SARAJI EAST MINING LEASE PROJECT

Environmental Impact Statement

Chapter 2
Project Alternatives and Justification

BHP

Contents

Saraji East Mining Lease Project

2 Project alternatives and justification

2.1 Project justification

The Project will allow BMA to expand its production capacity in the Bowen Basin to meet current and future market demands for its coal products.

This Project will produce metallurgical coal for export, generate jobs and result in increased investments and royalties for Queensland. Increasing demand for coal products in India, China and other international markets, particularly for steel manufacturing, creates the opportunity for the development of this new mine.

Coal is Queensland's largest export commodity with the Queensland Government benefiting significantly from royalties paid by the mining industry each year. In the 2016 financial year, the total royalties and taxes paid to the Queensland Government by BMA and BHP Billiton Mitsui Coal (BMC) was $381 million (BHP Billiton, 2016). The Project will add to the royalties derived from mining activities in each year of operation.

In addition to these economic benefits, BMA, through its existing operations, provides considerable employment and training opportunities through direct and indirect employment and secondary support industries, and extensive support to community development, education, health, social and recreational programs.

2.1.1 Commercial viability

BMA owns and manages seven coal mines within Central Queensland. The Project has been assessed as commercially viable and beneficial through BMA's business planning processes, and the development of coal resources within Mining Lease Application (MLA) 70383 have been identified as a priority within BMA's large portfolio of development options.

2.1.2 Compatibility with policy and regulatory frameworks

Chapter 1 Introduction summarises the key policy, legislative and regulatory documentation that applies to the Project and outlines the response taken by BMA to address the requirements. The Project is compatible and compliant with all relevant legislation and is consistent with the planning framework in place for the Isaac Regional Council (IRC).

BMA is committed to regularly reviewing environmental performance and publicly reporting on progress.

2.1.3 Economic and social benefits

The Project will benefit IRC, and the State of Queensland. Key benefits of the Project include:

- direct economic benefits, including employment, payment of taxes and royalties (refer **Chapter 18 Economics**)
- creation of up to 1,000 jobs in peak construction phase, and up to 500 jobs in peak operational phase
- value add for industries in the Mackay region

- indirect employment effects, in Project-related services both locally in IRC and state-wide
- increased profits to shareholders of BMA
- expansion of BMA Community Partnership Program for increased community initiatives
- support for appropriate skills and training programs to further develop industry skills.

BHP's approach to working with its communities is guided by a commitment to creating enduring social, environmental and economic value. BHP's Community Development Management Plans (CDMPs) guide partnerships and shared value initiatives with its communities.

In Financial Year (FY) 2018 BHP committed that by the end of FY 2022, BHP's social investment will contribute to improved quality of life in its host communities and support achievement of the United Nations Sustainable Development Goals. This includes investing not less than one per cent of pre-tax profits in meeting these objectives. In FY 2016 BHP invested over $60 million into community projects across Australia (BHP, 2017).

Social and economic impacts are detailed in **Chapters 17 Social** and **Chapter 18 Economics**, respectively. It is envisaged that the Project will add to the prosperity of local and regional communities.

2.2 Project alternatives

2.2.1 'Do Nothing' alternative

The 'Do Nothing' alternative, whereby the Project is not progressed, would result in:

- loss of economic benefit
- local, state and nationwide job opportunities would not be realised
- reduction in demand and income for support industries and service suppliers
- loss of primary and secondary employment opportunities for local, state and national workforces
- available resources in the area would not be realised
- missed opportunity for employee opportunities, apprenticeship programs, support of local businesses and financial donations to community groups and local projects
- State royalty payments and Commonwealth tax revenue from the coal resources would be foregone.

2.2.2 Alternative locations

The exploitation of other resources in the Bowen Basin is being considered as part of the BMA growth plan and is necessary to meet the growing demand for these coal products in India, China and other international markets.

The resource is located predominantly in MLA 70383 which is contiguous with leases currently held by BMA for the existing Saraji Mine. The Project location has been identified as a potential site for incremental and strategic expansion because the extent and nature of the resource is well understood due to extensive exploration and historic mining in the area. Hence, BMA can bring this project into production reasonably quickly compared to less well-known resources. The resource is a high-quality resource that will meet current and expected future market requirements and demands.

The Project configuration within the chosen location was developed based on the following:

- proximity of the proposed rail loop and loading infrastructure to the existing rail line
- sufficient sizing and practical location of the CHPP to enable efficient coal transportation between the underground mine and the rail load out

- locating proposed infrastructure outside of areas which would be impacted by future mining
- minimising disturbance of environmentally sensitive areas by utilising previously disturbed areas of the existing Saraji Mine, where feasible.

As a result, developing the Project at an alternate location would result in key infrastructure being positioned further away from existing infrastructure and mining operations. This would result in higher developing and operational cost and would have a greater impact on the environment. Therefore, it is of no benefit to locate mining operations at an alternate location as the proposed mine plan benefits from access off the existing open pit highwall, shared infrastructure and existing knowledge of the area.

2.2.3 Mine plan options analysis

Two mine plan options were considered for the Project, including:

- Option 1 – Maximised mine plan
- Option 2 – Optimised mine plan.

Both options would allow for facilitation of coal in the desired location and benefit from using the existing Saraji Mine facilities.

The options are discussed below and shown in Figure 2-1.

Maximised mine plan

The maximised mine plan option considers the maximum mining capacity available within the area (refer to Figure 3.2). This option includes 17 longwalls to follow a production schedule over a period of 19 years (FY 2023 to FY 2041). This option was not considered the most effective use of the coal resource when considering the Project objectives outlined in **Section 1.4**. As such the maximised mine plan was not the preferred option for the Project.

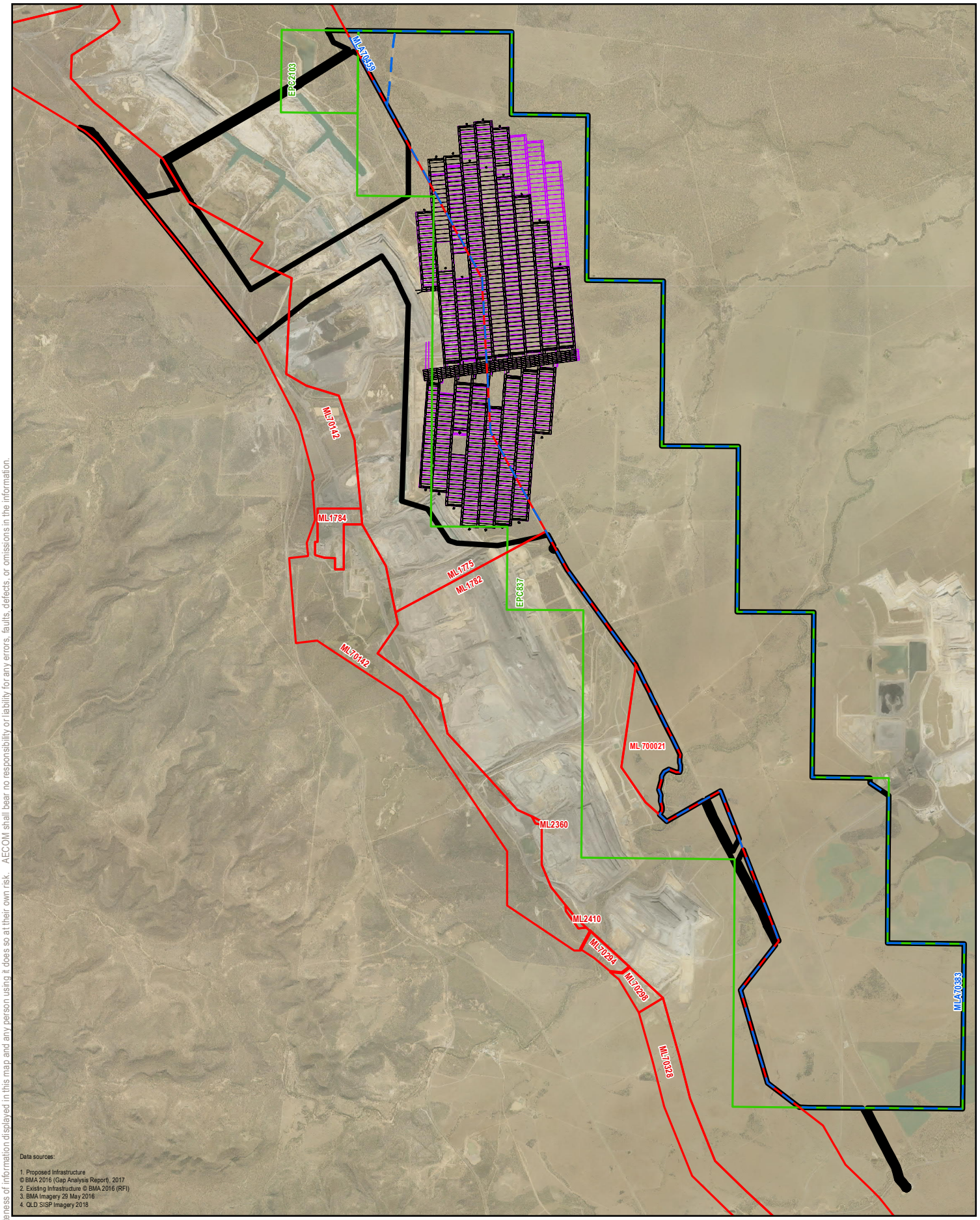
However, to provide a conservative assessment, where appropriate, technical investigations presented in the EIS have considered a project footprint based on the potential ground and surface disturbance associated with a maximised mine plan. The maximised mine plan relates to the mining capacity of known resources within the area for which a production schedule is yet to be developed.

Optimised mine plan

The optimised mine plan option considers the optimum mining capacity of high quality coal within the project site (refer to Figure 2-1). This option was developed based on consideration of a range of factors including resource recovery, coal quality, production rates and site constraints including the potential extent of environmental impacts.

The optimised mine plan was considered the preferred option for this Project as it provides the most effective use of the coal resource and would best meet the objectives of the Project outlined in **Section 1.4**.

To the extent that the optimised and maximised layouts do not overlap (an area of approximately 20 ha in the north-western panels), BMA will not mine past the modelled limit of subsidence until further subsidence and any other necessary environmental impact assessments are undertaken to address any relevant risks to environmental values.



Data sources:

1. Proposed Infrastructure
© BMA 2016 (Gap Analysis Report), 2017
2. Existing Infrastructure © BMA 2016 (RFI)
3. BMA Imagery 29 May 2016
4. QLD SISP Imagery 2018

LEGEND

- Project Site
- Exploration Permit Coal (EPC)
- Mining Lease (ML)
- Mining Lease Application (MLA)
- Underground layout (optimised)
- Underground layout (maximised)

N

Figure 2-1
Alternative Mine Plan

Environmental Impact Statement
Saraji East Mining Lease Project

0 0.5 1 2
Kilometres

Scale: 1:110,000 (when printed at A4)

Projection: Map Grid of Australia - Zone 55 (GDA94)

BHP

DATE: 6/10/2020 VERSION: 3

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2.2.4 Mining methods

The resource within the proposed mining area is deep and is therefore better suited to the underground method of mining. The selection of a mining method involves consideration of a range of factors including resource recovery, production and quality targets, production rates and site constraints including social, community and environmental considerations. The following concepts were considered in relation to this:

- incremental expansion of the current open cut mining operation
- commencement of high productivity underground mining within the Dysart Lower Seam
- targeted production of hard coking coal to maintain current market specifications.

The Dysart Lower Seam was selected as the target mining seam in preference to the Harrow Creek Upper Seam as it is generally a thicker seam, maximising resource extraction.

The underground mining option was selected as the depths (>150m) and seam thicknesses (>8m) were conducive to underground mining methods. Furthermore, the nominated mining methodology of thick seam mining within the Dysart Seam maximises production of the highest quality coal. The optimised mine layout and underground methodology is designed to provide a generally consistent coal quality and production output.

The underground mine access methods and locations were selected with consideration for the existing Saraji Mine open cut operations. Access to the underground workings will be through a portal developed in the existing open cut highwall on the far eastern side of the existing open cut mining area. This reduces the portal complexity, length and quantity of spoil materials generated compared to an above ground configuration. Locating the portal in the existing open cut also allows for shorter above ground conveyor configuration between the underground mine and CHPP. Use of the existing open cut pit for mine access minimises potential environmental impacts, costs, time and risks involved in construction of a new mine portal from above ground level.

The longwall mining technique is widely used within the mining industry as it provides a safe and efficient method of extracting coal resources. While there are variations in longwall mining methods available the preferred technique for the Project is Longwall Top Coal Caving (LTCC). The LTCC methodology supports mining of thick seams greater than 4.5 m, such as those of the Dysart Lower D24 seam and maximises production of the highest quality coal. The technique is discussed further in Section 3.7.2.

LTCC is considered to be the most efficient and safe method of coal extraction for the Project considering the proposed extraction height which typically ranges between 4.8 m and 7.0 m. Alternatives, including traditional longwall mining methods which extract at reduced height are likely to result in the sterilisation of some coal resources following extraction. All contemporary underground mining methods are likely to cause subsidence. While longwall mining methods which target lower extraction heights may result in reduced subsidence, it is considered that any reduction would not substantially alter the environmental impacts of the Project overall. Therefore, the LTCC methodology is considered the preferred method when considering economic, environmental and social factors together with the project objectives.

2.2.5 Coal handling and processing plant

In order to maintain and expand BMA's export coal sales, all run of mine (ROM) coal produced must be washed to meet market specifications for export and domestic customers. In the absence of the coal handling and preparation plant (CHPP) process, the product coal would be of a lower quality and therefore lower value.

The absence of a CHPP would also result in low recovery volumes of ROM coal. Failure to wash the coal would allow for the combustion of an inferior coal product, which would increase the potential for environmental impacts through the production of poorer emissions and increased combustion wastes.

These factors support the case for constructing a CHPP to cater for the increased production of ROM coal. Construction of a CHPP will allow efficient washing of the increased ROM coal output and ensure the quality of coal meets the highest standards for efficient combustion. CHPPs are the only viable method of washing large volumes of coal efficiently and are in use across all major mining operations in Queensland.

The CHPP is proposed to be constructed on MLA 70142 of the existing Saraji Mine. The CHPP is located within this area as it is previously disturbed and would avoid further disturbance to previously undisturbed areas. This location also provided sufficient space with a practical connection between the proposed underground layout and rail load out. The Project site is constrained by existing operations and a substantially different layout is not considered feasible.

The CHPP has been designed with a maximum processing capability of seven million tonnes per annum (Mtpa) ROM coal feed (this equates to up to five Mtpa of product coal). In the years where annual production exceeds the CHPP capacity, the overflow coal will be processed through the existing Saraji Mine CHPP.

2.2.6 Tailings management

The Project's CHPP will produce dewatered tailings and coarse rejects that will be disposed of via a dry disposal system. Dewatering of the CHPP tailings will be achieved through the use of belt press filters which maximises yield, reduces costs, and minimises environmental issues associated with traditional tailings dam disposal. Dewatered tailings reduce process water requirements and eliminate complexities associated with traditional wet tailing storage facilities. For these reasons a dry tailings disposal system is the preferred method for the Project.

The Project will utilise in-pit spoil dumps at the existing Saraji Mine to distribute and dispose of dry tailings and reject material. The material will be trucked to the existing Saraji Mine spoil dumps for disposal. As a result, the Project will not require new tailings dam storages. The volume of reject and tailings material is not expected to have a significant impact on the size and management of the in-pit spoil dumps.

All of the in-pit spoil dumps will continue to be managed under the existing Saraji Mine Environmental Authority (EA), with appropriate cover of the rejects and tailings material to ensure run-off and leachate is managed. Should reject haulage fall behind, the bin will overflow to the designated bunker. The bunker will provide access for a loader to remove coarse rejects and dewatered tailings material as required.

2.2.7 Location of infrastructure

The Project is located in close proximity to the existing Saraji Mine. Therefore, the majority of above ground infrastructure has been located within previously disturbed areas and close to existing infrastructure where possible. This includes the newly proposed CHPP, access to the underground mine, the conveyer system to the CHPP, rail loading balloon loop, product stockpiles, raw water dam, ROM pad and Mine Infrastructure Area (MIA). The locations have been selected for the construction of above ground infrastructure on the basis of:

- consultation with affected stakeholders
- proximity to existing infrastructure (i.e. the existing rail line)
- long term operational efficiencies and economic return
- minimisation of vegetation clearing
- minimisation of construction impacts such as surface water, groundwater and visual amenity
- avoidance of sensitive environmental areas.

The chosen location maximises efficiencies by enabling a logical transport of coal from the underground in the east towards the existing rail line to the west of the Project site while remaining within existing operational areas, thereby minimising environmental impacts. The operational accommodation village is located to the far east of the Project site to mitigate environmental impacts related to vibration, noise and dust which may occur at alternative locations closer to existing operations.

In addition, existing Saraji Mine infrastructure including the existing CHPP, BMA's existing water pipeline network, telecommunications network, electrical power network, and in-pit spoil dumps will be used by the Project (refer to **Chapter 3 Project description** for details). The utilisation of this infrastructure will reduce the need to construct additional facilities where they are not needed. The reduction in associated construction activity will result in reduced environmental and economic impacts.

2.2.8 Accommodation

The accommodation options originally assessed for the Project included:

- accommodation at existing accommodation villages
- accommodation at Coppabella, Dysart or Moranbah
- construction of a new construction accommodation village on the Project Site
- construction of a new operational accommodation village on the Project Site.

Initially, BMA had included an operational accommodation village within the scope of the Project at the commencement of the EIS. The operational accommodation village was proposed to be located south of the proposed construction accommodation village on the eastern boundary of MLA 0783.

Following consideration of feedback from the Office of the Coordinator-General (OCG) and IRC during the development of the Project and Social Impact Assessment (SIA), it became evident to BMA that the proposed operational village did not align with stakeholder expectations. As a result, BMA has investigated alternative off site accommodation options and opted to remove the operational accommodation village from the Project. Instead, workers will be accommodated at Coppabella, Dysart or Moranbah in existing BMA accommodation villages or other accommodation in town.

As the timing of the Project is subject to further refinement, it is possible that there would continue to be sufficient capacity in existing accommodation villages in the Dysart and Moranbah area to accommodate some or all construction personnel. However, existing accommodation capacity may be exceeded in the future when construction of the Project proceeds due to employment growth or

economic drivers outside of BMA's control. As a result, it is prudent for BMA to pursue an approval that allows for the use of new construction accommodation on site. Therefore, the proposed construction accommodation village remains part of the Project.

The proposed construction accommodation village will have capacity for up to 1,000 workers and will be located along the eastern boundary of MLA 70383.

The location of the proposed construction accommodation village was chosen based on the following considerations:

- proximity to development locations and mine with reference to fatigue factors
- land ownership and tenure
- overlapping tenures such as exploration and petroleum leases where future development by other parties may impact on the suitability of the location
- available land area
- proximity to supporting infrastructure of power and water to reduce the cost of providing such services
- mitigating environmental impacts related to vibration, noise and dust which may occur at alternative locations closer to existing operations
- avoidance or minimisation of disturbance to significant vegetation communities or threatened species
- potential future development impacts or demands providing flexibility for expanding the initial development to allow for any future expansion
- safe access points to the Dysart-Moranbah Road and Lake Vermont Road.

During construction, there is also the opportunity for workers to commute locally, from Dysart, Moranbah and other small towns in the vicinity of the Project Site.

2.2.9 Water supply

The Project's water supply will be linked to the existing Saraji Mine water management system, which is described in **Chapter 3 Project Description**. A mine water balance model was prepared as part of the EIS and is presented in **Appendix E-2 Mine Water Balance Technical Report**. The water balance study was conducted to:

- evaluate strategies for optimum use of water supplies
- establish procedures for limiting site discharge
- estimate the demand on water treatment plants, holding ponds or evaporation ponds.

An important aspect of the operational strategy for the Project's water management system is to reuse mine water wherever possible as a priority over external pipeline raw water supply. This has sustainability benefits in making the mine as self-sufficient as possible and minimising the mine's reliance on external water supplies. It is also important to manage the storage inventory (total mine water volumes) in the mine water management system so that adequate storage can be made available for the containment during wet seasonal conditions.

Not all of the mine's operational water requirements can be met with reused mine water. Some of the water requirements for the operations require high quality water sourced from external pipeline raw water supply. This raw water demand forms a very small portion of the overall site water use and includes:

- water treated for potable uses (e.g. drinking, washrooms)

- a small quantity of water required for the CHPP. While most of the water demand for the CHPP is met through recycled water, a minor component (typically three per cent) of the CHPP water use requires raw water.

A new water pipeline would be required for the transfer of water within the Project Site. A number of alignment options were considered for the water supply pipeline. In general, the alignment was located within close proximity to existing infrastructure corridors such as road, rail or power easements in areas that were already disturbed.

The existing Eungella Water Pipeline Company (EWPC) Southern Extension Water Pipeline intersects the proposed underground layout. Keeping the EWPC Southern Extension Water Pipeline in the existing position poses the risk of subsidence impacts and potential uncertainty of the continued operations of the pipeline. BMA has committed to forego the option of leaving the EWPC Southern Extension Water Pipeline as-is and to move it to a more suitable location. A high-level constraints analysis was undertaken to assess the suitability of the new location. Constraints considered included:

- lease boundaries
- terrain (hydraulics)
- existing major services (surrounding pipelines & power)
- flora and fauna
- water crossings.

The preferred option involves the relocation and reconnection of the EWPC Southern Extension Water Pipeline into a new infrastructure and transport corridor to the eastern boundary of MLA 70383 and northern boundary of MLA 70459. The Project will not obtain any water from the EWPC Southern Extension Water Pipeline.

2.2.10 Power supply

The Project will share an integrated power supply network with the existing Saraji Mine. The existing 132 kilovolt (kV) powerline will be relocated to the eastern transport and infrastructure corridor. A number of transformers will be required to step down the voltage in order to supply other mine infrastructure. Additionally, a number of powerlines currently servicing the existing Saraji Mine will require decommissioning.

Electrical power demand will be supplied via the existing power network supplying the Saraji Mine and the construction of a new 66 kV powerline to Dysart Substation.

The initial power demand increase associated with the Project is in the order of 14 megawatt (MW) and is required by FY 2021 under the development scenario being assumed for the Project's EIS. The total power demand for the Project is estimated to be between 11 MW and 14 MW and will be required by FY 2023.

By utilising the existing infrastructure, BMA minimises their footprint. The alignment of the eastern transport and infrastructure corridor has been located to minimise potential environmental impacts from clearing while enabling coalignment with road access and the EWPC Southern Extension Water Pipeline. The alignment is located outside of the proposed underground mine footprint.

2.3 Standard criteria assessment

The *Environmental Protection Act 1994* (EP Act) requires environmentally relevant activities (ERAs) to be authorised by an Administering Authority. The administering authority for the Project is the Department of Environment Science (DES). Schedule 2 of the Environmental Protection Regulation 2019 (EP Regulation) lists all ERAs that are required to be licensed. When deciding whether to grant, refuse an application or deciding on the conditions of the EA, DES considers certain matters set out in the EP Act. One of those matters is the 'Standard Criteria'.

In order to determine the viability of the Project in Queensland, it is important to address the Standard Criteria. The purpose of this Section is to address each of these criteria and to demonstrate how these criteria will be met by the Project.

Schedule 4, Section 7 of the EP Act defines the Standard Criteria as:

- the following principles of environmental policy as set out in the Intergovernmental Agreement on the Environment:
  - the precautionary principle
  - intergenerational equity
  - conservation of biological diversity and ecological integrity
- any applicable Commonwealth, State or Local government plans, standards, agreements or requirements about environmental protection or ecologically sustainable development
- any relevant environmental impact study, assessment or report
- the character, resilience and values of the receiving environment
- all submissions made by the applicant and submitters
- the best practice environmental management for the activities under, any relevant instrument, or proposed instrument, as follows:
  - an EA
  - a transitional environmental program
  - an environmental protection order
  - a disposal permit
  - a development approval
- the financial implications of the requirements under an instrument, or proposed instrument as they relate to the type of activity or industry carried out, or proposed to be carried out, under the instrument
- the public interest
- any relevant site management plan
- any relevant integrated environmental management system or proposed integrated environmental management system
- any other matter prescribed under a regulation.

Table 2.1 demonstrates how the standard criteria are incorporated into the Project.

Table 2.1 Incorporation of standard criteria into Project development

Standard criteria (Schedule 4 EP Act)	Integration into Project development
the principles of ecologically sustainable development as set out in the *National Strategy for Ecologically Sustainable Development*	Refer to Table 2.2.
any applicable environmental protection policy	The following Environmental Protection Policies have relevance to the Project: • Environmental Protection (Water and Wetland Biodiversity) Policy 2019 • Environmental Protection (Air) Policy 2019 • Environmental Protection (Noise) Policy 2019.
any applicable Commonwealth, State or local government plans, standards, agreements or requirements	Commonwealth, State and local plans, agreements, standards and requirements have been considered in the preparation of this EIS. Applicable legislation is discussed in **Chapter 1 Introduction** and **Appendix A-2 Approvals Framework.**
any applicable environmental impact study, assessment or report	BMA has prepared this EIS subject to the EIS process under the EP Act and therefore has undertaken numerous studies to determine the environmental impact of the Project. The EIS details the existing environmental values, the impacts of the Project and the mitigation measures to be implemented to reduce the impacts.
the character, resilience and values of the receiving environment;	The character, resilience and values of the receiving environment are described in each chapter of the EIS.
all submissions made by the applicant and submitters;	The public submissions process is described in **Chapter 1 Introduction**. Interested parties will have the opportunity to make submissions and comments on the EIS, in accordance with the statutory timeframes and requirements of the EP Act.
the best practice environmental management for activities under any relevant instrument, or proposed instrument, as follows: • EA • a transitional environmental program • an environmental protection order • a disposal permit • a development approval.	Best practice environmental management is defined in the EP Act, Section 21 as: “the management of the activity to achieve an ongoing minimisation of the activity’s environmental harm through cost-effective measures assessed against the measures currently used nationally and internationally for the activity”. The Project will implement a comprehensive rehabilitation program in accordance with the DES *Mined Land Rehabilitation Policy*.
the financial implications of the requirements under an instrument, or proposed instrument, mentioned in paragraph (g) as they would relate to the type of activity or industry carried out, or proposed to be carried out, under the instrument;	The cost of environmental compliance is well understood by BMA, who operates numerous mines in accordance with existing EAs. The Project will financially benefit the local and regional community directly, not only in value adding but also in providing employment opportunities. The Project has the technical and financial support to establish and maintain commitments associated with infrastructure requirements and environmental management controls.
the public interest	The consideration of the public interest is incorporated into the EP Act’s EIS process, with the requirement to

Standard criteria (Schedule 4 EP Act)	Integration into Project development
	consider public submissions on the ToR and the draft EIS, and also with the assessment of social and economic impacts due to the Project's development. For more detail on the EIS process and submissions, see **Chapter 1 Introduction**. Issues of community interest and concern have been identified and assessed during the EIS process and are detailed in **Chapter 19 Stakeholders**. BMA will continue to engage with the community throughout the life of the Project.
any applicable site management plan	It is no longer a requirement for an EIS to produce an EMP. Following approval of the EIS, comprehensive site environmental management plans will be prepared to address environmental issues. The management plans will be based on the summary of commitments as presented in **Appendix O-1 Summary of Commitments**. The site management plans will state management strategies to minimise the potential for environmental harm and will also set out a framework to manage environmental obligations set out in the EA conditions.
any integrated environmental management system or proposed integrated environmental management system.	The Project would operate in accordance with the issued EA and summary of commitments (**Appendix O-1 Summary of Commitments**).

2.4 Sustainable development

The Project's compatibility was reviewed against the objectives and principles defined in the *National Strategy for Ecologically Sustainable Development* (Ecologically Sustainable Development Steering Committee, 1992) (refer Table 2.2).

The goals of ecologically sustainable development are to develop and improve the quality of life, both now and in the future, in a manner that maintains the integrity of ecological processes on which life depends.

Table 2.2 Integration of ESD principles into the Project development

Guiding principles of ESD	Integration into Project development
Key objectives	
to enhance individual and community well-being and welfare by following a path of economic development that safeguards the welfare of future generations	The Project will provide significant benefits to the broader community in terms of income generation, employment and increased government revenues and reinvestment as detailed in **Chapter 18 Economics**. BHP's approach to working with its communities is guided by a commitment to creating enduring social, environmental and economic value. BHP's Community Development Management Plan (CDMP) guide partnerships and shared value initiatives with its communities. In FY 2018 BHP committed that by the end of FY 2022, BHP's social investment will contribute to improved quality of life in its host communities and support achievement of the United Nations Sustainable Development Goals. This

Guiding principles of ESD	Integration into Project development
	includes investing not less than one per cent of pre-tax profits in meeting these objectives. In FY 2016 BHP invested over $60 million into community projects across Australia (BHP, 2017).
to provide for equity within and between generations (the Intergenerational Equity Principle)	Through appropriate management strategies and monitoring of the impacts, the Project will not significantly reduce, or fail to maintain the health, diversity and productivity of the Queensland environment or affect future generations. Disturbed land will be progressively rehabilitated in line with **Appendix K-1 Rehabilitation Management Plan**. The Project's proximity to the existing Saraji Mine will provide opportunities for the Project to minimise impacts. This will include the location and construction of above ground infrastructure within previously disturbed areas on the Saraji Mine thereby reducing the requirement for clearing of vegetation. Clearing of vegetation will have some effect on individual flora and fauna species as detailed in **Chapter 6 Terrestrial Ecology**. Associated mitigation measures are also discussed in this Chapter. Groundwater drawdown from the drainage of incidental mine gas and underground mining activities is not expected to impact on remnant vegetation in the vicinity of the Project site as discussed in **Chapter 9 Groundwater**. Water management practices on-site will ensure that the downstream water quality is not adversely affected by the construction or operational phases of the Project. Measures to protect water quality are detailed in **Chapter 8 Surface Water Resources**. Project emissions will be controlled to have no significant long-term adverse effect on the surrounding environment by implementing best practice environmental management.
to protect biological diversity and maintain essential ecological processes and life-support systems	The terrestrial and aquatic ecology values in the vicinity of the Project site are described in **Chapter 6 Terrestrial Ecology** and **Chapter 7 Aquatic Ecology** respectively. These chapters also provide an assessment of the impacts along with mitigation measures throughout the life of the Project. The Project infrastructure has been located to minimise impacts on terrestrial and aquatic systems. The Project consists of underground mining which will result in subsidence. Subsidence is not expected to result in a direct loss of these vegetation communities. Offsets are proposed for residual impacts as presented in **Appendix C-2 Offsets Strategy**.
Guiding ESD principles	
decision-making processes should effectively integrate both long and short	The Project will provide immediate and long-term benefits to the economic and social fabric of Queensland and in particular the region of IRC. The Project will contribute to

Guiding principles of ESD	Integration into Project development
term economic, environmental, social and equity considerations	the national, state and local economies. BMA will invest approximately $7.2 billion over the life of the Project on development and operation activities.
where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation (the Precautionary Principle)	BMA has undertaken an assessment of the risk of unacceptable environmental harm consistent with the Precautionary Principle and used the findings to determine appropriate environmental control strategies, which have been detailed in this EIS and the Project's summary of commitments (**Appendix O-1 Summary of Commitments**). The Project has the technical and financial support and resources to establish and maintain these environmental protection controls.
the global dimension of environmental impacts of actions and policies should be recognised and considered	BHP and BMA are aware of their corporate responsibilities in relation to the Project and greenhouse gas emissions. In 1995, BHP was one of the first participants in the Australian Greenhouse Challenge program, a federal government initiative to encourage reductions in greenhouse gas emissions. The company began measuring its greenhouse gas emissions in 1993 and has publicly reported greenhouse gas emissions data since then. It exceeded its targets of 10 percent reduction in greenhouse gas intensity between 1995 and 2000 and exceeded a further five per cent reduction between 2002 and 2007 (BHP, 2018a). More recently, BHP has continued to minimise greenhouse gas (GHG) emissions and exceed its emissions reduction targets. The company's total GHG emissions of 18.0 million tonnes of carbon dioxide equivalent (CO_2-e) in FY2016 was significantly lower than the total GHG emissions in FY2015, primarily as a result of the demerger of South32. The emissions in FY2016 were 13% below the FY2006 emissions (baseline limit), and the company is on track to meet the FY2017 targets (BHP, 2018a). BMA explores options to provide greater focus and delivery on energy efficiency improvements and reductions in fugitive emissions. In FY2015, BMA implemented projects that delivered annualised GHG emissions reductions of 676,000 tonnes of CO^2-e (BHP, 2018a). BHP also works with customers to improve energy efficiency in the downstream consumption of energy coal products, as well as promoting activities to help deliver low or zero-emission coal technologies. These activities include capture of methane in ventilation air, as well as support for external research such as the Australian COAL21 program, Cooperative Research Centre for Greenhouse Gas Technologies and the Cooperative Research Centre for Coal in Sustainable Development. The Project will generate greenhouse gas emissions from site operations, product transport and product use. As outlined in **Chapter 11 Air Quality and Greenhouse Gas**,

Guiding principles of ESD	Integration into Project development
	BMA proposes a range of mitigation measures for site level emissions and is taking action at a BHP corporate level to address the wider implications of greenhouse gas emissions and climate change.
the need to develop a strong, growing and diversified economy which can enhance the capacity for environmental protection should be recognised	The Project will add value to international, Australian and Queensland economies. There will be indirect flow on effects to other areas of the Queensland economy as a result of the Project. BMA will encourage the use of local suppliers and contractors during construction and operations. Refer to **Chapter 17 Social**.
the need to maintain and enhance international competitiveness in an environmentally sound manner should be recognised	The Project will enhance Australia's international competitiveness by adopting latest technology and mining methods. BMA has used the Project's proximity to the Saraji Mine to minimise environmental impacts. The Project will be subject to an EA which will ensure that all environmental impacts are managed appropriately.
cost-effective and flexible policy instruments should be adopted, such as improved valuation, pricing and incentives mechanisms	The Project is consistent with the relevant local, State and Commonwealth government policies.
decisions and actions should provide for broad community involvement on issues which affect them	BMA has undertaken community consultation prior to preparing the EIS, which is detailed in **Chapter 19 Stakeholders** and will continue the process through the Project's life. BMA intends to work with and maintain open communication with the community and stakeholders on all aspects of the Project. BMA will continue to have meetings with local councils and continue briefings by Project representatives to community groups and stakeholders.
Specific ESD objectives for the mining sector	
to ensure mine sites are rehabilitated to sound environmental and safety standards and to a level at least consistent with the condition of surrounding land	BMA has prepared a Rehabilitation Management Plan (**Appendix K-1**) in which the land disturbed by mining activities is proposed to be progressively rehabilitated to a safe and stable landform that does not cause environmental harm and is able to sustain an approved post-mining land use. The proposed post mining land use will be an undulating landscape that could be used as grazing land, consistent with the surrounding pastoral land use that dominates the region. The exception to this is where remnant native bushland is disturbed. Where practicable, the post mining land use for these areas is woodlands habitat as this is compatible with the pre-existing land use for biodiversity values. There may be instances in which a mix of native and non-native species will be implemented. Post mining land uses for the Project will be confirmed prior to construction.
to provide appropriate community returns for using mineral resources and achieve	This Project will produce metallurgical coal for export. Increased demand for coal products in India, China and other international markets, particularly for steel

Guiding principles of ESD	Integration into Project development
better environmental protection and management in the mining sector	manufacturing, has created a window of opportunity for the development of this new mine. For the foreseeable future, coal exports from the Project will provide significant revenues to Commonwealth, State and local Governments. The coal resource has been subject to detailed investigations to define the extent of the resource and the feasibility of its extraction and processing. The Project will be developed to minimise resource waste and sterilisation. The mine sequencing will be designed to maximise resource extraction. BMA has undertaken a comprehensive EIS process to identify the opportunities to improve environmental protection and management for the Project. This EIS documents the detailed assessments that have been undertaken. In addition, the summary of commitments (**Appendix O-1 Summary of Commitments**) outlines the proposed environmental management strategies for the Project. The Project has the technical and financial support to establish and maintain these environmental management controls.
to improve community consultation and information, improve performance in occupational health and safety and achieve social equity objectives	BMA has undertaken community consultation prior to preparing the EIS. The details of which, are presented in **Chapter 19 Stakeholders** and have been incorporated into the assessment of social impacts as defined in **Chapter 17 Social**. BMA has undertaken a review of the risks to occupational health and safety posed by the Project and proposed appropriate management measures as detailed in **Chapter 20 Hazards, Health and Safety**.