Saraji Mine Grevillea Pit Continuation Project

Application Number: **02200** Commencement Date: **21/12/2023** Status: **Locked**

1. About the project

1.1 Project details

1.1.1 Project title *

Saraji Mine Grevillea Pit Continuation Project

1.1.2 Project industry type *

Mining

1.1.3 Project industry sub-type

Coal

1.1.4 Estimated start date *

01/05/2025

1.1.4 Estimated end date *

31/12/2055

1.2 Proposed Action details

1.2.1 Provide an overview of the proposed action, including all proposed activities. *

BM Alliance Coal Operations Pty Ltd (BMA) propose to develop the Saraji Mine (SRM) Grevillea Pit Continuation Project to extend existing open cut mining operations into Mining Lease (ML) 700021 (the proposed action) (**Attachment A** – Proposed action layout, Figure 1 – page 1).

The SRM is an open cut mine and has been in operation since 1974, operating using dragline and truck/shovel equipment, supplying hard coking (steel making) coal product for the export market. Currently, SRM mines approximately 16 million tonnes per annum (Mtpa) of Run-of-Mine (ROM) coal. Located within the Isaac Regional Local Government Area (LGA), SRM is located approximately 20 kilometres (km) north of Dysart in the Bowen Basin, Queensland.

It is expected that existing mining operations within Grevillea Pit will exhaust current resources within ML 1782 during Financial Year (FY) 2025. The proposed action will continue SRM mining operations by extending the footprint of the existing Grevillea Pit beyond ML 1782 into ML 700021 (**Attachment B** – Proposed action description, pages (pp.) 1-4).

ML 700021 is positioned directly east of ML 1782 where current SRM mine operations are occurring, and is bordered by Spring Creek in the north, Phillips Creek in the south, and power easements for 132kV/66kV electrical transmission lines to the east. The proposed action seeks to continue Grevillea Pit into ML 700021.

The proposed action will be confined to ML 700021 for which BMA currently holds the Surface Area (SA) (SA1) rights to undertake mining activities granted under the *Mineral Resources Act 1989* (MR Act) in 2018 The existing Grevillea Pit at SRM operates in accordance with, amongst other authorisations, Environmental Authority (EA) EPML00862313, granted under the Queensland *Environmental Protection Act 1994* (EP Act) (**Attachment C** – Environmental authority, pp. 1-59). In 2017, approval was granted for the existing SRM EA to be amended to include the proposed action on ML 700021.

Mining Methodology

The key elements of the proposed action are listed below:

- Continuation of vegetation clearing, the removal and stockpiling of topsoil material, drilling and blasting of overburden and interburden material.
- Continuation of open cut mining (dragline, truck and shovel/excavation methods) of ROM coal from the coal measures to the east beyond the current ML 1782 from FY25.
- Continued use of existing SRM infrastructure (e.g. Coal Handling and Preparation Plant, ROM and product stockpiles, train load-out, water management system and other supporting infrastructure).
- Continued disposal of rejects and tailings in accordance with the EA.
- Construction and operation of new or relocated infrastructure associated with the proposed action within ML 700021 to facilitate and/or support the continuation of open cut mining (detailed further below under Mine Infrastructure).
- Continuation of overburden and interburden material removal (dragline and truck and shovel/excavator methods) to uncover coal, which is placed as back fill in the mined-out pits (in-pit spoil dumps) as mining advances.
- Ongoing exploration activities within ML 700021.
- Continuation of progressive rehabilitation of disturbed areas.

A typical cross section of ML 700021 is provided in **Attachment B** – Proposed action description, Plate 1, page 2.

Mine Infrastructure

The key mine infrastructure currently within the ML 700021 includes:

- Mine access roads and borrow pits.
- Electrical infrastructure including 66kv overhead power lines and substations.
- Water management infrastructure such as dams, drains and pipelines.
- Earth-moving-equipment build pad.
- Flood protection levees.

Over the life of the SRM, the key mine infrastructure within ML 700021 will likely include:

- Haul roads (heavy vehicles), light vehicle roads and access roads including parking lots.
- Pit infrastructure such as floors, walls, benches, ramps and access roads and spoil stockpiles.
- Flood protection levees.
- Water management infrastructure such as dams, drains and pipelines.
- Relocated earth-moving-equipment build pad and supporting infrastructure.
- Electrical infrastructure including new or realigned stub lines and substations.

During pit progression, infrastructure will be relocated as required to support the mine operations within ML 700021. A 50-100 m lead on the high wall will remain to enable positioning of this support infrastructure up to the completion of mining in the pit.

Mine Closure

The proposed action will continue the existing Grevillea Pit up to FY2055. In accordance with Condition E3 of the EA, areas significantly disturbed by mining activities must be rehabilitated in accordance with defined requirements to ensure a safe, stable, and non-polluting landform. As per Condition E15 of the EA, infrastructure constructed by, or for the SRM, must be removed from the site (except where agreement is reached). The proposed action will continue to implement existing rehabilitation and landform planning activities as per current operations. These rehabilitation and closure activities will be guided by the approved PRCP for the mine.

The final landform design is based on the mine planning information and other detail available at the time of preparation of the application for referral. The main features of the final landform will be the rehabilitated overburden dumps to the west. The design of the final landform has been developed through an understanding of the spoil type and volume, waste characterisation, mining sequence and schedules, and required post-mining land use outcomes. The closure landform (excluding void and top of spoil dumps) will be free draining and will not require sediment dams or other water control structures, unless required for the mine.

The design of spoil dumps is an important part of mine rehabilitation. The spoil dumps will be constructed in lifts (or benches) which will be regraded and reshaped to PRCP-approved slopes and contour characteristic prior to soil preparation and revegetation activities to the appropriate Post Mining Land Use (as per the EA and PRCP).

The proposed action area is approximately 220 hectares (ha), with the entire area proposed to be directly impacted. Therefore, the total disturbance footprint is approximately 220 ha.

Activities not included in the Proposed Action

Prior to the proposed action commencing, SRM will continue to carry out authorised activities within ML 700021 in accordance with existing or future State and Commonwealth government approvals.

The proposed action does not include mining and associated activities in the existing SRM adjacent to the proposed action area. Certain activities within the proposed action area are unlikely to have a significant impact on Matters of National Environmental Significance (MNES), and accordingly are excluded from the proposed action for the purposes of this referral. These activities include access tracks, internal power supply infrastructure, survey and demarcation activities, water management infrastructure associated with the existing SRM, exploration activities, works relating to the management or salvage of Aboriginal heritage items, and installation of monitoring equipment. Such activities within the proposed action area are not part of the proposed action and will be addressed in a separate EPBC Act referral, if necessary.

1.2.2 Is the project action part of a staged development or related to other actions or proposals in the region?

No

1.2.6 What Commonwealth or state legislation, planning frameworks or policy documents are relevant to the proposed action, and how are they relevant? *

A description of the Commonwealth and State legislation relevant to the proposed action is provided below.

***Environment Protection and Biodiversity Conservation Act* (EPBC Act) (Cth)**

The EPBC Act provides protection for listed Matters of National Environmental Significance (MNES), which are:

- World heritage properties
- National heritage properties
- Wetlands of international importance
- Listed threatened species and ecological communities
- Listed migratory species
- Protection of the environment from nuclear actions
- Commonwealth marine areas
- The Great Barrier Reef Marine Park
- Nuclear actions
- Water resources (that relate to large coal mining development or coal seam gas development)

The proposed action has the potential to have a significant impact on MNES and therefore has been referred to DCCEEW for further assessment, per the EPBC Act requirements. This referral addresses this Act.

***Native Title Act 1993* (Cth)**

The Barada Barna People are the Native Title holders for the proposed action.

***Aboriginal Cultural Heritage Act 2003* (ACH Act) (Qld)**

The Barada Barna People are considered the Aboriginal Party for the purposes of the ACH Act. The existing Cultural Heritage Management Plan(CHMP) (CLH012020) for the SRM includes the proposed action area and therefore will be adopted for the proposed action.

***Biosecurity Act 2014* (Biosecurity Act) (Qld)**

The Biosecurity Act protects Queensland's economy, biodiversity and people's lifestyles from the threats posed by invasive pests and diseases. Under Section 23 of the Biosecurity Act, individuals and organisations are responsible for taking all reasonable and practical steps to minimise the risks associated with invasive plants under their control. This is known as the general biosecurity obligation. Activities associated with the proposed action will be in accordance with the existing SRM Weed and Feral Animal Management Plan.

***Environmental Protection Act 1994* (EP Act) (Qld), and *Mineral and Energy Resources (Financial Provisioning) Act 2018* (MERFP Act) (Qld)**

The SRM currently operates in accordance with EA EPML00862313 which was amended in 2017 to include the area associated with the proposed action. The amended EA includes the following Environmentally Relevant Activities (ERAs) that may be undertaken as part of the proposed action:

- Schedule 3, ERA 13 - Mining Black Coal
- Ancillary ERA 8 – Chemical Storage
- Ancillary ERA 31 – Mineral Processing
- Ancillary ERA 60 – Waste Disposal
- Ancillary ERA 62 – Resource Recovery and Transfer Facility Operation; and
- Ancillary ERA 63 – Sewage Treatment.

A PRCP has been prepared for the broader SRM operation and includes the proposed action. The PRCP is currently being assessed by Department of Environment and Science (DES). Negotiations with DES are expected in late January 2024 following the RFI period.

Mineral Resources Act 1989 **(MR Act) (Qld)**

BMA has received approval for surface rights across ML 700021 in accordance with the MR Act.

Nature Conservation Act 1992 **(NC Act) (Qld)**

The proposed action site is not located within a high risk Protected Plant Survey Trigger Area, however if critically endangered, endangered, vulnerable and near threatened species are identified through surveys, a Protected Plant Clearing Permit may be required.

A species management program or damage mitigation permit may be required where breeding places are identified in areas to be disturbed. A fauna spotter catcher will be engaged prior to vegetation clearing to assess areas of habitat and manage breeding places should they be present during clearing.

Water Act 2000 **(Water Act) (Qld)**

Watercourses defined under the Water Act are located to the north (Spring Creek) and south (Phillips Creek) of the proposed action, outside of the proposed action boundary. The proposed action does not impact these watercourses and therefore is not expected to require approval under the Water Act.

1.2.7 Describe any public consultation that has been, is being or will be undertaken regarding the project area, including with Indigenous stakeholders. Attach any completed consultation documentations, if relevant. *

BMA maintains ongoing dialogue and consultation with key stakeholders regarding its actions and future plans at its operations in central Queensland. Consultation and engagement with relevant stakeholders to date has focused on providing an overview of BMA operations at SRM, this has included both targeted and public consultation during the ML application and the application for an EA Amendment. BMA's intention to continue mining the Grevillea pit is well understood by stakeholders. The following stakeholders are frequently consulted at various stages of operation development:

- local landholders
- community groups
- Isaac Regional Council
- Native Title parties (Barada Barna People)
- Queensland DES
- Queensland Department of Resources
- Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) including the Independent Expert Scientific Committee (IESC)
- Queensland Department of Regional Development, Manufacturing and Water
- overlapping tenure holders
- worker accommodation village service providers
- infrastructure service providers.

BMA, in consultation with Native Title parties and the local indigenous community, maintains and implements a CHMP at SRM. The CHMP provides consultation opportunities and governs actions to identify and protect cultural heritage artefacts and notable locations.

1.3.1 Identity: Referring party

Privacy Notice:

Personal information means information or an opinion about an identified individual, or an individual who is reasonably identifiable.

By completing and submitting this form, you consent to the collection of all personal information contained in this form. If you are providing the personal information of other individuals in this form, please ensure you have their consent before doing so.

The Department of Climate Change, Energy, the Environment and Water (the department) collects your personal information (as defined by the Privacy Act 1988) through this platform for the purposes of enabling the department to consider your submission and contact you in relation to your submission. If you fail to provide some or all of the personal information requested on this platform (name and email address), the department will be unable to contact you to seek further information (if required) and subsequently may impact the consideration given to your submission.

Personal information may be disclosed to other Australian government agencies, persons or organisations where necessary for the above purposes, provided the disclosure is consistent with relevant laws, in particular the Privacy Act 1988 (Privacy Act). Your personal information will be used and stored in accordance with the Australian Privacy Principles.

See our Privacy Policy to learn more about accessing or correcting personal information or making a complaint.

Alternatively, email us at privacy@awe.gov.au.

☑ **Confirm that you have read and understand this Privacy Notice ***

1.3.1.1 Is Referring party an organisation or business? *

Yes

Referring party organisation details

ABN/ACN	67096412752
Organisation name	BM ALLIANCE COAL OPERATIONS PTY LIMITED
Organisation address	4000 QLD

Referring party details

Name	Hannah Silcox

Job title	Environment Approvals Specialist
Phone	0447337870
Email	hannah.silcox@bhp.com
Address	

1.3.2 Identity: Person proposing to take the action

1.3.2.1 Are the Person proposing to take the action details the same as the Referring party details? *

No

1.3.2.2 Is Person proposing to take the action an organisation or business? *

Yes

Person proposing to take the action organisation details

ABN/ACN	67096412752
Organisation name	BM ALLIANCE COAL OPERATIONS PTY LIMITED
Organisation address	4000 QLD

Person proposing to take the action details

Name	Craig Bancroft
Job title	Manager - Environment
Phone	0429041853
Email	craig.bancroft2@bhp.com
Address	Level 14, 480 Queen Street, Brisbane, Qld 4000

1.3.2.14 Are you proposing the action as part of a Joint Venture? *

No

1.3.2.15 Are you proposing the action as part of a Trust? *

No

1.3.2.17 Describe the Person proposing the action's history of responsible environmental management including details of any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against the Person proposing to take the action. *

The proponent of the proposed action is BMA and is owned 50:50 by BHP Group Limited (BHP) and Mitsubishi Development Pty Ltd (operated by BHP) and is Australia's largest supplier of seaborne metallurgical coal. BMA operates eight Bowen Basin mines: Blackwater, Broadmeadow, Goonyella Riverside, Peak Downs, SRM, Saraji South Mine, Caval Ridge and Daunia as well as owning and operating the Hay Point Coal Terminal near Mackay.

BMA has an excellent record of responsible environmental management and a strong commitment to the communities and the environments in which it operates. BMA has no convictions for breaches of environmental management requirements and regularly reviews environmental performance and publicly reports on progress.

BMA has not been subject to any environmental related proceedings in any superior State or Federal 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.

The proposed action will be undertaken in accordance with the BMA's environmental policy and framework.

BMA has been responsible for multiple actions approved and under assessment, under the EPBC Act, including (but not limited to):

- 2023/9723 – BM Alliance Coal Operations Pty Ltd, Blackwater Mine – North Extension Project (draft received)
- 2022/9350 – BM Alliance Coal Operations Pty Ltd, Peak Downs Mine Continuation Project (under assessment)
- 2022/9279 – BM Alliance Coal Operations Pty Ltd, Blackwater Mine South Coking Coal Project (assessment commenced)
- 2021/9031 – BM Alliance Coal Operations Pty Ltd, Caval Ridge Mine Horse Pit Extension (under assessment)
- 2019/8576 – BM Alliance Coal Operations Pty Ltd, Saraji Mine Spring Creek to Phillips Creek Diversion.
- 2016/7791 – BM Alliance Coal Operations Pty Ltd, Saraji East Mining Lease proposed action (approved)
- 2013/6868 – BM Alliance Coal Operations Pty Ltd, Dysart Road Relocation (approved)
- 2013/6865 – BM Alliance Coal Operations Pty Ltd, Red Hill Mining Proposed action (approved)
- 2012/6268 – BM Alliance Coal Operations Pty Ltd, M Block 3D Seismic Survey Program (approved)
- 2009/4759 – BM Alliance Coal Operations Pty Ltd on behalf CQCA Joint Venture, Hay Point Coal Terminal Expansion (approved)

- 2008/4659 – BM Alliance Coal Operations Pty Ltd, Vessel-based Seismic and Hydrographic Sonar Survey (approved)
- 2008/4418 – BM Alliance Coal Operations Pty Ltd, Develop an Open Cut Coal Mine at Daunia (approved)
- 2008/4417 – BM Alliance Coal Operations Pty Ltd, Caval Ridge Open Cut Coal Mine Proposed action (approved)
- 2005/2248 – BM Alliance Coal Operations Pty Ltd, Goonyella Riverside Coal Mine Expansion (approved)
- 2005/2211 – BM Alliance Coal Operations Pty Ltd, Hay Point Services Coal Terminal Offshore Expansion (approved)
- 2004/1447 – BM Alliance Coal Operations Pty Ltd, Norwich Park Coal Mine - Development of East Pit (approved).

1.3.2.18 If the person proposing to take the action is a corporation, provide details of the corporation's environmental policy and planning framework

BMA operates under BHP Group Limited (BHP) and/or Mitsubishi Development Pty Ltd environmental policy and planning framework. BHP and Mitsubishi Development policies and frameworks are described below.

In line with *Our Charter* value of Sustainability, BHP seeks to avoid or minimise adverse environmental impacts through every stage of its operational activities and acknowledges its role in contributing more broadly to the resilience of the natural environment.

BHP's approach to environmental management is based on and influenced by:

- the identification, assessment and management of risks (both threats and opportunities) across all phases of our operational life cycle, including exploration, development, operation, closure and post closure. BHP applies a Group-wide Risk Framework to identify and manage risks, including environmental risks;
- engagement with internal and external stakeholders to ensure we take their perspectives and knowledge into account in our decision-making;
- the realms of nature (land, oceans, freshwater and atmosphere) that we may impact or depend on;
- the extent and nature of our planned activities and optimising our activities to seek to minimise or prevent adverse impact and maximise contribution to social value; and
- societal risks such as habitat loss and pollution.

BHP's group-wide approach to environmental management is set out in the Our Requirements for Environment and Climate Change standard and BHP's mandatory minimum performance requirements for risk management. BHP takes an integrated, risk-based approach to managing any actual or reasonably foreseeable operational impacts (direct, indirect and cumulative) on biodiversity, land, water and air.

BHP's primary approach to preventing or minimising potential adverse environmental impacts is to apply the mitigation hierarchy. Steps one and two of the mitigation hierarchy – avoid and minimise – seek to prevent adverse impacts as far as possible. Steps three and four – rehabilitate and compensate – seek to address those impacts that cannot be avoided.

BHP's Climate Transition Action Plan 2021, Water Stewardship Position Statement and Group-level biodiversity strategy outline BHP's vision, strategies and focus areas to support action on the global challenges of climate change and biodiversity loss.

BHP's environmental policy is further described on BHP's website: https://www.bhp.com/sustainability/environment/.

Mitsubishi Development (a wholly owned subsidiary of Mitsubishi Corporation) operates under three corporate principles: corporate responsibility to society; integrity and fairness; and global understanding through business.

These principles are the heart of Mitsubishi Development's sustainability approach, which strives to address the following key sustainability issues:

- transitioning to a low-carbon society;
- procuring, operating and supplying in a sustainable manner;
- tackling evolving regional issues in Australia;
- addressing the needs of society through business innovation and new technology;
- conserving the natural environment;
- growing together with local communities; and
- fostering our employees' maximum potential including health and safety.

Mitsubishi Development is committed to reducing greenhouse gases by implementing new operational efficiencies and sustainable technologies, as well as actively pursuing business partnerships that facilitate the transition to a low-carbon society.

Mitsubishi Corporation, Mitsubishi Development's parent company, aims to reduce greenhouse gas emissions by 50 per cent by 2030 per total assets, compared to FY2020 levels and Net Zero by 2050.

Further information on Mitsubishi Development's sustainability approach is available at: https://www.mdp.com.au/sustainability.

1.3.3 Identity: Proposed designated proponent

1.3.3.1 Are the Proposed designated proponent details the same as the Person proposing to take the action? *

Yes

Proposed designated proponent organisation details

ABN/ACN	67096412752
Organisation name	BM ALLIANCE COAL OPERATIONS PTY LIMITED
Organisation address	4000 QLD

Proposed designated proponent details

Name	Craig Bancroft
Job title	Manager - Environment

Phone	0429041853
Email	craig.bancroft2@bhp.com
Address	Level 14, 480 Queen Street, Brisbane, Qld 4000

1.3.4 Identity: Summary of allocation

Confirmed Referring party's identity

The Referring party is the person preparing the information in this referral.

ABN/ACN	67096412752
Organisation name	BM ALLIANCE COAL OPERATIONS PTY LIMITED
Organisation address	4000 QLD
Representative's name	Hannah Silcox
Representative's job title	Environment Approvals Specialist
Phone	0447337870
Email	hannah.silcox@bhp.com
Address	

Confirmed Person proposing to take the action's identity

The Person proposing to take the action is the individual, business, government agency or trustee that will be responsible for the proposed action.

ABN/ACN	67096412752
Organisation name	BM ALLIANCE COAL OPERATIONS PTY LIMITED
Organisation address	4000 QLD
Representative's name	Craig Bancroft
Representative's job title	Manager - Environment
Phone	0429041853

Email	craig.bancroft2@bhp.com
Address	Level 14, 480 Queen Street, Brisbane, Qld 4000

Confirmed Proposed designated proponent's identity

The Person proposing to take the action is the individual or organisation proposed to be responsible for meeting the requirements of the EPBC Act during the assessment process, if the Minister decides that this project is a controlled action.

Same as Person proposing to take the action information.

1.4 Payment details: Payment exemption and fee waiver

1.4.1 Do you qualify for an exemption from fees under EPBC Regulation 5.23 (1) (a)? *

No

1.4.3 Have you applied for or been granted a waiver for full or partial fees under Regulation 5.21A? *

No

1.4.5 Are you going to apply for a waiver of full or partial fees under EPBC Regulation 5.21A?

No

1.4.7 Has the department issued you with a credit note? *

No

1.4.9 Would you like to add a purchase order number to your invoice? *

No

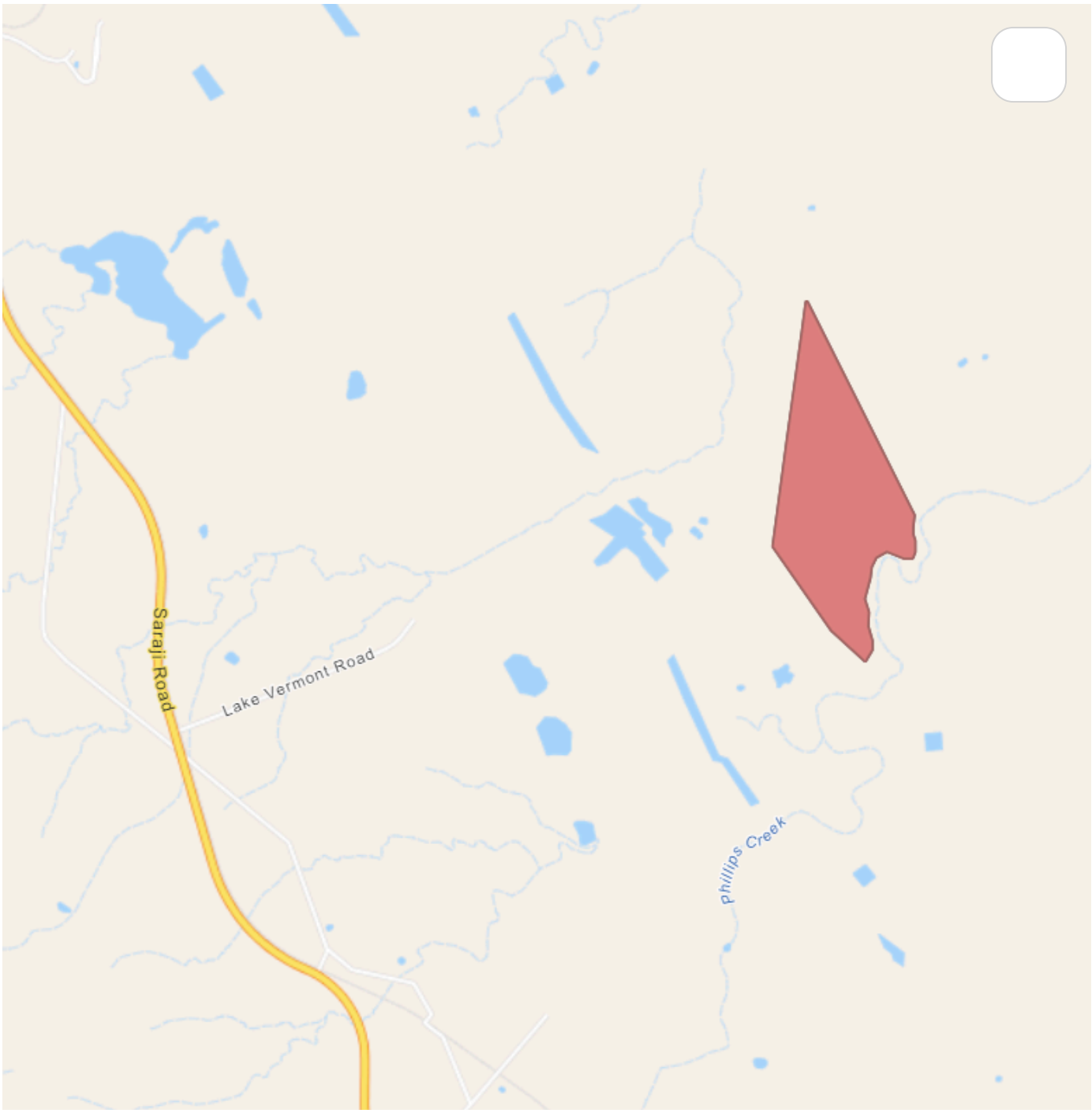
1.4 Payment details: Payment allocation

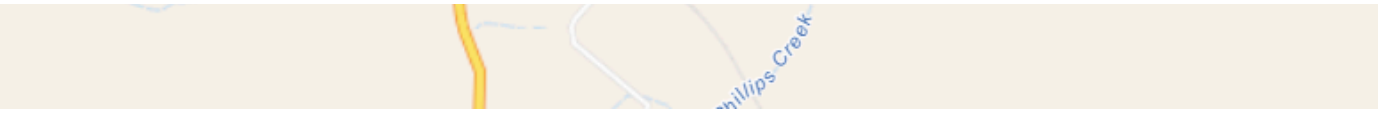
1.4.11 Who would you like to allocate as the entity responsible for payment? *

Referring party

2. Location

2.1 Project footprint





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Project Area: 221.62 Ha **Disturbance Footprint:** 221.62 Ha

2.2 Footprint details

2.2.1 What is the address of the proposed action? *

2200 Saraji Road, Dysart, Qld 4745

2.2.2 Where is the primary jurisdiction of the proposed action? *

Queensland

2.2.3 Is there a secondary jurisdiction for this proposed action? *

No

2.2.5 What is the tenure of the action area relevant to the project area? *

The ownership of the underlying ML 700021 is comprised of:

- 201SP321205 (freehold)
- GSP260662 (access easement)
- BCNS119 (power supply easement)

3. Existing environment

3.1 Physical description

3.1.1 Describe the current condition of the project area's environment.

The proposed action is located within a highly disturbed landscape immediately adjacent to existing open cut coal mines.

The site is located within the Brigalow Belt bioregion, which has undergone extensive clearing and resulting habitat loss from vegetation clearing, high grazing pressure and the spread of invasive species, with Buffel Grass (*Cenchrus ciliaris*) comprising the dominant species within the broader landscape.

The proposed action is located within the Isaac Regional Council Area. The nearest towns to the proposed action area are Moranbah, which is approximately 50 km north, and Dysart, approximately 15 km south of the proposed action area. Road access is along the Peak Downs Mine Road and Saraji Road.

Landform of the proposed action area is primarily flat or undulating, there are no prominent rises, hills, valleys or ridge lines. Existing Saraji Mine is located immediately west and north of the proposed action area and contains large open pit areas. The proposed action is bordered on the north and south by Spring Creek and Phillips Creek, respectively, which flow intermittently during the wet season. To the east is open farmland with scattered vegetation that slopes away gently to the Isaac River approximately 20 km distant in a straight line. Lake Vermont Mine lies approximately 8 km east of the proposed action area.

Most of the habitat across the proposed action area is considered low quality due to historic broad-scale vegetation clearing and cattle grazing, and existing weed encroachment and fragmentation. The areas of non-remnant vegetation are now largely dominated by introduced Buffel Grass. Areas of good quality habitat are limited and usually constrained to small vegetation fragments. All vegetation fragments possess some level of exotic weed encroachment, most commonly by Buffel Grass dominating the ground layer.

Weed species are widespread across the proposed action area. A total of four Category 3 species listed under the *Biosecurity Act 2014* (Qld) were recorded including Harrisia Cactus (*Harrisia martinii*), Lantana (*Lantana camara*), Parthenium (*Parthenium hysterophorus*) and Velvety Tree Pear (*Opuntia tomentosa*). Parthenium, Lantana and Velvety Tree Pear are classified as Weeds of National Significance. Other non-listed introduced flora species were also recorded with the most numerous and widespread being the pastoral species of Buffel Grass which has formed vast monoculture-like communities through cleared areas and invaded almost all remaining patches of native vegetation.

Native vegetation patches are limited to:

- A 3.1 hectare (ha) area of Brigalow (*Acacia harpophylla*), which is potentially the nationally listed TEC although previous reports noted a dominance of Belah.
- A 9.7 ha patch dominated by Popular box (*Eucalyptus populnea*). The presence of *Eucalyptus populnea* is associated with RE 11.5.3, which does not form part of the Poplar Box TEC.

These two patches are adjacent and are located in the centre of the proposed action area, isolated from other vegetation, they are in poor condition and contain infestations of Buffel Grass. Remaining areas are highly disturbed and are dominated by exotic grasses. Further details on the current environment of the

proposed action area are contained in **Attachment D** – Matters of National Environmental Significance (MNES) Significant Impact Assessment, Section 4, pp. 14-19.

Aquatic ecosystems in the surrounding area (outside of the proposed action area) are highly adapted to a harsh and variable environment relating to the ephemeral nature of the flow regime. The flow regimes within watercourses are dominated by long periods of no flow.

Groundwater resources have low yield and high salinity (poor quality). The alluvial sediments were found to be unconfined, dry with isolated pockets of water, and discontinuous and limited in lateral extent from Phillips Creek (ephemeral watercourse). Groundwater quality of the alluvium was found to range between fresh and very saline, typically slightly saline. Tertiary sediments maintain permanent groundwater which are poorly connected to moderately permeable. Tertiary groundwater was found to range from slightly acidic to slightly alkaline. Given these properties, groundwater values are restricted to limited stock watering and industrial purposes such as coal mining.

Previous water quality monitoring indicates that water quality within Phillips Creek (located outside of the proposed action area, to the south) is turbid (rainfall runoff source) and often exceeded water quality guidelines. The pH levels were found to be generally within 6.5-9.0 with occasional exceedances. Electroconductivity was found to be generally higher downstream compared with upstream, but within the SRM EA condition limits. Dissolved oxygen was found to be consistent throughout the local reaches of Phillips Creek.

3.1.2 Describe any existing or proposed uses for the project area.

The proposed action is in the north of the Bowen Basin where mining and petroleum exploration activities have been conducted within the area since the 1960s and earlier. The dominant land uses in the area are a combination of mining, grazing and agriculture. The land incorporated by ML 700021 is predominantly used for cattle grazing.

The following easements and associated infrastructure currently intersect the site:

- access easement extending from Lake Vermont Road.
- existing powerline easement.

Currently SRM has existing activities occurring within ML 700021 that support the current mine operations, these include exploration and water management activities that will continue in accordance with current or future State and Commonwealth approvals. They do not form part of the referred action.

3.1.3 Describe any outstanding natural features and/or any other important or unique values that applies to the project area.

There are no outstanding natural features or other unique values within the proposed action.

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

The proposed action is not located within or adjacent to a marine area. Elevation within the proposed action decreases from west to east from approximately 203 m Australian Height Datum (AHD) to 197 m AHD.

3.2 Flora and fauna

3.2.1 Describe the flora and fauna within the affected area and attach any investigations of surveys if applicable.

The proposed action is located within the Brigalow Belt bioregion and on the boundary of the Bowen Basin and Isaac-Comet Downs sub-regions.

Most of the proposed action area supports non-remnant vegetation with small areas of regrowth vegetation. Remnant vegetation occurs to the south of the site, outside of the proposed action area on the alluvial soils associated with Phillips Creek.

Habitat connectivity across the site is low except for the vegetation along Phillips Creek to the south of the proposed action, which is mapped as a State-significant Bioregional Corridor. Vegetation along the creek provides opportunities for dispersal to other areas of remnant vegetation.

Aquatic ecosystems in the surrounding area (outside of proposed action area) are highly adapted to a harsh and variable environment relating to the ephemeral nature of the flow regime. The flow regimes within the watercourses are dominated by long periods of no flow. Rainfall and runoff are highly variable across years and stream flow occurs predominantly as floods. The primary habitat for fish, macroinvertebrates and aquatic plant communities in the area are provided within the permanent and semi-permanent water in billabongs and constructed dams.

Conservation significant flora

The Protected Matters Search Tool (PMST) identified five EPBC Act listed flora as having potential to occur within a 10 km radius of the proposed action area (**Attachment D** – MNES Significant Impact Assessment, Appendix A, pp.5-7). The likelihood of occurrence assessment determined two EPBC Act listed flora with

potential to occur within the proposed action area (*Dichanthium queenslandicum* and *Dichanthium setosum*). There were no threatened flora species listed under the EPBC Act found within the proposed action area during previous field surveys (**Attachment D** – MNES Significant Impact Assessment, Section 4.3, page 15). However, one species (*Dichanthium setosum*) was recorded adjacent to the proposed action area south of Phillips Creek, and potential habitat for *D. setosum* and *D. queenslandicum* has been mapped within the 3.1 ha remnant brigalow/belah vegetation patch (RE 11.4.9) found in the proposed action area.

Conservation significant fauna

The PMST identified 33 EPBC Act listed fauna species as having potential to occur within a 10 km radius of the proposed action area (**Attachment D** – MNES Significant Impact Assessment, Appendix A, pp.2-8). Based on past field surveys, the likelihood of occurrence assessment determined 19 fauna species as likely or having potential to occur in the proposed action area. Two mammal species are considered as possibly occurring within the proposed area, namely the greater glider (southern and central) (*Petauroides volans*) and the koala (*Phascolarctos cinereus*). These two species have been found within Phillips Creek riparian vegetation immediately adjacent to the south of the proposed action area (**Attachment D** – MNES Significant Impact Assessment Section 4.4, page 15). In addition, six bird species, seven migratory birds, two mammals and two reptiles are considered as having potential to occur.

3.2.2 Describe the vegetation (including the status of native vegetation and soil) within the project area.

Vegetation

The proposed action is located within the Brigalow Belt bioregion and on the boundary of the Bowen Basin and Isaac-Comet Downs sub-regions.

The proposed action area has been heavily degraded due to historic grazing and mine-related activities and predominantly features non-remnant vegetation including a dominance of pastoral grasses and weed species. Consequently, most of the habitat across the proposed action area is considered of low quality. The areas of non-remnant vegetation are now largely dominated by introduced species such as Buffel Grass.

Areas of good quality habitat are limited and usually constrained to small vegetation fragments. All vegetation fragments possess some level of exotic weed encroachment, most commonly by Buffel Grass dominating the ground layer.

Weed species are widespread across the proposed action area. A total of four Category 3 species listed under the *Biosecurity Act 2014* (Qld) were recorded including Harrisia Cactus (*Harrisia martinii*), Lantana (*Lantana camara*), Parthenium (*Parthenium hysterophorus*) and Velvety Tree Pear (*Opuntia tomentosa*). Parthenium, Lantana and Velvety Tree Pear are classified as Weeds of National Significance. Other non-listed introduced flora species were also recorded with the most numerous and widespread being the pastoral species of Buffel Grass which has formed vast monoculture-like communities through cleared areas and invaded almost all remaining patches of native vegetation.

Non-remnant vegetation accounts for approximately 208 ha of the proposed action area, while remnant vegetation accounts for approximately 13 ha.

Previous surveys in 2021 summarised within **Attachment D –** MNES Significant Impact Assessment, Section 3.2, pp. 5-6, identified the following three regional ecosystems present within the proposed action area (where classified using the Queensland Regional Ecosystems method):

- RE 11.5.3 – Remnant *Eucalyptus populnea* and/or *E. melanophloia* and/or *Corymbia clarksoniana* on Cainozoic sand plains/remnant surfaces.
- RE 11.4.9 – Remnant *Acacia harpophylla* and/or *Casuarina cristata* open forest in depressions on Cainozoic sand plains and remnant surfaces.
- RE 11.3.4 – Remnant *Eucalyptus tereticornis* and/or *Eucalyptus spp.* woodland on alluvial plains.

These RE's occur within a small area of vegetation in the centre of the proposed action area.

Phillips Creek is situated adjacent to the south of the proposed action area. Remnant vegetation communities exist within the riparian zone of Phillips Creek and as isolated patches to the south of Phillips Creek (outside of the proposed action area). The remnant vegetation patches within the proposed action area provide extremely limited, if any, connectivity opportunity to the vegetation associated with Phillips Creek. It is noted that the riparian vegetation along Phillips Creek, outside of the proposed action area, forms a wildlife corridor and affords connectivity to remnant vegetation outside of the proposed action area.

The vegetation within the proposed action area identified as RE 11.4.9 in 2021 surveys (summarised within **Attachment D –** MNES Significant Impact Assessment, Section 3.2, pp. 5-6) is indicative of the Brigalow TEC, totalling 3.1 ha in area. The Brigalow TEC is listed as Endangered under the EPBC Act and is characterised by the dominance of Brigalow (*Acacia harpophylla*) or co-dominance of Brigalow with other species such as Belah (*Casuarina cristata*), other species of Acacia, or species of Eucalyptus.

Surveys from 2016 (summarised within **Attachment D –** MNES Significant Impact Assessment, Section 3.2, pp. 5-6) identified this isolated patch as regrowth RE 11.5.16 dominated by Belah with regrowth Brigalow, and therefore not considered Brigalow TEC. While it is plausible that the Brigalow has grown to maturity during this time, further field validation would be required to determine the full extent and condition of Brigalow TEC within the proposed action area. For the purposes of this referral, it has been treated as meeting the definition of the TEC.

Details of the vegetation communities are presented within **Attachment D** – MNES Significant Impact Assessment, Section 4.1, pp. 14-15.

Soils

The proposed action is located within the Brigalow Belt bioregion, which is characterised by clay soils, texture contrast soils, alluvium deposits (associated with creek lines such as Phillips Creek) and areas of sandstone.

3.3 Heritage

3.3.1 Describe any Commonwealth heritage places overseas or other places recognised as having heritage values that apply to the project area.

The proposed action does not contain Commonwealth Heritage Places (**Attachment D** – MNES Significant Impact Assessment, Appendix A, page 2).

The Queensland Heritage Register identifies no culturally significant sites in the general vicinity of the proposed action area (accessed October 2023).

The closest significant site is the Tieri War Memorial located in Tieri, 65 km to the south of the proposed action.

3.3.2 Describe any Indigenous heritage values that apply to the project area.

BMA executed a CHMP with the Barada Barna People in 2012 for the SRM which includes the proposed action. The CHMP describes the assessment of the cultural heritage values within the proposed area of disturbance, and the development of appropriate management strategies. The CHMP will not be made publicly available due to cultural sensitivity reasons.

3.4 Hydrology

3.4.1 Describe the hydrology characteristics that apply to the project area and attach any hydrological investigations or surveys if applicable. *

Hydrology

The proposed action is located on the downstream side of the existing mine and represents a minor continuation of the existing pit in a north-eastern direction.

The footprint of the pit continuation does not directly intersect with any mapped watercourses or drainage paths defined under the Queensland *Water Act 2000*. The footprint comprises:

- An area of existing mining infrastructure, including Mine Affected Water (MAW) dams. This area currently reports to the SRM water management system.
- A minor area of pasture area. This area comprises a minor catchment area that drains to adjacent waterway systems.

This minor pasture area currently reports runoff generated from rainfall to the following downstream watercourses:

- Spring and One Mile Creeks (to the north of the proposed action area) are minor ephemeral systems with upstream catchment areas of 20 km2 and 15 km2, respectively. The local floodplain is approximately 250 m wide with the central creek invert being approximately 5-10 m wide.

Phillips Creek (immediately south of the proposed action area boundary) is diverted through the SRM and runs parallel to the proposed action's southern boundary. The creek has a catchment area of 452 km2. Alluvium, comprising clay, silt, and gravel, is confined to the present-day Phillips Creek channel. Shallow alluvium bores indicate the alluvium is dry with isolated pockets of water within clay-rich alluvium. Alluvium thickness ranges from up to 25 m to less than 2 m. Monitoring bore MB38, installed adjacent to Phillips

Creek, did not intersect groundwater and was monitored monthly to always be dry (i.e., no effective recharge or groundwater storage capacity) indicating that the alluvium is a sporadic discontinuous groundwater resource. The local floodplain varies in width at the proposed action area, between approximately 200 m and 800 m with the central creek invert being approximately 10 m wide.

Further, the characteristics of Phillips Creek are evident in the gauge data from the upstream Tay glen site. The twenty-year record (1968-1988) indicates:

- Flow is negligible approximately 76% of the time.
- Flow is less than 0.1 m3/s approximately 94% of the time.
- Short term flood responses are evident, with observed peaks of approximately less than 5m of depth, and 300 m3/s of flow.

Both creeks flow north-easterly. Spring and One Mile Creeks contribute to Boomerang Creek, and subsequently Isaac River. Phillips Creek contributes directly to the Isaac River. These waterway systems are located within the Fitzroy Basin (Isaac River sub-catchment) which is a scheduled basin under the Queensland Government's *Environmental Protection (Water and Wetland Biodiversity) Policy 2019*. Scheduled Isaac River Environmental Values (EVs) for the catchment include:

- Aquatic Ecosystems.
- Stock Watering (high).
- Human consumer.
- Primary recreation.
- Secondary recreation.
- Visual appreciation.
- Drinking water.
- Cultural and spiritual values.

Local identified surface water use from the immediate downstream waterways is limited (Phillips, Spring Creek) and generally limited to:

- Stock Watering (high).
- Crop Irrigation, and Water Supply for Horticulture.

Accordingly, water management at the SRM is stringently conditioned and managed, as required by existing EA conditions. Both creeks are monitored and are subjects of a Receiving Environment Management Plan (REMP).

The catchment areas reporting runoff to these waterway systems, as well as the proportion of the catchment area represented by the proposed action (2.21 km2), are as follows:

- One Mile, Southern Creek and Phillips Creek (at proposed action area)

504 km2 (0.44%)

- Boomerang Creek

1,325 km2 (0.17%)

- Isaac River (Phillips Creek Confluence)

5,800 km2 (0.04%)

- Isaac River (Mackenzie River Confluence)

~22,400 km2 (0.01%).

As such, the area of catchment within the proposed action area is very small relative to downstream hydrological systems.

The existing condition of the upstream Spring Creek and Phillips Creek catchments and drainage paths is considered moderately disturbed, principally due to apparent erosion and instability, likely associated with cattle grazing. Surface water sampling programs have determined that elevated water quality analytes in the environment (background) include Turbidity (>300 NTU), Total Suspended Solids (>250 mg/L), Sulphate as SO4 (>40 mg/L) and Ammonia (~50 µg/L). Noting the semi-arid and ephemeral flow characteristics of the creeks, surface water quality is noted to be highly variable, potentially associated with 'first flush' runoff events after prolonged periods of limited rainfall.

Similarly, groundwater associated with the waterway systems and local alluvium material is generally saline. The groundwater monitoring bores across the area reported to be screened through the alluvium are dry, except for bore MB32. Available water quality data for MB32, located upstream of SRM, indicates high variability, fresh to high salinity associated with diffuse rainfall recharge, creek flow loss, including "first flush" creek water.

The proposed action area is underlain by Quaternary and Tertiary age sediments, which overlay the Permian coal bearing strata. The sediments across the proposed action are generally undisturbed and slope to the east. The Permian unit includes less weathered to fresh overburden comprising of sandstone, siltstone, claystone, mudstone, coal, coal parting materials and sub-coal.

Stream morphology is variable in the area surrounding the proposed action with typical features including pool and riffle sequences, floodplains (stable and eroding). Watercourse channels range from well-defined and incised to poorly defined and meandering.

In flood conditions, flows are confined to the Spring Creek and Phillips Creek diversions up to the 1 in 1,000-year Annual Exceedance Probability (AEP) event, as this is the standard immunity required for watercourse diversions in the Queensland regulatory approach. Runoff events exceeding this rarity may result in overtopping of diversion perimeter bund features, resulting in flood inflows to the Grevillea Pit (continuation).

If required, further investigations regarding hydrology characteristics will be undertaken and made available upon request by the Department.

4. Impacts and mitigation

4.1 Impact details

Potential Matters of National Environmental Significance (MNES) relevant to your proposed action area.

EPBC Act section	Controlling provision	Impacted	Reviewed
S12	World Heritage	No	Yes
S15B	National Heritage	No	Yes
S16	Ramsar Wetland	No	Yes
S18	Threatened Species and Ecological Communities	Yes	Yes

EPBC Act section	Controlling provision	Impacted	Reviewed
S20	Migratory Species	Yes	Yes
S21	Nuclear	No	Yes
S23	Commonwealth Marine Area	No	Yes
S24B	Great Barrier Reef	No	Yes
S24D	Water resource in relation to large coal mining development or coal seam gas	Yes	Yes
S26	Commonwealth Land	No	Yes
S27B	Commonwealth Heritage Places Overseas	No	Yes
S28	Commonwealth or Commonwealth Agency	No	Yes

4.1.1 World Heritage

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

—

4.1.1.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.1.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

No World Heritage properties were identified by the PMST (DCCEEW, 2023) (**Attachment D** – MNES Significant Impact Assessment, Appendix A – PMST, page 2) within 20 km of the proposed action area.

4.1.2 National Heritage

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

—

4.1.2.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.2.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

No National Heritage Places were identified by the PMST (DCCEEW, 2023) (**Attachment D** – MNES Significant Impact Assessment, Appendix A – PMST, page 2) within 20 km of the proposed action area.

4.1.3 Ramsar Wetland

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

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4.1.3.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.3.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

There are no World Heritage properties identified by the PMST (DCCEEW, 2023) (**Attachment D** – MNES Significant Impact Assessment, Appendix A – PMST, page 2) within 20 km of the proposed action area. The proposed action is located approximately 125 km upstream of the Great Barrier Reef (GBR), which is the closest world heritage property. Given the distance to the GBR, there are no direct or indirect impacts expected.

4.1.4 Threatened Species and Ecological Communities

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

Threatened species

Direct impact	Indirect impact	Species
No	No	Calidris ferruginea
No	No	Dasyurus hallucatus
Yes	Yes	Denisonia maculata
Yes	Yes	Dichanthium queenslandicum
Yes	Yes	Dichanthium setosum
No	No	Egernia rugosa
No	No	Elseya albagula
No	No	Erythrotriorchis radiatus
No	No	Eucalyptus raveretiana
No	No	Falco hypoleucos
No	No	Furina dunmalli

Direct impact	Indirect impact	Species
Yes	Yes	Geophaps scripta scripta
No	No	Grantiella picta
No	No	Hemiaspis damelii
No	No	Lerista allanae
No	No	Macroderma gigas
No	No	Neochmia ruficauda ruficauda
No	No	Nyctophilus corbeni
Yes	Yes	Petauroides volans
Yes	Yes	Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)
No	No	Poephila cincta cincta
No	No	Pteropus poliocephalus
No	No	Rheodytes leukops
No	No	Rostratula australis
No	No	Stagonopleura guttata

Ecological communities

Direct impact	Indirect impact	Ecological community
Yes	Yes	Brigalow (Acacia harpophylla dominant and co-dominant)
No	No	Natural Grasslands of the Queensland Central Highlands and northern Fitzroy Basin
No	No	Poplar Box Grassy Woodland on Alluvial Plains

4.1.4.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

Yes

4.1.4.2 Briefly describe why your action has a direct and/or indirect impact on these protected matters. *

An MNES Report has been prepared to support referral of the proposed action under the EPBC Act (**Attachment D** – MNES Significant Impact Assessment, all pages).

Using a combination of desktop information and field-validated data from past field surveys in the proposed action area and surrounds, the potential presence and extent of MNES values within the proposed action area was determined. A total of 22 MNES were considered likely or potentially occurring within the proposed area including two threatened flora species, 12 threatened fauna species, seven migratory species, and one TEC.

The proposed action will have a direct and indirect impact on threatened species listed under the EPBC Act as the clearance of native vegetation and habitat within the proposed action footprint is required for the proposed action. These matters include:

- Ornamental snake (*Denisonia maculata*)
- Squatter pigeon (southern) (*Geophaps scripta scripta*)
- Greater glider (southern and central) (*Petauroides volans*)
- Koala (*Phascolarctos cinereus*)
- Brigalow (*Acacia harpophylla* dominant and co-dominant)
- King Blue-grass (*Dichanthium queenslandicum*)
- Bluegrass (*Dichanthium setosum*)

Brigalow TEC and potential and marginal habitat for the greater glider, koala, squatter pigeon and ornamental snake have been mapped across the proposed action area. The habitat mapping for these species is shown in Figures 4 to 9, in **Attachment D –** MNES Significant Impact Assessment, Section 8.0, pp. 30-64. The habitat mapping and potential impacts for each species is described in detail in **Attachment D –** MNES Significant Impact Assessment, Section 8.4 Brigalow, pp. 36-37; Section 8.5 Greater glider, pp. 39-40; Section 8.6 Koala, pp. 44-45; Section 8.7 *Dichanthium queenslandicum*, pp. 51-52; Section 8.8 Ornamental snake, pp. 56-57; Section 8.9 *Dichanthium setosum*, pp. 60-61; and Section 8.10 Squatter pigeon, pp. 63-64.

The direct impact on threatened species habitat would reduce the availability of habitat for these species, to the extent described below.

Brigalow (Acacia harpophylla dominant and co-dominant) TEC

A maximum total of 3.1 ha of Brigalow TEC will be cleared as part of the proposed action, which is the full extent of the community within the proposed action area (**Attachment D** – MNES Significant Impact Assessment, Figure 4, page 19).

Greater glider (southern and central) (*Petauroides volans*)

A total of 9.7 ha of potential greater glider habitat will be cleared as part of the proposed action (**Attachment D** – MNES Significant Impact Assessment, Figure 4, page 19).

Koala (*Phascolarctos cinereus*)

A total of 9.7 ha of potential koala habitat will be cleared as part of the proposed action (**Attachment D** – MNES Significant Impact Assessment, Figure 6, page 50).

King Blue-grass (*Dichanthium queenslandicum*)

A total of 3.1 ha of potential *Dichanthium queenslandicum* habitat will be cleared as part of the proposed action (**Attachment D** – MNES Significant Impact Assessment, Figure 7, page 55).

Ornamental snake (*Denisonia maculata*)

A total of 14.2 ha of marginal habitat for the ornamental snake will be cleared as part of the proposed action (**Attachment D** – MNES Significant Impact Assessment, Figure 8, page 59).

Bluegrass (*Dichanthium setosum*)

A total of 3.1 ha of potential *Dichanthium setosum* habitat will be cleared as part of the proposed action (**Attachment D** – MNES Significant Impact Assessment, Figure 7, page 55).

Squatter pigeon (southern) (*Geophaps scripta scripta*)

A total of 39 ha of potential squatter pigeon (southern) habitat will be cleared as part of the proposed action (**Attachment D** – MNES Significant Impact Assessment, Figure 9, page 67).

Other direct and indirect impacts are outlined below and detailed further in **Attachment D –** MNES Significant Impact Assessment, Section 6, pp. 22-25).

Potential direct impacts

Vegetation clearing

The total disturbance area for the proposed action is 220.9 ha, comprised primarily of non-remnant pasture (208.1 ha) with some natural regrowth vegetation (12.8 ha) (**Attachment D** – MNES Significant Impact Assessment, Figure 3, pp. 18).

Potential impacts as a result from vegetation clearing may include:

- Reduced patch size of vegetation communities potentially compromising the viability of the community and associated habitats.
- Loss of habitat causing a reduction of biological diversity or loss of local populations and genotypes.
- Loss of or disturbance to microhabitat features such as tree hollows, leaf litter, ground timber, dense shrubs and hollows.
- Loss of floristic diversity and the food resources this provides such as foliage, flowers, nectar, fruit and seeds.
- Increase in edge effects, leading to fragmentation, increase in light and noise penetration, alterations in microclimates, and increased weed/pest incursion.
- Fragmentation of habitats resulting in reduced dispersal opportunities for fauna.
- Destruction of abiotic features necessary to support vegetation communities and habitat types.

Loss and disturbance to fauna habitat

Clearing of vegetation (both native and exotic) can adversely impact native fauna including MNES species, through direct habitat loss, reduction in habitat quality, edge effects and habitat fragmentation.

While most impacts of the proposed action are likely to occur within non-remnant and modified vegetation consisting of minimal habitat resources, potential impacts to terrestrial fauna habitat may include:

- Direct displacement of fauna from the proposed action area, an overall reduction in fauna diversity and/or loss of local populations.
- Reduced availability of important habitat features (e.g., tree hollows, forage trees) for MNES species which rely on the availability of nesting, foraging, breeding and shelter habitat for survival.

Habitat Fragmentation

Habitat fragmentation can occur as a result of the proposed action. While habitats within the proposed area are modified and have already been subject to fragmentation, the following impacts have the potential to occur:

- Disconnect vegetation communities.
- Reduce the size of habitat patches.
- Impact the success of seed dispersal, species recruitment and ultimately the long-term viability and persistence of a vegetation community.
- Reduce fauna movement opportunities, leading to reduced species recruitment, genetic flow and ultimately affect the long-term viability and persistence of fauna populations within the landscape.

Due to the already highly disturbed state of vegetation within the proposed action area fragmentation impacts are expected to be minor in nature.

Fauna disturbance, injury and mortality

Potential impacts associated with the disturbance, injury and mortality of fauna as a result of the proposed action includes:

- Increase in strikes, particularly for species with low mobility such as koala, ornamental snake, and squatter pigeon.
- Entrapment and/or disorientation in the use of habitats and movement pathways, particularly for tree- or hollow-dwelling species, such as koala and greater glider.
- Entrapment in trenches/holes particularly for ground-dwelling and/or nocturnal species, such as, ornamental snake.
- Acute and chronic stress, particularly for threatened mammals.

Potential indirect impacts

The following indirect impacts while they may occur, are considered unlikely as a result of the proposed action:

- Potential spread or exacerbation of weed species.
- Potential for spread of invasive fauna species.
- Potential disturbance to individuals from dust, noise and light during construction.

4.1.4.4 Do you consider this likely direct and/or indirect impact to be a Significant Impact? *

No

4.1.4.6 Describe why you do not consider this to be a Significant Impact. *

An MNES Report has been prepared to assess potential impacts of the proposed action including Significant Impact Assessments (SIAs) (**Attachment D –** MNES Significant Impact Assessment, all pages).

An impact assessment for known, likely and potentially occurring MNES within the proposed action area was completed via a two-step process which identified the below species requiring SIAs in accordance with Significant Impact Guidelines 1.1 (Cth):

- Brigalow TEC.
- Koala.
- Greater glider.
- *Dichanthium queenslandicum*.
- Ornamental snake.
- *Dichanthium setosum*.
- Squatter pigeon.

The results of the SIA did not indicate any species likely to be significantly impacted by the proposed action. This is summarised as follows, and can be found in **Attachment D –** MNES Significant Impact Assessment, Section 8.4 Brigalow, pp. 36-37; Section 8.5 Greater glider, pp. 39-40; Section 8.6 Koala, pp. 44-49; Section 8.7 *Dichanthium queenslandicum*, pp. 51-52; Section 8.8 Ornamental snake, pp. 56-57; Section 8.9 *Dichanthium setosum*, pp. 60-61; and Section 8.10 Squatter pigeon, pp. 63-64.

Brigalow TEC

Likely to occur. A maximum of 3.1ha of Brigalow TEC will be cleared for the proposed action.

The likelihood of occurrence assessment identified the Brigalow TEC as likely to occur in the proposed action area, associated with 3.1ha of remnant RE11.4.9. This patch of vegetation is isolated, connected only to a small patch of RE11.5.3, it occurs within a non-remnant paddock adjacent to active mining operations and is functionally disconnected from other Brigalow TEC vegetation in the surrounding area.

Surveys undertaken in 2016 identified this patch as regrowth RE11.5.16 dominated by belah with regrowth brigalow, and therefore not considered Brigalow TEC. Later surveys in 2021 recorded the patch as RE11.4.9 which potentially forms part of the Brigalow TEC. As such the patch is being treated as the TEC for the purposes of this referral.

Whilst the extent of brigalow in the surrounding landscape has been substantially reduced by historical land practices, the clearing of 3.1ha is unlikely to materially reduce the extent of the community within the region. This isolated patch occurs in a highly disturbed location and is unlikely to contribute to the regional presence of Brigalow TEC. The Brigalow TEC occurs as a single small patch that is disconnected from most other vegetation. Significant impacts to this TEC are unlikely as a result of the loss of this patch.

Koala

Not recorded in proposed action area. A maximum of 9.7ha of potential koala habitat will be cleared.

The proposed action has potential to reduce the area of occupancy of the species where vegetation clearing extends into woodland ecosystems. As an endangered species, even small areas of habitat loss can have a significant impact. The proposed action may result in 9.7ha of potential koala habitat to be cleared that includes habitat likely to be utilised by the species for foraging purposes. However, the amount of habitat that will remain following the proposed action is expected to be able to support the species if present in the area.

The clearing is unlikely to lead to a long-term decrease in any potential koala populations present in the region given that large intact patches of preferred known habitat that will remain in the surrounding landscape, including the Phillips Creek riparian vegetation where the koala has been observed. The koala is highly mobile and known to utilise cleared areas as long as scattered suitable food or shelter trees occur. The species will continue to persist within its current distribution, regardless of the presence of habitat within the proposed action area.

The proposed action area would likely provide limited foraging and dispersal opportunities for koala as it comprises a small, disconnected patch with no contiguous linkages to other habitat. Given the proposed action area occurs alongside an active mine, and the proposed action does not propose to fragment koala habitat, it is unlikely that the clearing will create a further barrier for koala movement.

The proposed action is not expected to interfere substantially with the recovery of the species.

Greater glider

The species was detected adjacent the proposed action area in habitat associated with the riparian vegetation adjoining Phillips Creek during previous surveys. A total of 9.7ha of potential greater glider habitat was ground-truthed within the proposed action area. However, due to the relatively small size of the patch and lack of connectivity to denning habitat within the broader landscape (detached by >200m) it is unlikely the isolated patch provides habitat for the species due to gliding capabilities.

There is some uncertainty regarding the quality of canopy trees in this location, as it is a fragmented patch with a disturbed canopy of *Eucalyptus populnea* (poplar box). The number of hollows available within this habitat that would be suitable for the greater glider is unknown.

Large intact patches of potential habitat will remain in surrounding vegetation following the construction phase of the proposed action, including riparian vegetation adjoining Phillips Creek with previous surveys confirming species presence in this surrounding area. Given this, it is unlikely this amount of clearing will

lead to a long-term decrease in any potential greater glider populations present within the region. The species will continue to persist within the current distribution, regardless of impacts to habitat within the proposed action area.

The greater glider does not disperse across vegetation that is not native forest (due to the high predation risk and limited gliding distance). While potential habitat for the species occurs within the proposed action area, it is isolated and over 200m away from suitable habitat which exceeds the volplane distance of the species (>100m). No individuals have been observed utilising this patch during previous field surveys, therefore, it is unlikely the proposed action will result in a significant impact to the species.

Ornamental snake

Not recorded in the proposed action area. An area of 14.2ha of potential ornamental snake habitat will be cleared.

The proposed action has potential to lead to a long-term decrease in the size of an important population of a species. Habitat mapping identifies 14.2ha of potential habitat within the proposed action area. Suitable habitat for the ornamental snake occurs in a wide variety of non-remnant and remnant vegetation. RE11.4.9 was ground-truthed to occur within the proposed action area, as well as non-remnant gilgai landforms. Whilst no species were identified within the proposed action area during previous field surveys, the species has been recorded within the broader landscape.

The surrounding habitat such as Phillips Creek provides large amounts of potentially preferred habitat that will not be impacted by the proposed action.

The proposed action is considered unlikely to fragment an existing important population into two or more populations given that habitat within the proposed action area is already fragmented due to access tracks and historical vegetation clearing. Additionally, the proposed action is not expected to modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline. While the proposed action will remove a small area of potential habitat (14.2ha), other areas of contiguous breeding, foraging and dispersal habitat occur outside the proposed action area. No existing populations are known within the proposed action area, however, further targeted survey may detect the species.

Impact by feral pigs (Sus scrofa), domestic cattle and cane toads (*Rhinella marina*) will be managed through implementing BMA's Weed and Feral Animal Management Procedure.

Given, the lack of records within the proposed action area, impacts from the proposed action are considered possible and potentially significant however it is unlikely that these impacts will substantially interfere with the recovery of the species.

***Dichanthium* species**

Neither *D. queenslandicum* nor *D. setosum* individuals have been recorded within the proposed action area despite multiple survey events by different ecologists. The nearest species records of *D. queenslandicum* are 35km to the west of the proposed action area from 2011, and 27km north from 2022. *D. setosum* has been recorded south of Phillips Creek outside of the proposed action area. As such both species have a potential to occur within the 3.1ha of remnant RE11.4.9 in the proposed action area.

Due to the expected condition of the habitat for this species, and its location on a mining lease, it is likely that the understorey of the habitat is dominated by exotic pasture species rather than *D. queenslandicum or D. setosum*. Therefore, whilst 3.1ha of potential habitat is proposed to be impacted, the proposed action is considered unlikely to lead to a long-term decrease in the size of a population. Significant impacts are unlikely.

Squatter pigeon

The species was detected in the neighbouring mining lease 4km from the proposed action area during previous surveys in 2016. A total of 39ha of potential squatter pigeon (southern) habitat was ground-truthed within the proposed action area.

The species occurs across a broad swathe of central Queensland extending into north Queensland. Across this area the species is considered as a single interbreeding population. The species was not recorded within the proposed action area during previous targeted field surveys; however, individuals were observed throughout the broader landscape.

An important population is not considered to occur within the proposed action area. The proposed action area is impacted by historical clearing and exhibits fragmentation due to access tracks and current mining operations. The proposed action is considered unlikely to have an impact on an important population, as such significant impacts are unlikely.

4.1.4.7 Do you think your proposed action is a controlled action? *

No

4.1.4.9 Please elaborate why you do not think your proposed action is a controlled action. *

The proposed action is not considered to be a controlled action due to the significant impact assessment, completed in accordance with the Commonwealth Significant Impact Guidelines 1.1, indicating that no MNES are considered likely to be significant impacted.

Section 4.1.4.6 of the referral form provides a detailed explanation as to why the proposed impacts are not considered to be a significant impact, and therefore the proposed action is not considered to be a controlled action under the EPBC Act. Specific reference to the Commonwealth Significant Impact Guidelines 1.1 is provided.

Further, Section 4.1.4.2 and Section 4.1.4.10 of the referral form detail the potential direct and indirect impacts to relevant MNES, and the measures to be implemented to further avoid and mitigate potential impacts, respectively. A detailed significant impact assessment describing that the proposed action is not a controlled action is presented in **Attachment D** – MNES Significant Impact Assessment, Section 8, pp. 30-67.

4.1.4.10 Please describe any avoidance or mitigation measures proposed for this action and attach any supporting documentation for these avoidance and mitigation measures. *

A range of mitigation measures have been developed through the planning of the proposed action (**Attachment D** – MNES Significant Impact Assessment, Section 7, pp. 26-29). BMA has implemented the hierarchy of management principles in the planning for and development of the proposed action. These principles and the order in which they have been applied is as follows.

1. Avoid: locating activities to avoid direct and indirect impacts on MNES, in particular the riparian vegetation along Spring and Phillips creeks that provides habitat for MNES species.
2. Minimise: minimising direct and indirect impacts where they cannot be completely avoided.
3. Mitigate: implementing mitigation and management measures to reduce direct, indirect and cumulative impacts.
4. Remediate and rehabilitate: actively remediate and rehabilitate impacted areas to promote long-term recovery.

5. Offset (where necessary): provide suitable offsets for activities that result in significant residual impacts to MNES even with the implementation of the above principles.

BMA has committed to undertaking mitigation measures throughout all phases of the proposed action to avoid, reduce or compensate for potential impacts on MNES.

Measures to be implemented to avoid and mitigate potential impacts on the natural environment would include, but not be limited to:

- Proposed action designs to be modified to avoid impacts where feasible and practical to do so.
- Rehabilitation as per the EA and PRCP.
- Appropriate landform design and establishment of post-mining land uses in consideration of agricultural land uses and native ecosystem values of the surrounding landscape.
- Soil management practices, including the stripping and stockpiling of soil for use in rehabilitation.
- Appropriate erosion and sediment controls and upslope drainage during vegetation clearance, soil stripping and rehabilitation activities.
- Clear definition of areas to be cleared in a progressive manner as part of surface disturbance protocols.
- Management of the site water management system in accordance with the EA conditions.
- Minimising licenced extraction/harvesting of groundwater and surface water resources.
- Dust suppression within active mining areas and at coal handling and processing circuits.
- Appropriate design of blast events.
- Designing for overall energy efficiency.
- Consideration of purchasing renewable energy to supply the mine operations to minimise greenhouse gas generation.
- Weed and feral animal control strategies.
- Ongoing implementation of mitigation and management measures at SRM, including implementation of management plans and monitoring programs. Where necessary, these will be updated to incorporate the proposed action.

4.1.4.11 Please describe any proposed offsets and attach any supporting documentation relevant to these measures. *

BMA will ensure offsets are provided in accordance with Commonwealth and State legislation if required.

4.1.5 Migratory Species

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

Direct impact	Indirect impact	Species
No	No	Actitis hypoleucos
No	Yes	Apus pacificus
No	Yes	Calidris acuminata
No	No	Calidris ferruginea
No	Yes	Calidris melanotos
No	Yes	Cuculus optatus
No	No	Gallinago hardwickii
No	No	Motacilla flava
No	Yes	Myiagra cyanoleuca
No	Yes	Rhipidura rufifrons

4.1.5.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

Yes

4.1.5.2 Briefly describe why your action has a direct and/or indirect impact on these protected matters. *

The likelihood of occurrence assessment (**Attachment D** – MNES Significant Impact Assessment, Appendix B, pp. B-1-B-10) indicated that the proposed action area may contain habitat for the following migratory species:

- Fork-tailed swift (*Apus pacificus*)
- Sharp-tailed sandpiper (*Calidris acuminata*)
- Pectoral sandpiper (*Calidris melanotos*)
- Oriental cuckoo (*Cuculus optatus*)
- Satin flycatcher (*Myiagra cyanoleuca*)
- Rufous fantail (*Rhipidura rufifrons*)

The extent of habitat present within the proposed action area is expected to be unlikely to meet the thresholds suggested to lead to a significant impact to migratory species. Further, it is unlikely this habitat supports an ecologically significant proportion of a migratory population. It is noted that the following indirect impacts on the above-listed migratory species while they may occur, are considered unlikely as a result of the proposed action:

- Potential spread or exacerbation of weed species.
- Potential for spread of invasive fauna species.

- Potential disturbance to individuals (if present) from dust, noise and light during construction.

The potential impacts are considered negligible given that important habitat, specifically breeding habitat, for these migratory species is not present in the proposed action area. A reduction of migratory species' foraging and dispersal habitat will not significantly impact the persistence of these species.

Subsequently, a screening assessment (presented in **Attachment D** – MNES Significant Impact Assessment, Section 8.2, pp. 31-35) identifying MNES that are at low risk of potential impacts as opposed to MNES that are at potential risk and are recommended for further assessment, identified the six (6) migratory species above as being low risk and therefore were ruled out of further assessment.

4.1.5.4 Do you consider this likely direct and/or indirect impact to be a Significant Impact? *

No

4.1.5.6 Describe why you do not consider this to be a Significant Impact. *

The potential direct and indirect impacts on migratory species as a result of the proposed action are likely to be negligible and therefore are not considered to be significant. Impacts as a result of the proposed action are considered negligible given that important habitat, specifically breeding habitat, for these migratory species is not present in the proposed action area, and a reduction of migratory species' foraging and dispersal habitat will not significantly impact the persistence of these species.

A screening assessment (**Attachment D** – MNES Significant Impact Assessment, Section 8.2, pp. 31-35) was undertaken on all migratory species with the potential to be impacted by the proposed action, and all species were ruled out of further assessment (significant impact assessment) as being at low risk of impact.

4.1.5.7 Do you think your proposed action is a controlled action? *

No

4.1.5.9 Please elaborate why you do not think your proposed action is a controlled action. *

The negligible direct or indirect impacts of the proposed action are not considered significant impacts and therefore migratory species are not considered to be a controlled action.

4.1.5.10 Please describe any avoidance or mitigation measures proposed for this action and attach any supporting documentation for these avoidance and mitigation measures. *

Given potential impacts on migratory species are unlikely, targeted and detailed avoidance and mitigation measures have not been confirmed; however, BMA is committed to ensuring opportunities to avoid, minimise and mitigate significant impacts are undertaken throughout the mine design process.

Measures to avoid and mitigate potential impacts on the natural environment may include, but not necessarily be limited to:

- Proposed action designs to be modified to avoid impacts where feasible and practical to do so.
- Rehabilitation as per the EA and PRCP.
- Appropriate landform design and establishment of post-mining land uses in consideration of agricultural land uses and native ecosystem values of the surrounding landscape.
- Soil management practices, including the stripping and stockpiling of soil for use in rehabilitation.
- Appropriate erosion and sediment controls and upslope drainage during vegetation clearance, soil stripping and rehabilitation activities.
- Clear definition of areas to be cleared in a progressive manner as part of surface disturbance protocols.
- Management of the site water management system in accordance with the EA conditions.
- Minimising licenced extraction/harvesting of groundwater and surface water resources.
- Dust suppression within active mining areas and at coal handling and processing circuits.
- Appropriate design of blast events.
- Designing for overall energy efficiency.
- Consideration of purchasing renewable energy to supply the mine operations to minimise greenhouse gas generation.
- Weed and feral animal control strategies.
- Ongoing implementation of mitigation and management measures at SRM, including implementation of management plans and monitoring programs. Where necessary, these will be updated to incorporate the proposed action.

4.1.5.11 Please describe any proposed offsets and attach any supporting documentation relevant to these measures. *

No proposed offsets are necessary for migratory species as the proposed action is not considered likely to have a significant impact on any migratory species. If the assessment process by DCCEEW identifies that offsets are required, BMA will ensure offsets are provided in accordance with Commonwealth and State legislation if required.

4.1.6 Nuclear

4.1.6.1 Is the proposed action likely to have any direct and/or indirect impact on this protected matter? *

No

4.1.6.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The proposed action is not and does not involve a nuclear action.

4.1.7 Commonwealth Marine Area

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

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4.1.7.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.7.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

Commonwealth marine areas are not present within 20 km of the proposed action identified by the PMST (DCCEEW, 2023) (**Attachment D** – MNES Significant Impact Assessment, Appendix A, page 2).

4.1.8 Great Barrier Reef

4.1.8.1 Is the proposed action likely to have any direct and/or indirect impact on this protected matter? *

No

4.1.8.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The Great Barrier Reef is not located within 20 km of the proposed action identified by the PMST (DCCEEW, 2023) (**Attachment D** – MNES Significant Impact Assessment, Appendix A, page 2). The Great Barrier Reef is located approximately 125 km to the east of the proposed action area.

4.1.9 Water resource in relation to large coal mining development or coal seam gas

4.1.9.1 Is the proposed action likely to have any direct and/or indirect impact on this protected matter? *

Yes

4.1.9.2 Briefly describe why your action has a direct and/or indirect impact on this protected matter. *

The proposed action has the potential to impact surface water resources through the diversion of drainage features, creation of new temporary and permanent landforms with potential to affect flood waters and (if required) through release of water to the surrounding environment.

Potential impacts to surface water resources may include:

Operational Period

Phillips Creek Alluvium

The mine will intersect shallow alluvium mapped within ML 700021, reducing the Phillips Creek Alluvium drainage system. Possible flood barriers / berms to be installed between the proposed action area and Phillips Creek could influence creek geomorphology and flow characteristics.

Surface Water Yield

The potential for impacts to surface water yield is considered negligible, due to the small effective catchment area involved with the proposed area. The catchment areas reporting runoff to these waterway systems, as well as the proportion of the catchment area represented by the proposed action (2.21 km2), are as follows:

- One Mile, Southern Creek and Phillips Creek (at proposed Area)

504km2 (0.44%)

- Boomerang Creek

1,325km2(0.17%)

- Isaac River (Phillips Creek Confluence)

5,800km2 (0.04%)

- Isaac River (Mackenzie River Confluence)

~22,400 km2 (0.01%).

These portions are considered negligible, with the only credible impact being associated with local drainage paths downstream of the proposed action area (generally to the north-east). Management of these areas will occur under existing site erosion management planning and practices. Additionally, the site operates under a progressive rehabilitation program. Advancement of the pit developments (such as the proposed action) is planned to be offset with progressive rehabilitation of the south-western mine portion, in accordance with the PRCP.

Surface Water Quality

Surface water quality impact potential is considered limited, as follows:

- The proposed action area will be developed into an active pit development, such that mine affected waters are contained within the existing water management system.
- The current condition of the proposed area is predominantly pasture.

The only credible impact is associated with local drainage paths downstream of the proposed area (generally to the north-east). Reduced flows to local drainage paths may result in erosion, leading to increased sediment loads in the downstream receiving environment. Management of these areas will occur under existing site erosion management planning and practices.

The potential for existing site operations and the proposed action to cause impact in the receiving environment is monitored in the Receiving Environment Monitoring Program (REMP). REMP reporting is a State requirement (EA condition). As such, REMP reporting will cover the proposed action once developed per the existing EA.

REMP reporting for the existing SRM operations indicates that downstream water quality is generally within EA trigger response thresholds. Elevated water quality observations were observed associated with suspended sediments, salinity, electrical conductivity and sulfates; however, these were also typically evident in upstream (background) monitoring sites, or consistent with historical records for downstream monitoring sites.

Mine Water Management

Review of the proposed action within the broader water management planning of SRM was completed to determine if a credible impact is associated with the proposed action. This involved the review of the Central Region Water Balance Model, which is a BMA planning and risk management water balance tool. This water balance model includes the operations of Caval Ridge, Peak Downs, Saraji and Saraji South. The water balance model was developed in the GoldSim modelling software. The model has probabilistic inputs which allows for the probability of outputs to be assessed.

The model was analysed with and without the inclusion of the proposed action, and it was determined that a minor change in overall mine affected water volume was modelled (<5% on average). The difference was more or less depending on climatic sequence. Notwithstanding, the increase is negligible compared to the overall water storage capacity of the water management system.

Additionally, it is noted that mine water within the envelope of the Saraji Mine is managed and regulated in accordance with strict State EA conditions and internal BMA/BHP requirements, which regulate water storages, licensed release points, mine water inventories, hydraulic structures and erosion and sediment control procedures. This includes mandatory monitoring, notification and reporting of planned (licensed) and unplanned mine water releases.

Impact from Flooding Events

The potential for water to enter the Grevillea Pit, thereby generating contaminated flood volumes and subsequent impact to local and regional water resources, is considered negligible. Principally, this is because the extension is located between two existing watercourse diversions, which are the Phillips Creek and Spring Creek diversions. These diversions are licensed structures within the Queensland regulatory process. These facilities are actively managed and are designed to a minimum hydraulic design criteria of 1 in 1,000 AEP. Should this event happen, any water quality impact from mixed waters or subsequent spills may not necessarily occur as the capacity of the pit is very large, flood events are generally brief, and downstream areas would be heavily flooded and any potential impact would be diluted.

The final landform associated with the proposed action will have minimal impact on flood behaviour, limited to minor increases in depth and energy conditions with most impacts occurring within Spring and Phillips Creeks.

Post Closure Period

Closure planning (the PRCP) for the site includes rehabilitation and backfilling with the retention of a combined residual void for Ebony and Grevillea Pit structures. The residual void is proposed to be maintained as a groundwater sink.

Extensive modelling and assessments are part closure planning to ensure the Post Mining Land Use (PMLU) is supported by the final landform, including risk, hydrogeological, water balance and flood assessments.

Groundwater

The proposed action has the potential to impact groundwater resources through direct interaction with aquifers by open cut mining and indirect take from adjacent hydrostratigraphic units due to changes in hydraulic gradients.

Potential impacts to groundwater resources may include:

- Reduction in groundwaters and availability for use including ecological, stock watering, and mine water extraction.
- Long term impacts associated with ongoing final void pit water evaporation.
- Blending and water deterioration due to evaporation from final proposed action void.

Phillips Creek Alluvium

Quaternary alluvium is recognised to occur as paleo-channels associated with the present-day course of Phillips Creek. The alluvial aquifer is unconfined with a maximum thickness of 25 m adjacent to Phillips Creek. Quaternary alluvium is mapped within the footprint of the proposed pit extension. The Quaternary alluvium associated with Phillips Creek is recognised, through the installation and gauging of monitoring bores, to have limited groundwater potential. The removal of thin unsaturated alluvium during the open cut mining is not considered to markedly impact on the alluvium groundwater or the Phillips Creek, which is a losing system to the alluvium.

Tertiary and Permian groundwater

Incidental dewatering may be required as part of the mining operations, this has the potential to reduce groundwater levels in existing groundwater bores that fall within the cone of influence of the proposed pit continuation. Alternative water supplies will be de available should this occur. Significant impacts are unlikely.

Final voids

For the proposed action, the post closure phase considers the potential impacts on groundwater resources related to the open cut pit. Groundwater level recovery will be slow (due to low hydraulic properties of the host rock, recharge, and increased evaporation in the open cut pits). As a result, the reduced groundwater levels and alterations to the groundwater regime will be ongoing post closure.

Water quality

Groundwater monitoring at SRM indicates brackish groundwater in the alluvium (~1,500 µS/cm) and saline groundwater in the Tertiary deposits (6,000 to 18,000 µS/cm), with the coal seams having salinity concentrations of 10,000 to 20,000 µS/cm. Potential induced flow, assuming hydraulic connection, of lower salinity water from the overlying sediments will not markedly alter the coal seam groundwater quality captured during mining.

During mining, a cone of depression will develop around the proposed action mining footprint due to mine dewatering. This will result in localised groundwater flow into the mine workings. The risk of water contained in the open pit (a blend of groundwater from different strata) impacting on groundwater quality, away from the mine workings is limited.

Due to the high salinity groundwater within the SRM area, it is unlikely that there will be a marked alteration in water quality due to blending / mixing within the cone of depression predicted to envelop the open pit extension.

The mixing of groundwater types from the three different hydrostratigraphic units (alluvium, Tertiary, and Permian), if it occurs, would not markedly impact upon any existing groundwater environmental values.

4.1.9.4 Do you consider this likely direct and/or indirect impact to be a Significant Impact? *

No

4.1.9.6 Describe why you do not consider this to be a Significant Impact. *

Development, operation and performance monitoring of the proposed action will be managed in accordance with the State EA approval, which covers both surface water and groundwater domains.

Surface Water

Surface Water Yield and Quality

The reduction in catchment area, resulting in reduced runoff in downstream systems, is expected to be negligible. This is because the effective catchment area removed by the proposed action is small relative to downstream creek and river systems.

Minor impact may occur to the minor drainage paths downstream of the proposed area (to the north-east); however, the risk will be managed under existing site erosion and sediment control planning and is unlikely to comprise an impact of sufficient magnitude to constitute a 'significant impact'.

Mine Water Management

The proposed action has been analysed within the existing site water management planning process and has found to cause minor changes in overall Mine Affected Water volumes (1-5%). The difference is well within the capacity of the overall water management system and was modelled to be effectively managed. Accordingly, the development of the proposed action is not considered to significantly contribute to a potential risk from accumulating or spilled mine water.

Impact From Floods

The proposed action is currently bordered by the Spring Creek and Phillips Creek watercourse diversions. These structures are designed to a minimum design criteria of 1 in 1,000 year AEP event. Accordingly, the risk of contamination of flood waters entering the proposed action area is not considered likely.

Groundwater

The potential impacts associated with the proposed action on the groundwater included:

- reduction in groundwaters and availability for use including ecological, stock watering, and mine water extraction;
- long term impacts associated with ongoing final void pit water evaporation; and
- blending and water deterioration due to evaporation from final proposed action void.

These potential impacts were considered against the criteria outlined in the 'Significant impact guidelines 1.3: Coal seam gas and large coal mining developments – impacts on water resources'.

The general criteria (5.2) identifies that an action is likely to have a significant impact on a water resource if there is a real, or not remote, chance or possibility that it will directly or indirectly result in a change to:

- the hydrology of a water resource, the water quality of a water resource, that is of sufficient scale or intensity as to reduce the current or future utility of the water resource for third-party users, including environmental and other public benefit outcomes, or to create a material risk of such reduction in utility occurring.

The potential groundwater impacts of the proposed action are considered low (not significant) as:

- The surface water system in the proposed action area is ephemeral and limited surface water – groundwater interaction is evident, particularly related to GDEs.
- The Quaternary age alluvium is thin, discontinuous, and sporadic and contains isolated pockets of water in the Phillips Creek catchment and is measured to be dry in three monitoring bores immediately adjacent to the proposed action footprint.
- The clay-rich Tertiary sediments have low recharge potential and low permeability resulting in insufficient yield and low usage potential.
- The predicted drawdown within the target coal seams is sufficient deep and disconnected (limited vertical connectivity between the three hydrostratigraphic units [Quaternary alluvium, Tertiary and Permian sediments]) to not extend to the Isaac River to the east or associated alluvium groundwater resources.
- The groundwater quality in the three hydrostratigraphic units present within the SRM and proposed action area is not suitable for drinking, too deep for terrestrial ecosystems, and is often too saline for livestock watering.

- The surface water systems are separated from the envisaged impacted groundwater resources by low permeable sediments, which reduce the potential for the proposed action to impact on the alluvium and surface water flows.

The proposed action has potential to have long term locally contained impacts on the quantity and quality of groundwater resources immediately adjacent to the proposed action footprint including:

- Potential impact on existing groundwater levels associated with ongoing final void pit water evaporation.
- Blending (mixing of groundwater from different hydrostratigraphic units) and water deterioration due to evaporation from the final void, which may impact on water quality in the void.

The proposed action is therefore not considered to have a significant impact on water resources.

4.1.9.7 Do you think your proposed action is a controlled action? *

No

4.1.9.9 Please elaborate why you do not think your proposed action is a controlled action. *

Based on the discussion in Section 4.1.9.2 and conclusions in Section 4.1.9.6 indicating the proposed action is unlikely to have a significant impact on a water resource, the proposed action is not considered to be a controlled action. Significant impacts are considered unlikely for the following reasons:

- The size of the proposed action area, relative to the local water systems, is not significant.
- The potential impact is limited, or otherwise managed by existing mine water management planning processes and Queensland regulatory requirements.
- Limited water availability and quality means that water affected has low resource value and is restricted to localised stock watering.

4.1.9.10 Please describe any avoidance or mitigation measures proposed for this action and attach any supporting documentation for these avoidance and mitigation measures. *

The avoidance of impacts and mitigation measures will be developed in consideration of the potential impacts to all water resources including surface water and groundwater as required by the existing Environmental Authority.

4.1.9.11 Please describe any proposed offsets and attach any supporting documentation relevant to these measures. *

BMA will ensure offsets are provided in accordance with Commonwealth and State legislation if required.

4.1.10 Commonwealth Land

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

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4.1.10.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.10.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The proposed action is not located on Commonwealth land.

4.1.11 Commonwealth Heritage Places Overseas

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

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4.1.11.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.11.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The PMST indicates that there are no Commonwealth heritage places overseas within 20 km of the proposed action (**Attachment D** – MNES Significant Impact Assessment, Appendix A, page 2).

4.1.12 Commonwealth or Commonwealth Agency

4.1.12.1 Is the proposed action to be taken by the Commonwealth or a Commonwealth Agency? *

No

4.2 Impact summary

Conclusion on the likelihood of significant impacts

You have indicated that the proposed action will likely have a significant impact on the following Matters of National Environmental Significance:

None

Conclusion on the likelihood of unlikely significant impacts

You have indicated that the proposed action will unlikely have a significant impact on the following Matters of National Environmental Significance:

- World Heritage (S12)
- National Heritage (S15B)
- Ramsar Wetland (S16)
- Threatened Species and Ecological Communities (S18)
- Migratory Species (S20)
- Nuclear (S21)
- Commonwealth Marine Area (S23)
- Great Barrier Reef (S24B)
- Water resource in relation to large coal mining development or coal seam gas (S24D)
- Commonwealth Land (S26)
- Commonwealth Heritage Places Overseas (S27B)
- Commonwealth or Commonwealth Agency (S28)

4.3 Alternatives

4.3.1 Do you have any possible alternatives for your proposed action to be considered as part of your referral? *

No

4.3.8 Describe why alternatives for your proposed action were not possible. *

BMA operates eight mines in the Bowen Basin, with each asset being at a different stage in its mine and development life. Assets in the Bowen Basin have been progressively developed by BMA to meet long term global demand for high quality metallurgical coals since the 1960s. BMA's strategy is to continue to develop its assets over the coming decades to allow market demand to be met through the most efficient development of resources.

Benefits from the SRM occur through the continuity of employment, expendable income, export earnings and government revenue. BMA is the largest employer in the Central Queensland region and provides local jobs for its direct employees with an employment flow-on effect in the Isaac Regional LGA.

The SRM has approximately 2,400 full time equivalent (FTE) employees, including labour hire and contractors. These jobs are reliant on maintaining continuity of mining operations at the SRM through the proposed action.

The local and regional community has established itself to service the existing SRM, and is therefore accustomed to the benefits, costs and demands associated with mining operations. Development of the proposed action will provide continued direct employment opportunities to the regional communities, and long-term flow-on social and economic benefits.

BMA considers that the development of the proposed action, being a brownfield development (continuation of the existing SRM), and its use of the significant existing on-site infrastructure already developed (e.g. rail, road, power and water infrastructure) would result in less demand and impact on the environment, existing services and providers, when compared to a greenfield development away from an existing mining complex.

If the proposed action did not proceed, open cut mining operations would be restricted to within approved areas at the SRM. In absence of the proposed action, the significant premium hard coking coal resource located within the mining lease (**Attachment A** – Proposed action layout, Figure 1 – page 1) would be foregone resulting in a consequential loss of royalty payments to the State, taxes, expenditure with regional businesses and discontinuation of employment of the significant SRM workforce.

Refinement of the mine plan has considered the principles of the Queensland Government's mining rehabilitation reforms, in particular, progressive rehabilitation opportunities and post-mining land use outcomes.

The proposed action layout has been designed to maximise recovery of the resource while avoiding impacts to environmental values of significance, such as Phillips Creek and associated riparian ecological values.

Should the proposed action not be developed, it would not contribute to the significant economic growth provided by Queensland's growing export industry, the value the coal resource provides through State royalties and Commonwealth tax revenue would be foregone and the employment opportunities and social and community benefits for the region would not be realised.

The preferred mine plan, infrastructure design, production and workforce profiles are being developed by BMA in consideration of environmental and planning constraints, logistics, community and external relationship expectations for marketing and financial matters.

5. Lodgement

5.1 Attachments

1.2.1 Overview of the proposed action

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Attachment A - Proposed action layout.pdf Proposed action area figure	21/12/2023	No	High
#2.	Document	Attachment B - Proposed action description.pdf Description of the Proposed action	21/12/2023	No	High
#3.	Document	Attachment C - Environmental authority.PDF The Environmental Authority for Saraji Mine	21/12/2023	No	High

1.3.2.18 (Person proposing to take the action) If the person proposing to take the action is a corporation, provide details of the corporation's environmental policy and planning framework

	Type	Name	Date	Sensitivity	Confidence
#1.	Link	Environment https://www.bhp.com/sustainability/environment/			High
#2.	Link	Sustainability https://www.mdp.com.au/sustainability			High

3.1.1 Current condition of the project area's environment

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Attachment D - MNES Significant Impact Assessment.pdf Terrestrial ecology technical report for the significant impact assessment on Matters of National Environmental Significance	21/12/2023	No	High

4.1.1.3 (World Heritage) Why your action is unlikely to have a direct and/or indirect impact

	Type	Name	Date	Sensitivity	Confidence
#1.	Link	Protected Matters Search Tool https://pmst.awe.gov.au/#/map?lng=131.5283203125..			High

4.1.2.3 (National Heritage) Why your action is unlikely to have a direct and/or indirect impact

	Type	Name	Date	Sensitivity	Confidence
#1.	Link	Protected Matters Search Tool https://pmst.awe.gov.au/#/map?lng=131.5283203125..			High

4.1.3.3 (Ramsar Wetland) Why your action is unlikely to have a direct and/or indirect impact

	Type	Name	Date	Sensitivity	Confidence
#1.	Link	Protected Matters Search Tool https://pmst.awe.gov.au/#/map?lng=131.5283203125..			High

4.1.7.3 (Commonwealth Marine Area) Why your action is unlikely to have a direct and/or indirect impact

	Type	Name	Date	Sensitivity	Confidence
#1.	Link				

Protected Matters Search Tool https://pmst.awe.gov.au/#/map?lng=131.5283203125..		High

4.1.8.3 (Great Barrier Reef) Why your action is unlikely to have a direct and/or indirect impact

	Type	Name	Date	Sensitivity	Confidence
#1.	Link	Protected Matters Search Tool https://pmst.awe.gov.au/#/map?lng=131.5283203125..			High

5.2 Declarations

Completed Referring party's declaration

The Referring party is the person preparing the information in this referral.

ABN/ACN	67096412752
Organisation name	BM ALLIANCE COAL OPERATIONS PTY LIMITED
Organisation address	4000 QLD
Representative's name	Hannah Silcox
Representative's job title	Environment Approvals Specialist
Phone	0447337870
Email	hannah.silcox@bhp.com
Address	

☑ Check this box to indicate you have read the referral form. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *

☑ By checking this box, I, **Hannah Silcox of BM ALLIANCE COAL OPERATIONS PTY LIMITED**, 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. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *

✔ Completed Person proposing to take the action's declaration

The Person proposing to take the action is the individual, business, government agency or trustee that will be responsible for the proposed action.

ABN/ACN	67096412752
Organisation name	BM ALLIANCE COAL OPERATIONS PTY LIMITED
Organisation address	4000 QLD
Representative's name	Craig Bancroft
Representative's job title	Manager - Environment
Phone	0429041853
Email	craig.bancroft2@bhp.com
Address	Level 14, 480 Queen Street, Brisbane, Qld 4000

☑ Check this box to indicate you have read the referral form. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *

☑ I, **Craig Bancroft of BM ALLIANCE COAL OPERATIONS PTY LIMITED**, 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. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *

✔ Completed Proposed designated proponent's declaration

The Proposed designated proponent is the individual or organisation proposed to be responsible for meeting the requirements of the EPBC Act during the assessment process, if the Minister decides that this project is a controlled action.

Same as Person proposing to take the action information.

☑ Check this box to indicate you have read the referral form. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *

☑ I, **Craig Bancroft of BM ALLIANCE COAL OPERATIONS PTY LIMITED**, the Proposed designated proponent, consent to the designation of myself as the Proposed designated proponent for the purposes of the action described in this EPBC Act Referral. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *