Title of Proposal - Jellinbah Coal Mine-Central North Extension

Section 1 - Summary of your proposed action

Provide a summary of your proposed action, including any consultations undertaken.

1.1 Project Industry Type

Mining

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

The Jellinbah Coal Mine and proposed Central North Extension are located in the Bowen Basin in central Queensland. The operational area of the current mine is located approximately 24 km north-north-east of Blackwater and 190 km west of Rockhampton, within the Central Highlands Regional Council area. The Mine encompasses two operating mine areas – Jellinbah Central, operated by Jellinbah Group, and Jellinbah Plains, a contractor-run operation.

The purpose of the Project is to extend mining activities at Jellinbah main for current resource areas and expand the area available for dumping of spoil into three new MLs: ML 700011, ML 700012, and ML 700013. No changes to the currently approved mining methods or production rates are proposed as part of the Project.
Economically viable coal resources have been identified in a long, narrow section of ML 700011. The Project consists of two primary components:

1. The mining of coal at ML 700011, which has an estimated resource of 45.5 million tonnes of PCI coal and minor amounts of thermal coal within the Rangal Coal Measures
2. The placement of overburden and topsoil in ML 700012 and ML 700013.

Coal mining will only be conducted in ML 700011. The production life for the Project is anticipated to be greater than 20 years based on current economic assessment of the resource. Development of the Project will involve construction and operation of the following major elements:

- Open-cut mining excavations;
- Access / haul roads;
- Sediment dams for water management;
- Water management drains; and
- Topsoil stockpiling and spoil dumping.

The Project intends to initially extract approximately 17 Mt of in situ coal located at a depth shallower than 150 m below the surface. The depth of additional coal to mine will be determined on an economic basis prior to the commencement of mining in this area. The Central North Extension is anticipated to augment the current production of the Jellinbah Coal Mine by an average of 1.0 Mtpa Run-Of-Mine (ROM) coal in future years, thereby extending the mine's

overall production life. No increase in mining or production rates is proposed for the Jellinbah Coal Mine, as a result of the Central North Extension.

The Project will involve open-cut mining using truck and excavator methods. Topsoil stripped prior to mining will be stockpiled for later use in rehabilitation. Overburden will be relocated from above the coal seams to in-pit dumps and out-of-pit spoil dumps located on site.

Coal mined from the Project will continue to be transported in trucks for processing using existing Jellinbah Coal Mine infrastructure. Product coal will be transported by rail to Gladstone Port along Aurizon's Blackwater rail line where it will be exported through the RG Tanna Coal Export Terminal.

Overburden placement on ML 700012 is scheduled to commence within the next two years. Coal mining in ML 80068 is anticipated to commence within 5 years, based on the current mine plans. Mining will progress down-dip into the proposed new mining areas in ML 700011 approximately five years thereafter.

1.3 What is the extent and location of your proposed action? Use the polygon tool on the map below to mark the location of your proposed action.

Area	Point	Latitude	Longitude
ML 700013	1	-23.298490690455	148.90622235294
ML 700013	2	-23.315832551404	148.91403294559
ML 700013	3	-23.316226658324	148.91300297733
ML 700013	4	-23.298096530973	148.90484906192
ML 700013	5	-23.298569522211	148.90630818363
ML 700013	6	-23.298490690455	148.90622235294
ML 700012	1	-23.321247371558	148.91827543015
ML 700012	2	-23.321405008044	148.91827543015
ML 700012	3	-23.366008616318	148.9462562346
ML 700012	4	-23.37042087925	148.93853147263
ML 700012	5	-23.326922167268	148.9179321074
ML 700012	6	-23.321247371558	148.91827543015
ML 700011	1	-23.287508863761	148.92891843552
ML 700011	2	-23.287508863761	148.92891843552
ML 700011	3	-23.30374855957	148.93097837205
ML 700011	4	-23.358444395478	148.96101911301
ML 700011	5	-23.360177900853	148.95707090134
ML 700011	6	-23.29949174361	148.92170865769
ML 700011	7	-23.290347011758	148.92291028733
ML 700011	8	-23.287508863761	148.92891843552

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

The Jellinbah Coal Mine and proposed Central North Extension are located in the Bowen Basin in central Queensland. The operational area of the current mine is located approximately 24 km north-north-east of Blackwater and 190 km west of Rockhampton, within the Central Highlands Regional Council area. Predominant land uses in the region include grazing and cropping, with mining and exploration common in some areas.

The existing land use of the property in the target area is low intensity cattle grazing. Topography of the Project area consists of flat to gently undulating plains. Five stock watering dams, several exploration tracks and drill pads, and a powerline easement are located within the Project area. Surface water in the Project area is currently used for livestock watering.

The Central North Extension is located within the freehold lots 6 LR94 and 2 SP213140 (land holder: Peter John Dunne), and lots 100 SP230773 and 3 SP213140 (land holder: Jellinbah East JV). Landholder agreements have been finalised for all proposed actions.

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

798 ha

1.7 Is the proposed action a street address or lot?

Lot

1.7.2 Describe the lot number and title. Freeholds: 6 LR94, 100 SP230773, 2 SP213140, 3 SP213140

1.8 Primary Jurisdiction.

Queensland

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

No

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

No

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

Start date 01/2020

End date 01/2045

1.12 Provide details of the context, planning framework and State and/or Local government requirements.

State (Queensland)

An EA Amendment Application (Major Amendment) was submitted to the Queensland Department of Environment and Heritage Protection (EHP) in August 2015, in accordance with the requirements of the Queensland *Environmental Protection Act 1994* (EP Act). EHP issued an Information Request on 15th September 2015, to which a Response to Information Request was submitted on 9th September 2016.

Following a public notice period, EHP approved the EA amendment application on 10th January 2017. Specific conditions were amended for management and mitigation of impacts on both State and Commonwealth environmental values. Activities with potential to impact on MNES will not be undertaken until the required Commonwealth approvals are in place.

The following specialist studies and reviews were completed to support the EA Amendment application and subsequent Information Request:

Environmental Offsets Strategy (AARC), originally issued in September 2015. Terrestrial Flora and Fauna Assessment (AARC), originally issued in September 2015.

Groundwater Assessment and Response to EHP Information Request Jellinbah Central North Extension Area (JBT Consulting) originally issued in March 2016.

Jellinbah Mine Site Site Water Management Plan Including Proposed Central North (UDP) originally issued in September 2016.

The Terrestrial Flora and Fauna Assessment Report (AARC, 2015) has been revised for submission with this EPBC Referral. Updates to the original document include amended tables with the addition or omission of certain EPBC Act-listed species and their respective likelihood of occurrence in the project area and risk of impact. This revised information is added in order to reflect the most recent Protected Matters Search results for the project area. Small amendments have also been made to incorporate the reclassification of ‘Declared’ invasive plant and animal species under the former Land Protection (Pest and Stock Route Management) Act 2002 to ‘Restricted Matter’ under the Biosecurity Act 2014.

1.13 Describe any public consultation that has been, is being or will be undertaken,

including with Indigenous stakeholders.

Public consultation specific to the Central North Extension Project has been undertaken with Project stakeholders, including the underlying landholders, the Central Highlands Regional Council, and relevant Queensland Government departments. Affected persons were notified of the application during the Certificate of Public Notice process. All property owners of land underlying the Project have been consulted and have entered into compensation agreements where applicable.

Jellinbah Group has conducted extensive consultation with the registered Native Title groups and will continue to do so as part of a proactive community consultation program and ongoing development of Cultural Heritage Management Plans (CHMPs) for the existing Jellinbah Coal Mine. Consultation has been planned between the registered Native Title groups and Jellinbah Group for the purpose of developing a CHMP for the Central North MLs.

Following the Public Notification one submission was received from the Central Highlands Regional Council for consideration prior to the QLD Government's EA Amendment approval. The submission raised concerns regarding communication infrastructure, road transport and associated impacts to Five Mile Lagoon, fire and flood potential, noise mitigation, waste management, pest management, water management, rehabilitation, accommodation, Community liaison and benefits and local opportunities.

At the end of 2016 Jellinbah Coal Mine General Manager, Ian Cooper, addressed these concerns in a presentation delivered to the Central Highlands Regional Council planning and environmental officers.

Further information regarding the Central Highlands Regional Council concerns and how they were addressed can be found in the following documents:

Letter from Central Highlands Regional Council Jan 2016

CHRC Presentation Central North Extension Nov 2016.

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

STATE ENVIRONMENTAL IMPACT ASSESSMENT

The Project has been subject to a State EA Major Amendment application that resulted in final approval and an Environmental Authority being granted in January 2017. As part of the assessment process, it was agreed during a pre-lodgement meeting with EHP that an ecological survey of the proposed new ML areas would be required to properly assess the nature conservation values applicable to the EA Amendment Application. For other environmental values, it was agreed that existing environmental studies combined with long-term site experience and comprehensive site management plans would likely be sufficient to assess and

protect environmental values applicable to the Central North Extension. The Project application did not require an Environmental Impact Assessment (EIS) under the *Environmental Protection Act 1994* (EP Act) for the following reasons:

- No increase to currently approved production rates was proposed;

- No Category A Environmentally Sensitive Areas (ESAs) (e.g. National Parks, Great Barrier Reef Marine Parks, etc.) are present and impacts to Category B ESAs (i.e. Endangered Regional Ecosystems [Biodiversity Status]) will be limited; and

- No substantial changes to mining operations and/or the use of novel techniques were proposed. The following Environmental Values were identified during the EA Major Amendment application assessment process, with all relevant potential impacts of the project listed:

Air

The potential air quality impacts from the activities at the existing Jellinbah Coal Mine may include:

- Air emissions from diesel generators;

- Air emissions from company vehicles and heavy equipment;

- Dust from vehicle movements on unsealed roads;

- Dust from clearing activities;

- Dust generated from disturbed areas on the MLs, such as spoil dumps;

- Dust from blasting and mining of open cut pits; and

- Dust from materials handling and crushing on the MLs.

Particulate Matter Emissions and Dust Deposition:

Total dust generation at the Jellinbah Coal Mine is not expected to increase as a result of the Central North Extension, as no changes to mining or production rates are proposed. The Project proposes to extend mining and dumping activities into new areas directly adjacent to the approved MLs. This impact assessment therefore focuses on the change to emission source locations relative to the nearest sensitive receivers.

Dust particulates are the principal contributor to air quality impacts resulting from mining activities. Emissions of dust and particulate matter will arise from drilling, blasting and excavation activities in the pit, wind erosion of disturbed land and spoil dumps, transport of spoil, and vehicles travelling on unsealed roads (Pacific Air & Environment 2006).

Jellinbah Coal Mine Particulate Matter Emissions and Dust Deposition:

Modelling conducted for the Mackenzie South (Mackenzie North and South are areas of the existingJellinbah Coal Mine) air quality assessment determined that the greatest impacts would occur to the west of the site due to prevailing easterly/south-easterly winds (Pacific Air & Environment 2006). The assessment found that the Mackenzie South development resulted in negligible additional levels of Total Suspended Particulates, PM10 and dust deposition at sensitive receivers (Pacific Air & Environment 2006). Similarly, the air quality assessment of the Mackenzie North Project (Katestone 2013) found that all predicted concentrations were well below air quality objectives specified in the EA and the *Environmental Protection (Air) Policy* 2008.

Assessment of Emission Source Locations Relative to Sensitive Receivers:

There are 12 sensitive receivers in the vicinity of the Central North Extension and Jellinbah Coal Mine. Air quality impacts at identified sensitive receivers, based on the distance and direction to the nearest pits and spoil dumps at the Central North Extension and Jellinbah Coal Mine, were all assessed to be either unlikely or negligible when compared to current levels.

Only one sensitive receiver (Mourallyn) will be closer to mining activities (pit excavations and spoil dumping) due to development of the Central North Extension. All other receivers will remain the same distance from current mining activities at the Jellinbah Coal Mine. For residences other than Mourallyn, it is reasonable to conclude that there will be no additional air quality impacts as a result of the Project.

The proposed Central North Extension mining operations are located approximately 470 m closer to Mourallyn than currently approved mining operations at Jellinbah Coal Mine. Based on existing mine operating experience, Jellinbah Group believes that air quality emissions can be managed to achieve compliance with the existing EA limits at this residence. Considering the Mourallyn homestead is located upwind of the predominant wind direction, the risk of significant dust increase as a result of the Central North Extension is low and manageable.

Further to this, a Compensation Agreement is in place between the owner of the Mourallyn property (Mr Peter Dunne) and Jellinbah Group, in which Mr Dunne has provided consent to Jellinbah Coal Mine's MLs. Due to the existing MLs located on the Mourallyn property, Jellinbah Group and Mr Dunne have worked closely over a long period of time, resulting in both parties having a high level of understanding of the impacts of each other's businesses.

Jellinbah Group maintains a Complaints Register for recording complaints pertaining to dust and particulate emissions at nearby residences. Where investigative monitoring finds that dust and particulate matter exceed the prescribed objectives, Jellinbah Group must address the complaint and immediately implement abatement measures.

Vehicular emissions throughout construction, operation and decommissioning will emit oxides of carbon, nitrogen and sulphur; however, these emissions are anticipated to be minor.

Odour:

Mining activities on the Project site will not produce any significant odour. The only

activities associated with the Jellinbah Coal Mine that have the potential to cause odour are the disposal of putrescible wastes and operation of septic treatment facilities. These activities are already conducted at the existing Jellinbah Coal Mine and the development and operation of the Central North Extension will not result in any material change to odour production. Given the slight increase in proximity of the nearest sensitive receiver to these existing activities, it is unlikely that additional odour nuisance will occur. There have been no complaints about odour nuisance from operations to date.

Greenhouse Gas Emissions:

Sources of greenhouse gas (GHG) emissions associated with the Central North Extension are:

- Fuel consumption;

- Electricity consumption;

- Blasting;

- Fugitive methane emissions; and

- Land clearing.

Modelling for the Mackenzie North Project found that diesel combustion and fugitive methane emissions were the greatest contributors to Scope 1 and 2 emissions. As the Project will not result in an overall increase in mining or production rate of the existing mine, it is reasonable to conclude that no increase in GHG emissions will result from the Project.

Further Information regarding air impacts and mitigation strategies can be found in the following documents:

Central North Extension - Jellinbah Coal Mine Environmental Authority Amendment - Supporting Information (AARC 2015)

Noise and Vibration

Potential noise and vibration sources resulting from activities at the Jellinbah Coal Mine are largely associated with the operation of machinery and equipment, including:

Mining equipment for overburden transport;Haul road vehicles;Loading equipment andLight vehicles accessing the site

Total noise generation at the Jellinbah Coal Mine is not expected to increase as a result of the Central North Extension. While the Project will extend mining and dumping into new areas directly adjacent to the Jellinbah Coal Mine, no changes to mining or production rates are proposed. This impact assessment therefore focuses on the change to emission source locations relative to the nearest sensitive receivers.

Assessment of Emission Source Locations Relative to Sensitive Receivers:

An assessment of the likelihood and magnitude of noise impacts at the 12 sensitive receivers in the vicinity of the Central North Extension and Jellinbah Coal Mine, based on receivers' location (distance and direction) relative to the nearest pits and dumps at the Central North Extension and Jellinbah Coal Mine, stated that additional noise impacts were either unlikely or negligible at all properties.

Only one sensitive receiver (Mourallyn) will be closer to mining activities (pit excavations and spoil dumping) due to development of the Central North Extension. All other receivers will remain the same distance from current mining activities at the Jellinbah Coal Mine. For residences other than Mourallyn, it is reasonable to conclude that there will be no additional noise impacts as a result of the Project.

The proposed Central North Extension mining operations are located approximately 470 m closer to Mourallyn than currently approved mining operations at Jellinbah Coal Mine. Based on existing mine operating experience, Jellinbah Group believes that noise emissions can be managed to achieve compliance with the existing EA limits at this residence. Considering the Mourallyn homestead is located upwind of the predominant wind direction, the risk of significant noise increase as a result of the Central North Extension is low and manageable.

Further to this, a Compensation Agreement is in place between the owner of the Mourallyn property (Mr Peter Dunne) and Jellinbah Group, in which Mr Dunne has provided consent to Jellinbah Coal Mine's MLs. Due to the existing MLs located on the Mourallyn property, Jellinbah Group and Mr Dunne have worked closely over a long period of time, resulting in both parties having a high level of understanding of the impacts of each other's businesses.

Jellinbah Group maintains a Complaints Register for recording complaints pertaining to noise impacts at nearby residences. Where investigative monitoring finds that noise emissions exceed the prescribed objectives, Jellinbah Group must address the complaint and immediately implement abatement measures. To date, no noise-related complaints have been received.

Further Information regarding noice and vibration impacts and mitigation strategies can be found in the following documents:

Central North Extension - Jellinbah Coal Mine Environmental Authority Amendment - Supporting Information (AARC 2015)

Surface Water

Site Water Management Plan

The Central North site is located immediately to the north of the Central site. Due to the close proximity to the central site facilities, it will utilise much of the same facilities and be set up in a similar manner.

The area to the east of the pit that drains towards the pit will enter open drains that carry the

water to the north, towards the Mackenzie River. The drains will outlet into natural watercourses known as 5 Mile Lagoon that then enter the Mackenzie River. This diversion will add approximately 150Ha to the 5 Mile Lagoon total catchment, which is less than a 2% increase in the total catchment area. This runoff will be clean water as the area will not be affected by mining activities.

Drainage from the overburden dumps will be collected and drained to two clean water sediment dams. These areas will not be affected by coal material. All coal will be moved to the coal pads currently at the Central site. Drainage and sediment control will be designed using the relevant Australian guidelines, such as those prepared by the International Erosion Control Association Australasia (IESA).

The Central North operations will commence with the existing drainage systems in place. The drain that currently splits the Central and Central North sites will be retained during the first years of production, with the final diversion arrangement implemented only when this area is to be mined.

The only source of Mine-affected Water (MAW) associated with the Central North Extension is water from the pit (which comes into contact with coal / groundwater). Pit water will be pumped to the Max Pit Tailings Dam (a regulated structure), consistent with current water management practices at the site. Water levels will be managed at all times by pumping to ensure compliance with the requirements of regulated structures.

A water balance of the Central North extension site has been calculated based on the catchment area as derived from digital survey data, and rainfall data. The Central North site requires a final design to size the proposed sediment dams. Calculations of catchments and runoff will assist in determining the dam sizing for the relevant areas and may allow for the annual wet season storage. Sediment traps have not been included in the site water balance model as these will be designed for erosion and sediment control purposes.

Water balance modelling concluded that the development of the Central North operation with the inclusion of the Central North Extension, will not significantly affect the mine water balance.

The Potential Impacts

The potential surface water quality impacts from activities associated with the Project include:

- Surface water runoff containing elevated levels of sediment or contaminants from cleared areas, spoil dumps and stockpiles;

- Overflow of the contaminated water management system due to extreme rainfall events; and

- Spills of contaminants potentially resulting in contamination of surface water.

Development of the Central North Extension is not anticipated to pose any further risks to the downstream surface water environment beyond those already managed at the Jellinbah Coal Mine. The Project is a relatively small extension of the Jellinbah Coal Mine and will not

necessitate any substantial changes to current surface water management practices.

Overflows from the contaminated and clean water management systems are considered unlikely to occur as a result of the Project. Contaminated water storages have sufficient capacity to accommodate annual rainfall and continual monitoring of water levels and storage capacities throughout the year is undertaken to ensure adequate storage for the wet season and onsite water use.

The addition of the Central North Extension will not result in any substantial change to water quality or water management. No additional regulated structures, contaminated water storages or release points are proposed. Any water released to the receiving environment will be via currently authorised release points at Jellinbah Coal Mine and in accordance with current EA conditions.

Site experience and monitoring indicates that the Site Water Management Plan (SWMP) is operating in accordance with its design intent with minimal risk of contaminated water release. Existing controls to manage sediment runoff are successfully achieving minimal impact on the receiving environment. UDP Group (UDP) were commissioned to update the SWMP to include the proposed Project.

Key components of the revised SWMP include:

- Site water balance modelling to quantify the specific impact of Central North and the proposed Central North Extension; and

- A revision of site water management arrangements to ensure all clean water and MAW generated by the Project are managed accordingly.

Water balance model predicts adequate storage capacity is available at the Jellinbah Mine for all MAW, with the inclusion of the Central North Extension.

Given the success of the previous SWMP in managing site water runoff and releases, it is considered likely that the addition of the Central North Extension area, managed in accordance with the updated SWMP, will not result in any additional impacts to surface water.

Further Information regarding surface water impacts and mitigation strategies can be found in the following documents:

Central North Extension - Jellinbah Coal Mine Environmental Authority Amendment - Supporting Information (AARC 2015)

Central North Extension Response to Information Request (AARC 2016)

Jellinbah Mine Site Site Water Management Plan Including Proposed Central North (UDP 2016)

Groundwater

Potential groundwater quality impacts from the Project activities could include infiltration of process water, mine water or leachate to the groundwater from areas such as:

- Voids containing pit water or tailings;

- Spoil dumps and stockpiles; and

- Dams and ponds.

Typically, during the operation of an open-cut mine, groundwater inflows exceed any outflow, meaning that the pit acts as a sump requiring dewatering. As such, contamination of the groundwater system with mine affected water is not expected. In addition, any cone of depression created around the pit is unlikely to affect groundwater users due to the lack of registered bores in the region (Mackenzie South Project: Groundwater Impact Assessment 2006 by Australasian Groundwater and Environmental (AGE)).

Tertiary and Triassic strata within the Central North Extension area are considered to be dry, with groundwater only likely to occur within the Permian coal measures (JBT 2016). Given that Quaternary alluvial deposits occur only in the north-eastern area of the Central North Extension, which is not proposed to be mined, JBT (2016) concluded that groundwater monitoring within the Central North Extension area is not warranted.

A previous groundwater study for the Mackenzie South development indicated that there is limited hydraulic connectivity between the Mackenzie River and the alluvium (AGE 2006). Dewatering of the pit on the Project site is therefore unlikely to affect the Mackenzie River.

Proposed mining at Central North Extension is within a similar geological setting to the Mackenzie South project, and similar dewatering rates are anticipated. Additionally, the proposed Central North mining areas are located further south of the Mackenzie River and therefore no impact is expected.

Environmental value of groundwater applicable to the proposed amendment is limited to the protection of aquatic ecosystems associated with alluvial aquifers associated with the Mackenzie River or other watercourses (AARC 2015). While groundwater within Quaternary alluvium may be of environmental value for ecosystem protection, Quaternary alluvium does not exist in the proposed mining area of the Central North Extension. Mining will occur approximately 2.24 km south of the Quaternary alluvium. On this basis, this environmental value is not considered applicable to groundwater at the Central North Extension.

Mining within the proposed Central North Extension will occur in an area in which groundwater levels are already impacted by existing mining activities. Impacts will be limited to the Permian coal measures, which are not considered to be of particular environmental value (JBT 2016). Additional groundwater monitoring at the Central North Extension is therefore considered unnecessary.

During 2015 and 2016, DEHP received and reviewed a number of reports related to groundwater impacts. Following consideration of these documents DEHP concluded that no

further monitoring of groundwater was required for the project as reflected in the current EA for the mine.

Further Information regarding groundwater impacts and mitigation strategies can be found in the following documents:

Central North Extension - Jellinbah Coal Mine Environmental Authority Amendment - Supporting Information (AARC 2015)

Central North Extension - Response to Information Request (AARC 2016)

Groundwater Assessment & Response to EHP Information Request Jellinbah Central North Extension Area (JBT 2016)

Spoil and Tailings

Potential impacts associated with the production and storage / disposal of spoil and tailings material include:

- Acid mine drainage;Contamination of runoff draining into the receiving environment;

- Reduced plant growth;Erosion; and

- Reduced land suitability.

Spoil Characterisation

Spoil is typically characterised using the acid-base accounting method, which calculates the net acid producing potential (NAPP) by balancing the total acid forming potential (based on the measured sulphide sulphur content) and the acid neutralising capacity (ANC) (measured directly) (Ison 2005). A sample with a NAPP value of >0 is classed as potentially acid forming (PAF), while sample with a NAPP value of ?0 is classed as non acid forming (NAF) or potentially acid consuming (Ison 2005).

A review of the aforementioned waste characterisation reports for the Jellinbah Coal Mine has revealed the following key conclusions:

Testing conducted for three previous waste characterisation assessments have indicated that overburden at Jellinbah Coal Mine is either NAF or potentially acid consuming. No specific management strategies are required for acid mine drainage at the Jellinbah Mine (EGI 2013, Ison 2005, Ison 2007).Spoil at the Jellinbah Coal Mine is non-saline. Sampling conducted by EGI (2013) for the Mackenzie North project indicated that it was unlikely for overburden / interburden to release significant salinity or metals / metalloids. This has been supported by existing mine operational experience.Some fresh spoil at the Jellinbah Coal Mine is likely to be partly sodic but not highly dispersive (EGI 2013). However, this fresh material has potential to become dispersive under certain weathering conditions. Existing management experience at the Jellinbah Mine suggests that dispersive spoil can be adequately managed through the

management of surface runoff.

Results from existing areas of Jellinbah Coal Mine are considered to reflect the likely spoil characteristics of the Central North Extension, which proposes to target the same coal seams as those currently mined at Jellinbah Coal Mine (i.e. Rangal Coal Measures, specifically the Pollux Upper and Pollux Lower seams). Spoil produced at the Central North Extension is unlikely to pose any risk to the environment.

Tailings Material

Operation of the Coal Processing Plant (CPP) process results in the generation of coarse and fine rejects. Coarse rejects are dumped into current work areas and fine rejects are pumped as slurry into the Max Pit tailings storage.

Further Information regarding tailings and spoil impacts and mitigation strategies can be found in the following documents:

Central North Extension - Jellinbah Coal Mine Environmental Authority Amendment - Supporting Information (AARC 2015)

Central North Extension - Response to Information Request (AARC 2016)

Land

The development of the proposed Project may result in the following impacts to soil quality and land suitability:

- Change in suitability classification of the land;

- Destabilisation of soils and increased risk of erosion;

- Impacts to the chemical and physical properties of soil due to stripping, stockpiling and handling of topsoil. This may impede a soil’s ability to support vegetation;

- Contamination of surface and subsoil due to spills or seepage;

- Sedimentation of receiving waterways; and

- Loss of topsoil and beneficial plant nutrients.

No Priority Agricultural Areas, Priority Living Areas or Strategic Environmental Areas occur in the vicinity of the Project area. Two small Strategic Cropping Areas (SCAs) occur in the northern-most portion of the eastern ML amounting to approximately 14.61 ha, as identified on the Strategic Cropping Land Trigger Map (v3.1). Project infrastructure has been located to ensure no impact to potential SCAs, no impact to these SCAs is expected to occur.

The Central North Extension proposes additional disturbance areas as the Jellinbah Coal Mine

extends into new ML areas. The suitability of this land for agricultural activities will be affected by Project operations, both during the life of the Project and following decommissioning and rehabilitation. Rehabilitation will aim to restore the land to its pre-mining land use of low-intensity cattle grazing, minimising impacts on soil and land suitability values.

Potential impacts of the Project are likely to be consistent with existing impacts experienced at the Jellinbah Coal Mine. The Jellinbah Topsoil Management Plan and Sediment and Erosion Control Plan have proven successful in managing these impacts. Therefore, the risks to the environmental values of soil and land associated with the development and operation of the Central North Extension are likely to be minimal.

Given the small scale of the proposed Project and previous rehabilitation success at the Jellinbah Coal Mine, the risks to soil and land suitability are considered to be minor. With the implementation of appropriate management practices during the rehabilitation process, it is not foreseeable that the Central North Extension will pose significant additional risks to these environmental values.

Further Information regarding land impacts and mitigation strategies can be found in the following documents:

Central North Extension - Jellinbah Coal Mine Environmental Authority Amendment - Supporting Information (AARC 2015)

Nature Conservation

The Project is located within the Brigalow Belt Bioregion, a region covering more than 36,400,000 ha of land between Townsville and northern New South Wales. The vegetation of the region is largely fragmented due to clearing for agricultural and pastoral activities. Remaining vegetation is dominated by Brigalow (*Acacia harpophylla*) and Eucalypt communities (Threatened Species Network 2008). A field survey was undertaken by qualified ecologists in order to describe environmental values of the Project site, assess likely impacts and identify suitable mitigation measures.

Flora:

A total of 142 flora species were recorded during the site survey. No species of conservation significance were recorded.

Two vegetation communities were identified in the Project area:

Community 1 – Dawson Gum (*Eucalyptus cambageana*) woodland to open forest with Brigalow (*Acacia harpophylla*) on Cainozoic clay plains (RE 11.4.8/11 .4.8a); and

Community 2 – Non-remnant grassland.

Community 1 occurs in two small patches in the central portion of the Project area. The community is characterised by Dawson Gum and Brigalow woodland and includes small areas

of palustrine wetlands associated with gilgai (melonhole mounds).

Community 1 is considered to be consistent with RE 11.4.8/11 .4.8a and covers an area of approximately 14.65 ha on the Project site. RE 11.4.8 is classed as Endangered under the *Vegetation Management Act 1999* (VM Act) and the Queensland Biodiversity Status. RE 11.4.8 has been extensively cleared for pasture (EHP 2014b). This community is also listed as an Endangered Ecological Community under the EPBC Act.

This community is subject to weed invasion and low to moderate intensity cattle grazing. Buffel Grass (*Cenchrus ciliaris*) and Sabi Grass (*Urochloa mosambicensis*) invasion has modified the ground layer, and exotic cacti are scattered throughout the ground and shrub layers. The community exhibits a variety of habitat features, including exfoliating bark, logs, fallen branches and leaf litter, suitable for supporting populations of common small reptiles. Scattered gilgai provide temporary water sources for fauna and habitat for a range of amphibians. Emergent Dawson Gum and stags provide a small amount of habitat for arboreal mammals (such as the Brushtail Possum, *Trichosurus vulpecula*) and nocturnal birds (such as the Tawny Frogmouth, *Podargus strigoides*). Swamp Wallabies (*Wallabia bicolor*) were observed in this vegetation community.

Community 2 occurs throughout the Project area and is characterised by non-remnant grassland interspersed with Brigalow-dominant regrowth and dams / wetlands. Community 2 covers an area of approximately 788.35 ha.

The conservation value of this community is minimal due to its non-remnant status and it is not listed under State or Commonwealth legislation. Vegetation in Community 2 has been subject to substantial clearing for cattle grazing and regrowth is typically low and sparse. The ground is heavily disturbed and dominated by exotic pasture grasses. There are few habitat features in this community.

Cattle dams provide habitat for aquatic birds and amphibians. The dense ground layer provides potential habitat for small mammals. A range of small granivorous and insectivorous bird species inhabit the shrubs and grasses of this community, providing food for raptors such as the Nankeen Kestrel (*Falco cenchroides*), which was observed in high numbers during the survey.

The extent of this Brigalow community in the Project area is relatively small (approximately 1.8% of the total area). The field survey noted that weed invasion has altered the structure and composition of this community.

No threatened flora species were observed during the survey period. Although potentially suitable habitat exists on the site for a small number of threatened flora species, surveys were unable to locate these species indicating they are unlikely to be present.

A total of 22 introduced plant species were observed in the Project area. The ground layer throughout the Project area was found to be dominated by introduced pasture grasses, predominantly Sabi Grass and Buffel Grass. The exotic legumes Shrubby Stylo (*Stylosanthes scabra*), Siratro (*Macroptilium atropurpureum*) and Phasey Bean (*Macroptilium lathyroides*) are also present in the Project area.

Four invasive plant species were noted in the Project area. Harrisia Cactus (*Harrisia martinii*) and Velvety Tree Pear (*Opuntia tomentosa*) were observed in low densities throughout the entire Project area. Small localised infestations of Parkinsonia (*Parkinsonia aculeata*) and Mother of Millions (*Bryophyllum delagoense*) were also noted. Under Queensland legislation, Harrisia Cactus, Velvety Tree Pear, Parkinsonia and Mother of Millions are Category 3 restricted invasive plant species. Landholders are responsible for the management of these species on their land. Parkinsonia and Velvety Tree Pear are also recognised as Weeds of National Significance.

Fauna:

A total of 76 fauna species were recorded in the Project area, including 11 mammals, 49 birds, 10 reptiles and 6 amphibians. An additional two bat species may also have been present, but their identification could not be confirmed from the available data.

Mammals:

The dense grassy understorey of the Project area provides forage for large macropods and shelter for small mammals. The Swamp Wallaby and Eastern Grey Kangaroo (*Macropus giganteus*) were observed in several portions of the Project area. Evidence of the Brush-tailed Possum was also recorded in areas of remnant vegetation.

Four bat species were positively identified in the Project area: Little Pied Bat (*Chalinolobus picatus*), Gould's Wattled Bat (*Chalinolobus gouldii*), Yellow-bellied Sheathtail Bat (*Saccolaimus flaviventris*) and Inland Forest Bat (*Vespadelus baverstocki*). A fifth species was also detected, but could not be positively identified to species level. Two additional bat species (*Scoterepens balstoni* and *Chaerephon jobensis*) may also have been present in the Project area, but their identification could not be confirmed from the call data collected. Strong winds experienced during the survey affected the quality of the bat call recordings, making species identification difficult.

Three introduced species of mammal were detected during the survey: European Cattle (*Bos taurus*), domestic Horses (*Equus caballus*) and Wild Dogs (*Canis familiaris*).

No mammalian species of conservation significance were recorded during the survey. Reptiles:

Ten reptile species were observed on the Project site during the survey period. High numbers of Rainbow Skinks (*Carlia* spp.) were observed throughout the Project area. Striped Snake-eyed Skinks (*Cryptoblepharus virgatus*), Common Dwarf Skinks (*Menetia greyii*) and Bynoe's Geckoes (*Heteronotia bynoei*) were also commonly encountered. One Blind Snake (*Ramphotyphlops affinis*) was captured in a pitfall trap and a single Mulga Snake (*Pseudechis australis*) was recorded on a motion detector camera.

The Project area provides a variety of suitable habitat for reptile species; areas of Brigalow vegetation contain numerous logs, dead trees, woody debris, exfoliating bark and leaf litter.

The areas of Brigalow vegetation provide a small amount of potential habitat for threatened

Brigalow reptiles within the Survey Area. Habitat within these areas was considered to be particularly suitable for the Ornamental Snake. The Ornamental Snake has previously been recorded at the neighbouring Curragh Coal Mine. Targeted diurnal searches for the Ornamental Snake in gilgai habitat failed to locate the species.

Amphibians:

Six species of amphibians were recorded during the survey. An Eastern Snapping Frog (*Cyclorana novaehollandiae*) was captured in a pitfall trap. An Eastern Sedgefrog (*Litoria fallax*) was captured in a funnel trap. Cane Toads (*Rhinella marina*), a Green Tree Frog (*Litoria caerulea*) and a single Green-stripe Frog (*Cyclorana alboguttata*) were recorded on motion detector camera. The Laughing Tree Frog (*Litoria rothii*) was heard calling at a cattle dam in the southern portion of the Project area.

No amphibians of conservation significance or suitable habitat for threatened amphibians were found in the Project area.

Birds:

Forty-nine bird species were observed feeding and moving through the Project area. The large pastures of the area provide habitat for a range of insectivorous birds, such as the Golden-headed Cisticola (*Cisticola exilis*), Rufous Songlark (*Cincloramphus mathewsi*), Black-faced Woodswallow (*Artamus cinereus*), and Australasian Pipit (*Anthus novaeseelandiae*). Seeding pasture grasses provide food for a range of granivorous birds, including the Zebra Finch (*Taeniopygia guttata*), Budgerigar (*Melopsittacus undulatus*), Galah (*Eolophus roseicapillus*) and Sulphur-crested Cockatoo (*Cacatua galerita*). Pasture areas provide a source of prey for the Nankeen Kestrel (*Falco cenchroides*), which was recorded in high densities. Other raptors observed in the Project area were the Wedge-tailed Eagle (Aquila audax), Whistling Kite (*Haliastur sphenurus*) and Black Kite (*Milvus migrans*). Australian Bustards (*Ardeotis australis*) were also observed in the pastures of the Project area.

The two woodlands on the Project area provide nesting habitat for two kookaburra species, and also support populations of Apostlebirds (*Struthidea cinerea*), Black-faced Cuckoo-shrikes (*Coracina novaehollandiae*), Pied Butcherbirds (*Cracticus nigrogularis*) and Noisy Friarbirds (*Philemon corniculatus*).

Corvids such as the Torresian Crow (*Corvus orru*) and Australian Magpie (*Cracticus tibicen*) were also recorded throughout the Project area.

Two wetland habitats were observed in the Project area, providing habitat for a range of aquatic and wetland species, such as the Australian Pelican (*Pelecanus conspicillatus*), Wandering Whistling Duck (*Dendrocygna arcuata*), Royal Spoonbill (*Platalea regia*) and several species of heron and cormorant. Pairs of Brolgas (*Grus rubicunda*) were also observed.

No bird species of state conservation significance were detected during the survey.

Pest Species:

Pest species known to occur within the Project area are the Dingo and the Cane Toad. European Rabbits (*Oryctolagus cuniculus*) were sighted in close proximity to the Project area, and are considered likely to occur on site. The Dingo and European Rabbit are restricted invasive animal species under the *Biosecurity Act 2014*. Land owners and managers are responsible for the control of these pests on their land.

Risk and Magnitude of Impacts to Environmental Values:

The survey identified two vegetation communities in the Project. One of these communities (RE 11.4.8) is listed as Endangered under the VM Act and EHP Biodiversity Status. The Project area supports populations of common mammal, bird, amphibian and reptile species. Fauna habitat features of the Project area include logs, dead trees, exfoliating bark, leaf litter, woody debris, dense groundcover, gilgai and two small wetlands. However, the environmental values of the Project site are compromised by weed and pest invasion, edge effects, fragmentation and habitat connectivity.

Vegetation clearing and mining of the Project area has the potential to cause habitat loss, erosion, sedimentation, noise, dust and contaminated surface water runoff. Project works will be undertaken in accordance with Jellinbah Mining's existing environmental management practices and procedures, in order to minimise these potential impacts.

Potential Impacts to Flora and Vegetation Communities:

The majority of the Project site is non-remnant pasture grass used for cattle grazing with little variation in vegetation characteristics, reducing the likelihood that significant flora species may be present.

Development of the Project will disturb approximately 798 ha of land, including clearing of approximately 14.65 ha of remnant vegetation, based on preliminary Project designs. Project development may result in the loss of two small, isolated areas of vegetation and fauna habitat, with associated potential for fauna mortality. As the survey was unable to identify any flora species of conservation significance and only a small area of remnant vegetation is proposed to be cleared, it is considered highly unlikely that the Project will impact threatened flora species overall, but will negatively impact the Endangered Brigalow community present.

Potential Impacts to Fauna Species of Conservation Significance;

No fauna species of conservation significance were identified on the Project site during the survey. An assessment of the likelihood of occurrence of species of conservation significance within the Project area and potential impacts was conducted. The majority of the Project site is non-remnant pasture grass with little variation in vegetation characteristics, reducing the likelihood that significant fauna species may be present. The most suitable habitat for fauna species of conservation significance occurs in the relatively small and isolated patches of remnant vegetation, on which the survey was focused.

Potentially suitable habitat exists on the Project site for a number of Migratory and/or Marine species not observed during the survey period. These species are considered unlikely to be

impacted by Project development due to their highly mobile nature (including some species which are strictly aerial), and the presence of suitable habitat within the region.

An Environmental Offset Strategy has been prepared for the Project. The Strategy identifies offset commitments and potential offset supply within the Brigalow Belt Bioregion, in accordance with the Queensland Environmental Offsets Policy 2014 (v1 .1) (EHP 2014).

Further Information regarding nature conservation impacts and mitigation strategies can be found in the following documents:

Central North Extension - Jellinbah Coal Mine Environmental Authority Amendment - Supporting Information (AARC 2015)

2015 Jellinbah Coal Mine - Central North Extension Terrestrial Flora and Fauna Assessment (AARC, Reissued 2017)

Central North Extension Environmental Offset Strategy (AARC 2015) Central North Extension Response to Information Request (AARC 2016) PMAV Application (AARC 2015)

Community

Potential impacts of the proposed Project on the community are limited to direct impacts on surrounding landholders such as:

Release of sediments or contaminants to waterways;

- Aiding the spread of weeds or pests;

- Noise emissions; and

- Dust emissions.

No changes to the magnitude of these existing impacts are anticipated as a result of the Project.

Most sensitive receivers will remain closer to existing mining operations and infrastructure than the proposed Central North Extension. The only exception is Mourallyn, which will be slightly closer to proposed Project mining activities. However, Jellinbah Group has entered into a Compensation Agreement with the landowner of the Mourallyn property, in which the owner has provided consent to Jellinbah Coal Mine’s MLs.

There are few facilities in the area. The nearest shops, hotel and service station are at Bluff, approximately 31 km by road. With the implementation of the management strategies proposed above, as well as the existing site management plans, little or no impact on the amenity and liveability of the area, access to services, health and wellbeing of the community is anticipated as a result of the Project.

Cultural Heritage

Risks associated with the Central North Extension include the disturbance, damage and/or the destruction of Aboriginal Cultural Heritage.

Jellinbah Group has conducted extensive consultation with the registered Native Title groups. Aboriginal cultural heritage surveys were conducted over the area prior to exploration drilling. Further surveys will be conducted prior to development of the Project.

POTENTIAL IMPACTS TO MATTERS OF ENVIRONMENTAL SIGNIFICANCE

World Heritage Properties and Natural Heritage Places

The closest World Heritage Property and Natural Heritage Listed Place to the Project site is the Great Barrier Reef (GBR) Marine Park, located approximately 130 km to the northeast.

The Project is located within the catchment of Blackwater Creek and the Mackenzie River. Blackwater Creek runs parallel to the western boundaries of the existing Jellinbah Central area. The Mackenzie River traverses the Jellinbah Coal Mine between the future Mackenzie North area and the existing mining operations at Jellinbah Plains and Jellinbah Central. Runoff from the majority of the Project area flows northeast towards the Mackenzie River. Two small drainage features in the southwest corner of the Central North Extension area (ML 700012) flow west towards Blackwater Creek, which in turn flows into the Mackenzie River to the north. The Mackenzie River is a major tributary of the Fitzroy River which flows to the Coral Sea at Rockhampton.

The *Significant impact guidelines 1.1: Matters of National Environmental Significance* (DoE 2013) define significant impact criteria for the assessment of impacts to World Heritage Properties. Although the Fitzroy River Basin is the largest catchment draining into the GBR, the catchment does not contribute significant freshwater flows in comparison to other river systems located further north. The contribution of the Project to sediment loads, nutrient loads and heavy metal concentrations entering the GBR at Rockhampton are likely to be negligible.

Investigations into the cumulative impacts of coal mining within the Fitzroy Basin on water quality were conducted by the Queensland Government in 2008. Outcomes of the investigation included a set of water conditions for the management of water discharges in order to achieve the Water Quality Objectives (WQOs) of the Queensland *Environmental Protection (Water) Policy 2009* (EPP (Water)).

Where controlled releases are conducted, they will be required to meet these WQOs. No uncontrolled releases are likely to occur.

No impacts on any of the national or world heritage values of the GBR are likely to occur as a result of the Project.

Wetlands of International Importance (declared Ramsar wetlands)

A review of the WetlandMaps (*Interactive Maps and Wetlands Data in Queensland*) (EHP 2017) indicates that no wetlands of international importance as nominated under the Ramsar

Convention have been recorded within 100 km of the Project.

The Great Barrier Reef Marine Park

The Great Barrier Reef (GBR) Marine Park is located approximately 130 km to the north east of the Project site.

The Project is located within the catchment of Blackwater Creek and the Mackenzie River. Blackwater Creek runs parallel to the western boundaries of the existing Jellinbah Central area. The Mackenzie River traverses the Jellinbah Coal Mine between the future Mackenzie North area and the existing mining operations at Jellinbah Plains and Jellinbah Central. Runoff from the majority of the Project area flows northeast towards the Mackenzie River. Two small drainage features in the southwest corner of the Central North Extension area (ML 700012) flow west towards Blackwater Creek, which in turn flows into the Mackenzie River to the north.The Mackenzie River is a major tributary of the Fitzroy River which flows to the Coral Sea at Rockhampton.

The *Significant impact guidelines 1.1: Matters of National Environmental Significance* (DoE 201 3a) define significant impact criteria for the assessment of impacts to Commonwealth Marine Areas. Although the Fitzroy River Basin is the largest catchment draining into the GBR, the catchment does not contribute significant freshwater flows in comparison to other river systems located further north. The contribution of the Project to sediment loads, nutrient loads and heavy metal concentrations entering the GBR at Rockhampton are likely to be negligible.

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Where controlled releases are conducted, they will be required to meet these WQOs. No uncontrolled releases are likely to occur.

No impacts on any of the national or world heritage values of the GBR are likely to occur as a result of the Project.

Commonwealth Marine Area

The closest Commonwealth Marine area to the Project site is the Great Barrier Reef (GBR) Marine Park, located approximately 130 km to the north east.

The Project is located within the catchment of Blackwater Creek and the Mackenzie River. Blackwater Creek runs parallel to the western boundaries of the existing Jellinbah Central area. The Mackenzie River traverses the Jellinbah Coal Mine between the future Mackenzie North area and the existing mining operations at Jellinbah Plains and Jellinbah Central. Runoff from the majority of the Project area flows northeast towards the Mackenzie River. Two small drainage features in the southwest corner of the Central North Extension area (ML 700012) flow

west towards Blackwater Creek, which in turn flows into the Mackenzie River to the north. The Mackenzie River is a major tributary of the Fitzroy River which flows to the Coral Sea at Rockhampton.

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Investigations into the cumulative impacts of coal mining within the Fitzroy Basin on water quality were conducted by the Queensland Government in 2008. Outcomes of the investigation included a set of water conditions for the management of water discharges in order to achieve the Water Quality Objectives (WQOs) of the Queensland *Environmental Protection (Water) Policy 2009* (EPP (Water)).

Where controlled releases are conducted, they will be required to meet these WQOs. No uncontrolled releases are likely to occur.

No impacts on any of the national or world heritage values of the GBR are likely to occur as a result of the Project.

Commonwealth Land

A Protected Matters Search showed that an area called the Blackwater Training Depot (a Defence establishment) occurs approximately 35km south of the Project.

No known impacts, either direct or indirect, are expected to occur to the Blackwater Training Depot as a result of the Project.

Nuclear Actions

No nuclear actions are proposed as part of the Project.

Listed threatened species and ecological communities Threatened Ecological Communities

The Protected Matters Search (provided) identified six threatened ecological communities under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) that could potentially occur on or within 100 km of the Project site:

- Brigalow (*Acacia harpophylla* dominant and co-dominant) – Endangered

- Broad Leaf Tea-tree (*Melaleuca viridiflora*) woodlands in high rainfall coastal north Queensland – Endangered

- Coolibah – Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions – Endangered

- Natural Grasslands of the Queensland Central Highlands and the northern Fitzroy Basin – Endangered

- Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions – Endangered

- Weeping Myall Woodlands - Endangered

A specialist Flora and Fauna Study formed the basis of assessment of Project impacts on threatened ecological communities. The Jellinbah Coal Mine - Central North Extension Terrestrial Flora and Fauna Assessment Report (AARC 2015) provides detailed descriptions of the environmental values of the Project site and assessments of the likelihood, nature and extent of impacts. The flora survey for the Project was conducted in accordance with the Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland (Neldner et al., 2012).

Following ground-truthing during the ecological surveying, two communities were identified on the Project area:

Community 1 – Dawson Gum (Eucalyptus cambageana) woodland to open forest with Brigalow (Acacia harpophylla) on Cainozoic clay plains (RE 11.4.8/11 .4.8a) (Area - 14.65 ha);

Community 2 – Non-remnant grassland (Area - 788 ha).

Whilst Community 2 is not listed under the EPBC Act, Community 1 is classified under the Act as a Threatened Ecological Community (Brigalow - A*cacia harpophylla* dominant and co-dominant).

Development of the Project proposes disturbance of approximately 798 ha of land and clearing of approximately 14.65 ha of the Brigalow - A*cacia harpophylla* dominant and co-dominant community (Community 1) within the Survey Area (1.8% of the Survey Area).

The field survey found that Community 1 contains habitat features suited to small reptiles such as exfoliating bark, logs, fallen branches and leaf litter. Scattered gilgais provide temporary water sources for fauna and habitat for a range of amphibians. Emergent Dawson Gum and stags provide a small amount of habitat for arboreal mammals (e.g. the Brushtail Possum) and nocturnal birds (e.g. Tawny Frogmouth). Swamp Wallabies were observed in this vegetation community.

Although listed as a Threatened Ecological Community, the integrity of this community within the Survey Area is highly compromised due to small patch sizes, past and current disturbance and the highly fragmented context of the surrounding landscape. This community is surrounded by cleared pasture lands. Previous clearing in the immediate vicinity of each patch means that this community is now subject to edge effects and weed invasion. This community is also

subject to low to moderate intensity cattle grazing, further enabling the introduction and spread of weeds. The ground layer has been modified by the invasion of Buffel Grass and Sabi Grass, while exotic cacti are present throughout the ground and shrub layers.

In order to determine whether the Project will have a significant impact on the Threatened Ecological Community, the ecological values of Community 1 were assessed and summarized below.

Community 1

- Consists of two small patches of Brigalow vegetation totalling 14.65 ha;

- Contains a small amount of potential habitat for threatened Brigalow reptiles. The habitat in these areas was considered to be particularly suitable for the Ornamental Snake, which has previously been recorded at the neighbouring Curragh Coal Mine. Targeted diurnal searches for the Ornamental Snake in gilgai habitat failed to locate the species. Habitat suited to conservation significant reptile species is isolated from other suitable habitat areas in the locality;

- Supports a variety of fauna species, but offers fauna corridor value to larger and highly mobile species only;Has been modified by edge effects and weed invasion resulting from cattle grazing and past vegetation clearing in the surrounding landscape;

- Does not function as a buffer to important habitats as it is surrounded by cleared pasture lands;

- Occurs in a highly fragmented landscape with little connectivity to similar habitat areas;

- Occurs within 5km of the State and regional corridor associated with the Mackenzie River. However, connectivity between this corridor and the Community 1 habitat patches is poor.

Owing to the small, disturbed, and fragmented nature of Community 1, this community offers limited ecological function at the regional, State or National level. The proposed impact represents 0.02 % of the extent of the Endangered RE 11.4.8 remaining throughout Queensland in 2015 (Queensland Herbarium, 2016). Given the extent of the impact and the ecological values of the proposed impact area, the Project is not expected to impose a significant impact on this Threatened Ecological Community.

Listed Threatened Species

Threatened Flora Species

The Protected Matters Search (provided) identified 27 threatened flora species under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) that could potentially occur on or within 100 km of the Project site (listed below).

Species Name (Common Name) - EPBC Act Status

Acacia grandifolia - Vulnerable

Aristida annua - Vulnerable

Bertya opponens - Vulnerable

Cadellia pentastylis (Ooline) - Vulnerable

Capparis thozetiana - Vulnerable

Corymbia xanthope (Glen Geddes Bloodwood) - Vulnerable

Cycas ophiolitica (Marlborough Blue) - Endangered

Cycas megacarpa - Endangered

Daviesia discolor - Vulnerable

Dichanthium queenslandicum (King Blue-grass) - Endangered

Dichanthium setosum (Bluegrass) - Vulnerable

Eucalyptus raveretiana (Black Ironbox) -Vulnerable

Hakea trineura - Vulnerable

Homoranthus decumbens - Endangered

Logania diffusa - Vulnerable

Macrozamia platyrhachis (Cycad) - Endangered

*Marsdenia brevifo*lia - Vulnerable

Neoroepera buxifolia - Vulnerable

Omphalea celata - Vulnerable

Olearia macdonnellensis - Vulnerable

Phaius australis (Lesser Swamp-orchid) - Endangered

Pimelea leptospermoides - Vulnerable

Polianthion minutiflorum - Vulnerable

Pultenaea setulosa - Vulnerable

Samadera bidwillii (Quassia) - Vulnerable

Solanum dissectum - Endangered

Solanum johnsonianum - Endangered

Several flora species of conservation significance were highlighted in the desktop searches undertaken prior to the field survey. Targeted searches for species of conservation significance were undertaken upon the identification of suitable habitat in the field. Such searches involved the use of methods discussed in Neldner et al. (2012). The targeted survey technique utilised in this study was the 'Random Meander' survey (Cropper 1993). This technique involves traversing areas of suitable habitat along a meandering route whilst searching for the plant species of interest. If there was any uncertainty in identification of a species, a specimen was collected for identification by the Queensland Herbarium.

No threatened flora species were observed in the Survey Area during the survey period. Although potentially suitable habitat exists on the site for a small number of threatened flora species, surveys were unable to locate these species. As a result, the proposed Project is highly unlikely to impact on any flora species of conservation significance. The likelihood of occurrence and potential impact significance for all the threatened flora species identified in the database searches are outlined in the Jellinbah Coal Mine - Central North Extension Terrestrial Flora and Fauna Assessment (AARC 2015).

Threatened Fauna Species

The Protected Matters Search (provided) identified 28 threatened fauna species under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) that could potentially occur on or within 100 km of the Project site (listed in the table below). The composition of these species consisted of 7 reptiles, 9 mammals, and 12 birds.

Scientific Name (Common Name) - EPBC Act Status

*Calidris ferruginea (*Curlew Sandpiper) - Critically Endangered

*Erythrotriorchis radiatus (*Red Goshawk) - Vulnerable

*Geophaps scripta scripta (*Squatter Pigeon (southern)) - Vulnerable

*Grantiella picta (*Painted Honeyeater) - Vulnerable

*Lathamus discolour (*Swift Parrot) - Critically Endangered

*Neochmia ruficauda ruficauda (*Star Finch (eastern)) - Endangered

*Numenius madagascariensis (*Eastern Curlew) - Critically Endangered

*Pedionomus torquatus (*Plains-wanderer) - Critically Endangered

*Poephila cincta cincta (*Black-throated Finch (southern)) - Endangered

*Rostratula australis (*Australian Painted Snipe) - Endangered

*Turnix melanogaster (*Black-breasted Button-quail) - Vulnerable

*Chalinolobus dwyeri (*Large-eared Pied Bat) - Vulnerable

*Dasyurus hallucatus (*Northern Quoll) - Endangered

*Lasiorhinus krefftii (*Northern Hairy-nosed Wombat) - Endangered

*Macroderma gigas (*Ghost Bat) - Vulnerable

*Nyctophilus corbeni (*South-eastern Long-eared Bat) - Vulnerable

*Onychogalea fraenata (*Bridled Nail-tail Wallaby) - Endangered

*Petauroides volans (*Greater Glider) - Vulnerable

*Phascolarctos cinereus (*Koala) - Vulnerable

*Pteropus poliocephalus (*Grey-headed Flying Fox) - Vuln*erable*

*Delma torquata (*Collared Delma) - Vulnerable

*Denisonia maculate (*Ornamental Snake) - Vulnerable

*Egernia rugosa (*Yakka Skink) - Vulnerable

*Elseya albagula (*Southern Snapping Turtle) - Critically Endangered

*Furina dunmalli (*Dunmall's Snake) - Vulnerable

*Lerista allanae (*Allan's Lerista) - Endangered

*Rheodytes leukops (*Fitzroy River Turtle) - Vulnerable

A specialist Flora and Fauna Study formed the basis of assessment of Project impacts on threatened fauna. The Jellinbah Coal Mine - Central North Extension Terrestrial Flora and Fauna Assessment (AARC 2015) Report provides detailed descriptions of the environmental values of the Project site and assessments of the likelihood, nature and extent of impacts.

Survey methodology was developed in accordance with the Terrestrial Vertebrate Fauna Survey Guidelines for Queensland (DSITIA, 2014). Fauna surveys were carried out within each of the vegetation communities in the Survey Area. Fauna trapping was conducted at four survey sites. Bird surveys were conducted at an additional targeted survey site. Fauna survey methods

included:

Elliot Trapping, Pitfall Trapping, Funnel Trapping, Motion Detector Camera Trapping, Micro-bat Surveys, Bird Surveys, Habitat Searching, Scat and Track Searches and Incidental Recordings

Mammals:

No mammalian species of conservation significance under the EPBC Act were recorded during the survey.

Potential habitat does exist within Community 1 for the 'Vulnerable' listed Greater Glider. The Greater Glider has not been recorded on the Project site, the Project is considered highly unlikely to have an impact on this species.

Birds:

No bird species of conservation significance under the EPBC Act were detected in the Survey Area.

Squatter Pigeons have previously been recorded in the local area and essential habitat mapped in the Survey Area. Suitable habitat occurs within the Survey Area, particularly around wetland areas. The mapped essential habitat will not be disturbed by the Project. Suitable habitat for this species occurs in abundance throughout the surrounding region. Given that this species is highly mobile and suitable habitat is common in the region, the Project is not likely to have a significant impact on an important population of this species should it have a presence on the Project site.

Reptiles:

No Reptile species of conservation significance under the EPBC Act were detected in the Survey Area.

A small amount of potential habitat for threatened Brigalow reptiles occurs in the Survey Area in Community 1. The habitat in these areas was considered to be particularly suitable for the Ornamental Snake. The Ornamental Snake has previously been recorded at the neighbouring Curragh Coal Mine. Targeted diurnal searches for the Ornamental Snake in gilgai habitat failed to locate the species. Given the small and fragmented nature of the Community 1 habitat areas, the Project is considered unlikely to have a significant impact on an important population of the species, should it occur in the Survey Area.

When assessed against the *Significant Impact Guidelines 1.1: Matters of National Environmental Significance* (DoE 2013), the Northern Extension Project is not considered to result in any significant impact to the Greater Glider, southern Squatter Pigeon, or Ornamental Snake. No impact on population continuity or gene flow, and no interference with any ecologically significant locations for any of the species, is expected and, as such, no significant residual impact is considered likely.

Potential Impact on Threatenes Species

The Flora and Fauna Assessment determined no flora or fauna species listed as of conservation significance under the EPBC Act were identified on the Project site. Owing to the small, disturbed, and fragmented nature of the remnant habitat within the Project area, it offers limited ecological function at the regional, state or national level. Given the extent of the impact and the ecological values of the proposed impact area, and the availability of similar habitat elsewhere in the locality, the Project is not expected to impose a significant impact on any Threatened Species.

The likelihood of occurrence and potential impact significance for all the threatened fauna species identified in the database searches are outlined in the Jellinbah Coal Mine - Central North Extension Terrestrial Flora and Fauna Assessment (AARC 2015).

Listed migratory species

The Protected Matters Search (provided) identified 14 listed migratory species under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) that could potentially occur on or within 100 km of the Project site (listed in the table below).

Scientific Name (Common Name) - EPBC Act Listing

Apus pacificus (Fork Tailed Swift) -Migratory Marine

Calidris ferruginea (Curlew Sandpiper) – Critically Endangered, Migratory Wetland

Crocodylus porosus (Salt-water Crocodile) - Migratory Marine

Cuculus optatus / saturatus (Oriental Cuckoo, Himalayan Cuckoo) - Migratory Terrestrial

Gallinago hardwickii (Latham's Snipe) - Migratory Wetland

Hirundapus caudacutus (White Throated Needle-tail) - Migratory Terrestrial

*Monarcha melanopsis (*Black Faced Monarch) - Migratory Terrestrial

Monarcha trivirgatus (Spectacled Monarch) - Migratory Terrestrial

Motacilla flava (Yellow Wagtail) - Migratory Terrestrial

Myiagra cyanoleuca (Satin Flycatcher) - Migratory Terrestrial

Numenius madagascariensis (Eastern Curlew) – Critically Endangered, Migratory Wetland

Pandion haliaetus (Osprey) - Migratory Wetland

Rhipidura rufifrons (Rufous Fantail) - Migratory Terrestrial

Rostratula benghalensis s. lat. (Painted Snipe) – Endangered

No EPBC listed migratory bird species were identified during the Flora and Fauna survey and the Project site itself is not considered to be important habitat for migratory species. The site is heavily impacted by grazing practices and provides no unique roosting or foraging habitat for migratory species.

All identified species are known to be generally common, widespread and highly mobile, and will be able to relocate to suitable habitat in neighbouring wetlands and farm dams, particularly along the Mackenzie River. The Project site is not considered to represent important or significant habitat for these species.

The likelihood of occurrence and potential impact significance for all the migratory and marine species identified in the database searches are outlined in the Jellinbah Coal Mine - Central North Extension Terrestrial Flora and Fauna Assessment (AARC 2015).

A water resource, in relation to coal seam gas development and large coal mining development

Whilst the Central North Extension Project meets the definition of a 'large coal mine', as per section 528 of the EPBC Act, the proposed Project is considered unlikely to have a significant impact on any water resources. Assessment of the Project's potential to impact water resources has been undertaken with reference to the following guidelines:

- *Significant impact guidelines 1.3: Coal seam gas and large coal mining developments – impacts on water resources* (DoE 201 3c); and

- *Information Guidelines for the Independent Expert Scientific Committee (IESC) advice on coal seam gas and large coal mining development proposals* (IESC 2014).

The potential risk and magnitude of impacts to water resources caused by the Project is addressed below.

Surface Water

Development of the Central North Extension is not anticipated to pose any further risks to the downstream surface water environment beyond those already managed at the Jellinbah Coal Mine. The Project is a relatively small extension of the existing Jellinbah Coal Mine, located immediately to the north of the operational Central site and will not necessitate any substantial changes to current surface water management practices.

Overflows from the contaminated and clean water management systems are considered unlikely to occur as a result of the Project. Contaminated water storages have sufficient capacity to accommodate annual rainfall and continual monitoring of water levels and storage capacities throughout the year is undertaken to ensure adequate storage for the wet season and onsite water use. The addition of the Central North Extension will not result in any substantial change to water quality or water management.

No additional regulated structures, contaminated water storages or release points are proposed. Any water released to the receiving environment will be via currently authorised release points at Jellinbah Coal Mine and in accordance with current EA conditions.

Site experience and monitoring indicates that the Site Water Management Plan (SWMP) is operating in accordance with its design intent with minimal risk of contaminated water release. Existing controls to manage sediment runoff are successfully achieving minimal impact on the receiving environment. Given the success of the current SWMP in managing site water runoff and releases, it is considered likely that the addition of the Central North Extension area, managed in accordance with an updated SWMP, will not result in any additional impacts to downstream waterways.

Key components of the revised SWMP include:

- Site water balance modelling to quantify the specific impact of Central North and the proposed Central North Extension; and

-A revision of site water management arrangements to ensure all clean water and mine-affected water (MAW) generated by the Project are managed accordingly.

Water balance modelling showed that overflows from the contaminated and clean water management systems are unlikely to occur as a result of the Project. The modelling concluded that the inclusion of the Central North Extension will not significantly affect the mine water balance, and that adequate storage capacity is available for all additional MAW contaminated water created by the Project. The water balance table is based on an average year of rainfall, assuming that the majority of the storages are empty or close to empty. Where the storages are deep, such as old pits, approximately three metres of storage depth has been anticipated as being available.

The only source of mine affected water (MAW) associated with the Central North Extension is water from the pit (which comes into contact with coal / groundwater). Pit water will be pumped to the Max Pit Tailings Dam (a regulated structure), consistent with current water management practices at the site. Water levels will be managed by pumping to ensure storage volumes remain in compliance with the requirements of the regulated structures.

Further Information regarding surface water impacts and mitigation strategies can be found in the following documents:

Central North Extension Response to Information Request (AARC 2016)

Jellinbah Mine Site Site Water Management Plan Including Proposed Central North (UDP 2016)

Groundwater

The Groundwater Assessment undertaken by JBT established that four groundwater units have been identified within the Project area: Quaternary alluvium, Tertiary sediments, Triassic Rewan Group, and Permian coal measures (Figure 6). JBT (2016) concludes that any potentially

impacted groundwater is only likely to occur in the Permian coal measures; Quaternary alluvial deposits occur only in the north-eastern area of the Central North Extension (which is not proposed to be mined), and a review of lithological logs for previous exploration bores indicates that the observed groundwater level is below the base of both the Tertiary and Triassic Rewan Group sediments (it is therefore determined that the Tertiary/Triassic strata are generally dry in the Project area).

Mining at the Project is proposed to occur between the existing Central and Plains pits. A review of water level data from geological exploration bores within the Project area indicates that drawdown impacts from these existing mining operations may extend over a distance of approximately 1.5 – 2 km from the edge of their respective pits. As the distance from the Central pit to the Plains pit is approximately 4 km, it is considered probable that groundwater levels within the Project area (between the Central and Plains pits) are already experiencing cumulative impacts from existing mining operations. Whilst mining within the Project area may further impact the quality of the Permian coal measures, the water has been shown to have no environmental value because the groundwater is too saline for stock use.

The environmental value of groundwater in the area is limited to the protection of aquatic ecosystems associated with alluvial aquifers associated with the Mackenzie River or other watercourses (AARC 2015). Whilst the groundwater within the Quaternary alluvium may be of environmental value for ecosystem protection, Quaternary alluvium does not occur in the proposed mining area of the Project (mining will occur approximately 2.24 km south). On this basis, this environmental value is not considered applicable to groundwater at the Project.

The lack of current connectivity between the Mackenzie River and the mining operations is acknowledged by the current EA, and groundwater monitoring provisions are prescribed to ensure that this continues. The groundwater assessment by JBT (2016) concludes that based on the observation that groundwater underlying the Project area is of low quality and already impacted by surrounding mining operations, future monitoring of the groundwater within the Project area is not warranted. Groundwater monitoring, however, at the Jellinbah Coal Mine will continue to be carried out in accordance with the requirements of the EA.

Based on the information presented above, no significant impact on groundwater is anticipated to result from development of the Project.

Further Information regarding groundwater impacts and mitigation strategies can be found in the following documents:

EA Permit EPML00516813 Jellinbah Group Pty Ltd Jellinbah Coal Mine (2017)

EA Permit Notice EPML00516813 Jellinbah Group Pty Ltd Jellinbah Coal Mine (2017)

Central North Extension Environmental Offset Strategy (AARC 2015)

Groundwater Assessment & Response to EHP Information Request Jellinbah Central North Extension Area (JBT 2016) (attached in this application as: Groundwater Assessment & Response to EHP Jellinbah CNE-JBT 2016)

Jellinbah Mine Site Site Water Management Plan Including Proposed Central North (UDP 2016) Part 1 (attached in this application as: Jellinbah Mine Site SWMP Including Proposed CNE (UDP 2016) Part 1)

Jellinbah Mine Site Site Water Management Plan Including Proposed Central North (UDP 2016) Part 2 (attached in this application as: Jellinbah Mine Site SWMP Including Proposed CNE (UDP 2016) Part 2)

PMAV Application (AARC 2015)

Jellinbah Coal Mine - Central North Extension Terrestrial Flora and Fauna Assessment (AARC Reissued August 2017) (attached in this application as: Jellinbah CNE Terrestrial FF Assessment (AARC Reissued August 2017) Part 1, Part 2 and Part 3

Central North MNES Assessment Report V2.0 Part 1 and Part 2

2015 Jellinbah CNE Database searches Part 1 and Part 2

2017 Jellinbah CNE Database searches

Jellinbah CNE 2015 batcall analysis

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

Yes

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

The Project is an extension of the existing Jellinbah Coal Mine, which commenced mining operations in 1989 and is currently operating under EA EPML00516813. The production life for the Central North Extension is anticipated to be greater than 20 years based on current economic assessment of the resource. The purpose of the Central North Extension is to extend mining activities at Jellinbah Plains into new resource areas and expand the area available for dumping of spoil from existing mining leases.

The Jellinbah Coal Mine is an open-cut coal operation, mining shallow, low strip ratio coal reserves and producing approximately 4.5 – 5.0 million tonnes per annum (Mtpa) of pulverised coal injection (PCI) and a minor amount of thermal coal, primarily for export.

Overburden is drilled and blasted to provide access to the high-grade, low-ash, low-sulphur coal resource, which is extracted using conventional open-cut truck and excavator methods. Strip mining is used in areas where coal seam dip is less than 10 degrees (Central) and terrace mining in more steeply dipping areas (Plains). Coal seams are mined separately with partings

selectively removed down to 150 millimetres (mm). Vegetation is cleared prior to mining and topsoil is selectively stripped for immediate reuse, or stockpiled for future use in rehabilitation. Overburden is initially used to form bunds, haul roads and hardstands or is transported to an out-of-pit spoil dump located clear of the coal resource. Most overburden is placed in-pit to backfill mined-out areas.

Run of mine (ROM) coal is crushed and screened, followed by washing (if required) at the coal processing plant (CPP) located at Jellinbah Central (ML 80053). Washery rejects produced at the CPP are disposed of with overburden and tailings in the mining voids. Raw and washed coal is transported by truck to the rail loading area east of Blackwater for rail transport to Gladstone.

Approved Activities:

- Mining of a high-grade coal;

- Continuous assessment of the coal resource by exploration;
- Clearing of any remaining vegetation in advance of mining;
- Selective stripping of available topsoil under supervision to be immediately reused or stockpiled for future use in the rehabilitation program;
- Drilling and blasting of overburden to provide access to coal resources;
- Operation of a conventional open-cut truck and excavator mine to maintain production to meet market demands;
- Overburden used to form bunds, haul roads and hardstands or transported to out-of-pit spoil dumps located clear of the coal resource but within the boundary of the MLs or placed in the previous mining strip to backfill mined-out areas;
- Reshaping of spoil dumps, replacement of topsoil and revegetation of the mined out and backfilled area;
- Crushing and screening of ROM coal;
- Coal washing (if required) at the CPP, located on ML 80053;
- Disposal of CPP rejects together with overburden (coarse rejects) and tailings (fine rejects) within existing mining voids;
- Transport of crushed and washed coal by private road to the existing rail loading area for rail transport to Gladstone;
- Operation of water management infrastructure such as regulated dams, sediment ponds, drains and bunds;
- Ongoing staged construction of a levee bank at Jellinbah Plains to protect mining operations from flooding of the Mackenzie River;
- Utilisation of existing infrastructure facilities, including offices, power and water; and
- Continued direct and contract employment of operating workers and support personnel with flow-on employment through the provision of associated goods and services.

The purpose of the Central North Extension is to extend mining activities at Jellinbah Plains into new resource areas and expand the area available for dumping of spoil. No changes to the currently approved mining methods or production rates are proposed as part of the Project.

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

Yes

1.16.1 Identify the nature/scope and location of the related action (Including under the relevant legislation).

The Project is an extension of the existing Jellinbah Coal Mine, which commenced mining operations in 1989 and is currently operating under the Queensland State Environmental Authority EA EPML00516813, approved under Chapter 5 of the Environmental Protection Act 1994.

Section 2 - Matters of National Environmental Significance

Describe the affected area and the likely impacts of the proposal, emphasising the relevant matters protected by the EPBC Act. Refer to relevant maps as appropriate. The interactive map tool can help determine whether matters of national environmental significance or other matters protected by the EPBC Act are likely to occur in your area of interest. Consideration of likely impacts should include both direct and indirect impacts.

Your assessment of likely impacts should consider whether a bioregional plan is relevant to your proposal. The following resources can assist you in your assessment of likely impacts:

• Profiles of relevant species/communities (where available), that will assist in the identification of whether there is likely to be a significant impact on them if the proposal proceeds;

• Significant Impact Guidelines 1.1 – Matters of National Environmental Significance;

• Significant Impact Guideline 1.2 – Actions on, or impacting upon, Commonwealth land and Actions by Commonwealth Agencies.

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

No

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

No

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

No

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

Yes

2.4.1 Impact table

Species	Impact
Brigalow (Acacia harpophylla dominant and co-	Development of the Project proposes the

Species	Impact
dominant)	clearing of approximately 14.65 ha of the Brigalow - Acacia harpophylla dominant and co-dominant community within the Project area (1.8% of the survey area). Due to the current condition and ecological function of this community, as well as the context of the surrounding landscape, the proposed impact is not considered to be a significant impact.

2.4.2 Do you consider this impact to be significant?

No

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

No

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

No

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

No

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

No

2.9 Is the proposed action likely to have ANY direct or indirect impact on a water resource related to coal/gas/mining?

Yes

2.9.1 Impact table

Water Resource	Impact
Mackenzie River	Potential groundwater quality impacts from the Project activities could include infiltration of process water, mine water or leachate to the groundwater from areas such as: • Voids

Water Resource	Impact
	containing pit water or tailings; • Spoil dumps and stockpiles; and • Dams and ponds. In addition, groundwater aquifers associated with the Project have the potential to interact with the Mackenzie River.
Mackenzie River and Blackwater Creek	The potential surface water quality impacts from activities associated with the Project include: • Surface water runoff containing elevated levels of sediment or contaminants from cleared areas, spoil dumps and stockpiles; • Overflow of the contaminated water management system due to extreme rainfall events; and • Spills of contaminants potentially resulting in contamination of surface water. Development of the Central North Extension is not anticipated to pose any further risks to the downstream surface water environment beyond those already managed at the Jellinbah Coal Mine. The Project is a relatively small extension of the existing Jellinbah Coal Mine, located immediately to the north of the operational Central site and will not necessitate any substantial changes to current surface water management practices.

2.9.2 Do you consider this impact to be significant?

No

2.10 Is the proposed action a nuclear action?

No

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

No

2.12 Is the proposed action to be undertaken in a Commonwealth Heritage Place Overseas?

No

2.13 Is the proposed action likely to have ANY direct or indirect impact on a water

resource related to coal/gas/mining?

Yes

2.13.1 Describe the nature and extent of the likely impact on the whole of the environment.

POTENTIAL IMPACTS AND SIGNIFICANCE

Threatened Ecological Communities

Brigalow-dominant regrowth vegetation it is present in the Project site, covering an area of 14.65 ha. Although listed as a Threatened Ecological Community, the integrity of this community within the Project area is highly compromised due to small patch sizes, past and current disturbance and the highly fragmented context of the surrounding landscape. This community is surrounded by cleared pasture lands. Previous clearing in the immediate vicinity of each patch means that this community is now subject to edge effects and weed invasion. This community is also subject to low to moderate intensity cattle grazing, further enabling the introduction and spread of weeds. The ground layer has been modified by the invasion of Buffel Grass and Sabi Grass, while exotic cacti are present throughout the ground and shrub layers.

Owing to the small, disturbed, and fragmented nature of Community 1, this community offers limited ecological function at the regional, state or national level. The proposed impact represents 0.02 % of the extent of the Endangered RE 11.4.8 remaining throughout Queensland in 2015 (EHP, 2016). Given the extent of the impact and the ecological values of the proposed impact area, the Project is not expected to impose a significant impact on this Threatened Ecological Community.

In addition, as part of Jellinbah's offset requirements under the Queensland Offset Act, the final extent of Brigalow offset will be four times that of the area cleared. Under the Queensland's Environmental Offset Policy (QEOP), Jellinbah has committed to provide an equivalent Brigalow Community offset area of 58.6 ha.

Surface Water

Surface water impacts and the potential for downstream contamination are managed through the Project's SWMS (Site Water Management Plan). Catchments of differing water quality are separated to prevent uncontrolled discharge of potentially contaminated water into the receiving environment. Based on current site experience and monitoring data, the implementation of the SWMS is considered adequate to mitigate the potential for adverse impacts to downstream water quality. The SWMS will ensure the Project maintains compliance with EA conditions pertaining to release and receiving water quality, which will ensure regional WQOs mandated by the Queensland EPP (Water) are achieved. No significant impact to surface water quality is anticipated.

Groundwater

The lack of current connectivity between the Mackenzie River and the mining operations is acknowledged by the current EA, and annual groundwater monitoring provisions are prescribed to ensure that this continues. The groundwater assessment by JBT (2016) concludes that based on the fact that groundwater underlying the Project area is of low quality and already impacted by surrounding mining operations, future monitoring of the groundwater within the Project area is not warranted. DEHP have accepted this finding and have not deemed it necessary to impose additional groundwater monitoring requirements for the project.

Based on the information presented above, no significant impact on groundwater is anticipated to result from the development of the Project.

2.13.2 Do you consider this impact to be significant?

No

Section 3 - Description of the project area

Provide a description of the project area and the affected area, including information about the following features (where relevant to the project area and/or affected area, and to the extent not otherwise addressed in Section 2).

3.1 Describe the flora and fauna relevant to the project area.

A field survey was undertaken from the 16th to the 20th of February 2015. Six Secondary flora transects and 72 Quaternary sites were completed to characterise and map the vegetation communities of the Survey Area. Fauna diversity was assessed through trapping, scat and track searches, habitat searches and incidental species sightings across five fauna sites.

Two vegetation communities were identified in the Survey Area, one of which is listed as Endangered under the Vegetation Management Act 1999 and listed as a Threatened Ecological Community under the Environment Protection and Biodiversity Conservation Act 1999. A total of 142 flora species were recorded in the Survey Area. No flora species of conservation significance were detected. Four species of restricted invasive plants under the Biosecurity Act 2014, two of which are also Weeds of National Significance, were recorded in the Survey Area.

A total of 76 fauna species were recorded in the Survey Area, including 11 mammals, 49 birds, 10 reptiles and six amphibians. No threatened species were recorded in the Survey Area. Three pest animal species were recorded on or adjacent to the Survey Area, two of which are restricted invasive animal species under the Biosecurity Act 2014.

For further supporting information, please find attached the following documents:

2015 Jellinbah Coal Mine - Central North Extension Terrestrial Flora and Fauna Assessment (AARC, Reissued 2017) (attached in this application as: Jellinbah CNE Terrestrial FF Assessment (AARC Reissued August 2017) Part 1, Part 2 and Part 3)

2015 Jellinbah CNE database searches Part 1 and Part 2

2017 Jellinbah CNE database searches

Jellinbah CNE 2015 batcall analysis

PMAV Application (AARC 2015)

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

Jellinbah Mine is located in the Mackenzie River Sub-basin of the Fitzroy Drainage Basin. Several small ephemeral watercourses flow through the Central North Project area. Five Mile

Lagoon is located in the north-east of the Project area. These watercourses drain into the Mackenzie River, which is located several kilometres north of the Project area. The Mackenzie River flows into the Fitzroy River, which flows east into the Coral Sea south-east of Rockhampton.

Relevant hydrology is addressed further in Section 2. For additional supporting information, please refer to the following documents:

Jellinbah Mine Site Site Water Management Plan Including Proposed Central North (UDP 2016) (attached in this application as: Jellinbah Mine Site SWMP Including Proposed CNE (UDP 2016) Part 1 and Part 2)

Groundwater Assessment & Response to EHP Information Request Jellinbah Central North Extension Area (JBT 2016)

(attached in this application as: Groundwater Assessment & Response to EHP Jellinbah CNE-JBT 2016)

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

Two vegetation communities were identified in the Survey Area:

- Community 1 – Dawson Gum (*Eucalyptus cambageana*) woodland to open forest with Brigalow (*Acacia harpophylla*) on Cainozoic clay plains (RE 11.4.8/11.4.8a); and
- Community 2 – Non-remnant grassland.

Vegetation characteristics, flora and fauna communities are addressed in Section 2 and the accompanying 2015 Jellinbah Coal Mine - Central North Extension Terrestrial Flora and Fauna Assessment (AARC, Reissued 2017)

The soils of the Project area are typically red brown clay, loams or a similar variant. Melon holes are common in areas. A full description of the Soil and Land Suitability of the Project area is provided in Section 4.5 of the Central North Extension - Jellinbah Coal Mine Environmental Authority Amendment - Supporting Information (AARC 2015).

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

Not applicable

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

Upon ground truthing of the Project site, Ecologists found discrepancies between present vegetation communities and the community classifications marked on the QLD Regulated Vegetation Mapping. These discrepancies were submitted to the Department of Natural Resources and Mines (DNRM) in September 2015. Further details can be found in the PMAV Application (AARC 2015) document.

For further information on native vegetation present in the project area, please refer to Section 2 and the following attached documents:

2015 Jellinbah Coal Mine - Central North Extension Terrestrial Flora and Fauna Assessment (AARC, Reissued 2017)

Jellinbah CNE Protected Matters Search Results

Central North Extension - Jellinbah Coal Mine Environmental Authority Amendment - Supporting Information (AARC 2015)

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

The elevation difference in the project site is 30m north to south, with the lowest point being around 120m AHD and the highest point around 150m AHD.

Gradient is 30m/8.5km= 3.53m per Km.

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

Brigalow and Dawson Gum Open Forest to Woodland (Vegetation Community 1), is subject to weed invasion and low to moderate intensity cattle grazing. Buffel Grass (*Cenchrus ciliaris*) and Sabi Grass (*Urochloa mosambicensis*) invasion has modified the ground layer, and exotic cacti are scattered throughout the ground and shrub layers.

Habitat features such as exfoliating bark, logs, fallen branches and leaf litter are present throughout this community. These features support populations of common small reptiles. Scattered gilgais provide temporary water sources for fauna and habitat for a range of amphibians. Emergent Dawson Gum and stags provide a small amount of habitat for arboreal mammals (such as the Brushtail Possum, *Trichosurus vulpecula*) and nocturnal birds (such as the Tawny Frogmouth, *Podargus strigoides*). Swamp Wallabies (*Wallabia bicolor*) were observed in this vegetation community.

Pasture (Vegetation Community 2), has been cleared to facilitate cattle grazing. Vegetation regrowth is generally low and sparse. The ground is heavily disturbed and dominated by exotic pasture grasses. There are few habitat features in this community. Cattle dams and lagoons

provide habitat for aquatic birds and amphibians. The dense ground layer provides potential habitat for small mammals. A range of small granivorous and insectivorous bird species inhabit the shrubs and grasses of this community, providing food for raptors such as the Nankeen Kestrel (*Falco cenchroides*), which was observed in high numbers during the survey.

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

Not applicable

3.9 Describe any Indigenous heritage values relevant to the project area.

Areas of Indigenous cultural heritage on the Jellinbah Coal Mine site may be of significance to local Indigenous people and Native Title claimants. To date, no significant Indigenous cultural heritage sites have been identified.

Jellinbah Group has conducted extensive consultation with the registered Native Title groups and will continue to do so as part of a proactive community consultation program and ongoing development of Cultural Heritage Management Plans (CHMPs) for the existing Jellinbah Coal Mine. Consultation has been planned between the registered Native Title groups and Jellinbah Group for the purpose of developing a CHMP for the proposed Central North MLs.

Jellinbah Mining has conducted extensive consultation with the registered Native Title groups. Aboriginal cultural heritage surveys were conducted over the area prior to exploration drilling. Further surveys will be conducted prior to development of the Project.

Jellinbah Mining intends to develop a CHMP encompassing the Central North Extension area and will continue to implement the CHMPs that have been developed for the mine to ensure compliance with the duty of care under the Aboriginal Cultural Heritage Act 2003.

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

Freeholds: 6 LR94, 100 SP230773, 2 SP213140, 3 SP213140

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

The Project area is currently used for cattle grazing. Adjacent land is used for cattle grazing and open-cut coal mining activities. Five stock watering dams, several exploration tracks and drill pads, and a powerline easement are located within the Project area. Surface water in the Project area is currently used for livestock watering. It is proposed to return the majority of the Project site back to its pre-mining land suitability and a land use of low intensity grazing after the cessation of mining activities.

Section 4 - Measures to avoid or reduce impacts

Provide a description of measures that will be implemented to avoid, reduce, manage or offset any relevant impacts of the action. Include, if appropriate, any relevant reports or technical advice relating to the feasibility and effectiveness of the proposed measures.

Examples of relevant measures to avoid or reduce impacts may include the timing of works, avoidance of important habitat, specific design measures, or adoption of specific work practices.

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

Management strategies detailed throughout the attached MNES Assessment Report aim to minimise the likelihood of impacts to environmental values, including MNES. Strategies primarily target operational practices, particularly vegetation clearing and site water management.

A minimised clearing footprint and progressive rehabilitation will limit the area of land subject to disturbance at any one time, thereby minimising potential ecological impacts.

In accordance with Queensland legislation, environmental offsets will be implemented for significant residual impacts to the TEC Brigalow and other MSES that may arise as a result of the Project.

UPD (UPD Group) were engaged to develop a SWMP (Site Water Management Plan) for the Project, within the context of the existing Jellinbah Mine, to achieve the following outcomes:

· Divert clean catchment water around mining works to the extent practicable;

· Use / recycle lesser quality water in preference to higher quality water;

· Use potentially contaminated water in preference to imported raw water or uncontaminated water;

· Release water from site only in accordance with the conditions of the EA, such that the released water will not significantly impact on the values of the receiving waters or downstream properties;

· Manage water storages and transfers within the site in order to:

- Maximise onsite storage to meet reasonably anticipated periods of wet and dry weather; and

- Minimise disruption to mining operations.

In addition to a SWMP, Jellinbah has committed to regularly monitoring water storages, receiving waters and groundwater bores to ensure no significant impacts to these values are occurring.

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

The only Matter of National Environmental Significance (MNES) that is expected to be significantly impacted through the actions of the Central North Extension Project is the clearance of 14.65 ha of Brigalow dominant vegetation community. Owing to the small, disturbed, and fragmented nature of Community 1, this community offers limited ecological function at the regional, State or National level. The proposed impact represents 0.02 % of the extent of the Endangered RE 11.4.8 remaining throughout Queensland in 2015 (Queensland Herbarium, 2016). Given the extent of the impact and the ecological values of the proposed impact area, the Project is not expected to impose a significant impact on this Threatened Ecological Community.

Clearance of the 14.65 ha of Brigalow Community has been authorised by EHP under Jellinbah's current Environmental Authority EPML00516813, with the area subject to environmental offset conditions under the *Environmental Offsets Act 2014* (EO Act). In addition to the final mine rehabilitation committments outlined in section 4.1, Jellinbah recognises its obligation to deliver suitable offsets prior to commencing any disturbance at the Central North Extension, in a manner agreed upon with State and Commonwealth administrative authorities.

Jellinbah has engaged AARC to oversee the offset delivery process. Jellinbah are committed to locating suitable offset areas that provides tangible conservation outcomes in accordance with the *Queensland Environmental Offsets Policy (EHP 2014)* (QEOP). In order to guide the application and delivery of the environmental offsets, the following principles have been applied:

1. Offsets will achieve a conservation outcome that achieves an equivalent environmental outcome;

2. Offsets will provide environmental values as similar as possible to those being lost;

3. Offset provision will minimise the time-lag between the impact and delivery of the offset;

4. Offsets will provide additional protection to environmental values at risk, or additional management actions to improve environmental values; and

5. Where legal security is required, offsets will be legally secured for the duration of the impact on the prescribed environmental matter.

The QEOP defines ‘strategic offset investment corridors’ as areas identified and delineated specifically for the benefit of prescribed environmental matters. Jellinbah will seek to prioritise offset delivery within these strategic offset investment corridors. The Galilee Basin Strategic Offset Corridors are located in the Brigalow Belt and Desert Uplands bioregions and are

managed through the Galilee Basin Offsets Strategy (EHP 2013). The purpose of the Galilee Basin Offsets Strategy is to identify areas which may be suitable to replace environmental values potentially lost as a result of development in the Galilee Basin. These identified areas, selected specifically for their potential to provide alternative habitat areas or augment the regio's conservation outcomes for the Central North Extension Project.

Any offset area selected will be proportionate to the impact area in terms of size and scale. The offsets will also be:

- Within the same Broad Vegetation Group as the impacted community;

- Of equivalent conservation status; and

- Within the same bioregion.

The QEOP sets multipliers for prescribed environmental matters, with a maximum multiplier of four. A multiplier is defined as “a number used to calculate the size of the offset requirement given the significant residual impact area, for a given prescribed environmental matter” (EHP 2014). The offset area is calculated by multiplying the area of impact by the prescribed multiplier: Offset Area = Area of Impact x Multiplier. For the purposes of this Environmental Offsets Strategy, a multiplier of four has been used, as per the QEOP, meaning a total offset area of 58.6 ha will be protected.

For additional supporting information, please refer to the following documents:

Central North Extension Environmental Offset Strategy (AARC 2015)

Section 5 – Conclusion on the likelihood of significant impacts

A checkbox tick identifies each of the matters of National Environmental Significance you identified in section 2 of this application as likely to be a significant impact.

Review the matters you have identified below. If a matter ticked below has been incorrectly identified you will need to return to Section 2 to edit.

5.1.1 World Heritage Properties

No

5.1.2 National Heritage Places

No

5.1.3 Wetlands of International Importance (declared Ramsar Wetlands)

No

5.1.4 Listed threatened species or any threatened ecological community

No

5.1.5 Listed migratory species

No

5.1.6 Commonwealth marine environment

No

5.1.7 Protection of the environment from actions involving Commonwealth land

No

5.1.8 Great Barrier Reef Marine Park

No

5.1.9 A water resource, in relation to coal/gas/mining

No

5.1.10 Protection of the environment from nuclear actions

No

5.1.11 Protection of the environment from Commonwealth actions

No

5.1.12 Commonwealth Heritage places overseas

No

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

It is not anticipated that the Jellinbah Central North Extension Project will constitute a ‘controlled action’ due to the fact that significant impacts to identified MNES, when assessed against the relevant criteria provided by DoEE, are considered unlikely to occur. Additionally, the Central North Extension is only a minor extension to the existing Jellinbah Coal Mine operations and is not anticipated to have significant impacts beyond those which are successfully managed at the operation. The range of mitigation and management strategies discussed above and throughout this report will minimise the Project’s potential to adversely impact environmental values.

Section 6 – Environmental record of the person proposing to take the action

Provide details of any proceedings under Commonwealth, State or Territory law against the person proposing to take the action that pertain to the protection of the environment or the conservation and sustainable use of natural resources.

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

Jellinbah Group Pty Ltd is committed to minimising environmental impacts during all phases of the Project life. Staff training and awareness ensures that all personnel and contractors implement best practice strategies for environmental protection and give due consideration to the environmental values of the Project site.

Jellinbah Group Pty Ltd has demonstrated their commitment to good environmental stewardship by thoroughly researching and assessing the environmental values of the Project Site before development commences. The company currently holds multiple granted mining leases for its existing operations and is currently operating under the conditions of their Environmental Authority. There have been no infringement notices or non-compliance orders issued. The company has a good relationship with local and state government authorities

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

Not applicable

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

Yes

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

Please refer to attached Jellinbah Group Environmental Policy

6.4 Has the person taking the action previously referred an action under the EPBC Act, or

been responsible for undertaking an action referred under the EPBC Act?

Yes

6.4.1 EPBC Act No and/or Name of Proposal.

Project Title: Mackenzie North Project (Jellinbah Resources Pty Ltd) EPBC reference number 2011/5873

Section 7 – Information sources

You are required to provide the references used in preparing the referral including the reliability of the source.

7.1 List references used in preparing the referral (please provide the reference source reliability and any uncertainties of source).

Reference Source	Reliability	Uncertainties
Atlas of Living Australia website at http://www.ala.org.au	High	None
Australasian Groundwater and Environmental (AGE) 2006, Mackenzie South Project: Groundwater Impact Assessment, report prepared for AustralAsian Resource Consultants Pty Ltd, February 2006.	High	None
AustralAsian Resource Consultants Pty Ltd (AARC) 2015, Environmental Authority Amendment – Supporting Information, report prepared for Jellinbah Group Pty Ltd on behalf of Jellinbah East Joint Venture, September 2015	High	None
AustralAsian Resource Consultants Pty Ltd (AARC) 2015, Environmental Offsets Strategy, report prepared for Jellinbah Group Pty Ltd on behalf of Jellinbah East Joint Venture, September 2015	High	None
AustralAsian Resource Consultants Pty Ltd (AARC) 2017, Central North Extension Terrestrial Flora and Fauna Assessment, report prepared for Jellinbah Group Pty Ltd, August 2017	High	None
Australian and New Zealand Environment and Conservation Council (ANZECC) and	High	None

Reference Source	Reliability	Uncertainties
Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) 2000, Australian and New Zealand Guidelines for Fresh and Marine Water Quality		
Australian Coal Association Research Program (ACARP) 2001, Monitoring and Evaluation Program for Bowen Basin River Diversions, Project C9068, ACARP	High	None
Barker, R.M., Haegi, L., and Barker, W.R. in Wilson, A.J.G. (ed) (1999). Flora of Australia 17B, Proteaceae 3 Hakea to Dryandra.	High	None
Bean, A.R. (2004). The taxonomy and ecology of Solanum subg. Leptostemonum (Dunal) Bitter (Solanaceae) in Queensland and far north-eastern New South Wales, Australia. Austrobaileya 6(4), 639 – 816.	High	None
Cropper, S. (1993) Management of endangered plants, CSIRO Publications, Melbourne.	High	None
Curtis, L.K., Dennis, A.J., McDonald, K.R., Kyne, P.M. and Debus, S.J.S. 2012, Queensland's Threatened Animals, CSIRO Publishing, Collingwood	High	None
Department of Environment and Heritage Protection (EHP) 2013, Guideline: Model water conditions for coal mines in the Fitzroy basin (ESR/2015/1561), Queensland Government	High	None
Department of Environment and Heritage Protection (EHP) 2014a, Rehabilitation Requirements for Mining	High	None

Reference Source	Reliability	Uncertainties
Projects (ESR/2016/1875), Queensland Government		
Department of Environment and Heritage Protection (EHP) 2014. Olearia macdonnellensis. WetlandInfo. http://wetlandinfo.ehp.qld.gov.au/wetlands/ecology/components/species/?olearia-macdonnellensis	High	None
Department of Environment and Heritage Protection (EHP) 2016, Flying-fox roost monitoring and locations. Available from: https://www.ehp.qld.gov.au/wildlife/livingwith/flyingfoxes/roost-locations.html.	High	None
Department of Environment and Heritage Protection (EHP) 2016, Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (ESR/2016/1933), Queensland Government	High	None
Department of Environment and Heritage Protection (EHP) 2016, Regional Ecosystems Descriptions Database (REDD), Version 10.0, Queensland Government	High	None
Department of Mines and Energy (DME) 1995, Mine Planning Guidelines for Assessment and Management of Saline and Sodic Waste, Department of Mines and Energy, Queensland Government	High	None
Department of Natural Resources and Mines (DNRM) 2014, Guideline – Works that interfere with water in a watercourse: watercourse diversions, Queensland Government	High	None
Department of Science, Information Technology,	High	None

Reference Source	Reliability	Uncertainties
Innovation and the Arts (DSITIA) 2012, Terrestrial Vertebrate Fauna Survey Guidelines for Queensland, Queensland Government		
Department of Sustainability, Environment, Water, Population and Communities (DSEWPAC) 2003, Nationally threatened species and ecological communities – Brigalow Regrowth and the EPBC Act, Commonwealth of Australia	High	None
Department of Sustainability, Environment, Water, Population and Communities (DSEWPAC) 2011, Draft Referral guidelines for the nationally listed Brigalow Belt reptiles, Commonwealth of Australia	High	None
Department of Sustainability, Environment, Water, Population and Communities (DSEWPAC) 2011, Survey Guidelines for Australia's Threatened Reptiles: Guidelines for detecting reptiles listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999, Commonwealth of Australia	High	None
Department of Sustainability, Environment, Water, Population and Communities (DSEWPAC) 2011, Survey Guidelines for Australia's Threatened Mammals: Guidelines for detecting mammals listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999, Commonwealth of Australia	High	None
Department of the Environment (DoE) 2013, Significant impact guidelines 1.1: Matters of	High	None

Reference Source	Reliability	Uncertainties
National Environmental Significance, Commonwealth of Australia		
Department of the Environment (DoE) 2013, Significant impact guidelines 1.3: Coal seam gas and large coal mining developments – impacts on water resources, Commonwealth of Australia	High	None
Department of the Environment (DoE) 2014, Conservation Advice: Elseya albagula, Commonwealth of Australia	High	None
Department of the Environment (DoE) 2014, EPBC Act referral guidelines for the vulnerable koala, Commonwealth of Australia.	High	None
Department of the Environment and Energy (DoE) 2015, Species Profile and Threats Database, Commonwealth of Australia	High	None
Department of the Environment (DoE) 2015, Submitting a referral under the EPBC Act – A fact sheet for a person proposing to take an action, Commonwealth of Australia	High	None
Department of the Environment (DoE) 2015, Referral guideline for management actions in grey-headed and spectacled flying-fox camps, Commonwealth of Australia	High	None
Department of the Environment (DoE) 2015, Referral guideline for 14 birds listed as migratory species under the EPBC Act (draft), Commonwealth of Australia	High	None
Department of the Environment (DoE) 2015, Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act	High	None

Reference Source	Reliability	Uncertainties
listed migratory shorebird species, Commonwealth of Australia		
Department of the Environment (DoE) 2015, Directory of Important Wetlands in Australia – Information Sheet – Lake Elphinstone, QLD, Commonwealth of Australia	High	None
Department of the Environment (DoE) 2016, Outcomes-based Conditions Policy: Environment Protection and Biodiversity Conservation Act 1999, Commonwealth of Australia	High	None
Department of the Environment (DoE) 2016, Outcomes-based Conditions Guidance: Environment Protection and Biodiversity Conservation Act 1999, Commonwealth of Australia	High	None
Department of the Environment (DoE) 2016, EPBC Act Referral guideline for the endangered northern quoll Dasyurus hallucatus, Commonwealth of Australia	High	None
Department of the Environment and Energy (DoEE) 2017, Species Profile and Threats Database, Commonwealth of Australia	High	None
Department of the Environment and Energy (DoEE) 2017, Numenius madagascariensis in Species Profile and Threats Database, Department of the Environment, Canberra	High	None
Department of the Environment and Energy (DoEE) 2017, Calidris ferruginea in Species Profile and Threats Database, Department of the Environment, Canberra.	High	None
Department of the Environment	High	None

Reference Source	Reliability	Uncertainties
and Energy (DoEE) 2017, Chalinolobus dwyeri in Species Profile and Threats Database, Department of the Environment, Canberra.		
Department of the Environment and Energy (DoEE) 2017, Dasyurus hallucatus in Species Profile and Threats Database, Department of the Environment, Canberra.	High	None
Department of the Environment and Energy (DoEE) 2017, Delma torquata in Species Profile and Threats Database, Department of the Environment, Canberra.	High	None
Department of the Environment and Energy (DoEE) 2017, Egernia rugosa in Species Profile and Threats Database, Department of the Environment, Canberra.	High	None
Department of the Environment and Energy (DoEE) 2017, Elseya albagula in Species Profile and Threats Database, Department of the Environment, Canberra.	High	None
Department of the Environment and Energy (DoEE) 2017, Erythrotriorchis radiatus in Species Profile and Threats Database, Department of the Environment, Canberra.	High	None
Department of the Environment and Energy (DoEE) 2017, Furina dunmalli in Species Profile and Threats Database, Department of the Environment, Canberra.	High	None
Department of the Environment and Energy (DoEE) 2017, Geophaps scripta scripta in Species Profile and Threats Database, Department of the	High	None

Reference Source	Reliability	Uncertainties
Environment, Canberra.		
Department of the Environment and Energy (DoEE) 2017, Grantiella picta in Species Profile and Threats Database, Department of the Environment, Canberra.	High	None
Department of the Environment and Energy (DoEE) 2017, Lasiorhinus krefftii in Species Profile and Threats Database, Department of the Environment, Canberra.	High	None
Department of the Environment and Energy (DoEE) 2017, Lathamus discolor in Species Profile and Threats Database, Department of the Environment, Canberra.	High	None
Department of the Environment and Energy (DoEE) 2017, Lerista allanae in Species Profile and Threats Database, Department of the Environment, Canberra.	High	None
Department of the Environment and Energy (DoEE) (2017), Neochmia ruficauda ruficauda in Species Profile and Threats Database, Department of the Environment, Canberra.	High	None
Department of the Environment and Energy (DoEE) (2017), Nyctophilus corbeni in Species Profile and Threats Database, Department of the Environment, Canberra.	High	None
Department of the Environment and Energy (DoEE) (2017r), Pedionomus torquatus in Species Profile and Threats Database, Department of the Environment, Canberra.	High	None
Department of the Environment and Energy (DoEE) (2017), Petauroides volans in Species	High	None

Reference Source	Reliability	Uncertainties
Profile and Threats Database, Department of the Environment, Canberra.		
Department of the Environment and Energy (DoEE) (2017), Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) in Species Profile and Threats Database, Department of the Environment, Canberra.	High	None
Department of the Environment and Energy (DoEE) (2017), Poephila cincta cincta in Species Profile and Threats Database, Department of the Environment, Canberra.	High	None
Department of the Environment and Energy (DoEE) (2017), Pteropus poliocephalus in Species Profile and Threats Database, Department of the Environment, Canberra.	High	None
Department of the Environment and Energy (DoEE) (2017), Rheodytes leukops in Species Profile and Threats Database, Department of the Environment, Canberra.	High	None
Department of the Environment and Energy (DoEE) (2017x), Rostratula australis in Species Profile and Threats Database, Department of the Environment, Canberra.	High	None
Department of the Environment and Energy (DoEE) (2017), Turnix melanogaster in Species Profile and Threats Database, Department of the Environment, Canberra.	High	None
Department of the Environment, Water, Heritage and the Arts (DEWHA) 2009, Significant impact guidelines for the endangered black-throated	High	None

Reference Source	Reliability	Uncertainties
finch (southern) (Poephila cincta cincta), Commonwealth of Australia		
Department of the Environment, Water, Heritage and the Arts (DEWHA) 2010, Survey Guidelines for Australia's Threatened Birds: Guidelines for detecting birds listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999, Commonwealth of Australia	High	None
Department of the Environment, Water, Heritage and the Arts (DEWHA) 2010, Survey guidelines for Australia's threatened bats: Guidelines for detecting bats listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999, Commonwealth of Australia	High	None
Environment Australia 2001, Brigalow (Acacia harpophylla dominant and co-dominant) information sheet, Commonwealth of Australia	High	None
Environmental Protection Agency (EPA) 2009, A study of the cumulative impacts on water quality of mining activities in the Fitzroy River Basin, Queensland Government	High	None
Forster, P. and Holland, A. (2006). National Multi-species Recovery Plan for the cycads, Cycas megacarpa, Cycas ophiolitica, Macrozamia cranei, Macrozamia lomandroides, Macrozamia pauli-guilielmi and Macrozamia platyrhachis. http://www.environment.gov.au/system/files/resources/7f73872d-5d6	High	None

Reference Source	Reliability	Uncertainties
1-42a6-ab64-d38e980f010c/files/cycads.pdf		
Garnett, S., Szabo, J. and Dutson, G. 2010, The Action Plan for Australian Birds 2010, CSIRO Publishing, Canberra	High	None
Geoscience Australia 2015, Floods Public Search – Water Observations from Space, Commonwealth of Australia	High	None
Great Barrier Reef Marine Park Authority (GBRMPA) 2009, Great Barrier Reef Outlook Report 2009, Australian Government, Great Barrier Reef Marine Park Authority, November 2009	High	None
Independent Expert Scientific Committee (IESC) 2015, Information Guidelines for Independent Expert Scientific Committee advice on coal seam gas and large coal mining development proposals, Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development	High	None
International Erosion Control Association (IECA) 2012, Best Practice Erosion and Sediment Control Guideline, IECA	High	None
JBT Consulting Pty Ltd (JBT) 2016, Groundwater Assessment & Response to EHP Information Request, report prepared for Jellinbah Group Pty Ltd, March 2016	High	None
Marchant, S. and Higgins, P.J. (eds) 1993, Handbook of Australian, New Zealand and Antarctic Birds, Oxford University Press, Melbourne	High	None
Menkhorst, P. and Knight, F. 2011, A Field Guide to the Mammals of Australia, Oxford	High	None

Reference Source	Reliability	Uncertainties
University Press		
Neldner, V.J., Wilson, B.A., Thompson, E.J. and Dillewaard, H.A. 2012, Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland, version 3.2, Queensland Herbarium, Queensland Department of Science, Information Technology, Innovation and the Arts, Queensland Government	High	None
Pilgrim, D.H. (ed) 1998, Australian Rainfall & Runoff – A Guide to Flood Estimation, Institution of Engineers, Australia, Barton, ACT, 1998	High	None
Pizzey, G. and Knight, F. 2007, The Field Guide to the Birds of Australia, HarperCollins Publishers Pty Ltd	High	None
Queensland Herbarium (2012). Specimen label information, Queensland Herbarium.	High	None
Queensland Herbarium (2011). Specimen label information, Queensland Herbarium.	High	None
Threatened Species Scientific Committee (TSSC) 2013, Commonwealth Conservation Advice for Brigalow Ecological Community. Canberra: Department of Sustainability, Environment, Water, Population and Communities	High	None
UDP Group Services Pty Ltd (UDP 2016) Surface Water Management Plan Including Central North report prepared for Jellinbah Group Pty Ltd, September 2016	High	None
Wang, J. (1995). Logania diffusa. Species Management Manual. Department of Natural Resources, Brisbane.	High	None

Section 8 – Proposed alternatives

You are required to complete this section if you have any feasible alternatives to taking the proposed action (including not taking the action) that were considered but not proposed.

8.0 Provide a description of the feasible alternative?

No alternatives are available as the location of the proposed mining area is dictated by the location of the in situ coal resource and current mining operations. All mining areas and infrastructure components of the Project are required to be located within the bounds of the mining leases that have been granted to the Jellinbah Group. The Mine planning and engineering have identified that the proposed coal resource can only feasibly be extracted via open cut mining methods to meet government expectations and to maximise coal resource recovery as required under State legislation.

The proposed project has direct economic impact to the State of Queensland through the development of the mine to make best use of the existing resource. The consequences of not proceeding with the Project are associated with a significant coal resource remaining undeveloped and economic proceeds through taxation and royalties not being realised for the State of Queensland.

There is a significant opportunity cost to both State and Federal revenues without the development of the Lake Vermont Northern Extension. The availability of existing process facilities and product transport infrastructure at the Jellinbah Coal mine is limited to the economic life of the operating Jellinbah Coal Mine. Should the Central North Extension development be deferred to a later date, the use of existing coal processing and transport infrastructure is not guaranteed. The feasibility of a deferred Project, without transport and processing facilities is highly uncertain.

8.1 Select the relevant alternatives related to your proposed action.

8.27 Do you have another alternative?

No

Section 9 – Contacts, signatures and declarations

Where applicable, you must provide the contact details of each of the following entities: Person Proposing the Action; Proposed Designated Proponent and; Person Preparing the Referral. You will also be required to provide signed declarations from each of the identified entities.

9.0 Is the person proposing to take the action an Organisation or an Individual?

Organisation

9.2 Organisation

9.2.1 Job Title

Company Secretary

9.2.2 First Name

Timothy

9.2.3 Last Name

O'Brien

9.2.4 E-mail

tobrien@jellinbah.com.au

9.2.5 Postal Address

Level 7 12 Creek St
Brisbane QLD 4001
Australia

9.2.6 ABN/ACN

ACN

010754793 - JELLINBAH GROUP PTY LTD

9.2.7 Organisation Telephone

+(07)38776700

9.2.8 Organisation E-mail

tobrien@jellinbah.com.au

9.2.9 I qualify for exemption from fees under section 520(4C)(e)(v) of the EPBC Act because I am:

Not applicable

Small Business Declaration

I have read the Department of the Environment and Energy's guidance in the online form concerning the definition of a small a business entity and confirm that I qualify for a small business exemption.

Signature:..... Date: .....

9.2.9.2 I would like to apply for a waiver of full or partial fees under Schedule 1, 5.21A of the EPBC Regulations

No

9.2.9.3 Under sub regulation 5.21A(5), you must include information about the applicant (if not you) the grounds on which the waiver is sought and the reasons why it should be made

Person proposing the action - Declaration

I, Tim O'Brien, 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 of or for the benefit of any other person or entity.

Signature: T. O'Brien Date: 22/12/17

I, _____, the person proposing the action, consent to the designation of _____ as the proponent of the purposes of the action describe in this EPBC Act Referral.

Signature:..... Date: .....

9.3 Is the Proposed Designated Proponent an Organisation or Individual?

Organisation

9.5 Organisation

9.5.1 Job Title

Company Secretary

9.5.2 First Name

Timothy

9.5.3 Last Name

O'Brien

9.5.4 E-mail

tobrien@jellinbah.com.au

9.5.5 Postal Address

Level 7 12 Creek St
Brisbane QLD 4001
Australia

9.5.6 ABN/ACN

ACN

010754793 - JELLINBAH GROUP PTY LTD

9.5.7 Organisation Telephone

0738776700

9.5.8 Organisation E-mail

tobrien@jellinbah.com.au

Proposed designated proponent - Declaration

I, Tim O'Brien, the proposed designated proponent, consent to the designation of myself as the proponent for the purposes of the action described in this EPBC Act Referral.

Signature:..... Date: 22/12/17

9.6 Is the Referring Party an Organisation or Individual?

Organisation

9.8 Organisation

9.8.1 Job Title

Principal Environmental Scientist

9.8.2 First Name

Heath

9.8.3 Last Name

Carney

9.8.4 E-mail

hcarney@aarc.net.au

9.8.5 Postal Address

Suite 5, 1 Swann Road

Suite 5 1 Swann Road
Taringa QLD 4068
Australia

9.8.6 ABN/ACN

ABN

71620818920 - AARC ENVIRONMENTAL SOLUTIONS PTY LTD

9.8.7 Organisation Telephone

07 3217 8772

9.8.8 Organisation E-mail

admin@aarc.net.au

Referring Party - Declaration

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

Signature: H. Carney Date: 2/1/2018

Appendix A - Attachments

The following attachments have been supplied with this EPBC Act Referral:

1. 2015_jellinbah_cne_database_searches_part_1.pdf
2. 2015_jellinbah_cne_database_searches_part_2.jpg
3. 2017_jellinbah_cne_database_searches.pdf
4. central_north_extension_environmental_offset_strategy_aarc_2015.pdf
5. central_north_mls_shapefiles.zip
6. central_north_mnes_assessment_report_-_part_1.pdf
7. central_north_mnes_assessment_report_-_part_2.pdf
8. chrc_presentation_central_north_extension_nov_2016.pdf
9. ea_permit_epml00516813_jellinbah_group_pty_ltd_jellinbah_coal_mine.pdf
10. ea_permit_notice_epml00516813_jellinbah_coal_mine.pdf
11. fig_1_-_location_plan_and_mine_tenements.jpg
12. fig_1_-_mine_tenements_and_sensitive_receptors.jpg
13. fig_2_-_regional_coal_tenements.jpg
14. fig_3_-_petroleum_exploration_tenements.jpg
15. fig_4_-_regional_landowners.jpg
16. fig_5_-_infrastructure_plan.jpg
17. fig_6_-_strategic_cropping_land.jpg
18. fig_7_-_flora_and_fauna_survey_locations.jpg
19. fig_8_-_vegetation_communities.jpg
20. fig_9_-_location_plan_and_mine_tenements.jpg
21. fig_9_-_watercourses.jpg
22. groundwater_assessment_response_to_ehp_jellinbah_cne-jbt_2016.pdf
23. jellinbah_cne_2015_batcall_analysis.pdf
24. jellinbah_cne_terrestrial_ff_assessment_aarc_reissued_aug_2017_part3.pdf
25. jellinbah_cne_terrestrial_ff_assessment_aarc_reissued_aug_2017_part_1.pdf
26. jellinbah_cne_terrestrial_ff_assessment_aarc_reissued_aug_2017_part_2.pdf
27. jellinbah_coal_mine_site_overview.jpg
28. jellinbah_group_central_north_extension_mls.kml
29. jellinbah_group_environmental_policy.pdf
30. jellinbah_mine_site_swmp_including_proposed_cne_udp_2016_part_1.pdf
31. jellinbah_mine_site_swmp_including_proposed_cne_udp_2016_part_2.pdf
32. letter_from_central_highlands_regional_council_jan_2016.pdf
33. location_of_water_bores_in_dnrm_groundwater_database_jbt_2016.jpg
34. pmav_application_aarc_2015.pdf
35. signed_referral_pages.pdf
36. surface_geology_1100000_scale_digital_geology_jbt_2016.jpg