EPBC Act referral

Australian Government
Department of Agriculture, Water and the Environment

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Title of proposal	**2021/9031 - Caval Ridge Mine Horse Pit Extension, Bowen Basin**

Section 1

Summary of your proposed action

1.1 Project industry type Mining

1.2 Provide a detailed description of the proposed action, including all proposed activities

The Caval Ridge Mine (CVM) is owned and operated by BM Alliance Coal Operations Pty Ltd (BMA) and is located primarily within Mining Lease (ML) 1775, with Harrow Creek acting as the southernmost boundary between CVM and Peak Downs Mine (PDM). Associated infrastructure is located on ML 70403 and ML 70462. The northern boundary of the CVM is located approximately five (5) kilometres (km) south-west of Moranbah in the Bowen Basin, Queensland. The CVM was approved in 2011 under EPBC Approval (2008/4417) and has been in operation since 2014. The open cut mining operation uses dragline and truck/shovel equipment that supplies hard coking coal product for the export market. The CVM produces up to 15 million tonnes per annum (Mtpa) of Run-of-Mine (ROM) coal.

The CVM includes two pits: Horse Pit (north of Peak Downs Highway) and Heyford Pit (north of Harrow Creek), both located within ML 1775. Existing infrastructure includes the Caval Ridge rail spur (Goonyella System), Train Load-out Facility (TLF) and coal stockpiles, ROM stockpiles, In Pit Spoil Dumps (IPD), Coal Handling and Processing Plant (CHPP), water management infrastructure and supporting infrastructure (i.e. roads, powerlines, laydown area, workshops and offices).

The proposed action is the extension of the existing Horse Pit footprint at the CVM (as shown in Figure 1 and 2).

The key mining elements of the proposed action are summarised below:

- Extension of the existing Horse Pit beyond the approved extent during FY2025, exclusive of Moranbah Airport and the Moranbah Access Road
- Maximum CVM ROM coal production up to 15 Mtpa
- Revised CVM Life of Mine (LOM) to FY2056
- Development of an Out of Pit Dump (OOPD) in the north-west of ML 70403 (commencing in FY2028)
- Continuation of progressive rehabilitation of disturbed areas with the aim of progressing to a final landform design, including a final void at the conclusion of mining
- Continuation of existing open cut mining techniques including exploration activities
- Continuation of progressive disposal of mining waste and CHPP rejects to IPDs and to the proposed OOPD, and
- Continued use of the existing accommodation and workforce strategy.

The key mine infrastructure elements of the proposed action are summarised below:

- Relocation of enabling infrastructure, including: an Earth Moving Equipment (EME) Build Pad, blasting compound (two relocation options), go-lines, substations, back-access roads and powerlines as required by the progress of mining
- Extension of the haul road to access to the proposed OOPD, including the construction of a bridge over Horse Creek
- Construction of two flood levees: the northern levee protects a portion of Horse Pit and the western levee located at the south-west extent of the proposed OOPD
- Relocation of mine water dams and pipelines will occur ahead of the progress of mining
- Expansion of sediment dam capacities and construction of new sediment dams, clean water diversion drains and mine affected water (MAW) drains to manage runoff associated with the proposed OOPD
- Relocation of the Peak Downs Highway dragline crossing
- Continued use of the CHPP complex, no upgrades to the CHPP are required as a result of the Project
- Continued disposal of dewatered tailings and rejects within spoil, and
- Continued use of the conveyor from PDM, Caval Ridge rail spur, TLF, product coal stockpiles, ROM stockpiles, IPDs, water management system and supporting infrastructure (i.e. roads, powerlines, laydown, workshops and offices).

The Referral Area, encompassing the proposed action, is located north of the Peak Downs Highway over a portion of the existing MLs: ML 1775, ML 70403 and ML 70462 (refer to Figure 4). BMA holds Surface Area (SA) rights over the Referral Area, exclusive of two areas of nil-SA to the east of Horse Pit and adjacent to the Peak Downs Highway (refer to Figure 4). The nil-SA parcels will require an application for SA rights under the Mineral Resources Act 1989 (MR Act).

Prior to the Project commencing, CVM will continue to explore within ML 1775, ML 70403 and ML 70462 in accordance with existing or future State and Commonwealth government approvals.

Details of the Project are outlined on the following figures attached to this referral:

- Figure 1 Project Location

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- Figure 2 Project Overview, and
- Figure 3 Proposed Disturbance.

1.3 What is the extent and location of your proposed action?

See Appendix B

1.5 Provide a brief physical description of the property on which the proposed action will take place and the location of the proposed action (e.g. proximity to major towns, or for off-shore actions, shortest distance to mainland)

The proposed action is located to the east and west of the existing CVM operations. The Referral Area's northern boundary is located approximately five (5) km south-west of Moranbah in the Bowen Basin, Queensland. The proposed action is located in the north of ML 1775, ML 70403 and ML 70462.

1.6 What is the size of the proposed action area development footprint (or work area) including disturbance footprint and avoidance footprint (if relevant)?

Project (Referral) Area: 1214 ha.
Disturbance footprint: 911 ha (Comprising portions of ML 1775, ML 70403 and ML 70462).
Avoidance footprint: 303 ha.

1.7 Proposed action location

Address - Caval Ridge Mine, Moranbah, Queensland, 4744, Australia

1.8 Primary jurisdiction Queensland

1.9 Has the person proposing to take the action received any Australian Government grant funding to undertake this project?

☐ Yes ☑ No

1.10 Is the proposed action subject to local government planning approval?

☐ Yes ☑ No

1.11 Provide an estimated start and estimated end date for the proposed action

Start Date 01/07/2023
End Date 31/07/2056

1.12 Provide details of the context, planning framework and state and/or local Government requirements

The Queensland legislative context is summarised below.

Mineral Resources Act 1989 (MR Act)

The Project is located within ML 1775, ML 70403 and ML 70462. BMA holds SA rights over the Referral Area, exclusive of two areas of nil-SA to the east of Horse Pit and adjacent to the Peak Downs Highway. The nil-SA parcels will require an application for SA rights under the MR Act.

Environmental Protection Act 1994 (EP Act)

Resource activities carried out on mining tenure are approved via the grant of an Environmental Authority (EA) under Chapter 5 of the EP Act. BMA operates the CVM under EA EPML00562013 (issued under the EP Act). An EA Amendment is required for the extension of mining beyond the footprint assessed in the CVM Environmental Impact Statement (2010). Environmental impact assessments have been undertaken for the Project and the EA Amendment Application is due to be submitted during Q3 2021.

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Under the EP Act, rehabilitation of the CVM and the establishment of the final void will be authorised through the Progressive Rehabilitation and Closure Plan (PRCP) framework. The PRCP framework commenced on 1 November 2019 and has a transition period for existing operations. The transitional PRCP for the CVM is due to be submitted in Q4 2022 and will include BMA's commitments to progressive rehabilitation milestones and final landform, these requirements are currently regulated via the CVM EA. It is a requirement that the final landform (including the final void) will be safe, stable and non-polluting. The PRCP will be assessed and approved by the Department of Environment and Science (DES).

Environmental Offset Act 2014 (EO Act) & Queensland Environmental Offsets Policy 2017 (EO Policy)

Under the EO Act, EO Policy offsets will be required for the action. The EO Act provides for offsetting residual impacts on matters of national, State or local environmental significance. Offsets under local, State and Commonwealth jurisdiction can be addressed under an Offsets Delivery Plan (ODP).

Planning Act 2016 (Planning Act)

The Project is located within ML 1775, ML 70403 and ML 70462, and therefore primary approvals (in Queensland) are required under the MR Act and the EP Act. As such, the action is not within local government planning jurisdiction and does not require a development approval under the Planning Act.

Native Title Act 1993 (NT Act)

The NT Act provides recognition for the rights and interests over land and water possessed by Australian Indigenous people under traditional laws and customs. The NT Act sets out specified processes that must be followed for any 'future act' on land or waters that would affect native title rights and interests. The Barada Barna native title determination in 2016 found that native title has been extinguished over the Referral Area.

Aboriginal Cultural Heritage Act 2003 (ACH Act)

The ACH Act provides for the recognition, protection, and conservation of Aboriginal cultural heritage in Queensland. Section 23 of the ACH Act sets out a cultural heritage duty of care. The duty of care requires land users to take all reasonable and practicable measures to ensure their activity does not harm Aboriginal cultural heritage. BMA have a Cultural Heritage Management Plan (CHMP) in place with the Barada Barna, under which cultural heritage matters at the CVM are managed.

1.13 Describe any public consultation that has been, is being or will be undertaken, including with Indigenous stakeholders

The CVM operates with a stakeholder management plan that incorporates communications practices for the site. In addition, the Project has a Communication and Engagement Plan developed by the project team to engage stakeholders impacted by the Project. A Project fact sheet will be displayed on the BHP website during public notification periods.

BMA will undertake a review of the Cultural Heritage Management Plan (CHMP) for the site and consult with the Barada Barna People to undertake appropriate pre-disturbance cultural heritage duty of care surveys. The Traditional Owners were engaged in March, 2021 to discuss the future Project impacts and upcoming public notification process.

The Isaac Regional Council and Members of Parliament (MP) (local and State Government) will be engaged during public notification periods via a telephone call from the Project team. Emailed communication will be sent to community stakeholders (including landowners) impacted by the Project prior to public notification periods, and letters will be sent to those community stakeholders without an email address. The BHP workforce will be informed prior to public notification periods through emailed communication and staff meetings.

The Environmental Authority (EA) Amendment application will most likely be determined by the Department of Environment and Science (DES) as a 'Major Amendment requiring public notification'. As such, the EA Amendment application will be publicly notified during Q1 of 2022 and stakeholders will be afforded the opportunity to provide submissions to the DES during this period.

There will also be a public notice period for the application for Surface Area (SA) rights over two nil-SAs, refer to Figure 4 attached to this Referral, providing further opportunity for stakeholders to provide submissions.

1.14 Describe any environmental impact assessments that have been or will be carried out under Commonwealth, State or Territory legislation including relevant impacts of the project

BMA is currently finalising assessments to determine the potential risks to environmental values from the Project. The technical assessments relevant to this Referral have been completed, including terrestrial ecology, aquatic ecology,

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groundwater and surface water. BMA is finalising these assessments with the view to submit the EA Amendment for the Project during Q3 of 2021. Where relevant to Matters of National Environmental Significance (MNES), impact assessment documentation has been attached to this referral.

1.15 Is this action part of a staged development (or a component of a larger project)?

☑ Yes ☐ No

1.15.1 Provide information about the larger action and details of any interdependency between the stages/components and the larger action

The existing Horse Pit footprint is within the CVM, which was approved in 2011 under EPBC Approval (2008/4417). The proposed action is an extension of the Horse Pit footprint beyond the already approved extent and was not part of the 2008/4417 action assessed. The infrastructure included in this proposed action is limited to that required to support the Horse Pit footprint extension.

1.16 Is the proposed action related to other actions or proposals in the region?

☐ Yes ☑ No

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Section 2

Matters of national environmental significance

2.1 Is the proposed action likely to have any direct or indirect impact on the values of any World Heritage properties?

☐ Yes ☑ No

2.2 Is the proposed action likely to have any direct or indirect impact on the values of any National Heritage places?

☐ Yes ☑ No

2.3 Is the proposed action likely to have any direct or indirect impact on the ecological character of a Ramsar wetland?

☐ Yes ☑ No

2.4 Is the proposed action likely to have any direct or indirect impact on the members of any listed species or any threatened ecological community, or their habitat?

☑ Yes ☐ No

Species or threatened ecological community

King Bluegrass (Dichanthium queenslandicum)

Impact

The proposed action is likely to result in a significant impact on D. queenslandicum through the clearing of 23.40 ha of suitable habitat (Figure 5).

D. queenslandicum is endemic to central and southern Queensland occurring in grassland communities within three disjunct populations (SEWPaC 2013). Although no individuals were recorded during the ecological assessment (Appendix A, Section 7.1.1.1, pp 28), the species was recorded within the CVM MLs during baseline ecological assessments in 2008.

There is 23.4 ha of suitable habitat within the disturbance footprint of the proposed action and 8.04 ha of suitable habitat within the avoidance area. While the habitat is isolated from other habitat areas, the species has been previously recorded at the CVM, and these areas are considered habitat critical to the survival of the species.

The direct loss (habitat removal) of 23.4 ha of habitat critical to the survival of D. queenslandicum is likely to lead to a long-term decrease in the size of a local population and to disrupt/interfere with the breeding cycle (pollination and see dispersal) of a potential local population (as opposed to populations within the greater surrounding landscape).

There is potential for indirect impacts related to the spread or introduction of weed species via the movement of soil, vehicles, machinery and equipment amongst sites. Management measures have been identified to manage the likelihood of this risk.

The removal of 23.40 ha of suitable habitat for D. queenslandicum is likely to decrease the size of a potential local population for the species within the Project Area. Although the removal of suitable habitat within the Study area is likely to reduce the area of occupancy for a local population, due to the isolated nature of habitat observed, species distribution and extent of potential habitat within the sub-region, the habitat impacted by the Project is not considered likely to reduce the area of occupancy of the species within the greater landscape or subregion. Refer to Table 9, Section 7.1, pp 28 of Appendix A.

Species or threatened ecological community

Ornamental snake (Denisonia maculata)

Impact

The proposed action is likely to result in a significant impact on the ornamental snake through clearing of 167.84 ha of preferred ornamental snake habitat. Refer to Figure 6.

Ornamental snake individuals were positively identified during the 2020 wet season survey. As such, the ground-truthed

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ornamental snake habitat mapped at the Referral Area qualifies as important habitat, therefore designating the ornamental snake population in the Referral Area an 'important population'. Refer to Table 11, Section 7.1, pp 35 of Appendix A.

The proposed disturbance (i.e. the extension of an open cut pit) is likely to reduce the area of habitat in the Referral Area and therefore result in a decrease of the local population within the Referral Area that is long-term in scale. Refer to Table 11, Section 7.1, pp 35 of Appendix A.

The ornamental snake habitat within the Horse Pit Project area is subject to ongoing disturbance and likely to support a relatively small population (i.e. limited environmental carrying capacity). As such, the habitat within the disturbance footprint is not considered critical to the survival of the species and unlikely to trigger the species as a whole to decline in response. Refer to Table 11, Section 7.1, pp 35 of Appendix A.

Species or threatened ecological community

Squatter pigeon (southern subspecies) (Geophaps scripta scripta)

Impact

The Project is unlikely to result in a significant impact on the squatter pigeon (southern subspecies) as the species within the disturbance footprint and the broader Moranbah region is not considered to be an 'important population' or an important subpopulation. In addition, no squatter pigeon individuals were observed during the dry season survey or the wet season survey. Refer to Figure 7 attached to this Referral and Table 12, Section 7.1, pp 38 of Appendix A.

The species has a relatively wide distribution between Burdekin-Lynd divide to Charleville and Longreach, east to the coast between Proserpine to Port Curtis and throughout scattered sites in southeast Queensland. The population within this distribution is largely fragmented. Species habitat is generally open forest to sparse, open woodlands containing Eucalyptus, Corymbia, Acacia or Callitris species in the ecologically dominant layer. Foraging and breeding habitats are largely the same however foraging occurs up to 3km from a permanent water source while breeding is typically within 1km from a permanent or ephemeral source of water (Squatter Pigeon Workshop 2011). Refer to Table 12, Section 7.1, pp 38 of Appendix A.

There is 54.82 ha of preferred habitat and 28.71 ha of suitable habitat within the Referral Area that will be disturbed. This habitat is not considered critical to the survival of the species as habitat within the Referral Area is degraded by fragmentation, dense non-native ground cover, lack of permanent water sources and common feral predators. The reduced carrying capacity of habitat may support a correspondingly low population size, although no squatter pigeon individuals were observed during recent surveys (Appendix A). Refer to Table 12, Section 7.1, pp 38 of Appendix A.

The most recent confirmed observation in the area was recorded in 2008 during the original EIS. Squatter pigeon habitat utilisation within the Referral Area is likely intermittent and to exist as part of a larger home range encompassing adjacent and regional squatter pigeon habitat. As such, the local population is not dependent on the degraded habitat present within the Referral Area. Refer to Table 12, Section 7.1, pp 38 of Appendix A.

Species or threatened ecological community

Australian painted snipe (Rostratula australis)

Impact

Preferred habitat for the Australian painted snipe is shallow, terrestrial wetlands and waterways fringed with dense vegetation and/or coarse woody debris. Breeding habitat typically requires a small island within shallow wetlands comprised of exposed mud and various levels of vegetative cover. Refer to Table 10, Section 7.1, pp 32 of Appendix A.

No breeding habitat was recorded within the Referral Area. Within the Referral Area, 1.80 ha of potential intermittent foraging habitat was mapped along Horse Creek (stream order 3), three drainage lines (stream order 1) and a few scattered farm dams. Refer to Figure 8 attached to this Referral. Many of the dams associated with CVM activities were lined with textile cloth and were not included as potential foraging habitat. Refer to Table 10, Section 7.1, pp 32 of Appendix A.

The removal of 1.80 ha of potential intermittent foraging habitat along drainage lines identified within the disturbance footprint is highly unlikely to lead to a long-term decrease in the size of the species' population. Thus, the Project is unlikely to result in a significant impact on Australian painted snipe. Refer to Table 10, Section 7.1, pp 32 of Appendix A.

2.4.2 Do you consider this impact to be significant?

☑ Yes ☐ No

2.5 Is the proposed action likely to have any direct or indirect impact on the members of any listed migratory species or their habitat?

☐ Yes ☑ No

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2.6 Is the proposed action to be undertaken in a marine environment (outside Commonwealth marine areas)?

☐ Yes ☑ No

2.7 Is the proposed action likely to be taken on or near Commonwealth land?

☐ Yes ☑ No

2.8 Is the proposed action taking place in the Great Barrier Reef Marine Park?

☐ Yes ☑ No

2.9 Is the proposed action likely to have any direct or indirect impact on a water resource from coal seam gas or large coal mining development?

☑ Yes ☐ No

Water resource

Surface Water

Impact

No significant impact is likely from the action to a surface water resource and therefore the 'water trigger' does not apply. In addition, monitoring of surface water will continue in accordance with the relevant CVM EA surface water conditions, including the REMP under the Environmental Protection Act 1994.

Water-Dependent Assets

The Referral Area is within the Cherwell Creek catchment, a tributary of the Isaac River, that is ~12.1 km2 (less than 0.06% of the 22,000 km2 Isaac Connor's sub catchment). All watercourses and tributaries in the area are ephemeral (Appendix B Section 2). The majority of the catchment flows north into Horse Creek. 2.2 km north of the Referral Area, Horse Creek flows into Grosvenor Creek. This flow is infrequent due to a weir located at the confluence with Grosvenor Creek. East of this junction, Grosvenor Creek flows into the Isaac River. A minor portion of the Referral Area catchment flows south-east and into Cherwell Creek or its tributaries. Cherwell Creek has a catchment area of 700 km2 and flows through the CVM MLs to the confluence with the Isaac River. Environmental Values relevant to the action and present downstream include aquatic ecosystems, visual recreation, stock watering, aquatic foods, and cultural and spiritual values. No farm water supply users are located along Horse Creek and Cherwell Creek, and recreation uses, and aquaculture are unlikely due to the ephemeral nature of the system.

Aquatic threatened species are unlikely to occur in waterways within or immediately downstream of the action. No licenced surface water users were identified within 10 km of the Referral Area. The weir on Horse Creek at the confluence with Grosvenor Creek is not associated with a water licence.

Assessments Completed

The Surface Water Impact Assessment (Appendix B) considered potential changes to streamflow and hydrology, flooding, water quality and impacts and mitigation measures. Figures 9 to 11 outline the flood extent. IESC information requirements checklist completed (Appendix C). The Geochemistry report (Appendix D) provides an assessment of the geochemical risk. An Aquatic Ecology Assessment (Appendix E) considered the impact on aquatic species and ecosystem functions of waterways within and downstream of CVM.

Assessment Findings

The Horse Creek catchment will be reduced by 4 km2 (7%) as a result of the proposed action. However, the impact diminishes immediately downstream as flow is significantly altered by the weir at the confluence with Grosvenor Creek, resulting in negligible flow impacts downstream. The Cherwell Creek catchment will be reduced by only 0.4% as a result of the proposed action (Appendix B, Section 6.2). Impacts to downstream flow as a result of the action are very minor, including changes to the occurrences of higher or medium flows. As such, the action is unlikely to cause changes to the flow regime that would result in impacts to downstream users (Appendix B, Section 6.2). The proposed action includes flood levees to prevent flood impacts from Horse Creek, i.e. ingress to Horse Pit and to protect the OOPD. Flood modelling determined that this infrastructure achieves 0.1% AEP flood immunity and does not result in impacts to infrastructure, pit inundation or impacts to areas downstream. Modelling also determined the proposed action would not result in significant changes to flood velocities. Flood immunity is achieved with minimal impacts to flood behaviour and impacts from flooding are limited to within the Referral Area (Appendix B, Section 6.1). The final landform is free draining and designed to be a stable landform in a Probable Maximum Flood Dam Failure flood event. Final void modelling in the Groundwater Impact Assessment (Appendix F, Section 6.6), demonstrates the void remains a groundwater sink. The final void extent (and rehabilitation of the CVM) will be managed under the State EP Act.

Impacts to water quality and aquatic ecology have been considered and determined that:

- Direct impacts to water resources is low in a regional context
- Threatened species are unlikely to occur in waterways within or downstream of the action and therefore impacts are unlikely, and
- Potential for impacts to aquatic ecosystem function are unlikely.

Water balance modelling demonstrates the CVM will continue to manage mine water in compliance with the existing State EA approval. The action includes minor upgrades to sediment dam capacity and no upgrades to management of MAW (Appendix B, Section 6.2). Cumulative impacts were assessed and indicated the Project will be able to manage surface water

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impacts appropriately. The weir on Horse Creek alters the natural flow and flood regime and restricts any impacts from propagating further downstream (Appendix B, Section 6.4).

The assessments have determined that impacts associated with the action will be insignificant. Therefore, the 'water trigger' does not apply.

Water resource

Groundwater

Impact

No significant impact is likely from the proposed action to a groundwater resource and therefore the 'water trigger' does not apply. In addition, monitoring of groundwater water will continue in accordance with the relevant CVM EA groundwater water conditions under the Environmental Protection Act 1994.

Water-Dependent Assets

Alluvial groundwater in the region generally exceeds guidelines levels for drinking water, freshwater aquatic systems, and long-term irrigation. Groundwater in Regolith is not suitable for livestock, irrigation, drinking water or aquatic ecosystems. Basalt within the Referral Area is generally suitable for stock water supply and short-term irrigation, but exceeds guidelines for drinking water, freshwater aquatic systems, and long-term irrigation. Water in interburden of the Moranbah Coal Measures (MCMs) is generally suitable for stock water supply.

The landholder bores census found groundwater use to be limited due to low yields. Many bores have been abandoned in favour of water supply from the Sunwater owned pipeline. Groundwater is not privately extracted from the MCMs within 5km of the Referral Area and its unlikely extraction occurs further east (due down dip of the MCMs). Limited groundwater extraction (yields from ~1.6 to 4.7 ML/yr) is primarily from the shallower Fort Cooper CMs.

Appendix E determined stygofauna is not present in groundwaters associated with action.

Assessments Completed

SLR completed a groundwater model and Groundwater Impact Assessment (GIA), Appendix F. The regional groundwater model developed in 2018 for the Olive Downs Project, and ultimately approved at State and Federal levels, was extended to incorporate the CVM, refer to Section 6.1, pp 124 of Appendix F. In addition, the GIA describes groundwater distribution, flow and recharge, water quality, and anthropogenic and environmental usage and provides an assessment of impacts and mitigations measures.

BMA engaged third-party reviewer Dr. Noel Merrick to review the groundwater model and GIA. The third-party review report and sign off of the GIA is provided under Appendix G.

The table of references to the IESC requirements is attached under Appendix C and provides cross references to relevant reports attached to this referral. In addition, a Geochemistry report provides an assessment of the geochemical risk and is under Appendix D.

In addition, the AEIA (Appendix E) considered the impact of the proposed action on GDEs and the potential for presence of stygofauna within and downstream of the CVM.

Assessment Findings

The key findings of the GIA relating to hydrogeology are:

- No privately-owned bores within aquifers within >1 m predicted drawdown
- Impacts to anthropogenic or environmental water users are very unlikely (Appendix F, Section 7.2.1, pp 165 & 8.2.1, pp 167)
- The final void is outside of the Isaac River floodplain
- No impacts are predicted to the hydrology of the Isaac River (Appendix F, Section 6.4.2, pp 134)
- No changes to water levels are predicted in Quaternary alluvium (Appendix F, Section 6.4.2, pp 134), and
- Cumulative drawdown is only predicted in the Regolith and MCMs and doesn't pose a significant risk to water resources (Appendix F, Section 6.3, pp 128).

The key findings of the GIA relating to water quality are:

- Groundwater quality is generally poor as salinity levels are above guideline values for stock watering (ANZECC, 2000). Groundwater in the Quaternary alluvium will not be impacted (Appendix F, Section 5.4.2, pp 100)
- The final void will act as a sink to groundwater flow
- Water quality is unlikely to be impacted (Appendix F, Section 7.4.3, pp 165)
- Leachate from the OOPD will generally be fresh and low in sulfur (Appendix F, Section 7.4.1, pp 134), and
- The action will not impact on stream baseflows or water quality of the Isaac River (Appendix F, Section 6.4.2, pp 134).

The GIA determined it is unlikely the action would result directly or indirectly in a substantial change in hydrogeology of groundwater resources and will not have a significant impact on groundwater quality. Therefore, the action will not have a significant impact on a water resource and as such the 'water trigger' does not apply.

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Water resource

Groundwater Dependent Ecosystems

Impact

No significant impact is likely from the action to groundwater dependant ecosystems (GDEs) and therefore the 'water trigger' does not apply.

Desktop Findings

The National Groundwater Dependent Atlas identified 154 ha of terrestrial GDEs mapped within the Predicted Drawdown Extent (PDE). Mapped GDE areas were in association with watercourse and floodplain vegetation and areas containing underlying basalt located in the south in association with Cherwell and Caval Creeks. Refer to Section 3.3, pp 18 of Appendix H.

The Department of Resources mapped Regulated Vegetation intersecting the GDE Atlas comprising eight REs (refer to Table 3, pp 19 of Appendix H). The DES Queensland Wetland mapping identified Riverine RE wetlands, associated with RE 11.3.25 and wetlands of general ecological significance, and a number of artificial lacustrine bodies associated with existing dams. No Ramsar, important wetlands or wetlands of high ecological significance are mapped within the PDE. Refer to Section 3.3, pp 18 of Appendix H.

Assessments Completed

The GDE Report (Appendix H) provides an assessment of terrestrial GDEs potentially impacted by groundwater drawdown as a result of the Action. The Aquatic Ecology Assessment (Appendix E) assessed potential impacts to aquatic GDEs. In addition, SLR completed a Groundwater Impact Assessment (Appendix F) that outlines predicted drawdown levels and has been used to assess impacts to GDEs.

The table of references to the IESC requirements (Appendix C) provides cross references to relevant reports attached to this referral.

Assessment Findings

GDEs Identified

Most of the vegetation within the central and northern extent of the PDE has been subject to historical impacts. Due to the absence of mapped GDEs and lack of mature vegetation likely to access groundwater, these areas were not included in the GDE assessment. Refer to Section 4.1, pp 24 of Appendix H.

Field survey determined limited areas of riparian vegetation, comprising remnant and regrowth RE 11.3.25 in the north of the PDE, were considered likely to be terrestrial GDEs. Other remnant and regrowth communities (RE 11.5.3, 11.3.2 and 11.3.25) in the south of the PDE contain possible GDEs, determined via presence of potential GDE species: Eucalyptus populnea, Eucalyptus camaldulensis, Melaleuca fluviatilis and Casuarina cunninghamiana. Refer to Section 4.1 of Appendix H.

These species are 'facultative' (i.e. they may utilise groundwater if available, but are not dependent on groundwater). Refer to Section 4.1.2 and Table 8 of Appendix H.

Rooting Depths

Potential GDE indicator species within REs 11.3.2 and 11.3.25 (E. camaldulensis and E. populnea) root zone is up to ~ 23 m deep. As such, REs 11.3.2 and 11.3.25 occurring where DTW is between 5 and 23 mbgl are considered potential terrestrial GDEs. RE 11.3.25 (regrowth and remnant) on Horse Creek are modelled in an area with DTW between 5 and 10 mbgl are considered likely facultative GDEs. RE 11.3.2 in the floodplain of Cherwell Creek and Caval Creek were identified at 15 to 25 mbgl is considered a possible facultative GDE. C. cunninghamiana, is an opportunistic species, accessing groundwater at low elevations and relying on soil water at higher elevations, and Melaleuca species are likely to be facultative. Refer to 5.1.1 of Appendix H.

On sandy plains, potential GDE indicator species within REs 11.3.5 (E. populnea) are considered facultative, with root depths of 13 to 27 m mbgl. As groundwater depths are likely to be greater than 10 mbgl, RE 11.5.3 is considered a possible facultative GDE and areas of RE 11.5.3 with a DTW greater than 20 m are considered unlikely to be a terrestrial GDE. Refer to 5.1.2, pp 30 of Appendix H.

In addition, no potential surface expression GDEs are mapped within the Referral Area and stygofauna was not present. Refer to Section 4.7 under Appendix E.

Potential Groundwater Drawdown

Modelled groundwater drawdown has indicated drawdown extending approximately 4 km south towards Cherwell Creek and approximately 2 km north along Horse Creek. Modelled groundwater drawdown predicts minor impacts to some potential GDEs, refer to Section 6.1 and Table 9 of Appendix H.

Groundwater Quality

The pit will act as a groundwater sink, drawing water into the pit. Therefore, the action is unlikely to impact water quality in

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surrounding strata. Refer to Section 6.6, pp 145 of Appendix F.

Impacts

The assessment identified 1.81 ha of likely GDE and 36.92 ha of possible GDE to be within the area of potential impact. This includes patches of RE 11.3.2, 11.3.25 and 11.5.3, all vegetation communities considered to be facultative (i.e. not solely relying on groundwater). Based on the limited extent and facultative nature the impacts of groundwater drawdown on these areas, impacts are not significant and as such the 'water trigger' does not apply. Refer to Section 6.1 and Table 9 of Appendix H.

2.9.2 Do you consider this impact to be significant?

☐ Yes ☑ No

2.10 Is the proposed action a nuclear action?

☐ Yes ☑ No

2.11 Is the proposed action to be taken by a Commonwealth agency?

☐ Yes ☑ No

2.12 Is the proposed action to be undertaken in a Commonwealth Heritage place overseas?

☐ Yes ☑ No

2.13 Is the proposed action likely to have any direct or indirect impact on any part of the environment in the Commonwealth marine area?

☐ Yes ☑ No

Note: PDF may contain fields not relevant to your application. These fields will appear blank or unticked. Please disregard these fields.

Section 3

Description of the project area

3.1 Describe the flora and fauna relevant to the project area

Flora

The surveys (Appendix A, Section 5.1, pp 26) identified 173 flora species in the Referral Area, comprising 140 native and 33 introduced species. The Referral Area is dominated by non-native grasses and scattered regrowth brigalow (Acacia harpophylla) shrublands.

The surveys identified six Broad Vegetation Groups containing nine regional ecosystems. The canopy and subcanopy species identified include Eucalyptus orgadophila, poplar box (Eucalyptus populnea), Dawson's gum (Eucalyptus cambageana), Eucalyptus thozetiana, narrow-leaved ironbark (Eucalyptus crebra), Corymbia dallachiana, Dallachy's gum (Corymbia dallachiana), Moreton Bay ash (Corymbia tessellaris), Sally's wattle (Acacia salicina), ironwood (Acacia excelsa), Acacia salicina, brigalow (Acacia harpophylla), bendee (Acacia catenulata), yellowwood (Terminalia oblongata), river red gum (Eucalyptus camaldulensis), Queensland ebony (Lysiphyllum hookeri), weeping melaleuca (Melaleuca fluviatalis) and Grevillea striata.

Shrub species identified include dysentery bush (Grewia latifolius), ebony (Lyssiphyllum carronii), dead finish (Archidendropsis basaltica), currant bush (Carissa ovata), Leichhardt bush (Cassia brewsteri), scrub bonaree (Alectryon diversifolia), Melhania oblongifolia, Sida spp., Rostellaria adscendens, wilga (Geijera parviflora), brush hovea (Hovea longipes), myrtle tree (Psydrax oleifolia), Waltheria indica and white wood (Atalaya hemiglauca).

Numerous native forbs and grass species are present in the Referral Area, however ground cover within non-remnant vegetation communities is dominated by introduced pasture grasses.

No threatened flora species were recorded in the Referral Area during recent surveys. However, king bluegrass (Dichanthium queenslandicum) was previously recorded in the CVM MLs (CVM EIS), in an area now occupied by the northern extent of the active Horse Pit. Due to the previous species records, king bluegrass is considered 'known to occur' in the Referral Area. King bluegrass suitable habitat in the Referral Area was identified during the March 2020 survey (Appendix A, Section 5.1.5, pp 38) and is estimated at 31 ha. Refer Figure 5.

Four weed species listed as Weeds of National Environmental Significance or restricted under the Biosecurity Act 2014 were recorded, namely harrisia cactus (Harrisia martinii), common prickly pear (Opuntia stricta), velvet tree pear (Opuntia tomentosa) and parthenium (Parthenium hysterophorus). In addition, ground cover within non-remnant vegetation communities is dominated by introduced pasture grasses including buffel grass (Cenchrus ciliaris), Indian bluegrass (Bothriochloa pertusa), red Natal grass (Melinis repens) and Guinea grass (Megathyrsus maximus).

Fauna

During the two field assessments (Appendix A, Section 5.2, pp 43), 66 fauna species were recorded within the Referral Area, including 60 native species and six pests. Birds accounted for over half (56%) of the fauna species recorded. Bird species, such as brolga (Grus rubicunda), were utilising the limited inundated wetlands, gilgai and farm dams for foraging opportunities. Other species, namely the Australian bustard (Ardeotis australis), Australasian grebe (Tachybaptus novaehollandiae), and Australian wood duck (Chenonetta jubata), were observed incubating nests or with young.

Many fauna species detected were readily visible and mobile (e.g. eastern grey kangaroo (Macropus giganteus)). The survey also identified species such as the spiny knob-tailed gecko (Nephrurus asper), eastern mulch slider (Lerista fragilis) and ornamental snake (Denisonia maculata). Five species of native frog and numerous species of microbat were detected in the Referral Area.

Two threatened fauna species are 'known to occur' in the Referral Area. The ornamental snake (Denisonia maculata) was recorded at two locations during the wet season survey (Appendix A, Section 5.2.3, pp 48). Both ornamental snake records were located in regrowth brigalow (Acacia harpophylla). Ornamental snake 'preferred habitat' in the Referral Area is estimated at 326 ha, refer to Figure 6. The squatter pigeon (Geophaps scripta scripta) was not detected during recent surveys however was recorded during 2006 and 2008 surveys for the CVM EIS (BMA 2009). For this reason, squatter pigeon is considered as known to occur within the Referral Area. 'Preferred habitat' for the species in the Referral Area is estimated at 74 ha, refer Figure 7.

The Commonwealth Protected Matters Search Tool (PMST) report identified the potential for 10 migratory bird species to occur within 50 km the Referral Area. No suitable habitat for migratory birds was identified during surveys, although limited foraging habitat was identified.

Six pest fauna species were recorded during surveys (Appendix A, Section 5.2.5, pp 60): cane toad (Rhinella marina), cat (Felis catus), deer (Cervus sp.), rabbit (Oryctolagus cuniculus), pig (Sus scrofa) and wild dog (Canis lupus).

3.2 Describe the hydrology relevant to the project area (including water flows)

Surface Water

The Referral Area is located within the Horse Creek catchment and a small proportion is located in the Cherwell Creek catchment. Both creeks are a tributary of the Isaac River. The Isaac River catchment is part of the Isaac-Connors sub-catchment, which is part of the Fitzroy River Basin. The Fitzroy River terminates at the Coral Sea south-east of Rockhampton.

Note: PDF may contain fields not relevant to your application. These fields will appear blank or unticked. Please disregard these fields.

Land uses in the Fitzroy River Basin include mining, agriculture and bushland. The Referral Area is ~1214 ha (12.1 km2), representing a fraction of the 22,000 km2 Isaac Connor sub catchment and 140,000 km2 greater Fitzroy Basin catchment.

All watercourses and tributaries within, and in the vicinity of, the Referral Area are ephemeral. After significant rainfall, water remains in ponds that are used for livestock watering. Annual average rainfall recorded 557 mm at Moranbah WTP and 530 mm at Moranbah Airport (SILO data set).

The majority of the Referral Area catchment flows north and into Horse Creek or its tributaries. Horse Creek flows through the Referral Area and beyond the northern boundary of ML 1775. Approximately 2.2 km north of the Referral Area, Horse Creek flows into Grosvenor Creek. This flow is infrequent due to a weir located at the Horse Creek confluence with Grosvenor Creek. Approximately 6 km to the east of this junction, Grosvenor Creek flows into the Isaac River. The catchment area of Horse Creek to the junction with Grosvenor Creek is 57 km2.

A minor portion of the Referral Area catchment flows south-east and into Cherwell Creek or its tributaries. Cherwell Creek has a total catchment area of over 700 km2 and flows through the CVM MLs to its confluence with the Isaac River. The Referral Area covers 3 km2 of the overall 700 km2 catchment.

Groundwater

The study area (i.e the modelled area) is associated with key hydrogeological units: Cainozoic sediments, tertiary Basalt and Permian coal measures. Cainozoic sediments are characterised by Quaternary alluvium (unconfined aquifer localised along Cherwell Creek and the Isaac River) and Quaternary/Tertiary colluvium and weathered units (Regolith) – unit bordering alluvium. The Tertiary Basalt is unconfined, heterogenous and discontinuous, with variable permeability subject to weathering and fracturing. The Permian coal measures are low permeability interburden units with aquitard properties. Coal sequences exhibit water bearing properties. The sandstones of the Clematis Group are considered to form an aquifer and are included within the Great Artesian Basin (GAB). The Clematis Group occurs as a small isolated outcrop in the study area and is not connected to the GAB. The MCMs are the primary aquifer units within the Referral Area. The coal seams are confined fractured rock aquifers, with Q, P, H and D seams forming the main aquifer units. Overburden and interburden act as aquitards and are typically dry, or low yielding.

Regionally, Permian coal measures underlie the Rewan Group, and outcrop along ridgelines to the east and west. Groundwater occurrence within Permian coal measures is restricted to permeable coal seams that exhibit secondary porosity.

The Isaac River is largely a losing system with stream-stage above that of the groundwater levels, resulting in water draining through alluvial sediments to local groundwaters. Occasional periods of baseflow to the river from underlying alluvium may occur after significant rainfall events.

Monitoring results indicate Na and Cl dominate groundwater in the Referral Area. Surficial alluvial and basalts display a mixed water type, with higher proportions of Mg and HCO3-. Groundwater within the alluvium is fresh to saline (average TDS of 556 mg/L). Water in the Regolith is highly saline (average TDS of 7,101 mg/L) and in Tertiary basalt is moderately saline (average TDS of 3,538 mg/L). Water in the MCMs seams is saline (average TDS of 7,598 mg/L) and moderately saline in interburden (average TDS of 5,349 mg/L).

Alluvial groundwater generally exceeds guidelines levels for drinking water, freshwater aquatic systems, and long-term irrigation. Groundwater in the Regolith material is not suitable for livestock, irrigation, drinking water or aquatic ecosystems. Basalt within the Referral Area is generally suitable for stock water supply and short-term irrigation, but exceeds guidelines for drinking water, freshwater aquatic systems, and long-term irrigation. Water in interburden of the MCMs is generally suitable for stock water supply.

The landholder bores census found groundwater use to be limited due to low yields. Many bores have been abandoned in favour of water supply from the Sunwater owned pipeline. Groundwater is not privately extracted from the MCMs within 5km of the Referral Area and it is unlikely that extraction is undertaken further east (due to the down dip of the MCMs). The limited groundwater extraction is primarily from shallower Fort Cooper CMs, with insignificant yields from ~1.6 to 4.7 ML/yr.

3.3 Describe the soil and vegetation characteristics relevant to the project area

Soils

The on-site soils assessment and subsequent laboratory analysis indicates there are a total of three soil orders within the Referral Area, as assessed utilising the revised Australian Soil Classification (Isbell, 2016). Soil types at the Referral Area include Vertosols, Chromosols and Dermosols, and are described below:

- Vertosols – The Vertosols on site generally consisted of brown to very dark brown light to heavy clay A horizons (topsoil) with moderate structure, overlying a medium to heavy medium clay B2 horizon with strong subangular blocky structure. The topsoil showed neutral, non-sodic and non-saline properties with a few locations showing alkaline, sodic and saline properties. The B2 horizon generally showed strongly alkaline, strongly sodic and highly saline properties.
- Chromosols – The Chromosols on site generally consisted of brown loam A horizons (topsoil) with weak structure, overlying a light to light medium clay B2 horizon with moderate angular blocky structure. The topsoil generally showed neutral, non-sodic and non-saline properties, whilst the B2 horizon showed mild to strong alkalinity, non-sodic to marginally sodic and non-saline to slightly saline properties.
- Dermosols – The Dermosols on site generally consisted of very dark brown clay loam to light clay A horizons (topsoil) with weak to moderate structure, overlying a light medium clay B2 horizon with strong subangular blocky structure.

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The topsoil showed neutral, non-sodic and non-saline properties, whilst the B2 horizon generally showed strongly alkaline, strongly sodic and non-saline to highly saline properties.

Vegetation Communities

The Referral Area has been historically cleared for agricultural activities and is dominated by non-native grasses and scattered regrowth brigalow (Acacia harpophylla) shrublands. Most of the vegetation communities within the Referral Area comprise regrowth and non-remnant vegetation. The surveys identified six Broad Vegetation Groups containing nine REs, refer to Figure 2 of Appendix A. Referral Area

Non-remnant vegetation communities within the Referral Area consist of improved/disturbed grasslands dominated by non-native grasses and scattered regrowth brigalow (Acacia harpophylla) shrublands. These non-remnant areas have been subject to historical clearing (e.g. blade ploughing), pasture improvement and weed encroachment. Regrowth brigalow shrubland was observed throughout undulating clay plains across the Referral Area. All vegetation communities show varying levels of degradation associated with CVM existing disturbance and historical land uses, namely: clearing and encroachment by non-native species.

Refer to the attached Terrestrial Ecology Impact Assessment (Appendix A).

3.4 Describe any outstanding natural features and/or any other important or unique values relevant to the project area

There are no outstanding natural features relevant to the Referral Area. The area does not support unique, important or outstanding natural features, rather it is characteristic of modified habitats used for mining and related activities in the region, mainly consisting of grazing agriculture.

3.5 Describe the status of native vegetation relevant to the project area

The Referral Area was found to comprise of 112.40 ha of remnant vegetation, 27.16 ha of HVR vegetation, 971.25 ha of regrowth vegetation, and 688.84 ha of non-remnant areas. Native vegetation within the Referral Area has been historically cleared for agricultural activities. All vegetation communities show varying levels of degradation associated with historical land uses, namely: clearing and encroachment by non-native species.

Refer to the attached Terrestrial Ecology Impact Assessment (Appendix A).

3.6 Describe the gradient (or depth range if action is to be taken in a marine area) relevant to the project area

The topography of the Referral Area is relatively flat with gentle undulation and average elevations of approximately 200 mAHD. Elevations across the Referral Area in general range between approximately 274 mAHD in the east to 220 mAHD in the west. The topography gently grades (<1% slope) east-north east towards the Isaac River, where elevations are approximately 200 mAHD.

3.7 Describe the current condition of the environment relevant to the project area

The Referral Area has been subject to extensive historical disturbance, mostly associated with agricultural activities. Most of the vegetation communities within the Referral Area comprise regrowth and non-remnant vegetation. The Referral Area has been impacted heavily by the encroachment by non-native species.

The Referral Area is located within a highly modified landscape, with drainage systems relatively intact, although modified. Several drainage lines traverse the Referral Area, including minor tributaries to Horse Creek, Nine Mile Creek and Cherwell Creek. The drainage line extent of upper Horse Creek has previously been diverted to allow for operations at the CVM whilst maintaining fluvial processes. Permanent water sources, such as farm and mine dams are scattered throughout the Referral Area. No diversions or further realignment of the existing Horse Creek diversion are required to accommodate the proposed action.

Field surveys (Appendix B) over the Referral Area included geomorphology observations of drainage systems. Horse Creek, including the diverted extent of the drainage line in the south-west of the Referral Area, exhibit extreme to moderate bank erosion. Erosion is evident on banks for the length of Horse Creek, as well as aggregation of sediments on the creek bed.

3.8 Describe any Commonwealth Heritage places or other places recognised as having heritage values relevant to the project

There are no Commonwealth heritage places or other places recognised as having heritage values relevant to the Referral Area.

3.9 Describe any Indigenous heritage values relevant to the project area

The Indigenous heritage values in the Referral Area are managed under a Cultural Heritage Management Plan (CHMP), executed in 2012 between the Barada Barna People and BMA. Under the CHMP the CVM has been subject to cultural heritage assessments and salvage since 2012. The Barada Barna native title determination in 2016 found that native title has been extinguished over the Referral Area.

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Cultural heritage sites have been identified within the Referral Area. All sites were identified and are currently managed in consultation with the Barada Barna People in line with principles outlines in the CHMP. Further consultation will be sought as to future management processes of all sites within the Referral Area. Importantly, the heritage sites located at the CVM will not be disturbed by the action.

3.10 Describe the tenure of the action area (e.g. freehold, leasehold) relevant to the project area

The Referral Area is located on ML 1775, ML 70403 and ML 70462. Two nil-SA's located within ML 1775, require an 'Application for additional surface area on a mining lease' under the Mineral Resources Act 1989 (QLD), which will be lodged by BMA in due course.

The proposed action area is located on the following land parcels:

- Lot 2 on SP260061 (freehold)
- Lot 14 on SP163605 (freehold)
- Lot 4 on RP884695 (freehold)
- Lot 13 on SP151669 (freehold)
- Lot 14 on GV116 (Lands Lease)
- Lot 13 on GV225 (freehold)
- Lot 7 on RP615467 (freehold)
- Lot 8 on RP615467 (freehold)
- Lot 9 on RP615467 (freehold)
- Lot 10 on RP615467 (freehold)
- Peak Downs Highway (State Controlled Road 33A)

3.11 Describe any existing or any proposed uses relevant to the project area

Undisturbed land within the Referral Area is largely proposed to accommodate the extension of Horse Pit to the east and facilitating infrastructure including the new out of pit dump, flood levees, sediment control infrastructure and the relocated blast compound. This referral concerns the Referral Area and disturbance areas outlined on Figure 2 and Figure 3 attached, for the extension of current mining operations.

The Moranbah Airport (owned and operated by BMA) is located immediately north-east of the Referral Area, within a nil-SA extent of ML 1775. BMA will ensure the flow of goods and services into the region from Moranbah Airport will not be impacted by the action and continued operations of CVM.

Land surrounding the Referral Area is largely owned by BMA and is used for cattle grazing.

Note: PDF may contain fields not relevant to your application. These fields will appear blank or unticked. Please disregard these fields.

Section 4

Measures to avoid or reduce impacts

4.1 Describe the measures you will undertake to avoid or reduce impact from your proposed action

The management measures for the proposed action include as below. The existing activities at the CVM operate under a series of management plans and processes (in accordance with existing approvals) and the proposed action will adopt many of these already implemented approaches:

- Vegetation clearing shall not occur outside the delineated boundaries and will be confined to the smallest practicable area required.
- Significant residual impacts to MNES will be offset in accordance with the EPBC Act Environmental Offset Policy.
- Fauna habitat features (hollow logs/limbs, coarse woody debris) will be relocated where practical.
- Pre-clearance surveys will be conducted and no clearing will be undertaken without a fauna spotter catcher present.
- Progressive vegetation clearing methods will be employed to provide fauna time to relocate.
- Dust suppression as required.
- Periodic weed management to identify and eradicate pest species will be undertaken and weed material disposed appropriately.
- Vehicle movement restrictions and hygiene protocols (i.e. wash downs), including movement of vehicles on topsoil stockpiles and in undisturbed habitats.
- Weed treatment areas and infestations will be tracked using GIS/mapping to ensure effective management is being achieved.
- Continuation of environmental management procedures under the current CVM and BMA environmental management system
- The existing water management and monitoring measures outlined in the CVM Mine Water Management Plan (MWMP), CVM Receiving Environmental Monitoring Plan (REMP) and other procedures under the CVM EMP will be revised in accordance with the CVM EA and implemented.
- Progressive rehabilitation will be undertaken as areas become available to reduce the amount of disturbed area.
- Monitoring of groundwater and surface water will continue in accordance with the CVM EA and REMP.

4.2 For matters protected by the EPBC Act that may be affected by the proposed action, describe the proposed environmental outcomes to be achieved

The potential impacts of the proposed action on listed threatened species and communities have been assessed. The Project has identified strategies to mitigate impacts of the proposed action, including minimising the disturbance footprint, avoiding clearing where possible and avoiding further diversion of Horse Creek. Significant residual impacts to MNES will be offset in accordance with the EPBC Act Environmental Offset Policy.

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Section 5

Conclusion on the likelihood of significant impacts

5.1 You indicated the below ticked items to be of significant impact and therefore you consider the action to be a controlled action

- ☐ World Heritage properties
- ☐ National Heritage places
- ☐ Wetlands of international importance (declared Ramsar wetlands)
- ☑ Listed threatened species or any threatened ecological community
- ☐ Listed migratory species
- ☐ Marine environment outside Commonwealth marine areas
- ☐ Protection of the environment from actions involving Commonwealth land
- ☐ Great Barrier Reef Marine Park
- ☐ A water resource, in relation to coal seam gas development and large coal mining development
- ☐ Protection of the environment from nuclear actions
- ☐ Protection of the environment from Commonwealth actions
- ☐ Commonwealth Heritage places overseas
- ☐ Commonwealth marine areas

5.2 If no significant matters are identified, provide the key reasons why you think the proposed action is not likely to have a significant impact on a matter protected under the EPBC Act and therefore not a controlled action

This action is a controlled action for likely or potential impacts to listed threatened species, specifically King Bluegrass (Dichanthium queenslandicum) and Ornamental snake (Denisonia maculata).

The assessments attached have determined that the action will not have a significant impact on a water resource, in relation to coal seam gas development and large coal mining development. The basis for this finding is summarised below.

The Surface Water Impact Assessment (Appendix B) indicates that surface water impacts associated with the action will be insignificant and typically contained within the ML 1775. The basis for this conclusion is as below:

- Impacts resulting from Horse Creek catchment loss diminish immediately downstream as flow is significantly altered by a weir at the confluence with Grosvenor Creek.
- Flood levees achieve 0.1% AEP flood immunity and do not result in impacts to infrastructure, Horse Pit or downstream areas.
- The minimal impacts to flood behaviour and impacts from flooding are limited to within the Referral Area.
- The water management system at CVM will be able to manage water in accordance with the current State approval conditions.
- Minor upgrades are required to incorporate additional sediment dam capacity (at 1:10 AEP 24hr event).
- No upgrades to the management of MAW are required.
- Impacts to downstream flow are very minor and unlikely to cause any impacts to downstream users.
- Impacts to threatened species are unlikely as threatened species are unlikely to occur in waterways within or downstream of the action and no Riparian Vegetation TECs were identified.
- Impacts to aquatic ecosystem function are unlikely.
- The final landform is free draining and designed to be a stable landform in a PMF DF flood event.

The Groundwater Impact Assessment (Appendix F) concluded that there is no realistic possibility that the action would result in a substantial change to the hydrology or water quality of a groundwater water resource and as such, will not have a significant impact on a groundwater water resource. The basis for this conclusion is below:

- The landholder bores assessment found groundwater use to be very limited due to low yields, with no groundwater privately extracted from the MCMs within 5km of the Referral Area, and no privately-owned bores within the alluvium, Regolith or Permian coal measures aquifers within the predicted drawdown >1 m.
- Impacts to anthropogenic or environmental water users are very unlikely.
- There are no future impacts to water users that could not be managed.
- The final void is outside of the Isaac River floodplain and will act as a sink to groundwater flow.
- No impacts are predicted to the hydrology or water quality of the Isaac River.
- No changes to water quantity (levels) or water quality are predicted for the Quaternary alluvium.
- Cumulative drawdown is only predicted in the Regolith and MCMs and does not pose a significant risk to water resources as no water related assets will be affected.
- Groundwater quality is generally poor (salinity is above guideline values for stock watering), for waters in the Regolith, Tertiary basalt and MCMs.
- Runoff and pit inflow water will continue to be contained by the mine water management system at CVM and as such water quality is unlikely to be impacted.
- Leachate from the OOPD would generally be fresh and low in sulfur content, minimising the potential for a change in groundwater quality.

The Groundwater Dependent Ecosystems Report (Appendix H) and the Aquatic Ecology Impact Assessment (Appendix E)

Note: PDF may contain fields not relevant to your application. These fields will appear blank or unticked. Please disregard these fields.

determined that no significant impact is likely to GDEs. The basis for this conclusion is below:

- The action avoids direct clearing of terrestrial GDEs within the PDE and no high ecological significant wetlands are located within the PDE (Section 5 of Appendix H).
- Predicted drawdown identified areas of likely terrestrial GDEs containing remnant RE 11.3.25 along Horse Creek in the 10 m drawdown extent, but within the threshold of root depths (12-23 m). As RE 11.3.25 is facultative, impacts to this community are unlikely. Refer to Table 9 under Appendix H.
- Riparian and floodplain GDEs (REs 11.3.2 & 11.3.25) on Caval and Cherwell creeks are located in the 5-10 m drawdown extent, but within root depth threshold (12-23 m). As REs 11.3.2 and 11.3.25 are facultative, impacts to these communities are unlikely. Refer to Table 9 under Appendix H.
- Approximately 4.63 ha of possible GDE containing RE 11.5.3 is located in the predicted 10 m drawdown. However, RE 11.5.3 is facultative and as such impacts to these possible GDEs are considered to be minor. Refer to Table 9 under Appendix H.
- No potential surface expression GDEs are mapped within the Referral Area. The aquatic assessment concluded that aquatic ecological value of mapped potential GDEs was low to moderate. Refer to Section 4.7 under Appendix E.

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Section 6

Environmental record of the person proposing to take the action

6.1 Does the person taking the action have a satisfactory record of responsible environmental management? Explain in further detail

BMA has an excellent record of responsible environmental management and a strong commitment to continual improvement of environmental performance.

6.2 Provide details of any past or present proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against either (a) the person proposing to take the action or, (b) if a permit has been applied for in relation to the action – the person making the application

BMA has not been subject to any environmental related proceedings in any of the following Courts - High Court, Federal Court, Supreme Court, District Court, and Planning and Environment Court.

BMA has been the subject of environmental related proceedings in the Queensland Magistrates Court, for matters related to State legislation. A fine was imposed and paid by BMA. No conviction was recorded.

6.3 If it is a corporation undertaking the action will the action be taken in accordance with the corporation's environmental policy and framework?

☑ Yes ☐ No

6.3.1 If the person taking the action is a corporation, provide details of the corporation's environmental policy and planning framework

BHP's approach to environmental management is incorporated in the Charter, which outlines 'an overriding commitment to health, safety, environmental responsibility and sustainable development'.

6.4 Has the person taking the action previously referred an action under the EPBC Act, or been responsible for undertaking an action referred under the EPBC Act?

☑ Yes ☐ No

6.4.1 EPBC Act No and/or Name of Proposal

- (2019/8576) Saraji Mine Spring Creek to Phillips Creek Diversion
- (2016/7791) Saraji East Mining Lease Project, Qld
- (2013/6868) Relocation of approximately 16km of Dysart Road and associated service infrastructure
- (2013/6865) Red Hill Mining Project,20kms north of Moranbah, Qld
- (2012/6260) 7 North Dam Extension Project - Peak Downs Mine
- (2012/6268) M Block 3D Seismic Survey Program
- (2009/4759) Hay Point Coal Terminal Expansion
- (2008/4659) Vessel-based Seismic and Hydrographic Sonar Survey
- (2008/4417) Caval Ridge Open Cut Coal Mine Project
- (2008/4418) Develop an Open Cut Coal Mine at Daunia
- (2005/2211) Hay Point Services Coal Terminal Offshore Expansion
- (2005/2248) Goonyella Riverside Coal Mine Expansion, and
- (2004/1447) Norwich Park Coal Mine - Development of East Pit.

Note: PDF may contain fields not relevant to your application. These fields will appear blank or unticked. Please disregard these fields.

Section 7

Information sources

Reference source

BMA. 2009. Caval Ridge Mine Project. Environmental Impact Statement documents. Available from the Queensland State Development, Manufacturing, Infrastructure and Planning website << https://www.statedevelopment.qld.gov.au/coordinator-general/assessments-and-approvals/coordinated-projects/completed-projects/caval-ridge-mine/eis-documents.html>>

Reliability

Highly reliable

Uncertainties

None known

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Section 8

Proposed alternatives

Do you have any feasible alternatives to taking the proposed action?

☑ Yes ☐ No

8.0 Provide a description of the feasible alternative

The Project area is constrained by resource, geographic, environmental, existing infrastructure and feasibility considerations. As such, the only Project alternative to that proposed, is to not proceed with the Project. The direct consequences of not proceeding with the Project are the potential loss of sustained positive economic opportunities for the locality and the region. The potential positive impact of not proceeding with the Project is avoiding the potential environmental impacts. In this case, impacts on land, water and air (and associated physical, biological and social impacts) potentially arising from the Project, would not occur.

Should the Project not proceed, the following high-level impacts are highly likely to be realised:

- Loss of 1,500 jobs in regional Queensland
- Loss of up to A$206 million annual royalty payment to Queensland Government
- Negative economic impacts on local businesses in Moranbah, and
- Removal of community support.

8.1 Select the relevant alternatives related to your proposed action

☐ Timeframes
☐ Locations
☐ Activities

8.25 Do you have another alternative?

☐ Yes ☑ No

Australian Government
Department of Agriculture, Water and the Environment

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Section 9

Person proposing the action

9.1.1 Is the person proposing the action an organisation or business?

☑ Yes ☐ No

Organisation

Organisation name (as registered for ABN/ACN)	BM ALLIANCE COAL OPERATIONS PTY LIMITED
Business name	
ABN	67096412752
ACN	
Business address	Level 14, 480 Queen St, Brisbane City, 4000, QLD, Australia
Postal address	
Main Phone number	0429041853
Fax	
Primary email address	craig.bancroft2@bhp.com
Secondary email address	

9.1.2 I qualify for exemption from fees under Regulation 5.23(1)(ii) of the EPBC Regulations because I am:

☐ Small business
☑ Not applicable

9.1.2.2 I would like to apply for a waiver of full or partial fees under Regulation 5.21A of the EPBC Regulations

☐ Yes ☑ No

9.1.3 Contact (for an organisation - the contact details of the person authorised to sign on behalf of the organisation)

First name	Craig
Last name	Bancroft
Job title	BMA HSE Superintendent Environmental Approvals
Phone	
Mobile	0429041853
Fax	
Email	craig.bancroft2@bhp.com
Primary address	Level 14, 480 Queen St, Brisbane City, 4000, QLD, Australia
Address	

Declaration: Person proposing the action (To be signed by the person at 9.1.3)

I, Craig Bancroft **, declare that to the best of my knowledge the information I have given on, or attached to the EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence. I declare that I am not taking the action on behalf or for the benefit of any other person or entity.**

Signature: Bancroft, Craig 1 Digitally signed by Bancroft, Craig 1 DN: cn=Bancroft, Craig 1, o=BHP Billiton Group Operations Pty Ltd, ou=MULTI-ALLOWED Date: 2021.09.07 17:04:18 +10'00' **Date:** 07/09/2021

I, Craig Bancroft **, the person proposing the action, consent to the designation of** Craig Bancroft **as the proponent for the purposes of the action described in this EPBC Act Referral.**

Signature: Bancroft, Craig 1 Digitally signed by Bancroft, Craig 1 DN: cn=Bancroft, Craig 1, o=BHP Billiton Group Operations Pty Ltd, ou=MULTI-ALLOWED Date: 2021.09.07 17:05:16 +10'00' **Date:** 07/09/2021

Australian Government
Department of Agriculture, Water and the Environment

Note: PDF may contain fields not relevant to your application. These fields will appear blank or unticked. Please disregard these fields.

Proposed designated proponent

9.2.1 Is the proposed designated proponent an organisation or business?

☑ Yes ☐ No

Organisation

Organisation name (as registered for ABN/ACN)	BM ALLIANCE COAL OPERATIONS PTY LIMITED
Business name	
ABN	67096412752
ACN	
Business address	Level 14, 480 Queen St, Brisbane City, 4000, QLD, Australia
Postal address	
Main Phone number	0429 041 853
Fax	
Primary email address	craig.bancroft2@bhp.com
Secondary email address	

9.2.2 Contact (for an organisation - the contact details of the person authorised to sign on behalf of the organisation)

First name	Craig
Last name	Bancroft
Job title	BMA HSE Superintendent Environmental Approvals
Phone	0429 041 853
Mobile	
Fax	
Email	craig.bancroft2@bhp.com
Primary address	Level 14, 480 Queen St, Brisbane City, 4000, QLD, Australia
Address	

Declaration: Proposed Designated Proponent

I, Craig Bancroft **,the proposed designated proponent, consent to the designation of myself as the proponent for the purposes of the action described in this EPBC Act Referral.**

Bancroft, Craig 1

Digitally signed by Bancroft, Craig 1
DN: cn=Bancroft, Craig 1, o=BHP Billiton Group Operations Pty Ltd, ou=MULTI-ALLOWED
Date: 2021.09.07 17:05:38 +10'00'

Signature: ..... **Date:** 07/09/2021

Australian Government
Department of Agriculture, Water and the Environment

Note: PDF may contain fields not relevant to your application. These fields will appear blank or unticked. Please disregard these fields.

Referring party (person preparing the information)

9.3.1 Is the referring party an organisation or a business?

☑ Yes ☐ No

Organisation

Organisation name (as registered for ABN/ACN)	BM ALLIANCE COAL OPERATIONS PTY LIMITED
Business name	
ABN	67096412752
ACN	
Business address	Level 14, 480 Queen St, Brisbane City, 4000, QLD, Australia
Postal address	
Main Phone number	0429 041 853
Fax	
Primary email address	craig.bancroft2@bhp.com
Secondary email address	

9.3.2 Contact (for an organisation - the contact details of the person authorised to sign on behalf of the organisation)

First name	Craig
Last name	Bancroft
Job title	BMA HSE Superintendent Environmental Approvals
Phone	0429 041 853
Mobile	
Fax	
Email	craig.bancroft2@bhp.com
Primary address	Level 14, 480 Queen St, Brisbane City, 4000, QLD, Australia
Address	

Declaration: Referring party (person preparing the information)

I, Craig Bancroft **, declare that to the best of my knowledge the information I have given on, or attached to this EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence.**

Signature: Bancroft, Craig 1 Digitally signed by Bancroft, Craig 1 DN: cn=Bancroft, Craig 1, o=BHP Billiton Group Operations Pty Ltd, ou=MULTI-ALLOWED Date: 2021.09.07 17:08:16 +10'00' **Date:** 07/09/2021

Note: PDF may contain fields not relevant to your application. These fields will appear blank or unticked. Please disregard these fields.

Appendix A

Attachment

Document Type	File Name
action_area_images	F1 ProjectLocation.pdf
action_area_images	F2 ProjectOverview.pdf
action_area_images	F3 ProposedDisturbance.pdf
action_area_images	F4 Surface Area Rights.pdf
action_area_images	F5-F8 MNES Habitat Areas.pdf
action_area_images	F9-F11 Flood Extents.pdf
action_area_images	F12-F17 Groundwater Figures.pdf
action_area_images	MINING_CVM_Proposed_Disturbance_footprint.shp
govt_approval_conditions	Att01-CVM EPBC Act Approval 2008-4417_2011.pdf
govt_approval_conditions	Att02-CVM EPBC Act Variation to Conditions 2008-4417_2016.pdf
govt_approval_conditions	Att03-CVM EA EPML00562013.pdf
govt_approval_conditions	Att04-ML1775 Resource authority.pdf
govt_approval_conditions	Att05-ML70403 Resource authority.pdf
govt_approval_conditions	Att06-ML70462 Resource authority.pdf
supporting_tech_reports	App B P1 HPE Surface Water Impact Assessment.pdf
supporting_tech_reports	App B P2 HPE Surface Water Impact Assessment.pdf
supporting_tech_reports	App B P3 HPE Surface Water Impact Assessment.pdf
supporting_tech_reports	App C IESC Info Requirements Checklist.pdf
supporting_tech_reports	App D HPE Geochemistry Assessment.pdf
supporting_tech_reports	App E HPE Aquatic Ecology Assessment.pdf
supporting_tech_reports	App G Groundwater Impact Assessment Third-Party Review Report.pdf
supporting_tech_reports	App H Terrestrial Groundwater Dependant Ecosystem Assessment Report.pdf
supporting_tech_reports	App F P1 HPE Groundwater Impact Assessment.pdf
supporting_tech_reports	App A HPE Terrestrial Ecology Assessment.pdf
hydro_investigation_files	App F P2 HPE Groundwater Impact Assessment.pdf
hydro_investigation_files	App F P3 HPE Groundwater Impact Assessment.pdf
hydro_investigation_files	App F P4 HPE Groundwater Impact Assessment.pdf
hydro_investigation_files	App F P5 HPE Groundwater Impact Assessment.pdf
hydro_investigation_files	App F P6 HPE Groundwater Impact Assessment.pdf
hydro_investigation_files	App F P7 HPE Groundwater Impact Assessment.pdf
hydro_investigation_files	App F P8 HPE Groundwater Impact Assessment.pdf
hydro_investigation_files	App F P9 HPE Groundwater Impact Assessment.pdf
corp_env_policy_docs	Att-6.3.2 BHP Charter.pdf

Appendix B

Coordinates

Area 1
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Note: PDF may contain fields not relevant to your application. These fields will appear blank or unticked. Please disregard these fields.

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