Title of Proposal - Moranbah North Extension Project

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.

A detailed description of the Moranbah North Extension Project (the project) is provided in Section 2 of the attached Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) Environmental Assessment Report (EAR). Below is a summary of the key aspects of the project.

Moranbah North Mine is an operating underground longwall mine located approximately 7 km north of Moranbah Township in Central Queensland (Figure 1). Moranbah North Mine commenced operations in 1998 and produces export coking coal.

The project involves extending mining operations into an area to the east of the Moranbah North mining lease (ML) (Figure 2). A new ML will be required for the project. The project site is shown in Figure 2 and is the area that corresponds to the proposed new ML. The project mining operations will be integrated with the existing mine and Moranbah North's mining operations will ultimately move into the project site.

Mining will be undertaken using Moranbah North's mining equipment and the existing Moranbah North Mine portals and drifts will provide underground access to the project longwall panels. As is the case for Moranbah North Mine, the project will target the Goonyella Middle (GM) seam and mining will be at a maximum coal production rate of 12 million tonnes per annum (Mtpa) Run of Mine (ROM). The project will also make use of the existing surface infrastructure at Moranbah North Mine and no upgrades of the infrastructure are required for the project. The existing workforce will be used for the project. The project will extend the life of the Moranbah North Mine by approximately 16 years.

The project proponent is a Joint Venture between the following parties: Moranbah North Coal Pty Ltd; Mitsui Moranbah North Investment Pty Ltd; JFEMA Moranbah North Pty Ltd; NS Moranbah North Pty Ltd; NS Coal (Moranbah North) Pty Ltd; and Shinsho Moranbah Coal Pty Ltd. Anglo Coal (Moranbah North Management) Pty Ltd is the manager and operator of the Moranbah North Mine on behalf of the six Joint Venture parties. Anglo Coal (Moranbah North Management) Pty Ltd is a subsidiary of Anglo American's Coal business (Anglo American).

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
Project site	1	-21.915050727623	148.03463784119
Project site	2	-21.915528497295	148.03446617981
Project site	3	-21.832691173175	148.03412285706
Project site	4	-21.831894427175	148.06931343933
Project site	5	-21.91489147071	148.0687984552
Project site	6	-21.915050727623	148.03463784119

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).

Section 2.4 of the attached EPBC Act EAR provides a detailed description of the project site and surrounding area. A summary is provided below.

The existing Moranbah North Mine is located approximately 7 km north of the township of Moranbah (Figure 1). The project site adjoins the eastern boundary of the Moranbah North Mine and covers an area of approximately 3,177 ha. The project site is surrounded by grazing land to the east and north (Figure 1), and coal mining operations to the west (Moranbah North Mine), south (Grosvenor Mine) and north-west (Goonyella Riverside and Broadmeadow Mine complex (Figure 3). The Moranbah North Mine and the project site are located within the Isaac Regional Council Local Government Area.

The land use within the project site includes cattle grazing and the proponent’s coal exploration activities. The project site is also located within a gas field that forms part of the Moranbah Gas Project, one of Australia's largest coal seam gas (CSG) operations. There are in excess of 100 existing gas wells on the project site. The Moranbah Gas Project is a joint venture operation between Arrow Energy and AGL.

The project site includes areas previously cleared for grazing and CSG operations. There are also areas of remnant woodland vegetation on the project site, particularly within the northern portion of the project site (Figure 1). The topography is relatively flat with areas of elevated topography (jump-ups) in the north-eastern and south-eastern parts of the project site.

The project site, which is traversed by sections of Teviot Brook and Skeleton Gully, drains in a south-westerly direction. Teviot Brook and Skeleton Gully separately converge with the main channel of the Isaac River approximately 10 km downstream of the project site (Figure 1).

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

The project site is approximately 3,177 ha and the predicted maximum disturbance footprint is 833.2 ha.

1.7 Is the proposed action a street address or lot?

Lot

1.7.2 Describe the lot number and title. Lot 18 SP208194 and Lot 15 SP261431 and Lot 2 GV69

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 12/2042

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

The project requires an ML under the *Queensland Mineral Resources Act 1989* and the proponent lodged an ML application on 18 October 2018. The ML is the key approval for the project (other than the environmental approvals discussed in Question 1.14). Given that the project will be located within an ML, local planning frameworks do not apply to the project.

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

As part of the preliminary planning process, a pre-lodgement meeting was held with the Department of Environment and Science (DES) in Brisbane on 13 December 2017. The purpose of the meeting was to provide an overview of the project, understand any issues that DES may have in relation to the project and seek feedback on the likely approval process required for the project. The DES's feedback from the meeting was that the project was likely to be a major Environmental Authority (EA) amendment and that an Environmental Impact Statement (EIS) was not likely to be required. The DES did not raise any significant issues in relation to the project.

The proponent has undertaken consultation with the landowners potentially impacted by the project and has had a number of face to face meetings with them. The proponent has also undertaken consultation with the Isaac Regional Council (IRC) in relation to the project. The proponent has an ongoing program of consultation with the Barada Barna People, the designated Aboriginal party for the area covered by the project site. This involves regular meetings to discuss mining operations and cultural heritage clearances.

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.

The Moranbah North Mine has an EA (EPML00738813) issued under the *Queensland Environmental Protection Act 1994* (EP Act), which relates to activities in the Moranbah North ML. An amendment to the Moranbah North Mine EA is required for the project.

The proponent submitted an EA Amendment Application, including supporting documentation in the form of an Environmental Assessment Report (EAR), to DES on 18 October 2018. The DES has made an assessment level decision for the project under Section 228 of the EP Act and has determined that a major EA amendment will be required for the project. The DES provided preliminary advice during a prelodgement meeting indicating that an EIS was not likely to be required for the project.

The DES is currently assessing the EA amendment application and will advise the proponent if additional information is required as part of its assessment. The EA amendment application will be placed on public exhibition for a minimum period of 20 business days and submissions on the EA amendment application can be lodged during this time. The DES will then make a decision to approve or refuse the application. In making this decision, the DES will take into account issues raised in any public submissions that are received.

A modified version of the EAR that was submitted to the DES is attached to this EPBC Act referral application. The modified EAR focuses on Matters of National Environmental Significance (MNES). It is termed the EPBC Act EAR in this referral.

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

No

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 involves extending Moranbah North's mining operations into a new mining area. The Moranbah North Mine commenced operations in 1998, prior to the commencement of the EPBC Act, and the proponent has advised that the Moranbah North Mine falls under the grandfathering provisions of the EPBC Act. The project will not give rise to any changes to activities undertaken in the existing Moranbah North ML. This EPBC Act referral therefore relates to project activities only (i.e. activities proposed to be undertaken within the project site).

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 Threatened Ecological Community (TEC)	Clearing of 10.7 ha of Brigalow TEC. Significant impact predicted. Refer to Section 7- Terrestrial Ecology and Appendix E – Terrestrial Ecology

Species	Impact
	Report of the attached EPBC Act EAR for additional information.
Greater Glider (Petauroides volans) habitat	Clearing of 13.1 ha of Greater Glider habitat. No significant impact predicted. Refer to Section 7- Terrestrial Ecology and Appendix E – Terrestrial Ecology Report of the attached EPBC Act EAR for additional information.
Koala (Phascolarctos cinereus) habitat	Clearing of 533.4 ha of Koala habitat. Significant impact predicted. Refer to Section 7- Terrestrial Ecology and Appendix E – Terrestrial Ecology Report of the attached EPBC Act EAR for additional information.
Ornamental Snake (Denisonia maculate) habitat	Clearing of 14.1 ha of Ornamental Snake habitat. Significant impact predicted. Refer to Section 7- Terrestrial Ecology and Appendix E -Terrestrial Ecology Report of the attached EPBC Act EAR for additional information.
Squatter Pigeon (Southern) (Geophaps scripta scripta) habitat	Clearing of 230.1 ha of Squatter Pigeon (Southern) habitat. No significant impact predicted. Refer to Section 7 Terrestrial Ecology and Appendix E - Terrestrial Ecology Report of the attached EPBC Act EAR for additional information.
Australian Painted Snipe (Rostratula australis) habitat	Clearing of 14.6 ha of Australian Painted Snipe habitat. No significant impact predicted. Refer to Section 7- Terrestrial Ecology and Appendix E – Terrestrial Ecology Report of the attached EPBC Act EAR for additional information.

2.4.2 Do you consider this impact to be significant?

Yes

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

Yes

2.5.1 Impact table

Species	Impact
Black-faced Monarch (Monarcha melanopsis), Fork-tailed Swift (Apus pacificus), Latham’s Snipe (Gallinago hardwickii), Rufous Fantail (Rhipidura rufifrons) and the White-throated	The project site supports a range of habitat types that may be used by migratory species as they move throughout the locality. The project includes clearing 538.7 ha of remnant

Species	Impact
Needletail (Hirundapus caudacutus).	vegetation which may provide habitat for migratory birds. Despite this clearing, substantial areas of potential habitat will remain within the project site. An assessment of significance for migratory species was undertaken based on the significant impact criteria for migratory species, as provided in the Department of the Environment (2013), Matters of National Environmental Significance – Significant Impact Guidelines 1.1. This assessment concluded that the habitat within the project site is not considered to be “important habitat” (as defined in the Significant Impact Guidelines) for these species. Further, there is no evidence that the project site supports an ecologically significant proportion of the population of these migratory species. The project is therefore not predicted to give rise to a significant, impact on migratory species. Refer to Section 7- Terrestrial Ecology and Appendix E - Terrestrial Ecology Report of the attached EPBC Act EAR for additional information.

2.5.2 Do you consider this impact to be significant?

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
Drainage lines including Teviot Brook and Skeleton Gully (i.e. surface water resources).	The project longwall layout includes several longwall panels beneath drainage lines (Figure 2). Longwall mining will result in subsidence and may lead to the progressive development of shallow trough-like depressions in drainage lines on the project site. The potential impacts that may arise from subsidence of drainage lines are well understood, given that Moranbah North Mine has mined beneath the Isaac River on a number of occasions and has collected monitoring data which confirms that there have been no significant, long term impacts on the river. Key findings in relation to subsidence of the drainage lines on the project site are as follows: - Although subsidence may result in the formation of shallow depressions within the bed of drainage lines within the project site, these are expected to fill with sediment within a few wet seasons. In some limited areas of the drainage channels, there are predicted to be potential short term increases in the water velocity and erosion potential in the period prior to the refilling of subsidence depressions. Monitoring of these areas will be undertaken in accordance with the requirements of the Moranbah North Mine Subsidence Management Plan to ensure that no long term impacts arise, and to identify any necessary mitigation measures. - Subsidence cracks may occur within the bed and banks of drainage lines within the project site, in the reaches located within the limit of measurable subsidence. The cracks are predicted to be shallow, with no connection to underground workings. Any cracks in the bed of the drainage lines are likely to fill quickly with sediment following flow events. Consistent with practice at the existing Moranbah North Mine, a rehabilitation program for tension cracking will be implemented to ensure that subsidence cracks are remediated. The program includes measures to limit impacts on vegetation and prevent erosion and sedimentation. - Subsidence troughs can result in localised alteration of surface drainage paths and create ponding areas on the floodplain. Subsidence

Water Resource	Impact
	ponding will be mitigated by the installation of minor remedial drainage earthworks to re-establish free drainage, as necessary. With the installation of the minor remedial drainage earthworks and re-instatement of free drainage, there will be no significant changes in the existing ponding regime of the floodplain due to subsidence. - Sub-surface cracking is not predicted to impact any drainage lines within the project site, and the likelihood of hydraulic connectivity between surface water and the underground mine workings is very low. Overall, subsidence is not predicted to give rise to significant impacts on the surface water resources. The project will not give rise to any changes in the overall operation of the Moranbah North Mine Water Management System and it is not anticipated to give rise to any additional requirement to release mine-affected water. Controls are in place to prevent impacts from erosion and sedimentation, and Moranbah North Mine has an existing Sediment and Erosion Management Plan. In conclusion, no significant impacts on surface water resources are predicted. Further detail is provided in Section 6 – Surface Water of the EPBC Act EAR.
Groundwater resources, comprising the Teviot Brook alluvium, Tertiary sediments, Tertiary basalt and coal seams of the Permian coal measures.	In understanding the potential impacts on groundwater resources, it is important to note that the project is located within a gas field that forms part of the Moranbah Gas Project, one of Australia's largest CSG operations. The groundwater resources within the project site have already been significantly dewatered by CSG activities. The project groundwater assessment considered impacts on groundwater from the extraction of the target coal seam, as well as impacts on groundwater due to sub-surface cracking in areas that are subject to longwall mining. Key conclusions of the groundwater assessment are as follows: - The project mining activities are not predicted to give rise to depressurisation in the Teviot Brook alluvium, Tertiary sediments or Tertiary basalt. - Mining activities will give rise to localised depressurisation in the GM Seam around the project longwall panels. In the long term, post-mining, groundwater levels are predicted to

Water Resource	Impact
	gradually recover to pre-mining levels. - No impacts on water supply bores are anticipated, given that a bore census has confirmed that there are no water supply bores within the area predicted to experience depressurisation. - Groundwater depressurisation is not predicted to give rise to impacts on overlying surface water drainages, given that groundwater does not provide a baseflow to surface waters in the vicinity of the project site. An assessment of the project's cumulative impacts with existing and approved future mines and CSG production activities was undertaken. Predicted cumulative depressurisation effects are largely confined to the project site and no cumulative impacts on groundwater users or surface water drainages are predicted. In conclusion, no significant impacts on groundwater resources are predicted. Further detail is provided in Section 5 – Groundwater of the EPBC Act EAR.

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 any part of the environment in the Commonwealth marine area?

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.

The flora and fauna relevant to the project site are described in Section 7 – Terrestrial Ecology and Appendix E – Terrestrial Ecology Report of the EPBC Act EAR. A summary of the key flora and fauna relevant to the project site is described below.

A total of 10 different remnant vegetation communities, classified as Queensland regional ecosystems (REs), were identified. The distribution of remnant vegetation within the project site is shown in Figure 4. The quality of fauna habitat throughout the project site is typically in moderate condition, with poorer quality habitat associated with areas that have been cleared for cattle grazing, CSG activities and mining exploration.

The project site can be divided into five broad habitats comprising Brigalow communities, lateritic jump up communities, riparian woodlands, remnant Eucalypt woodlands, and shrublands on natural scalds (Figure 5). In addition, there are areas of the project site that have been entirely cleared of vegetation and are now dominated by exotic grass species and weed species. These cleared areas do not provide habitat values for native fauna.

The project site is not considered to be of particular importance for values such as high biodiversity, important feeding areas, high endemism, unusual fauna assemblages, or unique habitat types or assemblages. Field surveys identified the Brigalow (*Acacia harpophylla* dominant and co-dominant) TEC (listed as Endangered) as occurring in the project site.

Field surveys did not record any threatened EPBC Act listed flora species within the project site.

Field surveys recorded the following four threatened EPBC Act listed fauna species within the project site:

- Greater Glider (listed as Vulnerable);

- Koala (listed as Vulnerable);

- Ornamental Snake (listed as Vulnerable); and

- Squatter Pigeon (Southern) (listed as Vulnerable).

An assessment was undertaken of the likelihood of other EPBC listed fauna and flora species to occur within the project site. This assessment was based on the species' known ranges and habitat preferences, which were evaluated against the site characteristics. The assessment concluded that one additional threatened species, the Australian Painted Snipe (listed as Endangered), had a moderate potential of occurring within the project site.

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

The hydrology relevant to the project site are described in Section 6 – Surface Water and Appendix D – Surface Water Report of the EPBC Act EAR. A summary of the hydrology relevant to the project site is provided below.

Regional Catchment Setting

The project site is located in the Isaac River catchment, a sub-catchment of the upper Fitzroy Basin (Figure 6). The Isaac River catchment covers an area of approximately 22,000 km2. The dominant land uses within the Isaac River catchment include cattle grazing, coal mining and coal seam gas production. Coal mines in proximity to the project site are shown in Figure 3, and include the Grosvenor Mine to the south, the Goonyella Riverside and Broadmeadow Mine complex to the north-west, and the Burton and Broadlea Mines to the east.

The Isaac River is a regionally significant watercourse located approximately 10 km downstream of the project site (Figure 6). The Isaac River and its tributaries exhibit highly ephemeral, short duration, surface water flows that are typically restricted to the wet season (i.e. November to April). Surface water flows in the catchment exhibit naturally elevated suspended sediment loads and extensive sediment deposition.

Local Catchment and Drainage Setting

The project site is located within the catchments of Teviot Brook and Skeleton Gully (Figure 7). Both waterways are tributaries of the Isaac River. The key features of each catchment are discussed in the following sections.

Teviot Brook

The Teviot Brook catchment covers an area of approximately 266 km2 to the Isaac River. The Teviot Brook waterway commences approximately 13 km upstream of the project site (Figure 7). Teviot Brook and its floodplain traverse the proposed longwall mining areas within the project site (Figure 8). The Goonyella Rail Line crosses Teviot Brook at the southern end of the project site. Teviot Brook joins the Isaac River approximately 10 km downstream of the project site. It also traverses approved longwall mining areas at the Grosvenor Mine, downstream of the project site.

Within the project site, Teviot Brook is characterised by a well-defined channel that meanders across an alluvial floodplain. The bed of the channel is generally sandy and devoid of vegetation. Erosion resistant substrate is exposed in the bed at some locations. The banks of the main channel are generally well vegetated with a mix of small shrubs and immature trees. However, there is extensive bank erosion at a number of locations. The floodplain contains several relic channels of Teviot Brook providing evidence that the channel has been actively eroding over time. The floodplain also includes a number of high flow channels between meanders that would be active during flood events. The main channel flow capacity is estimated to be approximately equivalent to a two year Average Recurrence Interval (ARI) flood event. An assessment of waterway sediments concluded that sediment supply matches or exceeds sediment transport rates along Teviot Brook.

Skeleton Gully

The Skeleton Gully catchment covers an area of approximately 52 km2 to the Isaac River. The Skeleton Gully waterway commences approximately 3.2 km upstream of the project site and traverses the north-western corner of the project site (Figure 7). A minor tributary of Skeleton Gully traverses the central area of the northern longwall mining area within the project site (Figure 8). The tributary has a catchment area of 7 km2 to Skeleton Gully. Skeleton Gully joins the Isaac River approximately 10 km downstream of the project site. Skeleton Gully and its minor tributary also traverse approved longwall mining areas at the Moranbah North Mine, downstream of the project site.

Within the project site, Skeleton Gully has sections of small and ill-defined channel separated by sections of channel that are narrow and defined. The overbank flows drain along a relatively confined and narrow floodplain. The minor tributary consists of a well-defined v-shaped gully with a relatively steep gradient. The tributary has little to no floodplain. The capacity of the gully to transport sediment appears to exceed the sediment supply. However, the solid substrate material appears to prevent excessive bed erosion.

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

A detailed field survey was undertaken within the project site by specialist soil scientists. A comprehensive soils and land suitability assessment was undertaken, and the results are provided in the Soils and Land Suitability Report (Appendix B of the EPBC Act EAR). Seven soil types were identified within the project site.

The project site includes areas of undulating plains with texture contrast red to brown loamy sands and silty clay loams to loam and light clay soils, areas of skeletal ridgeline sandy soils and gradational clays on foot slopes, and alluvial loamy sands relating to active drainage pathways. Brown Orthic Sodosols and Leptic Rudosols comprise the majority of the soil types within the project site. Red Orthic Kandosol and a small area of Brown Kandosol are also present in the project site.

The land within and surrounding the project site comprises a combination of cleared areas and native woodland, consisting of Eucalypt and Acacia dominated vegetation. The majority of the southern portion of the project site has been cleared in the past to facilitate grazing. Many of the vegetated areas are fragmented due to clearing associated with CSG activities.

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

The project site is not considered to have any outstanding natural features or any other unique values.

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

The status of native vegetations within the ecology survey area is described in Section 7 - Terrestrial Ecology and Appendix E- Terrestrial Ecology Report of the EPBC Act EAR attached. A summary is provided below.

Field surveys identified:

- 1,944 ha of remnant vegetation, comprising mostly Eucalyptus and Corymbia woodland species and Acacia woodland to open forest species; and

- 1,233 ha of cleared and disturbed areas that do not support remnant vegetation communities. These areas have been subject to clearing in the past for cattle grazing, CSG activities undertaken as a part of the Moranbah Gas Project, and linear infrastructure corridors.

A total of 10 different remnant vegetation communities, classified as Queensland REs, were identified. The distribution of remnant vegetation within the project site is shown in Figure 4. The quality of fauna habitat throughout the project site is typically in moderate condition, with poorer quality habitat associated with areas that have been cleared for cattle grazing, CSG activities and mining exploration.

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

The topography is relatively flat with areas of elevated topography (jump-ups) in the north-eastern and south-eastern parts of the project site.

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

The project site is located within a highly modified landscape of grazing activities and CSG operations, where weeds, introduced plants and some feral predators are present. A large proportion of the project site was cleared in the past for cattle grazing, although areas of remnant vegetation remain particularly in the northern part of the project site. A gas field that forms part of the Moranbah Gas Project, one of Australia's largest operating CSG projects overlies the project site. The project site also contains built infrastructure, including a section of the Braeside water pipeline, a section of the Goonyella Rail line and above ground powerlines. Please refer to Section 2 of the EPBC Act EAR for further detail.

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

There are no Commonwealth Heritage Places or other places recognised as having heritage values relevant to the project area.

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

The Barada Barna People have been identified as the Aboriginal party for the project in accordance with the *Aboriginal Cultural Heritage Act 2003* (ACH Act). Moranbah North Management Pty Ltd executed a Cultural Heritage Management Agreement (CHMA) with the Barada Barna People on 16 October 2017 for all tenements controlled by Anglo American within their claim area, including the area covered by the project site. Aboriginal cultural heritage on the project site is managed and protected in accordance with the ACH Act and the CHMA.

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

The tenure of the project is described in detail in Section 2 - Project Description of the attached EPBC Act EAR.

The project site is located within parts of the following properties:

- Lot 18 on SP208194 (Crown Land)

- Lot 15 on SP261431 (Freehold Land)

- Lot 2 on GV69 (Crown Land)

The proponent is currently in discussions with each landholder to determine compensation agreements that will allow mining to proceed.

The project site covers Exploration Permit for Coal (EPC) 706, owned by Moranbah North Coal Joint Venture Parties (Figure 9). The project site is wholly within Petroleum Lease (PL) 191 held by CH4 Pty Ltd (a subsidiary of Arrow Energy) (Figure 10). A Co-Development Agreement is in place between the proponent and the holder of the petroleum tenement.

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

The land use within the project site includes cattle grazing and the proponent’s coal exploration activities. The project site is also located within a gas field that forms part of the Moranbah Gas Project, one of Australia's largest CSG operations. There are in excess of 100 existing gas wells on the project site. The Moranbah Gas Project is a joint venture operation between Arrow Energy and AGL.

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.

The mitigation measures relevant to the project are described in Section 4 – Rehabilitation, Section 5 – Groundwater, Section 6 – Surface Water, Section 7 – Terrestrial Ecology, and Section 8 – Aquatic Ecology of the EPBC Act EAR. A summary of the key mitigation measures is provided below.

Terrestrial Ecology

Vegetation clearing required for the project is restricted to clearing for the installation of temporary infrastructure associated with underground mining. The clearing footprint has been specifically designed to avoid or minimise the clearing of riparian vegetation as far as practicable. A minimum 100 m buffer from the centreline of Teviot Brook and its anabranch has been incorporated into the design of the clearing footprint to ensure minimal clearing within these drainage corridors.

A range of plans and procedures are in place at the Moranbah North Mine, which are designed to mitigate and avoid impacts to flora and fauna due to mining activities. These plans and procedures would also apply to the project and include:

- Vegetation clearing protocols to minimise impacts to vegetation and fauna, and to reduce loss of habitat. These protocols include a Permit to Disturb process, pre-clearing surveys and restrictions for construction within the vicinity of a watercourse;

- Procedures in relation to the rehabilitation of areas disturbed by project activities;

- Weed and pest animal management measures; and

- Erosion and sediment control measures.

Biodiversity offsets will be provided for significant, residual impacts on MNES. The project is predicted to give rise to significant, residual impacts on the Brigalow TEC, Koala and Ornamental Snake, and offsets will be provided. A Biodiversity Offset Strategy has been developed and provided in Appendix G of the EPBC Act EAR. The Biodiversity Offset Strategy provides details of the potential offset properties in the vicinity of the project site which meet the estimated offset requirements.

Aquatic Ecology

A number of the mitigation measures for terrestrial ecology are also relevant to aquatic ecology (e.g. vegetation clearing protocols, weed and pest animal management measures and erosion and sediment control measures). In addition, as per the requirements of the Moranbah North Mine EA, an existing Receiving Environment Monitoring Program (REMP) is in place for the Moranbah North Mine to identify and describe any adverse impacts of the project on surface water environmental values, quality and flows. The REMP includes monitoring points at locations downstream of the project site, and will be updated to include monitoring points within and upstream of the project site, as necessary, to address project activities.

Soil and Land Suitability

Moranbah North Mine has a Topsoil Management Plan, prepared in accordance with the requirements of the Moranbah North Mine EA and this plan will also apply to the project. The plan addresses the stripping and stockpiling of topsoil and is designed to ensure that topsoil is conserved and handled appropriately. Sediment controls will be installed in accordance with the existing Moranbah North Mine Sediment and Erosion Management Plan (SEMP).

Groundwater

Moranbah North Mine operates an extensive groundwater monitoring network and monitors groundwater levels and quality. The established groundwater monitoring network will be extended to include four additional groundwater monitoring bores located within the project site, including bores screened in the Tertiary sediments; the alluvium; the upper Permian coal measures (Fort Cooper Coal Measures); and the Tertiary Basalt. These bores will be monitored throughout the life of the project. The groundwater monitoring data will be reviewed annually and the groundwater monitoring program revised, as necessary.

Surface Water - Subsidence

An existing Subsidence Management Plan (SMP) addresses the potential subsidence impacts

of the Moranbah North Mine on surface drainage. The SMP addresses the requirements of the Moranbah North Mine EA.

The SMP describes the adaptive management program used to manage subsidence impacts. Prior to commencement of mining beneath Teviot Brook and Skeleton Gully, the existing Moranbah North SMP will be updated to incorporate a description of the pre-subsidence stream condition of the sections of Teviot Brook and Skeleton Gully within the project mining area, including a survey of cross section and longitudinal profiles. It will also include the predicted extent, magnitude and timing of subsidence of Teviot Brook and Skeleton Gully. A monitoring program will be established. The SMP will form the basis for all operational management activities related to the mitigation and management of the project's subsidence impacts on Teviot Brook, Skeleton Gully and surface drainage.

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.

Biodiversity offsets will be required for any significant, residual impacts on MNES. The project will potentially give rise to significant, residual impacts on the Brigalow TEC, Koala and Ornamental Snake. Offsets are therefore proposed for the following significant, residual impacts:

- Clearing of approximately 10.7 ha of Brigalow TEC;

- Clearing of approximately 533.4 ha of suitable Koala habitat; and

- Clearing of approximately 14.1 ha of suitable Ornamental Snake habitat.

The proponent has developed a Biodiversity Offset Strategy, which is provided in Appendix G of the EPBC Act EAR. The Biodiversity Offset Strategy provides details of the potential offset properties in the vicinity of the project site which meet the estimated offset requirements.

Offsets are actions undertaken to counterbalance significant residual impacts and are used as a last resort in instances where an action will give rise to significant impacts, even after the application of management measures. The offsets proposed for the project's predicted significant impact to Brigalow TEC, Koala habitat and Ornamental Snake habitat are consistent with the *EPBC Act Offsets Policy* and will deliver an overall conservation outcome to protect or maintain the viability of Brigalow TEC, Koala habitat and Ornamental Snake. The offsets will provide additional areas of Brigalow TEC, Koala habitat and Ornamental Snake habitat which will be managed for conservation purposes in the long term.

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

Listed threatened species and communities - Yes

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.

Not applicable.

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.

Anglo American is a leading global mining company with established environmental management systems such as the Anglo Safety Health and Environment (SHE) Way. The Anglo SHE Way contains environmental management system standards and environmental performance standards. These internal procedures are consistent with international standards and all Anglo American mines are operated in accordance with these procedures. The procedures provide a comprehensive framework of environmental policies, standards and principles that relate to the company's operation as a whole. The documents are designed to ensure the company upholds the corporate commitments to environmental management.

Anglo American is an experienced coal mine operator with five operating coal mines in Queensland (Moranbah North Mine, Grosvenor Mine, Grasstree Mine, German Creek Mine and Dawson Mine). Each of these Anglo American mines has a sound environmental record.

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.

None.

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.

Anglo American has a comprehensive framework of environmental policies, standards and principles in place that relate to the company's operations as a whole. The documents are designed to ensure the company upholds the corporate commitments to the environment and

made to stakeholders. The documents are available for download from the following web address: http://www.angloamerican.com/sustainability/approach-and-policies.

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.

EPBC Act referrals have been made for numerous mines operated by subsidiaries of Anglo American. The most relevant are the referrals for the adjacent Grosvenor Mine EPBC Act referral 2007/3785 and EPBC Act referral 2016/7796.

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
Gordon Geotechniques Pty Ltd (June 2018), Subsidence Report for the Moranbah North Extension Project. Included as Appendix A of the EPBC Act EAR.	High degree of reliability. This report is a site-specific subsidence report prepared by a subsidence specialist. A subsidence model was developed and was calibrated with data from the existing Moranbah North Mine.	None known.
GT Environmental Pty Ltd (May 2018), Soil and Land Suitability Assessment – Moranbah North Extension Project. Included as Appendix B of the EPBC Act EAR.	High degree of reliability. This report is based on field work and desktop data. Detailed soil survey sites were established at 17 locations, and observation sites were undertaken at 61 locations. The report was prepared by a soil specialist.	None known.
Klohn Crippen Berger (August 2018), Groundwater Report – Moranbah North Extension Project. Included as Appendix C of the EPBC Act EAR.	High degree of reliability. This report is based on a site groundwater investigation and the development of a 3D numerical model. The dedicated site investigation program included installing a network of groundwater monitoring bores. The report was prepared by a groundwater specialist.	None known.
WRM Water & Environment Pty Ltd (September 2018), Moranbah North Extension Project – Flood and Geomorphic Impact Assessment. Included as Appendix D of the EPBC Act EAR.	High degree of reliability. This report is based on a site visit and hydraulic modelling for the project. The report was prepared by a surface water specialist.	None known.
Ecological Survey and Management (August 2018),	High degree of reliability. This report is based on two seasons	None known.

Reference Source	Reliability	Uncertainties
Terrestrial Ecology Report – Moranbah North Extension Project. Included as Appendix E of the EPBC Act EAR.	of survey work as well as desktop searches. The report was prepared by a terrestrial ecologist specialist.	
C&R Consulting (August 2018), Aquatic Ecology Report – Moranbah North Extension Project. Included as Appendix F of the EPBC Act EAR.	High degree of reliability. This report is based on an aquatic ecology field survey conducted after significant rainfall had fallen within the region, as well as reviews of aerial photographs. A total of seven sampling sites were assessed across the project site. The report was prepared by an aquatic ecologist specialist.	None known.

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?

Not applicable. There are no feasible alternatives for the project. The project location and activities are determined by the location of the existing approved Moranbah North Mine and the location of the project coal resource. The project location and activities are therefore not able to be changed. The project has been designed so that project activities will be integrated with operations at the existing Moranbah North Mine and will extend the life of the mine by 16 years. The timing of the project cannot be delayed. Any delay in the commencement of the project will likely result in the shut down of Moranbah North Mine and the possible retrenchment of the approximately 660 Moranbah North Mine employees.

8.1 Select the relevant alternatives related to your proposed action.

8.27 Do you have another alternative?

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 Director

9.2.2 First Name

Elizabeth

9.2.3 Last Name

Hansen

9.2.4 E-mail

liz.hansen@angloamerican.com

9.2.5 Postal Address

GPO Box 1410
Brisbane QLD 4001
Australia

9.2.6 ABN/ACN

ABN

14069603587 - ANGLO COAL (MORANBAH NORTH MANAGEMENT) PTY LIMITED

9.2.7 Organisation Telephone

07 38341333

9.2.8 Organisation E-mail

liz.hansen@angloamerican.com

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, ELIZABETH HANSEN, 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:..... Date: 07-12-18

I, ELIZABETH HANSEN, 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: 07-12-18

9.3 Is the Proposed Designated Proponent an Organisation or Individual?

Organisation

9.5 Organisation

9.5.1 Job Title

Company Director

9.5.2 First Name

Elizabeth

9.5.3 Last Name

Hansen

9.5.4 E-mail

liz.hansen@angloamerican.com

9.5.5 Postal Address

GPO Box 1410
Brisbane QLD 4001
Australia

9.5.6 ABN/ACN

ABN

14069603587 - ANGLO COAL (MORANBAH NORTH MANAGEMENT) PTY LIMITED

9.5.7 Organisation Telephone

07 3834 1333

9.5.8 Organisation E-mail

liz.hansen@angloamerican.com

Proposed designated proponent - Declaration

I, ELIZABETH HANSEN, 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: EH Date: 07-12-18

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

Laura

9.8.3 Last Name

Knowles

9.8.4 E-mail

lknowles@hansenbailey.com.au

9.8.5 Postal Address

GPO Box 3285
Brisbane QLD 4001
Australia

9.8.6 ABN/ACN

ABN

17093597810 - HANSEN BAILEY PTY LTD

9.8.7 Organisation Telephone

07 3226 0900

9.8.8 Organisation E-mail

lknowles@hansenbailey.com.au

Referring Party - Declaration

I, LAURA KNOWLES, 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: ..... Date: 06-12-2018

Appendix A - Attachments

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

1. 0 - Moranbah North Main Volume Table of Contents.pdf
2. 1 - Introduction.pdf
3. 2 - Project Description Part 1.pdf
4. 2 - Project Description Part 2.pdf
5. 3 - Subsidence.pdf
6. 4 - Rehabilitation.pdf
7. 5 - Groundwater.pdf
8. 6 - Surface Water.pdf
9. 7 - Terrestrial Ecology Part 1.pdf
10. 7 - Terrestrial Ecology Part 2.pdf
11. 8 - Aquatic Ecology.pdf
12. 9 - Glossary.pdf
13. 10 - Abbreviations.pdf
14. 11 - References.pdf
15. 12 - Study Team.pdf
16. Appendix A Subsidence Part 1.pdf
17. Appendix A Subsidence Part 2.pdf
18. Appendix A Subsidence Part 3.pdf
19. Appendix A Subsidence Part 4.pdf
20. Appendix B Soils Part 1.pdf
21. Appendix B Soils Part 2.pdf
22. Appendix B Soils Part 3.pdf
23. Appendix C Groundwater Part 1.pdf
24. Appendix C Groundwater Part 2.pdf
25. Appendix C Groundwater Part 3.pdf
26. Appendix C Groundwater Part 4.pdf
27. Appendix C Groundwater Part 5.pdf
28. Appendix D Surface Water Part 1.pdf
29. Appendix D Surface Water Part 2.pdf
30. Appendix D Surface Water Part 3.pdf
31. Appendix E Terrestrial Ecology Part 1.pdf
32. Appendix E Terrestrial Ecology Part 2.pdf
33. Appendix E Terrestrial Ecology Part 3.pdf
34. Appendix E Terrestrial Ecology Part 4.pdf
35. Appendix E Terrestrial Ecology Part 5.pdf
36. Appendix E Terrestrial Ecology Part 6.pdf
37. Appendix F Aquatic Ecology Part 1.pdf
38. Appendix F Aquatic Ecology Part 2.pdf
39. Appendix F Aquatic Ecology Part 3.pdf
40. Appendix F Aquatic Ecology Part 4.pdf
41. Appendix G.pdf
42. Figure 1.pdf
43. Figure 2.pdf
44. Figure 3.pdf
45. Figure 4.pdf

46. Figure 5.pdf
47. Figure 6.pdf
48. Figure 7.pdf
49. Figure 8.pdf
50. Figure 9.pdf
51. Figure 10.pdf
52. MNE_EPBC Act EAR_Biodiversity Offset Strategy - Redacted.pdf
53. SHP1 - MLAExtents.zip