infrastructure and supporting infrastructure (BMA 2024, p. 10). Post-mining, much of the project area is classified as a non-use management area (NUMA; BMA 2024, Figure 6-1, p. 121) and will remain a final void (BMA 2024, p. 95).

The project is in the headwaters of upland tributaries of the Isaac River, within the Isaac-Connors sub-catchment of the Fitzroy Basin (Engeny 2024b, p. 27). The project is located between Spring Creek to the north and Phillips Creek to the south (BMA 2024, p. 14), both of which have been modified or diverted through SRM.

The project area and adjacent riparian corridor associated with Phillips Creek are known, or likely, to provide habitat for faunal species listed by the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), including Ornamental Snake (*Denisonia maculata*), Greater Glider (southern and central) (*Petauroides volans*) and Koala (*Phascolarctos cinereus*) (Engeny 2024a, p. 93). Phillips Creek is also identified as potential habitat for the Squatter Pigeon (*Geophaps scripta scripta*). This riparian vegetation includes groundwater-dependent terrestrial vegetation, provides drought refugia habitat (Engeny 2024a, p. 93) and forms a wildlife corridor providing connectivity to remnant vegetation in the region (BMA 2024, p. 15; Engeny 2024b, p. 20).

The proponent proposes a “setback of 100m – 150m between the southern Project area boundary and Phillips Creek and associated riparian corridor” (BMA 2024, p. 15) to minimise potential direct impacts to the riparian corridor. However, this proposed setback width is inconsistent with Figure 2.1 (BMA 2024, p. 16) and coordinates presented in Table 2.1 (BMA 2024, p. 14) that show substantially smaller distances from the project boundary to Phillips Creek. It is also unclear whether alluvial water levels would be lowered by mining and the final void, which would impact groundwater-dependent vegetation, compromising the setback’s intended protection of the high ecological values of the riparian zone of Phillips Creek.

The project is located within the Bowen Basin where considerable mining activity already occurs. Impacts from the project will contribute to cumulative impacts of mining and other activities to groundwater and surface water ecosystems and their biota across the Basin.

Key potential impacts from this project are:

- removal of 205 ha of vegetation that may alter surface runoff regimes and recharge, increase erosion and sedimentation (e.g. adversely affecting gilgai) and reduce habitat availability and connectivity for native water-dependent flora and fauna;
- reduction in alluvial water availability to riparian vegetation communities, especially terrestrial groundwater-dependent ecosystems (tGDEs), arising from open-cut mining through alluvium in the project area;
- persistent legacy effects of the final void (NUMA), maintained as a groundwater sink, that may continue to reduce alluvial groundwater availability and, if levees fail or are inadequate, intercept floodwaters that are important in maintaining floodplains and their ecological assemblages downstream;
- deteriorating water quality in the final void which would be intensified by evapo-concentration, thus increasing its risks of downstream impacts if floodwaters mix with the poorer quality water impounded by the void;
- contribution to cumulative impacts to groundwater levels, receiving water quality, and water-dependent ecosystems and their biota;

- disruption of landscape connectivity currently provided by Phillips Creek, one of the few remaining and comparatively intact riparian corridors crossing some 60 km NW to SE of the northern Bowen Basin impacted by open-cut mining.

The provided documentation on local-scale hydrogeology and hydrology assessment is incomplete and inadequate for the project area and its immediate surroundings. Additional work required to improve the ecohydrological conceptualisation and address the key potential impacts is summarised below.

- Appropriate field data, including surveying and mapping, are needed to characterise the extent, thickness, and hydrogeological characteristics of the Quaternary alluvium along Phillips Creek and within the project area, including potential lateral and vertical hydraulic connectivity within the alluvium, and with the Tertiary sediments and Permian coal seams.
- Further assessments, including field work, should be completed to improve a local-scale conceptualisation of the alluvial groundwater system, characterise surface water-groundwater interactions and assess whether the model and its predictions are appropriate.
- Additional baseline surveys are needed of the composition and condition of tGDEs, including additional field assessments of their groundwater usage at different times of the year, to clarify potential impacts of the project and guide ongoing monitoring against a more reliable baseline dataset.
- Once further data have been collected, an impact pathway diagram should be developed to refine the understanding of how and where the project may impact water resources within and near the project area. This will assist in developing appropriate monitoring programs and management plans.
- The additional data, revised conceptualisation and the impact pathway diagram may indicate that improved prediction of local groundwater impacts is required, necessitating revised or local-scale modelling.
- Additional groundwater modelling should estimate and clearly document the long-term impacts of the proposed final void and the increased recharge of spoils.
- Given the importance of Phillips Creek and its riparian corridor for regional ecological connectivity, the proponent should confirm that the proposed setback will be 100–150 m wide along the creek, justify the choice of proposed width, and demonstrate that the setback's benefits will not be compromised by changes in the alluvial water levels, during and after mining (e.g. legacy impacts of the final void).
- Explicit account needs to be given to the climate warming trajectory and time horizon governing the impact of climate change on current and future flood risks, and information should be presented on the location, height, or freeboard allowance provided for the levees.
- An assessment should be made of how changes in mine water inventory may contribute to mine affected water releases to the receiving environment.
- The proponent should clarify how predicted drawdown, altered flow regimes in Phillips Creek, potential releases of MAW and removal of 205 ha of vegetation during the proposed 30-year operations will contribute to cumulative impacts of current and foreseeable mining in the area. Particular focus should be on the likely legacy of cumulative impacts of the final void on, for example, groundwater levels and water quality.
- Information is needed on the risks of the project to cumulative impacts on landscape connectivity if the setback is too narrow and/or compromised by lowered water levels in the alluvium.

Context

The project is a proposed expansion of the current Grevillea Pit within Saraji Mine (SRM). The project is located 25 km north-east of Dysart, Queensland, within the Bowen Basin and will mine approximately 55 Mt of ROM coal for 30 years. The project will not increase output from SRM but instead will continue the current operations of the Grevillea Pit (BMA 2024, p. 17). It will use existing infrastructure and processes within SRM, and no additional mine infrastructure areas, CHPP, train load-out facility or tailings storage facilities will be constructed within the project area (BMA 2024, p. 22). However, during pit progression, infrastructure will be relocated as required within the MLA, such as haul roads, pit infrastructure and dams, drains and pipelines (BMA 2024, p. 17). SRM operates under an approved Environmental Authority (EA) that includes this project (BMA 2024, p. 10).

The project is located in the Isaac River catchment where ephemeral streams flow east through mining areas of SRM and adjacent mines, such as Lake Vermont, Peak Downs, Vulcan and Caval Ridge, to enter the Isaac River. The project is bordered by Spring Creek diversion to the north and Phillips Creek to the south, both of which drain to the Isaac River approximately 20 km downstream of the Project (BMA 2024, p. 67). Phillips Creek is the largest waterway intersecting SRM (Engeny 2024b, p. 10). The proponent plans to build flood protection levees (Engeny 2024b, p. 58) that will remain in the landscape, presumably to stop floodwaters entering the final void.

The Saraji mine pits are to be progressively backfilled as much as feasible (BMA 2024, p. 95), leaving residual voids as non-use management areas (NUMAs). The Grevillea Pit's final void will be included in the 1838 ha of SRM residual voids (BMA 2024, p. 120). It appears from Figure 6-1 (BMA 2024, p. 121) that, post-mining, almost the entire MLA will be a void. The water quality of this void is likely to deteriorate over time through evapo-concentration.

The project targets the Harrow and Dysart seams of the Moranbah Coal Measures, within the Blackwater Group (SLR 2024a, p. 33). The main hydrogeological units in and around the project area are the Cainozoic sediments, including Quaternary alluvium, Tertiary sediments and weathered Permian units, and the Permian coal measures (SLR 2024a, p. 40). The Permian coal seams Q, P, H, and D of the Moranbah Coal Measures can be characterised as confined aquifers, while the overburden and interburden function as aquitards (SLR 2024b, p.40). The Quaternary alluvium forms an unconfined aquifer that is sporadically water-bearing. It is located near or alongside Phillips Creek and covers the south-eastern portion of the project area (SLR 2024b, Figure 20, p. 56). The planned final void appears to intersect this alluvium, based on the extent of the alluvium (SLR 2024b, Figure 20, p. 56) and the final design NUMA area (BMA 2024, Figure 6-1, p. 121), and may drain alluvial water away from Phillips Creek during and after periods of episodic flow. This process may lower alluvial water levels and reduce the availability of water for groundwater-dependent vegetation, potentially diminishing the effectiveness of the proponent's proposed setback of 100–150 m from Phillips Creek (BMA 2024, p. 15) aimed at protecting the high-value riparian corridor.

The project area is approximately 220 hectares (ha), of which all has the potential to be disturbed (BMA 2024, p. 14). Desktop and field assessments identified seven Matters of National Environmental Significance (MNES) that are known or have the potential to occur within and around the project area, including the Brigalow Threatened Ecological Community (*Acacia harpophylla* dominant and co-dominant), Greater Glider (southern and central) (*Petauroides volans*), Koala (*Phascolarctos cinereus*), Squatter Pigeon (southern) (*Geophaps scripta scripta*), Ornamental Snake (*Denisonia maculata*), King Bluegrass (*Dichanthium queenslandicum*) and Bluegrass (*Dichanthium setosum*) (BMA 2024, p. 45). Of these, the Ornamental Snake was found within the project area, Greater Glider was observed outside of the project area in vegetation along Phillips Creek, and Squatter Pigeon and Koala had the potential to occur within or close to the project area (BMA 2024, p. 36). Targeted field surveys did not detect either *D. queenslandicum* or *D. setosum* within the project area (BMA 2024, p. 35) and although approximately 150 ha of Brigalow occur in the project area, none of it meets all the criteria to be classified as a Threatened Ecological Community (BMA 2024, Table 3-3, pp. 45-46).

Response to questions

The IESC's advice in response to the requesting agency's specific questions is provided below.

Question 1: Can the Committee provide comment on whether the information provided in the PD, particularly the baseline and modelled data, and the conclusions drawn by the proponent, are sufficient to assess the project's impacts to surface and ground water resources, GDEs and other third-party users, and cumulative impacts with other proposed and existing projects?

Question 2: Can the Committee identify and discuss what, if any, additional information is required to enable the assessment of impacts on surface and ground water resources?

1. Although the proponent has presented information specific to the project, this information is often based on previous SRM studies and models. Further local-scale information or clarity is needed to adequately assess the project's impacts to surface and groundwater resources, GDEs and other third-party users, along with cumulative impacts of other proposed and existing projects. Key issues and required additional information are described in Paragraphs 3–11.
2. Following collection of the data and information outlined in Paragraphs 3–11, an updated evidence-based ecohydrological conceptual model and associated impact pathway diagrams (described in Commonwealth of Australia 2024) should be developed for all water resources and their ecological components in the project area, to ensure that all potential impact pathways are identified and assessed. This will also help guide the development of appropriate monitoring, mitigation and management actions (see response to Question 3).

Groundwater

3. In their conceptualisation of geological features, hydrogeology, and surface water-groundwater interactions, the proponent asserts that the Quaternary alluvium is hydraulically disconnected from underlying aquifers (SLR 2024a, p. 83 and p. 125). There are presently only two monitoring bores in the Phillips Creek alluvium (SLR 2024a, Table 8, pp. 42–48). These are insufficient to support conclusions presented in the conceptual site model and additional evidence has not been provided. Local-scale studies should be conducted to determine the presence and hydrogeological regime of alluvial aquifers and any surface water-groundwater interactions in and near the project area. Additional studies to improve conceptualisation of shallow groundwaters, especially between Phillips Creek and the location of the final void, should include collection of information and data to:
 - a. establish the depth, extent and hydraulic properties of the alluvium;
 - b. establish the extent, permanence and water level changes of any perched aquifers or saturated lenses of groundwater within the alluvium;
 - c. demonstrate that any groundwater present in the alluvium is hydraulically disconnected from underlying aquifers;
 - d. determine the impact to any alluvial groundwater due to stripping of alluvium within the project area or during proposed mining activities; and
 - e. evaluate whether altered water levels in the alluvium may compromise the intended benefits of the setback.
4. Groundwater modelling for the project has used the previous Olive Downs Project regional model that has been updated for multiple mining sites and mining extension projects within the immediate area (SLR 2024a, p. 86).

- a. The model is suitable for estimating regional drawdown in the Permian coal measures but unsuitable for local-scale assessment of the connectivity between surface water and groundwater or groundwater impacts to tGDEs. It is unsuitable due to the lack of supporting evidence for the conceptualisation (Paragraph 3), the lack of local groundwater observations from the alluvial and Quaternary/Tertiary aquifers to demonstrate adequate calibration, and the average absolute calibration residuals of 7.0 m in the project area (SLR 2024a, p. 23). The revised conceptualisation (Paragraph 3) should be used to inform whether local-scale groundwater modelling would assist in predicting changes in water levels in the alluvium during and after mining, to improve predictions of impacts to Phillips Creek and tGDEs.
- b. It is not clear whether predictive groundwater modelling to date appropriately simulates post-mining conditions, especially the final void. Impacts to groundwater flow, levels and quality should be clearly reported for regional-scale and any local-scale groundwater modelling.

Surface Water

5. The project will be incorporated into the existing SRM water management system (WMS). Water balance modelling shows that this WMS has capacity to store any additional mine-affected water (MAW) from the project (BMA 2024, p. 23). However, the water balance modelling is based on previous work undertaken for the greater SRM, and limited information is provided about the model parameters or water supply and demand inputs relevant to this project.
 - a. The SRM EA allows releases of MAW from nine discharge points to waterways across the mine (BMA 2024, Appendix C, p. 21). Information should be provided about past or predicted release volumes and water quality, and how releases are factored into the water balance and mine storage capacity, to assess how this project may impact on the receiving environment.
 - b. It is also noted that Lake Vermont Mine and Peak Downs Mine can release MAW as part of their EAs (Engeny 2024b, p. 22). The proponent should discuss any cumulative impacts of MAW releases from the greater SRM (with the project) and other operations.
 - c. Information should be provided on the assumptions made concerning the rate of global warming or the climate scenarios used to project mine water inventory over the service life of the project.
6. The flood model presents Base Case and Project Case scenarios for Phillips Creek and Spring Creek for the 10%, 1% and 0.1% AEP and PMF events (Engeny 2024b, p. 49).
 - a. It is stated that climate change impacts were included in the flood modelling (BMA 2024, p. 65) but information should be provided on what assumptions were made concerning the rate of global warming and the time horizons considered.
 - b. Flood modelling results show that flood water from Phillips Creek will enter the project area, and levees will be required to provide flood protection and prevent ingress into the pit (Engeny 2024b, p. 58). Information should be presented on the location, height or freeboard allowance provided for the levees during mining operations.
 - c. The model bathymetry “was raised around the proposed mining extent in the Project area to assess the maximum potential flooding impacts associated with the Project footprint” (Engeny 2024b, p. 46). It is not clear if this is just for the project case scenario and whether it includes the constraints imposed by existing or proposed levees. If it is also for the base case, base case flood modelling and differences between base case and project case scenarios would not be accurate and may under-represent changes and/or potential impacts. Further detail is required to clarify these methods and justify their appropriateness.

7. The post-mining landform will largely be a residual void (BMA 2024, Figure 6-1, p. 121), and flood protection landforms and levees will be used to maintain void flood immunity in accordance with EA conditions (Engeny 2024b, p. 58). Very limited information or discussion is provided about the post-mining landform (which is largely a void) and any potential legacy impacts, and management and mitigation measures are only described at a high level.
 - a. The proponent plans to use levees to provide flood immunity for 0.1% AEP events with a suitable freeboard allowance in accordance with hydraulic performance criteria for regulated levees (DESI 2024, referenced in Engeny 2024b, p. 59). Further information is required about levee designs and freeboard allowance, and on how climate change impacts have been considered, to understand if these guidelines are adequate to minimise impacts to downstream ecosystems, such as flood capture or mixing of pit water with floodwaters changing hydrological regimes downstream.
 - b. The final void will be maintained as a groundwater sink (BMA 2024, p. 92) that is likely to evaporate salts and other contaminants over time. The proponent should discuss potential impacts if flood waters overtop the levees, mix with poor-quality void water and either drain into the alluvial sediments or downstream.

Ecology

8. The proponent has relied on documentation provided for the Saraji East Mining Lease Project to describe the presence of GDEs within and adjacent to the project area (2rog 2024, Table 2-1, p. 17). The study by 3D Environmental (2023) was the only one investigating groundwater use by tGDEs. Fieldwork was only done once (August 2020) and although several sites were sampled along Phillips Creek, they did not include the area between the creek and the proposed pit in ML700021 (3D Environmental 2023, Fig. 13, p. 46). Although the methods are suitable for identifying groundwater use by terrestrial GDEs, the field sites and single sampling event are insufficient for fully assessing the potential project-specific and cumulative impacts of the Grevillea Pit expansion or providing an adequate baseline assessment of tGDE condition and groundwater use in the project area. After establishing the extent and seasonality of groundwater-dependence of tGDEs in the area between the creek and the proposed pit, the proponent should conduct appropriate assessments of the composition and condition of terrestrial GDEs to provide suitable baseline data and inform ongoing monitoring associated with potential project-specific and cumulative groundwater drawdown within the alluvium (Paragraphs 3 and 4).
9. Although aquatic GDEs are unlikely given the ephemeral nature of the surface water systems in the project area, there are likely to be subterranean GDEs that may be impacted. The proponent states that subterranean GDEs (stygo fauna) are unlikely to be found in the project area but acknowledges that stygo fauna have been detected in the Bowen Basin, mainly in alluvial sediments (BMA 2024, pp. 101–102). Glanville et al. (2016), not cited by the proponent, reports five families of stygo fauna from the Isaac-Comet Downs sub-bioregion in which the project area lies. The IESC agrees that stygo fauna are unlikely in the coal seams (2rog 2024, p. 29) but recommends a pilot survey of ten bores (DSITIA 2015) from saturated alluvial sediments along Phillips Creek. If this pilot survey yields stygo fauna, the proponent should sample more comprehensively (DSITIA 2015) so that potential impacts of the project on stygo fauna can be assessed and monitored. If no stygo fauna are collected, this increases confidence in the proponent's assertion that this GDE is absent in the project area.
10. The project area and adjacent Phillips Creek riparian corridor include suitable habitat for several EPBC Act-listed species, including the Ornamental Snake, Greater Glider and Koala (Engeny 2024a, pp. 62–77). Phillips Creek was also identified as potential habitat for the Squatter Pigeon. These ecological values are recognised by the proponent (BMA 2024, p. 15). The proponent states (BMA 2024, p. 15) "Strategic project design has incorporated a setback of 100–150 m between the southern Project area boundary and Phillips Creek and associated riparian corridor. This has ensured that no

direct impacts on these comparatively higher adjacent values, will occur as a result of the Project". However, this setback width is inconsistent with Figure 2-1 (BMA 2024, p. 16) and coordinates presented in Table 2-1 (BMA 2024, pp. 14–15) that show substantially lesser distance from the project boundary to Phillips Creek.

- a. Evidence should be presented to justify the adequacy of the proposed 100–150 m width of the setback for protecting aquatic and riparian ecological values, especially if there is potential removal and/or drawdown of alluvial sediments near or within this setback. Insufficient evidence has been provided to support this conclusion (Paragraphs 3 and 4).
 - b. Indirect impacts to Phillips Creek from altered stream hydrology are predicted to be unlikely as changes to the hydrological characteristics and flooding extent in the surface water modelling are minor (Engeny 2024a, p. 93). However, the proponent has not considered impacts from changes in alluvial water levels or altered flooding potentially impacting the condition of the riparian corridor and its vegetation.
11. This project is likely to contribute to the cumulative impacts of mining on waterways and associated water-dependent biota in the northern Bowen Basin. The proponent acknowledges the ecological significance of maintaining waterways and their associated riparian vegetation for landscape connectivity (BMA 2024, p. 120,) and this is a primary reason for the proposed setback of 100-150 m from Phillips Creek (BMA 2024, p. 110). It is especially important because this creek supports one of the few remaining and comparatively intact riparian corridors crossing a strip of some 60 km NW to SE of the northern Bowen Basin that is impacted by open-cut mining. However, there are uncertainties about whether the setback will be at least 100 m wide along the whole creek (Paragraph 10) and whether the setback's effectiveness may be compromised by reduced alluvial water levels arising from the project and final void (Paragraph 10b). More information is needed about the risks posed by these uncertainties to the landscape connectivity values of Phillips Creek.

Question 3: Can the Committee provide comment on the adequacy of the proposed mitigation, management and monitoring measures? Does the Committee consider that any additional measures are needed to remain within the projected levels of impact or reduce the risks to surface and ground water resources, GDEs and other third-party users, considering project impacts alone as well as cumulative impacts with other proposed and existing projects?

12. No project-specific mitigation, monitoring or management plans have been provided for assessment. Management measures in the available documentation are high level and reference existing SRM plans or best-practice guidelines.
13. As the impact assessment concluded that no project-specific impacts to groundwater resources are likely (SLR 2024b, pp. 129–136), the proponent proposes to adopt the existing Saraji Groundwater Monitoring and Management Plan. Further work is required to provide more robust justification for this conclusion, given the issues with the conceptualisation, limited site-specific groundwater data, and the scale of the model (Paragraphs 3 and 4). For example, there are only two monitoring bores in the alluvium and one hand-augered test hole to evaluate sediment saturation. The results of this further work will indicate whether additional water management measures may be necessary and, if so, what these measures might be and how best to monitor their effectiveness.
14. No plans have been provided for surface water management. Information should be provided about water management infrastructure specific to the project, such as bunds, drains and levees. Only general statements are provided about erosion and sediment control measures, separating clean and dirty runoff, and flood protection measures. Detailed information should be provided in management plans such as a project-specific Water Management Plan, Erosion and Sediment Control Plan, and Rehabilitation and Closure Plan. These plans should include and justify proposed mitigation, management and monitoring measures, and show how they will reduce the risks of potential impacts

on downstream water quality and water-dependent ecosystems, changes to flood dynamics and potential groundwater-surface water interactions, including as a result of the final void.

15. The SRM downstream monitoring station on Phillips Creek (BMA 2024, Figure 4-4, p. 71) is not downstream of the project area. This monitoring station should be moved or a new station should be added to monitor any potential water quality impacts to the downstream environment from construction, changes in surface runoff, erosion or sedimentation associated with the project.
16. No mitigation, monitoring or management measures are proposed for terrestrial GDEs as the proponent concludes there will be no project-specific impacts (2rog 2024, p. 48). Mitigation, monitoring and management measures should be considered for terrestrial GDEs, especially for potential indirect impacts from groundwater drawdown.
 - a. Terrestrial GDE condition assessments (Doody et al. 2019) should be conducted along the Phillips Creek riparian corridor to monitor any potential declines in riparian vegetation health associated with drawdown (Paragraph 8).
 - b. Information should be provided on how the proponent plans to validate and monitor the effectiveness of the proposed 100–150 m setback along Phillips Creek in protecting the systems water quality, riparian condition and biota dependent on this habitat (Paragraph 10).
17. No mitigation, monitoring or management measures are proposed for subterranean GDEs as the proponent concludes there will be no project-specific impacts (BMA 2024, p. 102). If the recommended baseline surveys (Paragraph 9) reveal stygofauna, the proponent should propose and justify how potential impacts (e.g. drawdown) will be mitigated and their effectiveness monitored during and after the 30-year life of the mine.
18. Given the significance of the proposed setback and the Committee’s concerns about its viability (Paragraph 10), particular attention should be paid to protection of the setback’s integrity during and after operations. Phillips Creek is one of the few remaining and comparatively intact riparian corridors crossing some 60 km NW to SE of the northern Bowen Basin impacted by open-cut mining.

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| Date of advice | 16 December 2024 |
| Source documentation provided to the IESC for the formulation of this advice | BMA 2024, <i>Saraji Mine: Grevillea Pit Continuation, Preliminary Documentation (EPBC 2023/09757) (including Appendices A–C)</i> , BHP Mitsubishi Alliance (BMA). |
| References cited within the IESC’s advice | <p>2rog 2024. <i>Groundwater-Dependent Ecosystem Impact Assessment, Saraji Mine Grevillea Pit Continuation Project, Technical Report</i>. 2rog Consulting on behalf of BMA, 9 September 2024, 59pp.</p> <p>3d Environmental 2023. <i>Saraji East Mining Lease Project: Groundwater Dependent Ecosystem Assessment</i>, prepared for AECOM Australia Pty Ltd, July 2023, 126pp.</p> <p>Commonwealth of Australia 2024. <i>Information Guidelines Explanatory Note: Using impact pathway diagrams based on ecohydrological conceptualisation in environmental impact assessment</i>. Report prepared for the Independent Expert Scientific Committee on Unconventional Gas Development and Large Coal Mining Development through the Department of Climate Change, Energy, the Environment</p> |

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SLR 2024b. *Saraji Mine Grevillea Pit Continuation Project – Groundwater Impact Assessment*. Prepared for Engeny on behalf of BM Alliance Coal Operations Pty Ltd. 13 September 2024.
