Vulcan Coal Mine Ancillary Infrastructure

Application Number: **01416** Commencement Date: **13/09/2022** Status: **Locked**

1. About the project

1.1 Project details

1.1.1 Project title *

Vulcan Coal Mine Ancillary Infrastructure

1.1.2 Project industry type *

Mining

1.1.3 Project industry sub-type

Coal

1.1.4 Estimated start date *

15/06/2023

1.1.4 Estimated end date *

31/12/2025

1.2 Proposed Action details

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

Vitrinite Pty Ltd (Vitrinite) is the owner of Queensland Coking Coal Pty Ltd (QCC) and Queensland Coal Aust. No. 1 Pty Ltd (QCA1), which hold the coal tenure associated with the Vulcan Coal Mine (VCM). For the purposes of this referral, QCC is the proponent of the proposed action.

The VCM is located 35 kilometers (km) north of Dysart and approximately 35 km south of Moranbah in Queensland's Bowen Basin. The VCM lies to the immediate west of several established mining operations including BMA's Peak Downs and Saraji mines.

The VCM was previously referred and approved under the EPBC Act (2020/8676). Significant impacts on the Squatter Pigeon (Southern) (*Geophaps scripta scripta*) and the Koala (*Phascolarctos cinereus*) were considered likely and were subject to environmental offsets.

Vitrinite proposes additional infrastructure to be located adjacent to the current VCM, which is to include a Coal Handling and Processing Plant (CHPP), rail Loop and a new open cut pit called the 'Matilda pit'. For the purposes of this EPBC referral, 'the action' refers to the aforementioned scope. These may potentially change the magnitude of impacts to matters of national environmental significance (MNES) and will result in a disturbance footprint of 93.3 ha. Please see below for the proposed changes.

Proposed scope details:

1. A new CHPP is proposed. The proposed CHPP is an open steel structure with three circuits, through which coal will be processed to produce a primary and secondary product (metallurgical and thermal coal). Tailings will be dewatered within the CHPP circuit, which will convert tailings into a solid cake for disposal in waste rock dumps. Recovered water will be recirculated to the process plant for reuse. Dry tailings will be trucked and placed within existing waste rock dumps (primarily within the in-pit Waste Rock Dump). Coal products will be conveyed and stacked on the product coal stockpiles. Product coal will be reclaimed via dozer push into coal valves and conveyed to the train load-out (TLO) facility. The CHPP will operate 24 hours per day, seven days per week. The CHPP and rail infrastructure (see below) will take approximately 18 months to construct, and coal will continue to be trucked and processed off site until construction is completed.
2. A new rail loop and TLO facility is proposed to transport coal processed on site to market. This rail loop will connect to the existing network in the south-east of the Mining Lease (ML). The loop is positioned in the western portion of the ML, between the ML boundary and the existing BMA flood levee that runs north-south through the ML. The loop will require approximately 4.5 km of rail to be located on the ML. A number of areas of cut and fill will be required along the alignment to produce required gradients. Controlled level crossings are proposed where the rail line crosses Saraji Road. Product coal will be transported by rail from the VCM using the Goonyella Rail network. Export options include Dalrymple Bay to the north and the RG Tanna terminal, in

Gladstone, to the south. This will result in a reduction of heavy vehicular road traffic along Saraji Road and the Peak Downs highway by an average of 80 truck movements per 24 hours each way.

3. The TLO facility will be positioned on the eastern side of the rail loop, on the western side of the existing flood levee. Coal will be transported by aerial conveyor, across the levee from the product stockpile to the TLO. Appropriate design controls will be incorporated to manage potential impacts on surface water systems from fugitive coal from the overpassing conveyor.
4. The addition of the CHPP will increase the VCM's water demand, which will be supplied from an adjacent pipeline. Vitrinite also has approval to receive mine-affected water from neighbouring mine sites. Water management infrastructure (e.g., sediment ponds and water diversion channels) has been modified to account for the CHPP, rail loop and TLO facility, and to ensure that clean water is diverted around operational areas and runoff from disturbed areas is captured in sediment dams. The construction of a new levee is proposed, to act as protection against ingress of floodwaters to the mining pit for a 0.1% Annual Exceedance Probability (AEP) event during the operational conditions of the VCM.
5. An explosive magazine is no longer proposed on site, given that this cannot be accommodated within the necessary exclusion zones around new infrastructure. Instead, the magazine will be located off-lease, to the south. A new access track to this magazine passes through the south of the lease.
6. Waste material will continue to be deposited within the mined pit. However, due to additional tailings material to be deposited in-pit, the height of the final landform will be approximately 30 m above the surrounding ground level. The slopes of the waste rock dump will retain a maximum gradient of 15%.
7. A small second pit (Matilda Pit) is proposed within the rail loop, in addition to the original pit. Both pits will be back-filled with waste rock following mining.
8. Due to the additional infrastructure to be constructed, construction will require a workforce of approximately 130 people for a period of 18 months. The peak operational workforce is anticipated to comprise 80 positions, due to a reduced need for haulage drivers.
9. Due to additional infrastructure, product stockpiles and access roads, the proposed clearing footprint will be 93.3 ha.

The development of coal mining operations have associated direct and indirect impacts on the environment. The following are considered the most significant activities as part of the proposed Matilda scope.

- Vegetation clearing- The clearing of vegetation to accommodate the Matilda Pit, Rail Loop and CHPP is the principal ecological impact of the Project. The extent of this impact has been minimised to the greatest extent practicable by utilising in-pit dumping of overburden, to reduce the overall size of the Project footprint. Clearing is discussed in more detail in Att A Terrestrial Ecology, Section 5.1.1, page 74.
- Mining- The mining process will involve coal being extracted via open-cut pits through truck-and-shovel mining operations. The mining will involve a relatively small and shallow (maximum depth 40m) open-cut pit being constructed to extract material. The mining process is expected to have minor impacts on surface water- flooding and down stream water quality Att B Surface Water, Section 11, page 137 and groundwater- drawdown and groundwater quality (Att C Groundwater, Section 6, page 68)
- Coal transportation- Product coal will be transported by aerial conveyor, across the levee from the product stockpile to the TLO. The TLO will link the product stockpiles with the proposed rail loop to load at a rate of 3,500 tph. The rail loop will connect to the existing network in the south east of the Mining Lease. The transportation of coal via the rail loop is expected to have minimal ecological impacts from dust (Att A terrestrial Ecology, Section 5.1.6, page 78), noise (Att A Terrestrial Ecology, Section 5.1.8, page 78), light (Att A Terrestrial Ecology, Section 5.1.9, page 78) and vehicle collisions (Att A Terrestrial Ecology, Section 5.1.5, page 78).
- Coal Handling and Processing- Haul trucks will deliver ROM coal from the pit to the ROM hopper. The trucks will dump directly into the ROM hopper or onto the 100 kt ROM stockpile for reclaim by a front end loader. Even though the CHPP will operate 24 hours a day, seven days per week, the establishment of a CHPP to process coal onsite is expected to have minimal impacts to the dust (Att A Terrestrial Ecology, Section 5.1.6, page 78), noise (Att A Terrestrial Ecology, Section 5.1.8, page 78) and light (Att A Terrestrial Ecology, Section 5.1.9, page 78).

The project area (referring to the entire Mining Lease, of which only a small portion will be impacted by the proposed action) is 407.46 ha The proposed development footprint (or disturbance footprint) for the project is 93.3 ha, which includes the proposed infrastructure (Matilda pit, rail loop and CHPP) and areas potentially to be impacted. It should be noted that areas that fall within the disturbance footprint that are not covered by infrastructure are proposed to be retained/avoided. For example, the Boomerang Creek tributary located south of the disturbance footprint, adjacent to the Rail Loop, is to be avoided. Refer to Att A Terrestrial Ecology, Figure 2-2, page 5 to understand the infrastructure and Att A Terrestrial Ecology, Figure 2-1, page 2 for the proposed disturbance footprint as part of the action.

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

Yes

1.2.3 Is the proposed action the first stage of a staged development (or a larger project)?

No

1.2.4 Related referral(s)

EPBC Number	Project Title
2019/8504	Vulcan Bulk Sample Project
2020/8676	Vulcan Complex Project

1.2.5 Provide information about the staged development (or relevant larger project).

Two previous EPBC approvals were obtained prior to undertaking actions within the Project area. The first (2019/8504) was for extracting a coal bulk sample (not a controlled action). The second (2020/8676) was for undertaking the current approved VCM (controlled action).

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 Mining Lease (ML700060) has been approved under the Queensland *Mineral Resources Act 1989*.

An Environmental Authority (EA) and a Progressive Rehabilitation and Closure Plan (PRCP) have been granted for the VCM. An EA and PRCP Amendment Application has been lodged with the Queensland Government under the *Environmental Protection Act 1994*.

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. *

The VCM Social Assessment Report (Att E Social Impact, Sections 1-7, pages 1-61), provided as part of the original EA0002912 application, assessed environmental values and existing conditions and detailed the potential impacts and mitigation measures. Other than a minor reduction in the proposed workforce, the proposed action will not change the operation and implementation of social management practices previously proposed and assessed.

The Barada Barna People (QUD380/08), represented by the Barada Barna Aboriginal Corporation RNTBC ICN 8343 (BBAC), are the native title holders for the broader area, and the 'Aboriginal party' for the VCM under the *Aboriginal Cultural Heritage Act 2003* (Qld). The proponents and the BBAC have entered into an indigenous land use agreement (body corporate agreement) (ILUA) in respect of the VCM (NNTT number QI2020/006). The ILUA also contemplates the management of Aboriginal cultural heritage under the *Aboriginal Cultural Heritage Act 2003* (Qld).

The proponent has also consulted with stakeholders potentially affected by the VCM throughout the design and assessment phase of the Project using the same mechanisms and with the same stakeholders as outlined in the original EA0002912 application Stakeholder Engagement Plan (Att D Stakeholder Engagement Plan, all sections, all pages). Primary stakeholders for the VCM include the landholders of the properties underlying the ML.

Vitrinite has consulted with the following government departments/ bodies:

- Commonwealth Department of Climate Change, Energy, the Environment and Water;
- Queensland Department of Resources;
- Queensland Department of Environment and Science;
- Queensland Department of Transport and Main Roads; and
- Isaac Regional Council.

1.3.1 Identity: Referring party

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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.

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1.3.1.1 Is Referring party an organisation or business? *

Yes

Referring party organisation details

ABN/ACN	94143463316
Organisation name	Mining & Energy Technical Services Pty Ltd
Organisation address	310 Edward Street, Brisbane City, QLD, 4000

Referring party details

Name	Laura Morgan
Job title	Environmental Consultant
Phone	1300078518
Email	laura.morgan@metserve.com.au
Address	310 Edward Street, Brisbane City, QLD, 4000

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	71129600004
Organisation name	Queensland Coking Coal Pty Ltd

Organisation address	Level 6, Suite 2, 12 Creek Street, Brisbane, Qld, 4000

Person proposing to take the action details

Name	Michael Callan
Job title	Chief Operating Officer
Phone	(07) 3174 4816
Email	michael@vitrinite.com.au
Address	Level 6, Suite 2, 12 Creek 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. *

Queensland Coking Coal Pty Ltd (owned by Vitrinite Pty Ltd) has an excellent record of responsible environmental management and has not received any infringement notices relating to any environmental incidents in their operating history. They are registered as suitable operators in Queensland (609708). Two previous EPBC approvals were obtained prior to undertaking actions within the Project area. The first (2019/8504) was for extracting a coal bulk sample (not a controlled action). The second (2020/8676) was for undertaking the current approved VCM (controlled action).

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

Vitrinite is committed to effectively managing its impact on Environment, Social and Governance (ESG) matters. This ESG statement provides for sustainable environmental management, socially responsible operations and ethical business management, driven by the board of directors.

Environment

- We aim to tread lightly and leave all lands as or better than we found them.
- We promote resource stewardship and sustainable land management through establishment of post mining land uses.
- We optimise equipment selection and its use to reduce Greenhouse Gas Emissions.
- We regularly report on environmental outcomes and maintain accountability of sites until relinquishment.

How we implement these values
We operate on a policy of being a good neighbour and corporate citizen, holding ourselves to the highest standard. We strive to minimise our environmental footprint and offset unavoidable ecological impacts at Vitrinite's operations. We manage the impact of our projects by:

- Reducing vegetation clearing by prioritising pre-cleared sites and access tracks;
- Avoiding ecological impacts where possible; and
- Progressively rehabilitating sites as soon as practicable.

We endeavour to be active members of the communities within which we work, support local business and strive to maximise project benefits and opportunities. Our board of directors acknowledge the need to respect human rights, acknowledge the transition to a lower carbon future and foster a corporate culture that considers all stakeholders. Vitrinite actively fosters positive working relationships with traditional owner groups associated with the land upon which it operates, through the commitment to involve Traditional Owners — who are the guardians, keepers, and knowledgeholders of Aboriginal cultural heritage during our activities.

As residents of Queensland, we recognise the importance of the role we play in social, community, economic and environmental issues among our friends, family, neighbours and colleagues. We will never compromise any of these responsibilities and hold our role in the community paramount.

Governance

- We are committed to human rights in line with the Guiding Principles on Business and Human Rights (United Nations). This also extends to elimination of modern slavery.
- Our suppliers are key partners in our commitment to operate in a way that is responsible, transparent and respects the rights of all.
- We have a zero-tolerance approach to bribery and corruption and are committed to conducting business with integrity.
- At Vitrinite, risk is managed in accordance with AS ISO 31000:2018 Risk Management—Guidelines.

Social

- We have a recruitment strategy with a preference for local employees.
- We use local business where they are technically capable and commercially competitive.
- We have implemented Indigenous employment targets.
- We have implemented procedures to facilitate Equal Opportunities in recruitment.
- We encourage Indigenous business opportunities and recruitment where practicable.
- We actively promote healthy lifestyle choices through education and training.
- We actively promote occupational health and safety through education and training, in order to minimise the incidence of workplace accidents.
- Involve families of workers through Family Fun Day.
- Sponsorship of Community Events.

Refer to the Vitrinite Environment, Social and Governance statement attached (Att G ESG statement, pages 1-2).

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	71129600004
Organisation name	Queensland Coking Coal Pty Ltd
Organisation address	Level 6, Suite 2, 12 Creek Street, Brisbane, Qld, 4000

Proposed designated proponent details

Name	Michael Callan
Job title	Chief Operating Officer

Phone	(07) 3174 4816
Email	michael@vitrinite.com.au
Address	Level 6, Suite 2, 12 Creek 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	94143463316
Organisation name	Mining & Energy Technical Services Pty Ltd
Organisation address	310 Edward Street, Brisbane City, QLD, 4000
Representative's name	Laura Morgan
Representative's job title	Environmental Consultant
Phone	1300078518
Email	laura.morgan@metserve.com.au
Address	310 Edward Street, Brisbane City, QLD, 4000

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	71129600004
Organisation name	Queensland Coking Coal Pty Ltd
Organisation address	Level 6, Suite 2, 12 Creek Street, Brisbane, Qld, 4000
Representative's name	Michael Callan
Representative's job title	Chief Operating Officer
Phone	(07) 3174 4816
Email	michael@vitrinite.com.au
Address	Level 6, Suite 2, 12 Creek 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 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

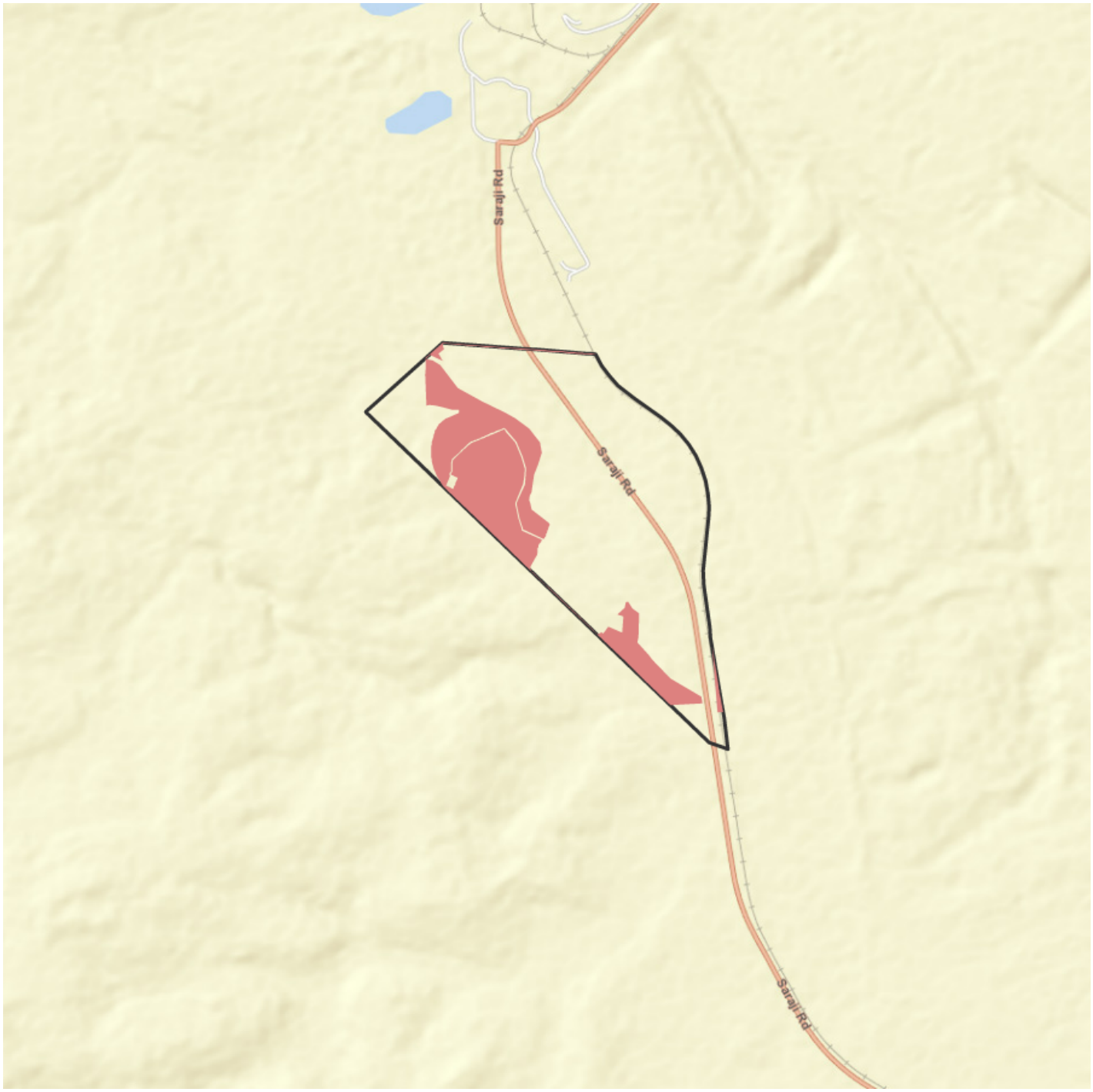
1.4 Payment details: Payment allocation

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

Proposed designated proponent

2. Location

2.1 Project footprint



2.2 Footprint details

2.2.1 What is the address of the proposed action? *

The ML occurs over three lots (10/SP325345, 26/CNS125 and ‘Saraji Road’). 4093 Saraji Road, Dysart QLD 4721.

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 action takes place within mining lease ML700060.

3. Existing environment

3.1 Physical description

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

The mining lease formerly comprised grazed, open grassy woodlands composed of primarily regrowth vegetation. The lease also contained a sealed road (Saraji Road), a railway (Goonyella System), a flood levee, and machinery and materials storage facilities servicing neighbouring mines. 281.5 ha of land within the mining lease has already been disturbed, or is approved to be disturbed. This includes the re-alignment of Saraji Road, and the construction of the mine pit, out-of-pit waste rock dump, topsoil stockpiles, water management infrastructure and other ancilliary infrastructure. This existing disturbance represents 69% of the total mining lease.

The project area is located approximately 35 km north of Dysart and approximately 35 km south of Moranbah in Queensland's Bowen Basin. The action lies to the immediate west and south of several established mining operations, including BHP's Peak Downs and Saraji mines.

The project area is bordered by Saraji Road to the east, Peak Downs mining operations to the north, and a coal mining lease development to the south and west. The surrounding area is heavily developed and has a distinct mining influence.

The land within the Project's ML is zoned as Rural under the Isaac Regional Council Planning Scheme. The lot containing the Project (lot 10, SP208611) is a Land Lease with an industrial purpose, and most of the lot contains operational areas of the Peak Downs Mine. All adjoining land to the Project is zoned as Rural.

A realignment of the existing Saraji Road and services infrastructure to the eastern boundary of the Mining Lease area, adjacent to the existing rail easement, is also approved. The re-alignment occurred on lease; however, the connection back to the existing alignment of Saraji Road to the north extended off lease and is approved through an alternative process under the Land Act, 1994.

Construction of the CHPP, TLO and the rail loop, is expected to be completed within 18 months. Once commissioned, operation of the CHPP, TLO and rail loop will replace the current approved road haulage of ROM coal to third party processing facilities, which will continue in the interim period.

The action will significantly reduce heavy vehicle traffic on the road network in the latter stages of the project. Heavy vehicle road traffic along Saraji Road and the Peak Downs Highway will be reduced by an average of 80 truck movements per 24 hours each way.

A Transport Impact Assessment (TIA) has been undertaken to assess the impacts on pavements of the adjoining road networks to the broader footprint that this scope falls within. The TIA also included an intersection impact assessment to consider site access during the construction, operation and completion stages of the Project. Results of the assessment conclude that turn treatments on the realigned Saraji Road of the proposed site access intersection in Project Year 4 are required to take the form of:

• Left-Turn: Basic Left Turn (BAL)

• Right-Turn: Short Channelised Right Turn (CHR[s]) (Att I Transport Impact Assessment, Intersection Impact Assessment, page 11).

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

The Project area is currently being used to mine coal. The land within the Project boundary is currently used for low intensity cattle grazing, and small commercial operations with few significant disturbances apart from small farm dams and dirt tracks. The post-mining land use is proposed to be cattle grazing, to restore the pre-mining use. Further discussion on current and proposed land uses for project area is described in the attached (Att F Soil and Land Suitability, Section 6, 7 and 9, pages 58-80, 81, 90-100).

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

The Project area does not contain any outstanding natural features or unique environmental values. Immediately west of the project is an extensive sandstone range (Harrow Range) that supports large tracts of remnant open forest supporting multiple species of conservation significance. Within this range, rock outcrops, gorges and small cliffs support saxicolous fauna and provide microclimates for flora normally restricted to wetter climates further east. The Project area is a mostly flat, sandy plain that lacks these unique natural features.

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 Project area primarily slopes to the east. The highest point (in the northwest) is 280 mAHD, which decreases to 240 mAHD in the northeast, over a 1,700 m distance (a mean gradient of 2.4% or slope angle of 1.3 degrees).

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 Project area was subjected to a series of flora and fauna surveys as part of baseline assessments for the VCM (refer to documentation provided for 2020/8676). These surveys sampled fauna at 127 locations and flora at 466 locations across a 6,566.5 ha survey area that was much larger than, and encompassed, the Project area (Att A Terrestrial Ecology, Section 2, page 1).

Field surveys detected 41 species of mammal, 135 species of bird, 36 species of reptile, 14 species of frog and 429 species of vascular plant within this broader survey area (Att A terrestrial Ecology, Section 3.2, pages 7-13). Species accumulation curves fitted to the data estimated that the surveys successfully detected 83% of the plants, 100% of reptiles, 97% of amphibians, 100% of birds, 92% of non-bat mammals and 100% of the bats present within the survey area that could potentially have been detected using the methodology employed. This represents a thorough knowledge of the region's ecology. Nevertheless, as some listed species may only be transient visitors, or are difficult to detect, a review of published records in nearby regions complemented the field surveys, in order to assess the likelihood that such species may be present despite going undetected (Att A terrestrial Ecology, Section 4.1.4.1, page 28).

In general, the faunal and floral communities of the survey area were typical of the dry *Acacia* and *Eucalyptus* woodlands of the northern Brigalow Belt. The location of the Project, midway between the mesic environments of coastal regions and the arid interior, results in a mixture of species from wetter and drier environments. The following species widespread in coastal regions reach their western distributional limits in the vicinity of the Project: Little Lorikeet (*Glossopsitta pusilla*), Scarlet Honeyeater (*Myzomela sanguinolenta*), Golden Whistler (*Pachycephala pectoralis*), Rufous Fantail (*Rhipidura rufifrons*) and the plants, *Deeringia amaranthoides, Euroschinus falcatus, Aristolochia thozetii, Desmodium rhytidophyllum, Pycnospora lutescens, Trophis scandens, Gossia bidwillii, Lophostemon grandiflorus, Sorghum leiocladum, Persoonia amaliae, Cheilanthes nudiuscula, Cyclophyllum coprosmoides, Pavetta granitica, Acronychia laevis, Flindersia australis, Planchonella pohlmanniana* and *Tetrastigma nitens.* Most of these species were recorded in isolated, sheltered pockets within sandstone gorges (Att A terrestrial Ecology, Section 4.1.4.2, page 28-29).

The Project area also represents the eastern distributional limit for the following species typical of more arid environments: Inland Forest Bat (*Vespadelus baverstocki*) and the plants, *Heliotropium cuninghamii, Cleome tetrandra* and *Cyperus betchei (*Att A terrestrial Ecology, Section 4.1.4.2, page 28-29*).*

Only one species (the plant, *Heliotropium peninsulare*) reaches its southern distributional limit near the Project area, and one species (Speckled Warbler, *Pyrrholaemus sagittatus*) is near its northern distributional limit. None of the above species are threatened or near threatened (Att A terrestrial Ecology, Section 4.1.4.2, page 28-29*).*

All of the above species occupy relatively broad ranges, and it is unexceptional that a small subset of the 653 species recorded on site occurs near the edge of their distribution. However, one species recorded on site occurs within a very narrow geographic range. The Ornate Velvet Gecko (*Oedura picta*) is a newly described species of reptile confined to sandstone outcrops within the Cherwell-Harrow Range between Moranbah and Tieri. The Project area lies midway along the eastern edge of this very small distribution. The action avoids disturbance to rock outcrops potentially inhabited by this gecko (Att A terrestrial Ecology, Section 4.1.4.2, page 28-29*).*

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

Vegetation

The Project area primarily comprises a sandy plain (Queensland land zone 5) that has been previously cleared of its remnant vegetation. The original vegetation (regional ecosystem 11.5.9: open forest dominated by *Eucalyptus crebra, Eucalyptus melanophloia* and *Corymbia clarksoniana*) has partially regrown to various degrees since clearing. Approximately one third of this regrowth is classed as high-value regrowth (category C regulated vegetation) under Queensland's *Vegetation Management Act 1999*, while the remainder is considered non-remnant (category X regulated vegetation), lacking protection under the *Vegetation Management Act 1999.*

The ML area lies below the eastern edge of the Harrow Range, a 35-km-long sandstone ridge that rises 100-170 m above the surrounding plains. The foothills of this range extend into the western parts of the Project area, where it supports dense *Acacia shirleyi* open forest (regional ecosystem 11.10.3) and *Eucalyptus crebra* open forest (regional ecosystem 11.10.7). These foothills are generally gently sloping, but contain an abundance of sandstone boulders at the surface. The rockiest areas have never been cleared, and support remnant vegetation (mostly 11.10.3), while most 11.10.7 has been heavily thinned for grazing and qualifies as either high-value regrowth or non-remnant.

Two ephemeral drainage lines pass through the ML area. The southern drainage line is a tributary of Boomerang Creek, which supports a narrow ribbon of remnant 11.3.25 (open forest dominated by *Eucalyptus camaldulensis,* with *Corymbia tessellaris* and *Melaleuca leucadendra* subdominant). The terraces of Boomerang Creek have been heavily thinned and are classified under the *Vegetation Management Act 1999* as non-remnant.

The northern drainage line is an upper tributary of Ripstone Creek, which supports a ribbon of high-value regrowth 11.3.25. This is similar in composition to the remnant vegetation along North Creek, although *M. leucadendra* is absent. Riparian vegetation along Boomerang Creek contains numerous large hollow trees, while hollows are mostly absent (or, if present, small) within vegetation along Ripstone Creek.

Midway along an artificial diversion channel lies a dam that permanently holds water. This dam is used to supply water to nearby troughs for cattle, but the dam itself is fully fenced and not grazed. As a result, the dam margins support a dense fringe of semi-aquatic sedges, grasses, reeds and *M. leucadendra*.

A detailed description of the vegetation present on site is provided in the Terrestrial Ecology Assessment appended to this referral (Att A Terrestrial Ecology, Section 4.1.2, pages 19-22).

Soils

Soil surveys identified three soil management units (SMUs) within the Project area, Crocodile, Limpopo and Zambezi (Att F Soil and Land Suitability, Section 4.0, pages 23-56).

Crocodile SMU

This unit contains shallow, rocky soils associated with hill slopes and plateau. It is the dominant soil management unit immediately west of the ML area, but occupies less than 1 ha of the ML. Soils are classed as arenic rudosols. Soil textures grade from surface loams to loamy sands with depth. Soils often contain rock material with little to no pedologic development throughout the solum. The Crocodile SMU belongs to the Carborough land System and the Back Creek Geological Group.

The Crocodile SMU is strongly acidic throughout the solum with only a minor increase in pH at depth. It has very low salinity. Soils in this SMU are non-sodic and not dispersive (Emerson Class 7 or 8). The topsoil is dominated by sand (52%) and gravel (30%), with 10% silt and 8% clay. This coarse texture limits the soil's water-holding capacity and extractable nutrient levels, with soils being deficient in phosphorus, nitrates, sulphates, copper and zinc (Att F Soil and Land Suitability, Section 4.0, pages 23-56).

Limpopo SMU

This is a brown texture-contrast soil unit. This soil management unit comprises 96% of the ML area. Soils are classed as brown sodosols. Soil textures grade from sands to clay sands in the surface soils to light clays in deeper horizons. The Limpopo SMU belongs to the Monteagle land System and the Back Creek Geological Group.

The Limpopo SMU has a moderately acidic soil profile (pH 5.5-5.6). Salinity levels are very low. Sandy surface soils are non-sodic and not vulnerable to dispersion. However, clay subsoils (below 0.5 m) are sodic and susceptible to dispersion. The topsoil is dominated by sand (79%) with 8% silt and 10% clay. This texture may be at risk of slumping. Soils are deficient in phosphorus, nitrates, potassium, copper, zinc and boron (Att F Soil and Land Suitability, Section 4.0, pages 23-56).

Zambezi SMU

This unit contains grey texture-contrast soils, with a sandy surface and clay subsoil. Within the ML, this soil management unit is confined to the vicinity of Boomerang Creek. Lower horizons display diffuse orange to yellow mottles. Soils are classed as grey sodosols. The Zambezi SMU belongs to the Cotherstone Land System and the TQa geological formation (late-Tertiary to Quaternary poorly consolidated alluvium).

The Zambezi SMU has a slightly acidic (pH 6.4 to 6.7) topsoil (to 0.3 m deep), which becomes progressively alkaline with depth (to pH 9 at >0.8 m depth) and mildly acidic (pH = 6) subsoil. Salinity levels are low throughout the soil profile. The subsoil is strongly sodic and the risk of dispersion is high below 0.3 m depth (Emerson Class 2). The topsoil is dominated by sand (77%), with 14% silt, 9% clay and <1% gravel. It has a loose to weak platy structure, and low organic matter content (2%). Soils are deficient in nitrates, sulphates, phosphorus, copper and zinc (Att F Soil and Land Suitability, Section 4.0, pages 23-56).

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 action will not have any direct or indirect impacts on the values of any Commonwealth heritage places as there are none located within the project area.

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

The Barada Barna People (QUD380/08), represented by the Barada Barna Aboriginal Corporation RNTBC ICN 8343 (BBAC), are the native title holders for the broader project area, and the 'Aboriginal party' for the project under the Aboriginal Cultural Heritage Act 2003 (Qld). Vitrinite and the BBAC have entered into an indigenous land use agreement (body corporate agreement) (ILUA) which addresses the area of the proposed action. The ILUA also contemplates the management of Aboriginal cultural heritage under the Aboriginal Cultural Heritage Act 2003 (Qld). Cultural heritage clearance of the project area has been completed.

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. *

Surface water

Section 2.1 of the appended Surface Water Assessment report provides a table of report section cross references to the IESC information requirements (Att B Surface Water, Section 2.1, pages 19-24). These sections of the report should be reviewed thoroughly.

The Project is located within the Isaac River sub-basin of the greater Fitzroy Basin. The Isaac River commences approximately 100 km to the north of the Project site within the Denham Range. It drains in a south westerly direction through the Carborough and Kerlong Ranges before turning in a south easterly direction near the Goonyella Riverside Mine. It drains approximately 30 km to the east of the Project, and eventually flows to the Mackenzie River some 150 km to the southeast. The Project is located in the headwaters of the Boomerang Creek catchment. Boomerang Creek is a watercourse and tributary of the Isaac River. The catchment area of the Isaac River to Boomerang Creek is 5,226 square kilometres (km2). The Boomerang Creek catchment commences to the west of the Project area and drains in an easterly direction towards Saraji Road and the Norwich Park Branch Railway. The Ripstone Creek catchment lies to the north of the Project area and drains into Boomerang Creek approximately 30 km southeast of the Project. The headwater tributaries of Boomerang Creek are ephemeral streams which experience flow only after sustained or intense rainfall (Att B Surface Water, Section 4.1, page 33).

The predominant catchment land uses include stock grazing to the west of Saraji Road and stock grazing and coal mining to the east. Downstream of the Project, Boomerang Creek, as well as its tributaries to the south, flow into the existing BHP Billiton Mitsubishi Alliance (BMA) operations (Peak Downs and Saraji). The catchment area of Boomerang Creek is 788 km2 (Att B Surface Water, Section 4.1, page 33).

The existing BMA operations have diverted and/or modified the original alignment of Boomerang Creek as well as Harrow Creek to the north (Att B Surface Water, Section 4.2, page 35, figure 4.2). Additional diversions and/or modification of Boomerang Creek and its floodplain are also planned for approved operations further to the east (Att B Surface Water, Section 4.1, page 33).

A number of baseline water quality values surrounding the Project do not meet the Water Quality Objectives for the region (Att B Surface Water, Section 4.5.4, pages 49-50, Table 4.4) these include:

- Filtered Iron;
- Filtered Aluminium;
- Filtered Selenium;
- Iron;
- Aluminium;
- Bicarbonate as CaCO3;
- Carbonate as CaCO3;
- Calcium;
- Chloride;
- Potassium; and
- Magnesium.

The hydrology of the project area is discussed in further detail within the Surface Water Assessment (Att B Surface Water, Section 8, pages 97-123), which is attached to this referral.

Groundwater

In the vicinity of the Project, all geological formations yield low volumes of groundwater and hence would not typically be classified as aquifers in most hydrogeological settings (Att C Groundwater, Section 4.3.2, page 26). Groundwater is between 5 m and 30 m deep within the Project area (Att C Groundwater, Section 5.6.2, page 47).

Hydrogeologist.com.au has developed a numerical groundwater flow model of the survey area and broader region to predict the effects of the Project on local groundwater levels (Att C Groundwater, Section 6.1, pages 62-66). The maximum drawdown extents predicted from the amendment is limited in geographical extent (300 m from the Matilda Pit crest) and magnitude (1–2 m) (Att C Groundwater, Section 6.3, page 72).

The zone of drawdown does contain some potential overlaps with terrestrial Groundwater dependent Ecosystems (GDE)s but not aquatic GDEs within the clearing footprint. No remnant vegetation outside the clearing footprint is found within the zone of drawdown. In summary, negligible impacts to GDEs are predicted to result from the Project, beyond that which will occur due to vegetation clearing (Att C Groundwater, 6.5 and 8, pages 72-75 and 79).

In general, groundwater flows from the west to the east (Att C Groundwater, Section 5.2.1, page 30). The low hydraulic conductivity and small storage of local aquifers mean that their levels have remained largely unaffected by 40 years of dewatering at mines just 600 m away to the east (Att C Groundwater, Section 5.3, pages 35-37).

The pH of local groundwater is neutral to slightly acidic. Salinity levels, however, are relatively high; groundwater is brackish to highly saline (electrical conductivity of 2,600 to above 20,000 µS/cm). This groundwater is generally unsuitable for irrigation, but it may be used in limited quantities as water for livestock (Att C Groundwater, Sections 5.6 and 5.7, pages 45-51 and 52-59).

Conductivity above 7,463 µS/cm is associated with declines in animal health if consumed for prolonged periods (ANZG 2018). All groundwater on site fails to meet guidelines for drinking water suitability for humans. Overall, groundwater on site has no or limited value for most uses, with the exception of limited stock watering and potential industrial purposes related to mining (Att C Groundwater, Section 5.7.2, pages 57-59).

Further discussion of surface water and groundwater features of the Project area, including models of potential impacts of the Project on the area's hydrology, are presented and discussed in the appended Groundwater Assessment Report (Att C Groundwater, all Sections, all pages).

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
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.

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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 occur within 100 km of the action. The nearest World Heritage place is the Great Barrier Reef which is approximately 150 km to the east of the action. Adherence to the water quality objectives specified in the EA conditions (for surface water downstream of the Project) will result in negligible risk to the Great Barrier Reef.

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.

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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 occur within 100 km of the action. The nearest National Heritage place is the Tree of Knowledge in Barcaldine, 327 km south-west of the action.

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. *

No Ramsar Wetlands occur within 200 km of the action. The nearest Ramsar Wetland is located at the Shoalwater and Corio Bays area, approximately 200 km to the east of the Project. Catchments within the vicinity of the project area do not flow into this wetland, and therefore the action will not impact this wetland.

Adherence to the water quality objectives specified in the EA conditions (for surface water downstream of the Project) will result in negligible risk to the Great Barrier Reef and the adjoining Shoalwater and Corio Bays Ramsar Wetland areas.

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	Aristida annua
No	No	Cadellia pentastylis
No	No	Calidris ferruginea
No	No	Cycas ophiolitica
No	No	Dasyurus hallucatus
No	No	Denisonia maculata
No	No	Dichanthium queenslandicum
No	No	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
Yes	Yes	Geophaps scripta scripta
No	No	Grantiella picta
No	No	Hirundapus caudacutus
No	No	Lerista allanae
No	No	Maccullochella peelii
No	No	Macroderma gigas
No	No	Neochmia ruficauda ruficauda

Direct impact	Indirect impact	Species
No	No	Nyctophilus corbeni
Yes	Yes	Petauroides armillatus
No	No	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	Samadera bidwillii

Ecological communities

Direct impact	Indirect impact	Ecological community
No	No	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
No	No	Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions

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. *

26 species of plants and animals listed as threatened species under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) were flagged by database searches as being potentially present in the region (Att A Terrestrial Ecology, Section 5.3.3, pages 86-101). The following three matters of national environmental significance (MNES) were detected during surveys of the site, and each is likely to experience significant residual impacts from the project:

- Koala (*Phascolarctos cinereus*) (endangered) – 1.7 ha of high-quality habitat and 82.2 ha of low-quality habitat will be removed;
- Squatter Pigeon (*Geophaps scripta scripta*) (vulnerable) – 92.4 ha of foraging habitat (76.4 ha of which is also breeding habitat); and
- Central Greater Glider (*Petauroides armillatus*) (vulnerable) – 1.7 ha of habitat will be removed.

Other direct impacts on all three species may include direct mortality due to falling trees from clearing.

Indirect impacts to the koala include the following, noise and vibration, dust and artificial lighting. Indirect impacts to the greater glider include noise and vibration, dust and artificial lighting. Indirect impacts to the squatter pigeon include noise and vibration and lighting (Att A Terrestrial Ecology, Section 5, page 74-80).

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

Yes

4.1.4.5 Describe why you consider this to be a Significant Impact. *

Impacts to the Squatter Pigeon, Koala and Greater Glider likely qualify as significant, as defined by the *Matters of National Environmental Significance Significant Impact Guidelines 1.1*. Impacts to other threatened species are unlikely to be significant.

Koala (*Phascolarctos cinereus*)

The action will not reduce the area of occupancy of the Koala, as defined in the *National Recovery Plan for the Koala* as the area within the extent of occurrence that is occupied by the species using 2 km × 2 km grid cells. The disturbance associated with the action (in isolation or in accumulation with the original VCM) does not fill a 2 km × 2 km cell, and the local area will thus remain “occupied”. The action will also not lead to fragmentation, disease, invasive species harmful to Koalas, or long-term decreases in population size (Att A Terrestrial Ecology, Section 5.3.3.3, page 89-91).

However, the action will adversely affect habitat critical to the survival of the species (habitat used for feeding and resting), and the action thereby qualifies as a significant residual impact under the EPBC Act (Att A Terrestrial Ecology, Section 5.3.3.3, page 89-91).

Squatter Pigeon (*Geophaps scripta scripta*)

As the action lies north of the Carnarvon Ranges, the local population of Squatter Pigeons does not qualify as an “important population” according to the Department of Climate Change, Energy, the Environment and Water (Att A Terrestrial Ecology, Section 5.3.3.2, page 87-89), and hence criteria 1, 2, 3 and 5 are not relevant. The scale of habitat loss, relative to the large extent of habitat remaining in the local landscape, means that the project is not likely to jeopardise the viability of local populations (criterion 9 is not triggered).

Nevertheless, this local population is expected to temporarily decline by approximately 18 individuals, which may trigger a significant impact under the sixth criterion listed above. Also, because habitat used for foraging, breeding, roosting and dispersal (qualifies as “habitat critical to the survival of a species” under the *Matters of National Environmental Significance Significant Impact Guidelines 1.1*) is proposed to be removed, criterion 4 is also triggered by the project.

The action may also lead to localised increases in some weeds, which qualify as invasive species potentially threatening ground-feeding Squatter Pigeons. Weed introduction could potentially occur during the construction, operation and rehabilitation phases of the action. However, these impacts are not likely to extend far beyond the action's disturbance footprint. Furthermore, the infertile, sandy soils present on site are relatively unfavourable for weed establishment. As the impact assessment assumes all habitat within the disturbance footprint is to be removed, no additional impacts of weeds are anticipated.

Overall, the action is likely to have a significant residual impact on the Squatter Pigeon under the EPBC Act due to the expectation that it causes the loss of 76.4 ha of breeding and foraging habitat and 16.0 ha of foraging (but not breeding) habitat to the extent that the population is likely to decline, albeit to a limited extent and only temporarily (Att A Terrestrial Ecology, Section 5.3.3.3, page 89-91).

Greater Glider (*Petauroides armillatus*)

On the grounds that the project will adversely affect habitat critical to the survival of a species (i.e., by removing hollow trees), the action is likely to significantly impact the Central Greater Glider (Att A Terrestrial Ecology, Section 5.3.3.4, pages 92-94).

The action may also lead to localised increases in some weeds, although no local weeds pose a threat to the health and long-term viability of large eucalypts used by Central Greater Gliders.

Refer to the Terrestrial Ecology Assessment for further discussion (Att A Terrestrial Ecology, Section 5.3.3.4, pages 92-94).

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

Yes

4.1.4.8 Please elaborate why you think your proposed action is a controlled action. *

Due to significant residual impacts on the Squatter Pigeon, Koala and Greater Glider (Att A Terrestrial Ecology, Section 5.3.3.2- 5.3.3.4, pages 87-92).

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. *

The action has been strategically positioned to avoid disturbance to as many matters of state and/or national environmental significance as practicable. No protected conservation estates, wetlands or watercourses of high ecological significance, secured offset areas or threatened ecological communities will be disturbed by the Project.

Mitigation and management measures are provided in the following sections of the appended technical reports:

- Surface Water Assessment report – Sections 5 and 7 (Att B Surface Water, Section 5 and 7, pages 55-64 and 77-96) ;
- Groundwater Impact Assessment report – Section 7 (Att C Groundwater, Section 7, pages 77-78 ; and
- Terrestrial Ecology Assessment report – Section 5.2 (Att A Terrestrial Ecology, Section 5.2, pages 80-82) .

Key mitigation measures are summarised below.

To limit the impacts of habitat loss on threatened species, the following actions will be taken:

1. Vitrinite employees and contractors will be made aware of environmental obligations and compliance requirements through a site induction program.
2. The edges of the project's footprint are to be marked out to prevent unnecessary accidental clearing of neighbouring habitats.
3. Overburden is to be mostly returned to the mined pits, to limit the total disturbance footprint of the project.
4. Topsoil removed from each site in preparation for mining is to be stored and managed in accordance with a Progressive Rehabilitation and Closure Plan, to protect a favourable growing medium for vegetation post-mining.
5. Post-mine rehabilitation will aim to restore habitat values for the Squatter Pigeon, Koala and Greater Glider, and completion criteria pertaining to these goals have been included in the Progressive Rehabilitation and Closure Plan.

To limit the impacts of weed invasion, the following actions will be taken:

1. All vehicles that will enter undisturbed parts of the site are to be washed and certified prior to arrival at the project site, to restrict the introduction of new weeds. Weed management activities are to control weeds in high traffic areas.
2. Light vehicles used for commuting between the project area and nearby towns (where they may be exposed to weeds) are to be parked in the visitor carpark.
3. Operational areas and the visitor carpark are to be inspected regularly (at least biannually) to identify new infestations of restricted weeds. These are to be treated soon after detection, with follow-up treatment until populations are eradicated.
4. Only native species, or species with low weed risk, are to be included within seed mixes applied to rehabilitated sites.

To limit direct mortality during the clearing process, the following actions will be taken:

1. Clearing will occur in stages, to allow fauna the opportunity to exit the area.
2. Injured fauna is to be taken to the nearest wildlife carer or veterinarian.
3. Any injury and/or mortality will be communicated to the Queensland Department of Environment and Science within 24 hours.
4. Vitrinite employees and contractors will be made aware of environmental obligations and compliance requirements through the site induction program.

To limit risk of vehicle collisions with threatened wildlife, the following actions will be taken:

1. Buses are to transport ~80% of workers daily from accommodation to site, to reduce the total number of vehicles using the roads.
2. Trains used to transport coal are to be of the largest size safely driven on the relevant tracks, to reduce the total number of trips required.
3. On-site speed limits are to be restricted to 60 km/h on all roads through or adjacent to habitat critical to the survival of the Koala during dawn and dusk and at night (Att A Terrestrial Ecology, Section 5.2, page 81).

To limit impacts of artificial lighting on threatened fauna, the following lighting designs will be used, where appropriate, in operational areas within 500 m of remnant vegetation:

1. Artificial lighting used in operational areas is to be angled away from habitats supporting sensitive species (e.g., riparian areas supporting Koalas and Greater Gliders).
2. Floodlights with "low glare" louvres/attachments are recommended to limit lateral transmission of light. Note that newer LED-type flood lights may have glare-reduction technology built-in.
3. Any street lights used are recommended to be of the "aeroscreen" type (flat glass lenses), to reduce sideways glare.
4. Light fittings should be positioned as close to horizontally as possible.

To prevent the action from increasing local populations of feral cats, foxes and dingoes, food wastes will be stored in sealed containers and disposed off-site.

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

Offsets are proposed for the following three threatened species:

- Koala (combined populations of Queensland, NSW and the ACT), *Phascolarctos cinereus* (endangered);
- Squatter Pigeon (southern subspecies), *Geophaps scripta scripta* (vulnerable); and
- Central Greater Glider, *Petauroides armillatus* (endangered).

An Environmental Offsets Strategy has been developed to articulate and commit to a process that will be undertaken to identify and assess suitable offset sites, and to prepare a draft Offsets Area Management Plan (OAMP) for approval prior to the commencement of any disturbance resulting from the amendment (Att H Offsets Strategy, all sections, all pages).

The Environmental Offsets Strategy only addresses impacts to MNES resulting from the proposed scope (Att H Offsets Strategy, all sections, all pages); all other activities associated within the VCM have been previously assessed and approved (these assess an area in which the action is situated within) (referral numbers 2019/8504 and 2020/8676).

The Environmental Offsets Strategy is attached to this referral for further information (Att H Offsets Strategy, all sections, all pages).

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	No	Apus pacificus
No	No	Calidris acuminata
No	No	Calidris ferruginea
No	No	Calidris melanotos
No	No	Cuculus optatus
No	No	Gallinago hardwickii
Yes	Yes	Hirundapus caudacutus
No	No	Motacilla flava
Yes	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. *

Two migratory species (Rufous Fantail and White-throated Needletail) have been recorded in the vicinity of the project area, and eight additional species are likely or possible visitors to the project area (Att A Terrestrial Ecology, Section 5.3.3.17, page 101-103). Species likely to be impacted are described below.

Rufous Fantail (*Rhipidura rufifrons*)

Rufous Fantails are migratory birds protected under the Bonn Convention (Att A Terrestrial Ecology, Section 5.3.3.17, page 101).

Rufous Fantails transit through the project area in spring and autumn. The species lives primarily along the east coast and nearby ranges, in rainforest and wet eucalypt forests with a dense, shrubby midstorey. During migration, they can inhabit drier woodlands further west. Two individuals were recorded near the VCM mining lease in September-October 2019: one within vine-thicket and the other within dense *Acacia* regrowth. The subspecies of these individuals is not known, but given the suboptimal habitat usage, these were likely to be migrants. Therefore, they belonged either to *Rhipidura rufifrons rufifrons* (south-eastern Australian subspecies) or migratory sub-populations of *Rhipidura rufifrons intermedia* (Queensland subspecies).

It is likely that small numbers (5 to 10) pass through the survey area during each northward or southward migration. According to population estimates provided by the *Referral guideline for 14 birds listed as migratory species under the EPBC Act* (Att A Terrestrial Ecology, Section 5.3.3.17, page 101-103), this constitutes a tiny fraction (0.001% to 0.002%) of the total population size of the subspecies involved.

Habitats possessing a dense midstorey of *Acacia*, *Melaleuca* or vine-thicket species are most likely to be used locally. A total of 14.3 ha of such habitat exist within the footprint of the proposed action. Extensive tracts of such habitat occur to the west of the VCM, and local habitat availability is highly unlikely to be constraining the movement of the small numbers of Rufous Fantails that pass through the region annually. Breeding has never been recorded in dry habitats west of the coastal ranges in central Queensland (Att A Terrestrial Ecology, Section 5.3.3.17, page 101-103), and is not likely to occur locally. Impacts to this species are expected to be negligible.

White-throated Needletail (*Hirundapus caudacutus*)

White-throated Needletails are migratory birds protected under the China-Australia Migratory Bird Agreement, Japan-Australia Migratory Bird Agreement and Republic of Korea-Australia Migratory Bird Agreement. The species is also protected as a threatened species under the EPBC Act, and is discussed in detail within the Threatened Species section of this referral and discussed further in the Terrestrial Ecology Assessment (Att A Terrestrial Ecology, Section 5.3.3.17, page 101-103).

White-throated Needletails were recorded on site on a single occasion. The project area is likely to be west of their primary migration route, but flocks occasionally feed in the area when drawn west by low pressure systems. The project area is of no particular importance to the White-throated Needletail on a local or regional scale, and the project will not include any wind turbines, tall buildings, airports or other structures that threaten airspace used by the species for foraging and dispersal (Att A Terrestrial Ecology, Section 5.3.3.17, page 101-103).

Therefore, impacts to this species are expected to be minimal.

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 action will not disrupt an ecologically significant proportion of any migratory species habitat. The action is also not anticipated to cause the establishment of harmful invasive species. It is expected that up to 10 Rufous Fantails pass through the survey area each year, with a total of 14.3 ha of potential habitat for transient Rufous Fantails being contained within the disturbance footprint of the proposed action. However, the habitats present on site are marginal (more inland, drier and open than is generally preferred).

White-throated Needletails were recorded on site only on a single occasion and the project area is likely to be west of their primary migration route, but flocks occasionally feed in the area when drawn west by low pressure systems. It is highly unlikely that the marginal habitats to be disturbed are a limiting factor constraining the migration of any of the migratory bird species listed, as such habitats are widespread in the local region. For this reason, it is considered unlikely that action will result in a significant impact on any migratory species protected under the EPBC Act.

Refer to the Terrestrial Ecological Assessment for further information (Att A Terrestrial Ecology, Section 5.3.3.17, page 101-103).

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. *

Due to no anticipated significant impacts on migratory species.

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 the low importance of the project area for migratory species, no specific avoidance or mitigation measures are proposed for migratory birds, other than those described for threatened species (Att A Terrestrial Ecology, Section 4.3.3 and 5.3.3.17, pages 58-64 and 101-103).

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

No offsets for migratory species are proposed.

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 project does not involve nuclear actions.

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. *

The proposed action will not take place in a Commonwealth Marine Area. The only way that the proposed action could result in potential impacts to a Commonwealth Marine Area is via a reduction in water quality of downstream surface water and groundwater, ultimately entering a Commonwealth Marine Area. The project area is located within the Isaac River sub-basin of the Fitzroy River Basin, which enters a Commonwealth Marine Area at Keppel Bay, over 580 km downstream of the project area.

Historical agricultural practices at the VCM (located adjacent to the action) cause the baseline water quality in local drainage lines to be poor. Local drainage lines regularly exceed default water quality objectives for Isaac Western Upland tributaries (stipulated by the *Environment Protection (Water and Wetland Biodiversity) Policy 2009*) for electrical conductivity, suspended solids, turbidity, aluminium, sulphates, iron, ammonia, total nitrogen and total phosphorus.

A water management system has been developed for the action to protect downstream water quality, including within Commonwealth Marine Areas. This water management system is described in detail within the attached Surface Water Assessment (Att B Surface Water, Section 5, pages 55-64). The water management system includes the following water-related infrastructure:

- diverted water drains, bunds and drainage diversions to divert runoff from undisturbed catchments around areas disturbed by mining;
- sediment dams and drains to collect and treat runoff from waste rock emplacement areas; and
- mine-affected water (MAW) drains and dams to store water pumped out of the open cut mining areas and to collect runoff from the infrastructure areas.

Models revealed that there are no predicted water spills to the receiving environment during the life of the mine from the mine water dams or open-cut pits (Att B Surface Water, Section 7.3.2.2, page 80-82). The risk of offsite release of MAW is therefore very low under all modelled climatic conditions.

Even in the unlikely event of MAW release, the quality of this water is expected to be relatively high. Geochemical analyses of local waste rock and coal revealed low sulphide content and excess acid-neutralising capacity, and classified local geological material as “not acid-forming” (Att B Surface Water, Section 6.8, page 75). Furthermore, surface runoff and seepage from mining waste is expected to be pH neutral to slightly alkaline and have a low level of salinity (Att B Surface Water, Section 6.8, page 75). There is also no significant enrichment of metals and metalloids, and most metals are sparingly soluble at neutral to slightly alkaline pH.

The above data indicate that water management objectives, when implemented through appropriate management plans, will mitigate the effects of the action on natural surface water quantity and quality and flooding downstream of the mine site during operations.

A hydraulic (TUFLOW) model was developed to assess the impact of the action on flooding. This revealed that the action will have limited impacts on the hydraulic characteristics of local drainage lines (Att B Surface Water, Section 8.2.2, page 97).

The action is not expected to have a measurable impact on receiving water quality or environmental values. Adherence to model mining conditions pertaining to water quality of receiving waters is expected to result in no measurable impacts to Commonwealth Marine Areas.

This information is described in the Surface water assessment (Att B Surface Water, all sections, all pages).

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 proposed action will not take place in the Great Barrier Reef Marine Park. The only way that the proposed action could result in potential impacts to the Great Barrier Reef Marine Park is via reduced water quality of downstream surface water and groundwater entering the Great Barrier Reef Marine Park. The project area is located within the Isaac River sub-basin of the Fitzroy River Basin, which enters the Great Barrier Reef Marine Park at Keppel Bay, over 580 km downstream from the project area.

Based on geochemical analysis of local rock and coal (Att B Surface Water, Section 6.8, page 75), and modelling of surface water flows and flooding, the proposed mine water management system will result in a negligible risk to the quality, quantity and flooding of downstream waters. The action will not result in persistent organic chemicals, heavy metals, or other potentially harmful chemicals accumulating in the downstream marine environment (Att B Surface Water, Section 11.5, page 138).

For further information regarding downstream risks to marine environments, refer to the section of this referral on Commonwealth Marine Area impacts, as well as the attached Surface Water Assessment (Att B Surface Water, Section 11.5, page 138).

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. *

As a coal project, water resources impacted by the action are a matter of national environmental significance to be considered, however the action and its associated effects on water resources are of a limited scale and duration. Furthermore, the sensitivity of the receiving surface water and groundwater environment is low (Att C Groundwater, Section 8, page 79; Att B Surface Water, Section 4, page 33-54).

The construction of the Matilda pit, which intercepts groundwater, and the increased risk of sediment erosion resulting from vegetation clearing and modification of the landform will potentially have localised impacts on surface water and groundwater quality and flow (Att C Groundwater, Section 6, page 62-76; Att B Surface Water, Section 8, 97-123).

Detailed geochemical, surface water and groundwater studies were undertaken on site, which addressed all “elements that could be included in Terms of Reference for the assessment of controlled actions so as to best ensure necessary information is provided for assessment”, as recommended by the Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development. The results of these studies are attached in the Groundwater Impact Assessment and the Surface Water Assessment (Att C Groundwater, all sections, all pages; Att B Surface Water, all sections, all pages).

Hydrogeologist.com.au (2022) has developed a numerical groundwater flow model of the project area and broader region to predict the effects of the action on local groundwater levels (Att C Groundwater, section 6.1, page 62-67). Groundwater flow into the main and Matilda Pits will be negligible, and these pits will be essentially dry. Groundwater flow into the Matilda Pit will be up to 2.7 m3/day, which will cause localised drawdown in surrounding aquifers. The drawdown predicted from the groundwater flowing into the pits is limited in geographic extent (up to 300 m from the pit crest), and most of the vegetation within this zone of drawndown will be removed to accommodate the rail loop and other infrastructure. As the pits will be back-filled, no residual drawdown is expected following the cessation of the project (Att C Groundwater, section 6.2, page 67-71). Nevertheless, 1.8 ha of potentially groundwater-dependent vegetation outside the project’s clearing footprint is found within the zone of drawdown. All of this comprises regrowth 11.5.9. The effect of drawdown on vegetation within this 1.8 ha is expected to be minimal. The dominant species present (*Eucalyptus crebra* and *Eucalyptus melanophloia*) are unlikely to utilise groundwater and will not be affected by drawdown. The principal impact could be on the sub-dominant tree, *Corymbia clarksoniana*, which frequently utilises shallow groundwater. It is unclear whether a drawdown of 1–2 m (as forecast by modelling) will have any effect on tree health. However, even if all *C. clarksoniana* within this small patch of 11.5.9 were to die, this would have relatively little effect on local wildlife. This species is not usually a Koala food tree, rarely develops hollow limbs, and does not provide key habitat resources for other threatened fauna (Att A Terrestrial ecology, section 5.3.2, page 83).

The groundwater quality is unlikely to be significantly altered by the action and, in any case, all local potentially groundwater-dependent ecosystems occur upgradient (in terms of the groundwater flow, which mimics the surface water drainage pattern from west to east) of potential effects. In summary, negligible impacts to groundwater-dependent ecosystems are predicted to result from the action, beyond that which will occur due to vegetation clearing (Att A Terrestrial ecology, section 5.3.2, page 83).

With a water management system in place to divert surface water around active mining areas, reuse MAW, and capture and treat sediment-laden runoff from exposed surfaces, there are expected to be relatively minor impacts from the action on downstream water quality and flow regimes (Att B Surface Water, Section 5.3, page 56). Models indicate that there will be no water spills to the receiving environment during the life of the mine from the mine water dams or open-cut pits (Att B Surface Water, Section 11.2, page 137). The altered landform will cause negligible changes to the hydraulic characteristics of local drainage lines upstream or downstream of the ML (Att B Surface Water, Section 1.8, page 139). In light of the poor baseline water quality, it is unlikely that the action will have a measurable impact on receiving water quality or environmental values (Att B Surface Water, section 11.5, page 138). Vitrinite will commit to maintaining these water values through EA conditions mandating a monitoring program and water quality targets at downstream monitoring locations (Att B Surface Water, Section 9.2, page 127).

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. *

Based on definitions within the *Significant impact guidelines 1.3: Coal seam gas and large coal mining developments—impacts on water resources*, an impact 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 (flow regimes, recharge rates to groundwater, aquifer pressure, groundwater table, groundwater-surface water interactions, river-floodplain connectivity, inter-aquifer connectivity and coastal processes), and/or
- the water quality of a water resource (surface water or groundwater).

This change must be 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.

For water-dependent ecosystems, a significant impact on water quality is likely if the predicted change in quality is greater than that required for 'moderately to slightly disturbed' systems as described in the relevant local or regional water quality objectives (typically the 80% to 95% ecosystem protection guideline values listed in the Australian Water Quality Guidelines). Note that other thresholds may apply where changes in water quality may impact on other matters of national environmental significance, such as threatened species or ecological communities.

The appended Groundwater Impact Assessment and the Surface Water Assessment anticipate that the action will have no measurable effect on downstream surface water flow or quality. There will be highly localised impacts on groundwater level but not groundwater quality. No third party users will be affected by the localised groundwater drawdown that is expected. This drawdown is also expected to have negligible effects on groundwater-dependent ecosystems. Therefore, the likely impacts of the action do not qualify as significant (Att B Surface water, Section 11, 137-139; Att C Groundwater, Section 8, 79).

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. *

Due to a lack of significant impacts on water resources.

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. *

No mitigation measures are currently proposed or required to manage risks to groundwater resources, as no impacts are predicted for third party users, surface water systems or groundwater-dependent ecosystems.

For a summary of the mine surface water management system to be implemented for the action, refer to the section of this referral pertaining to Commonwealth Marine Areas. Further detail is provided in the attached Surface Water Assessment (Att B Surface Water, Section 7, pages 77-96).

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

No offsets are proposed due to a lack of significant impacts on water resources.

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 action is not situated on Commonwealth Land, is not likely to impact Commonwealth Land, and will not be undertaken by a Commonwealth agency.

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 action will not impact any Commonwealth Heritage places in overseas territories.

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:

- Threatened Species and Ecological Communities (S18)

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)
- 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. *

Timing

The action has a short life of four years, and there is limited flexibility in when the action can take place.

Location

There are three principal components of the action, and each is relatively constrained in its location.

The location of the load-out facility and rail-loop is constrained by the boundaries of the mining lease, locations of existing open-cut pits and waste rock dumps, and availability of relatively flat land. It was also positioned to minimise impacts to existing surface water drainage patterns. Locating the loop further south in the lease would have had increased impacts on Boomerang Creek. Locating the loop further northwest (where the topography is steeper) would have required more extensive earthworks, resulted in a greater overall disturbance footprint (due to the need for a longer rail connection between the loop and the existing rail network), and impacted a greater extent of remnant vegetation. The loop cannot be located further north or east without disrupting water drainage patterns along the existing flood levee wall.

The position of the Matilda pit is based on the location of extractable resource. The size of the Matilda pit is constrained by the extent of the resource, as well as the location of other infrastructure. The Matilda pit is fully encircled by the proposed rail loop and its size is constrained by the size of this rail loop. While additional coal exists beyond the bounds of the proposed Matilda pit, the environmental and economic costs of moving this rail loop elsewhere within the mining lease, in order to access the resource, outweigh the value of the unused resource. Placing the Matilda pit within the rail loop minimises the cumulative impacts of the two components. This is because vegetation to be removed to accommodate the Matilda pit would otherwise be isolated within the rail loop and rendered potentially unusable by Koalas and other wildlife.

The CHPP was intentionally located within the already-approved disturbance footprint, on land that was approved to be included in the main open-cut pit. Additional drilling along the edge of the resource revealed that the boundary of the resource was further east than initially anticipated. Shifting the western boundary of the open-cut pit eastwards created space within the approved disturbance footprint that has become available for the proposed infrastructure. As this space is located adjacent to the proposed rail loop and load-out facility, it is an ideal location for the CHPP and product pad, so no other locations were considered.

Activities

The small size of the mining lease and the short life of the project meant there were no feasible alternatives for processing coal on site and/or transporting coal for export.

Not taking the action is an alternative that was considered. The principal reason this is not the preferred option is due to the economic uncertainty associated with maintaining the status quo (i.e., the existing VCM as approved). The existing VCM involves the road transport of unprocessed coal to third-party processing facilities. Fluctuations in demand among third party operators results in greater risk for the action, and the only way for this risk to be reduced is to process the coal on site. Shifting from road transport (coal is currently transported via road train on public roads) to rail has numerous economic, social and environmental benefits. These include improved safety for other road users, reduced damage to the roads' surface, reduced threat of collisions with Koalas and other wildlife, and reduced carbon emissions.

The addition of the Matilda pit offsets the reduction in the size of the main open-cut pit that resulted from the refinement of resource boundaries. This will ensure that the action maintains scale and economic viability.

5. Lodgement

5.1 Attachments

1.2.1 Overview of the proposed action

#1.	Att A Terrestrial Ecology	Document	Terrestrial Ecological Assessment
#2.	Att B Surface Water	Document	Surface Water Assessment
#3.	Att C Groundwater	Document	Groundwater Impact Assessment

1.2.7 Public consultation regarding the project area

#1.	Att D Stakeholder Engagement Plan	Document	Stakeholder Engagement Plan from the original EA Application.
#2.	Att E Social Impact	Document	VCM Social Impact Assessment

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

#1.	Att G ESG statement	Document	Environment, social and governance statement by Vitrinite (owned by Queensland coking coal)

3.1.1 Current condition of the project area's environment

#1.	Att I Transport Impact Assessment	Document	Transport Impact Assessment

3.1.2 Existing or proposed uses for the project area

#1.	Att F Soil and Land Suitability	Document	Vulcan Complex Soil and Land Suitability assessment

3.2.1 Flora and fauna within the affected area

#1.	Att A Terrestrial Ecology	Document	Terrestrial Ecological Assessment

3.2.2 Vegetation within the project area

#1.	Att A Terrestrial Ecology	Document	Terrestrial Ecological Assessment
#2.	Att F Soil and Land Suitability	Document	This SLSA documents the nature and distribution of major soil types in the study area and assesses their suitability for the land uses of both cattle grazing and dryland cropping. This assessment establishes baseline environmental characteristics and values relating to land use and suitability and provides recommendations for the management of soil resources within the Project area.

3.4.1 Hydrology characteristics that apply to the project area

#1.	Att B Surface Water	Document	Surface Water Assessment
#2.	Att C Groundwater	Document	Groundwater Impact Assessment
#3.	Australian and New Zealand Guideline for Fresh and Marine Water Quality	Link (Webpage)	https://www.waterquality.gov.au/anz-guidelines

4.1.4.2 (Threatened Species and Ecological Communities) Why your action has a direct and/or indirect impact on the identified protected matters

#1.	Att A Terrestrial Ecology	Document	Terrestrial Ecological Assessment

4.1.4.5 (Threatened Species and Ecological Communities) Why you consider the direct and/or indirect impact to be a Significant Impact

#1.	Att A Terrestrial Ecology	Document	Terrestrial Ecological Assessment

4.1.4.8 (Threatened Species and Ecological Communities) Why you think your proposed action is a controlled action

#1.	Att A Terrestrial Ecology	Document	Terrestrial Ecological Assessment

4.1.4.10 (Threatened Species and Ecological Communities) Avoidance or mitigation measures proposed for this action

#1.	Att A Terrestrial Ecology	Document	Terrestrial Ecological Assessment
#2.	Att B Surface Water	Document	Surface Water Assessment
#3.	Att C Groundwater	Document	Groundwater Impact Assessment

4.1.4.11 (Threatened Species and Ecological Communities) Proposed offsets relevant to avoidance or mitigation measures

#1.	Att H Offsets Strategy	Document	Environmental offsets strategy

4.1.5.2 (Migratory Species) Why your action has a direct and/or indirect impact on the identified protected matters

#1.	Att A Terrestrial Ecology	Document	Terrestrial Ecological Assessment

4.1.5.6 (Migratory Species) Why you do not consider the direct and/or indirect impact to be a Significant Impact

#1.	Att A Terrestrial Ecology	Document	Terrestrial Ecological Assessment

4.1.5.10 (Migratory Species) Avoidance or mitigation measures proposed for this action

#1.	Att A Terrestrial Ecology	Document	Terrestrial Ecological Assessment

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

#1.	Att B Surface Water	Document	Surface Water Assessment

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

#1.	Att B Surface Water	Document	Surface Water Assessment

4.1.9.2 (Water resource in relation to large coal mining development or coal seam gas) Why your action has a direct and/or indirect impact

#1.	Att A Terrestrial Ecology	Document	Terrestrial Ecological Assessment
#2.	Att B Surface Water	Document	Surface Water Assessment
#3.	Att C Groundwater	Document	Groundwater Impact Assessment

4.1.9.6 (Water resource in relation to large coal mining development or coal seam gas) Why you do not consider the direct and/or indirect impact to be a Significant Impact

#1.	Att B Surface Water	Document	Surface Water Assessment
#2.	Att C Groundwater	Document	Groundwater Impact Assessment

4.1.9.10 (Water resource in relation to large coal mining development or coal seam gas) Avoidance or mitigation measures proposed for this action

#1.	Att B Surface Water	Document	Surface Water Assessment

5.2 Declarations

Completed Referring party's declaration

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

ABN/ACN	94143463316
Organisation name	Mining & Energy Technical Services Pty Ltd
Organisation address	310 Edward Street, Brisbane City, QLD, 4000
Representative's name	Laura Morgan
Representative's job title	Environmental Consultant
Phone	1300078518
Email	laura.morgan@metserve.com.au
Address	310 Edward Street, Brisbane City, 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. *

By checking this box, I, **Laura Morgan of Mining & Energy Technical Services Pty Ltd**, 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	71129600004
Organisation name	Queensland Coking Coal Pty Ltd
Organisation address	Level 6, Suite 2, 12 Creek Street, Brisbane, Qld, 4000
Representative's name	Michael Callan
Representative's job title	Chief Operating Officer
Phone	(07) 3174 4816
Email	michael@vitrinite.com.au
Address	Level 6, Suite 2, 12 Creek 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, **Michael Callan of Queensland Coking Coal Pty Ltd**, 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, **Michael Callan of Queensland Coking Coal Pty Ltd**, 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. *