



MIDDLEMOUNT COAL MINE WESTERN EXTENSION SECTION 226 CONSIDERATION REPORT

July 2017



MIDDLEMOUNT COAL MINE
WESTERN EXTENSION
SECTION 226 CONSIDERATION REPORT



PREPARED BY
MIDDLEMOUNT COAL PTY LTD

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1 INTRODUCTION

Middlemount Coal Pty Ltd (MCPL) requests an amendment of the Middlemount Coal Mine Environmental Authority (EA) (EPML00716913) in accordance with section 224 of the Queensland (Qld) *Environmental Protection Act, 1994* (EP Act) to authorise the Western Extension (the Extension), which would include continuation of the existing open cut to the north-west resulting in a four to five year increase in mine life.

1.1 PURPOSE AND STRUCTURE OF THIS DOCUMENT

This document has been prepared to accompany an EA amendment application in consideration of section 226 of the EP Act. This document provides a description of the Extension, potential impacts on identified environmental values and further environmental assessments that would be conducted by MCPL.

It is anticipated that the Department of Environment and Heritage Protection (EHP) would use the information presented in this document to:

- Make an assessment level decision in accordance with section 228 of the EP Act.
- Decide whether to issue a “Decision to require a substituted way to give and publish the application notice”.
- Decide whether to give an Information Request in accordance with section 140 of the EP Act to request further information required to assess the EA amendment application. This consideration will include whether an Environmental Impact Statement (EIS) is required for the Extension under section 143 of the EP Act.

MCPL considers that the application is a major amendment to the existing EA that does not require an EIS given the small scale of the proposed change to the existing mine.

This document is structured as follows:

- | | |
|-----------|--|
| Section 1 | Introduction – provides a background to the Middlemount Coal Mine and an overview of the Extension. |
| Section 2 | Location and Mining Tenements – describes the location of the Middlemount Coal Mine and relevant mining tenements. |
| Section 3 | Extension Description – provides a description of the Extension and the types of activities that would be undertaken. |
| Section 4 | Environmental Values – identifies the environmental values relevant to the Extension. |
| Section 5 | Planning Considerations – describes the applicable statutory planning instruments and identifies where the requirements of section 226 of the EP Act are addressed. |
| Section 6 | Scope of Environmental Assessments – identifies key environmental risks of relevance to the Extension, provides an analysis of the likely nature and extent of potential impacts, and identifies the scope of environmental assessments to be conducted by MCPL for the Extension. |
| Section 7 | Environmentally Relevant Activities – identifies the environmentally relevant activities (ERAs) to be conducted as part of the Extension. |

Section 8 Stakeholder Engagement – outlines consultation already undertaken and proposed to be carried out for the Extension.

Section 9 References – lists documents referenced in Sections 1 to 8.

1.2 EXISTING MIDDLEMOUNT COAL MINE

MCPL owns and operates the Middlemount Coal Mine, an existing open cut coal mine located approximately 7 kilometres (km) to the south-west of the Middlemount township (Figure 1) within the Isaac Regional Local Government Area. The currently approved general arrangement of the mine is shown on Figure 2.

The Middlemount Coal Mine EA was amended on 29 June 2012 to approve the expansion of open cut mining operations within Mining Lease (ML) 70379 and ML 70417 (referred to as “Stage 2” of the Middlemount Coal Mine).

Approved operations include open cut mining of run-of-mine (ROM) coal up to 24 hours per day, seven days per week, using a conventional truck and shovel fleet at a rate of up to 5.7 million tonnes per annum (Mtpa). ROM coal is mined in a general west to east direction within ML 70379, with overburden and interburden waste material emplaced in-pit behind the advancing open cut operations, and out-of-pit within the East Dump (within ML 70417 and ML 700014) (Figure 2).

ROM coal is processed through a coal handling and preparation plant to produce approximately 4.1 Mtpa of pulverised coal injection (PCI) and coking coal for the export market. Product coal is transported by rail to the Dalrymple Bay Coal Terminal and Abbot Point Port. The existing Middlemount Coal Mine will operate until approximately 2031.

1.3 EXTENSION OVERVIEW

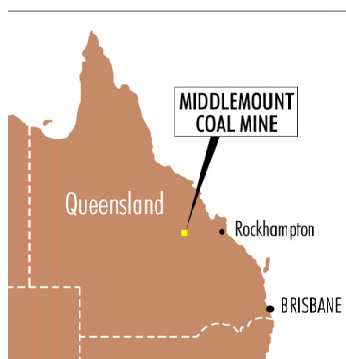
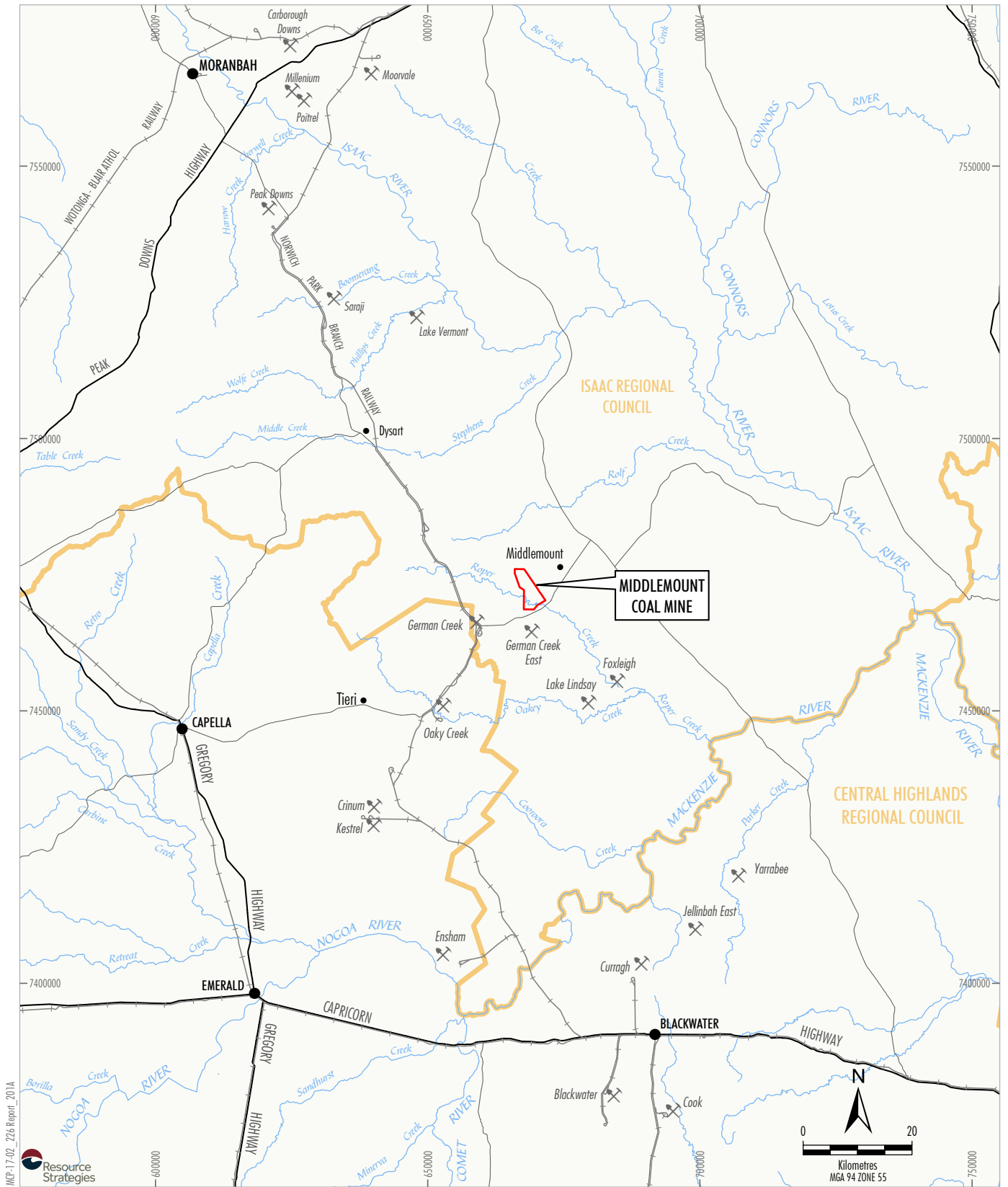
In May 2017, ML 70379 was extended to the north-west of currently approved operations at the Middlemount Coal Mine. MCPL is applying to obtain surface rights for this area under the *Qld Mineral Resources Act, 1989* (MR Act), which would be required for the extension of open cut mining operations. MCPL is also seeking a Mining Lease Application (MLA) for infrastructure under the MR Act to the east of ML 70417 to facilitate the extension of the East Dump.

The main elements of the Extension would include (Figure 3):

- continuation of the existing open cut;
- in-pit and out-of-pit waste rock emplacement;
- realignment of the Thirteen Mile Gully Diversion; and
- extension to the East Dump.

The target coal resource associated with the open cut extension has been estimated at approximately 24.5 million tonnes (Mt) (comprising approximately 21 Mt of recoverable coal), and would increase the mine life of the Middlemount Coal Mine by four to five years (i.e. operations would continue until approximately 2035 or 2036).

A detailed description of the Extension is provided in Section 3.



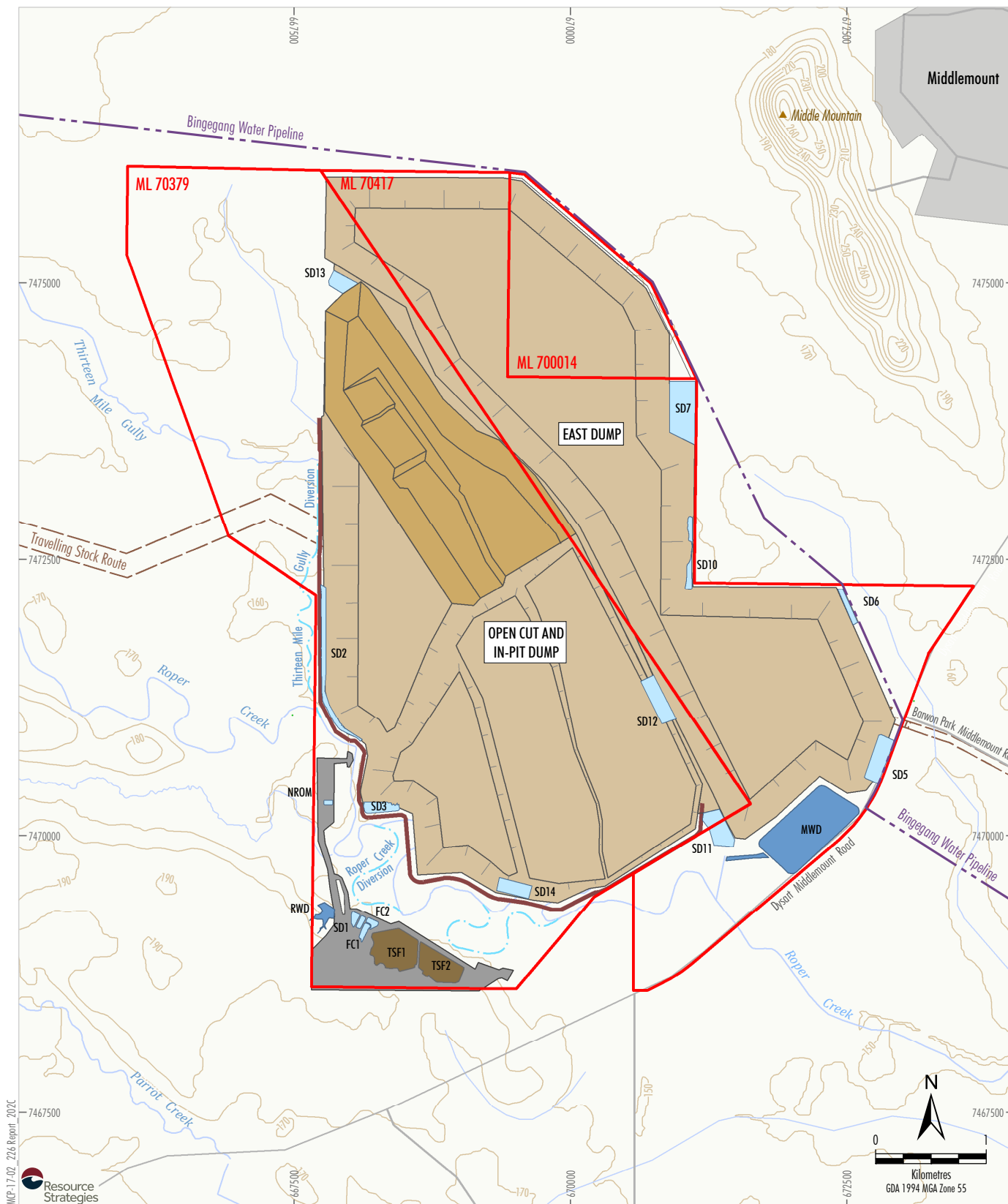
- LEGEND**
- Mining Lease Boundary
 - Local Government Area Boundary
 - ⛏ Operating Coal Mine

middlemount coal CITY LTD

WESTERN EXTENSION PROJECT

Regional Location

Figure 1

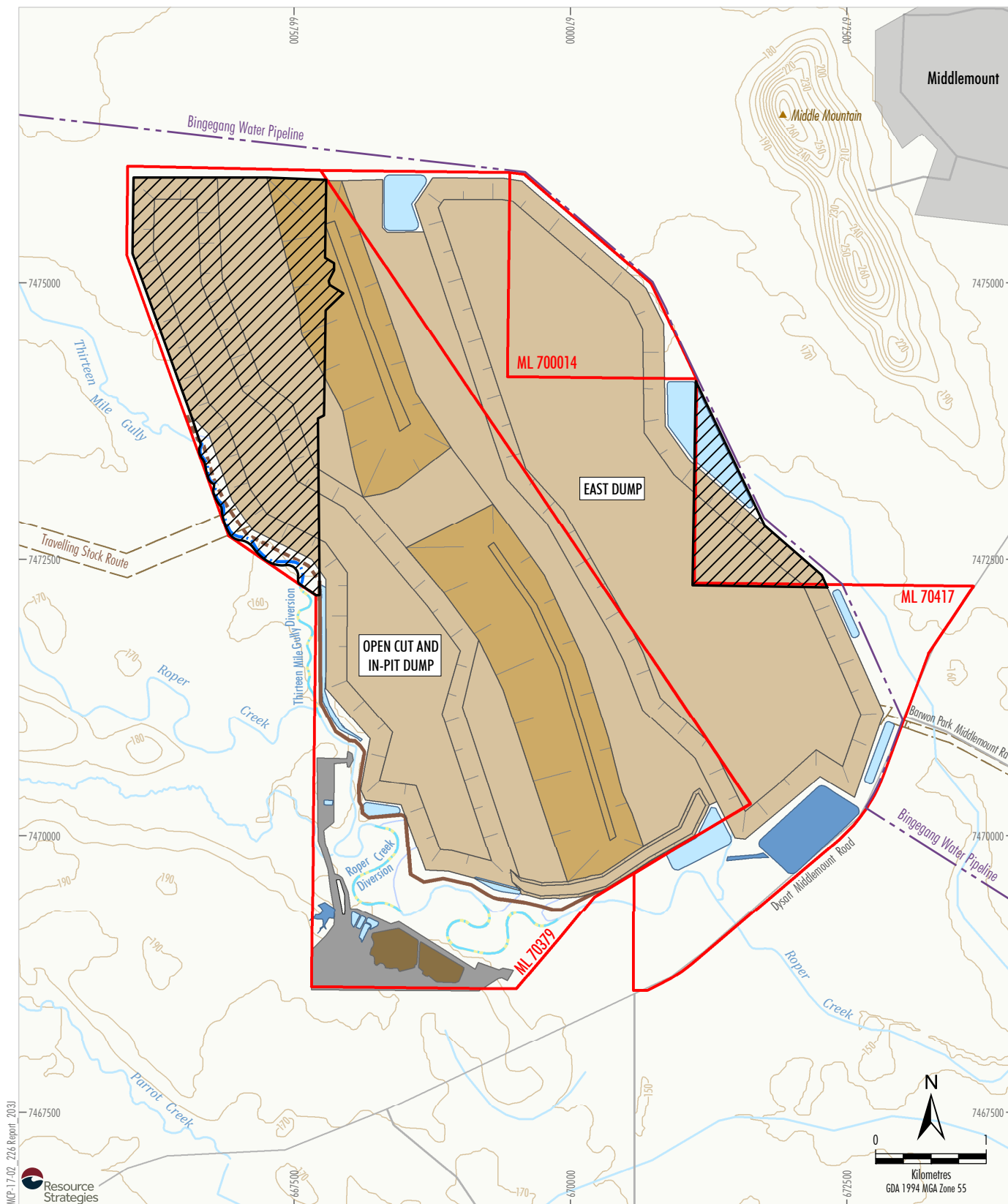


Source: Environmental Authority (EPML00716913) MCPL

middlemount
coal
city
ltd

WESTERN EXTENSION PROJECT
Currently Approved General Arrangement

Figure 2



WESTERN EXTENSION PROJECT
Proposed General Arrangement

Figure 3

1.4 PROPONENT

MCPL is the proponent for the Extension. MCPL is an incorporated joint venture between Peabody Energy Australia Pty Ltd and Yancoal Australia Ltd.

The registered address for the proponent is:

Middlemount Coal Pty Ltd
Level 1, 100 Melbourne Street
SOUTH BRISBANE QLD 4001

2 LOCATION AND MINING TENEMENTS

The Extension is located immediately adjacent to the Middlemount Coal Mine, on freehold land owned by MCPL. The majority of land within the Extension footprint is currently used for low intensity cattle grazing under an agistment agreement. The Extension is located on the followings lots:

- Lot 2, SP248577.
- Lot D, CNS136.
- Lot 5, SP210524.
- Lot 3, SP282156.

The Middlemount township is located approximately 2.5 km to the north-east of the Extension at its nearest point (Figure 3). Middlemount was established as a mining town in the 1980s and is primarily supported by the surrounding mining operations to this day. The Extension and the town are separated by Middle Mountain which rises approximately 100 metres (m) above the surrounding landscape (to a height of approximately 260 m Australian Height Datum [AHD]).

The Extension would be located in ML 70379, ML 70417 (Figure 3) and in a new Mining Lease Application Area for the East Dump. MCPL is in the process of applying for surface rights across the recently acquired portion of ML 70379 and a Mining Lease for infrastructure to facilitate the extension of the East Dump.

3 EXTENSION DESCRIPTION

3.1 GEOLOGY AND COAL RESOURCE

The Extension area lies within the structural unit of the Bowen Basin. The Rangal Coal Measures are the dominant geological formation in the Extension area and form a relatively narrow (3 km wide) structure within the Bowen Basin, striking approximately north-northwest to south-southeast. The Rangal Coal Measures sub-crop beneath Tertiary deposits across the majority of the Extension area and contain the Middlemount and Pisces Coal Seams (the target measures for the Extension). These coal measures dip to the east at between 3 and 7 degrees, where they are truncated by the Jellinbah Fault, which lies just inside the north-eastern boundary of ML 70379. The Rangal Coal Measures extend to the north and south beyond the Extension area.

The target coal resource for the Extension has been estimated at approximately 24.5 Mt, comprising approximately 21 Mt of recoverable coal.

3.2 MINING OPERATIONS

A proposed conceptual general arrangement is shown on Figure 3. The approximate extent of surface disturbance associated with the Extension covers in the order of 570 hectares (ha), subject to further detailed mine planning.

3.2.1 Open Cut Mining

Mining at the Middlemount Coal Mine is by conventional open cut strip mining methods, and progresses from west to east (with mining of the Middlemount Seam preceding mining of the underlying Pisces Seam).

The Extension would not result in a change to the open cut mining methods, targeted coal measures or the currently approved maximum annual ROM coal extraction rate. The Extension would not result in an increase in the maximum production rate, maximum mining fleet or workforce. The existing processing plant and mine infrastructure would be used for the Extension.

Vegetation Clearing and Topsoil Salvage

The Extension would not result in a change to the vegetation clearing and topsoil salvage methods. Vegetation would be progressively cleared ahead of the active open cut and waste rock emplacement areas. Topsoil would be stripped prior to excavation of underlying overburden or emplacement of waste rock. Where the topsoil cannot be directly used for progressive rehabilitation it would be stockpiled for use at a later date.

Overburden and Interburden Removal and Handling

The Extension would not result in a change to the method of overburden and interburden removal and handling methods. There would be no increase in the approved maximum mining fleet. The overburden and interburden would be removed and emplaced in both out-of-pit and in-pit waste rock emplacements (including emplacement in new areas proposed as part of the Extension).

The extension of the East Dump would improve mining efficiency and rehabilitation outcomes by alleviating the partial “saw tooth” layout of the currently approved dump design.

Consistent with existing operations, testing of overburden would be conducted to confirm a low to negligible risk of acid mine drainage and identify material with a high susceptibility for dispersion and slaking. Potentially acid forming material would not be used as capping material and would continue to be buried within the overburden dump with material that has a positive acid neutralising capacity, and less dispersive material would be used as capping material. Coarse reject material would only be placed within in-pit waste rock dumps.

Coal Handling and Transport

The Extension would not result in a change to the method of coal handling and transport. As is currently approved, ROM coal would be excavated then transported by truck for stockpiling or direct loading to the crusher before being conveyed to the existing coal handling and preparation plant (CHPP) for processing. Product coal (both coking and PCI coal) would be stockpiled and reclaimed into a train loading bin for rail transport to the Dalrymple Bay Coal Terminal or Abbot Point Port for export.

3.3 WATER SUPPLY AND MANAGEMENT

Consistent with the site's existing water management strategy, runoff from undisturbed areas would be diverted around mining activities (where possible), while runoff from disturbed catchments would be captured in the mine water management system and stored for release in accordance with the EA conditions, used within the CHPP, or used for haul road and stockpile dust suppression.

Conceptual water management infrastructure is shown on Figure 3. The water diversions and sediment dams associated with the Extension would be subject of the surface water assessment (Section 6.2) and designed as part of further detailed mine planning.

Drainage Feature Diversions

The Thirteen Mile Gully Diversion is currently predominantly off lease (outside of ML 70379) and was approved under the *Sustainable Planning Act, 2009* in July 2013 (Figure 2). The existing Thirteen Mile Gully Diversion is required to be realigned in order to access additional coal resource and provide additional surface footprint for out-of-pit waste rock emplacement. The northern portion of the Thirteen Mile Gully Diversion would be realigned as part of the Extension (within ML 70379), however the southern portion of the Thirteen Mile Gully Diversion would remain unchanged (Figure 3). A conceptual design for the re-aligned Thirteen Mile Gully Diversion would be prepared for the Extension and included in the environmental assessment of the Extension as described in Section 6.2.

Flood Levees

The existing flood levee would be realigned and extended as part of the Extension. The flood levee would be designed and constructed in accordance with accepted engineering standards, and hazard assessed by a Registered Professional Engineer of Queensland (RPEQ) against the EHP guideline for assessing regulated structures. A sufficient flood protection capacity would be provided as per engineering design flood protection from the Thirteen Mile Gully Diversion.

3.4 REHABILITATION AND POST-MINING LAND USE

The temporary change to land during mining operations would be managed through the rehabilitation of the majority of the site to a land use generally consistent with the pre-mining land use. Riparian zones along the proposed creek diversions would be established to provide fauna habitat and stabilise the diversion corridors. Rehabilitation would be conducted progressively to achieve the final land use objectives.

The nature of open cut mining results in the formation of voids when the open cut resource is fully extracted. The Extension mining schedule would result in changes to the existing final void in the northern area of the open cut extent, and creation of an additional final void in the southern area of the open cut extent, upon completion of mining operations. This proposed final void arrangement is generally in accordance with the MCPL Residual Void Study (December 2014) submitted to DEHP in January 2015.

It is proposed that the final voids would be left in a stable condition upon completion of mining activities. The cost to rehandle spoil material from the out of pit emplacements to the final voids would be prohibitive and delay rehabilitation, and as such, it is not proposed to do this as part of the Extension.

3.5 WASTE MANAGEMENT

General waste minimisation principles would be applied at the Extension in accordance with the Qld *Waste Reduction and Recycling Act, 2011* waste management hierarchy to minimise the quantity of wastes that require off-site disposal. In accordance with the Qld *Environmental Protection (Waste Management) Regulation, 2000*, MCPL would maintain a waste inventory and monitor all trackable wastes.

3.6 JUSTIFICATION FOR THE EXTENSION

In May 2017, ML 70379 was extended to the north-west of currently approved mining operations at the Middlemount Coal Mine, providing an opportunity for MCPL to access additional underground coal resources within the same coal seams targeted by approved mining operations. The Extension provides for the continuation of open pit mining operations for a period of approximately four to five years to recover an additional 21 Mt of coal from the Middlemount and Pisces seams.

The Extension would facilitate the continuity of employment for the existing Middlemount Coal Mine workforce (i.e. the Modification would not result in any additional demand for employees/contractors). The Extension would continue to provide job security for local mine employees and contractors, and stimulate demand in the local and regional economy. The Extension would result in additional contributions to regional and Qld output, business turnover and household income for an additional four to five years.

The Extension would include the implementation of mitigation and management measures to minimise potential impacts on the environment.

4 ENVIRONMENTAL VALUES

Sections 4.1 to 4.5 describe the environmental values relevant to the Extension.

4.1 LAND

As described in Section 2, the Extension is located on freehold land owned by MCPL which is currently used for low intensity cattle grazing under an agistment agreement. The natural topography is relatively flat, with an elevation typically ranging from approximately 160 to 170 m AHD.

The land within the Extension area is considered to be mostly agricultural land. No Strategic Cropping Land is mapped within, or in the vicinity of the Extension (Department of Natural Resources and Mines, 2016).

The Barwon Park - Middlemount Road traverses the Extension area. This is an unformed road that is mapped as a travelling stock reserve (Figure 2). MCPL has previously reached compensation agreements with the Isaac Regional Council to close part of the stock route within Mining Leases associated with the Extension. MCPL would seek to reach a similar compensation agreement with the Isaac Regional Council to address the part of the stock route that traverses the Extension area.

The Bingeang Pipeline, a water supply pipeline between the Bingeang Weir and the town of Dysart and nearby mining operations, has been realigned around the Middlemount Coal Mine and is located adjacent to the proposed extension to the East Dump (Figure 3).

Lot 3, SP282156 and Lot 2, SP248577, which partially overlap the Extension area, are listed on the EHP's Environmental Management Register as having livestock dips or spray races. Plans of these lots provided by the EHP indicate that the closest record (a dip site) is located approximately 2 km west of the Extension area.

The environmental values relevant to land were identified using the EHP Guideline *Application Requirements for Activities with Impacts to Land* (EHP, 2017a), and include:

- The physical description of the land.
- Soil health and function, and the ability for soil to sustain growth of native vegetation, crops and other flora (i.e. soil suitability).
- The natural interaction of the relevant land with other ecosystems including groundwater systems and surface waters.
- The cultural and spiritual values of the land.
- Qualities of the land which are conducive to human health and wellbeing.
- The qualities of the land which are conducive to protecting the aesthetics of the environment, including the appearance of buildings, structures and other property.

The scope of the Extension environmental assessments relevant to the environmental values for land is described in Section 6.6.

4.2 WATER

The Extension is located within the Roper Creek catchment, within the Mackenzie River Sub-basin of the greater Fitzroy Basin. The Extension area lies within the plan area of the *Water Plan (Fitzroy Basin) 2011* (within the Upper Mackenzie Sub-catchment).

Thirteen Mile Gully is an ephemeral second order stream (under the Strahler ordering system) that forms a tributary of Roper Creek (WRM, 2010). In its natural state, Thirteen Mile Gully drained in a south-easterly direction across ML 70379 and ML 70417 and discharged into Roper Creek within ML 70417 about 350 m upstream of Dysart Middlemount Road. Thirteen Mile Gully was diverted along the eastern boundary of ML 70379 in late 2014.

Frc environmental conducted a field survey of Thirteen Mile Gully in 2010 prior to construction of the diversion. The upstream section of Thirteen Mile Gully (including the portion to be diverted as part of the Extension) was identified as having a broad overland flow path with no defined bed and banks, with shallow and low flow at the time of survey. Instream habitat included woody debris and tree roots, trailing bank vegetation and undercut banks (frc environmental, 2010).

An unnamed watercourse which forms a tributary of Thirteen Mile Gully is also located in the Extension Area (within ML 70379) and was also diverted as part of the Thirteen Mile Gully Diversion (Figure 2).

Water quality of Roper Creek and the downstream catchment is characterised by high and variable turbidity, moderate and variable electrical conductivity and low dissolved oxygen concentrations at times. Nutrient levels are generally low with the exception of total nitrogen which exceeded the trigger value at most sites (WRM, 2016).

The Extension area lies within the Highlands Groundwater Management Area (GMA) as defined in the *Water Plan (Fitzroy Basin) 2011*. Groundwater aquifers in the vicinity of the Extension are present in three general geological units, namely the Alluvium (generally <5 m thick), the Tertiary unit and the coal measures. Shallow groundwater flow and recharge is expected to be limited by significant clay deposits within the Alluvium and Tertiary units, however sand layers are likely to contain local aquifers, with groundwater considered to be brackish to saline. Similarly, groundwater within the Permian strata is brackish to saline (MCPL, 2011).

Groundwater use in the vicinity of the Extension is limited, with the closest landholder bores located to the north of Middlemount township. Groundwater is considered to be of limited use, with low yields and relatively high salinity reported in nearby registered groundwater bores. Similarly, a census of nearby landholder bores, the closest being approximately 4 km from the open cut mining extent, generally found that groundwater is used on rare occasions for stock watering. The groundwater level in registered and census bores was found to be approximately 15 to 40 m below ground level (MCPL, 2011).

The *Environmental Protection (Water) Policy, 2009* (EPP [Water]) lists the environmental values and the water quality objectives to enhance or protect the environmental values. As described in the EPP (Water), environmental values of a water resource are particular values or uses of the water that are conducive to a healthy ecosystem or for public amenity, safety or health and that require protection from the effects of habitat alteration, waste releases, contaminated runoff and changed flows.

Schedule 1 of the EPP (Water) describes that the environmental values for the Mackenzie River sub-basin are presented in the *Mackenzie River Sub-basin Environmental Values and Water Quality Objectives* (EHP, 2011). The following environmental values for surface water relevant to the Extension have been identified:

- The intrinsic value of aquatic ecosystems, habitat and wildlife.
- The suitability of water supply for production of healthy livestock.
- Visual amenity of waterways.
- Cultural and spiritual values.

The Extension lies within the “Mackenzie Groundwaters” zone. The following environmental values for groundwater relevant to the Extension have been identified:

- Aquatic ecosystems.
- Farm supply/use.
- Stock water.
- Cultural and spiritual values.

As no irrigation, recreation or industrial activities rely on groundwater in the vicinity of the Extension, these values are not considered relevant. Similarly, there is no reliance on groundwater in the vicinity of the Extension for drinking water, and as such, this is not considered a relevant environmental value.

The scope of the environmental assessments relevant to the environmental values for water is described in Section 6.2.

4.3 BIODIVERSITY

The Extension is located within the Brigalow Belt North Bioregion, in the Isaac-Comet Downs subregion. The Brigalow Belt North Bioregion covers an area of approximately 59,824 square kilometres (Thackway & Cresswell, 1995) and has been largely cleared for dryland farming, grazing and mining, with remaining vegetation being highly fragmented and primarily limited to linear strips and isolated remnants.

The *Remnant Regional Ecosystem Map* (Department of Science, Information Technology and Innovation, 2016) shows Endangered Regional Ecosystem (RE) 11.3.1 (Brigalow Woodland) within the Extension Area. Endangered REs are 'Category B' environmentally sensitive areas relevant to EIS triggers (Section 5.2). Naturecall (2017) ground-truthed the extent of RE 11.3.1 in 2017 and the ground-truthed mapping is shown on Figure 4. Brigalow Woodland is further discussed in Section 6.3.

MCPL has existing State and Commonwealth approved biodiversity offset areas which were established for various components of the Middlemount Coal Mine (Figure 5). MCPL manage a total of approximately 3,944 ha of land dedicated to conservation, of which 3,412 ha is under an existing Voluntary Declaration (Declared Area Map 2013/003919) and 532 ha is proposed to be secured under a new Voluntary Declaration. In May 2017, ML 70379 was extended over a small portion of the Middlemount Coal (Stage 2) Project (EPBC 2010/5394) (Declared Area Map 2013/003919) and a small portion of the Middlemount Coal Mine Rail Loop and Spur (Declared Area Map 2013/003919). The existing offset areas are further discussed in Section 6.3.

The environmental values relevant to biodiversity were identified using the DEHP Guideline *Application Requirements for Activities with Impacts to Land* (DEHP, 2017a), and include:

- Bioregions and regional ecosystems including their health and biodiversity.
- Flora and fauna.
- Category B environmentally sensitive areas.
- Areas with high ecological significance values.

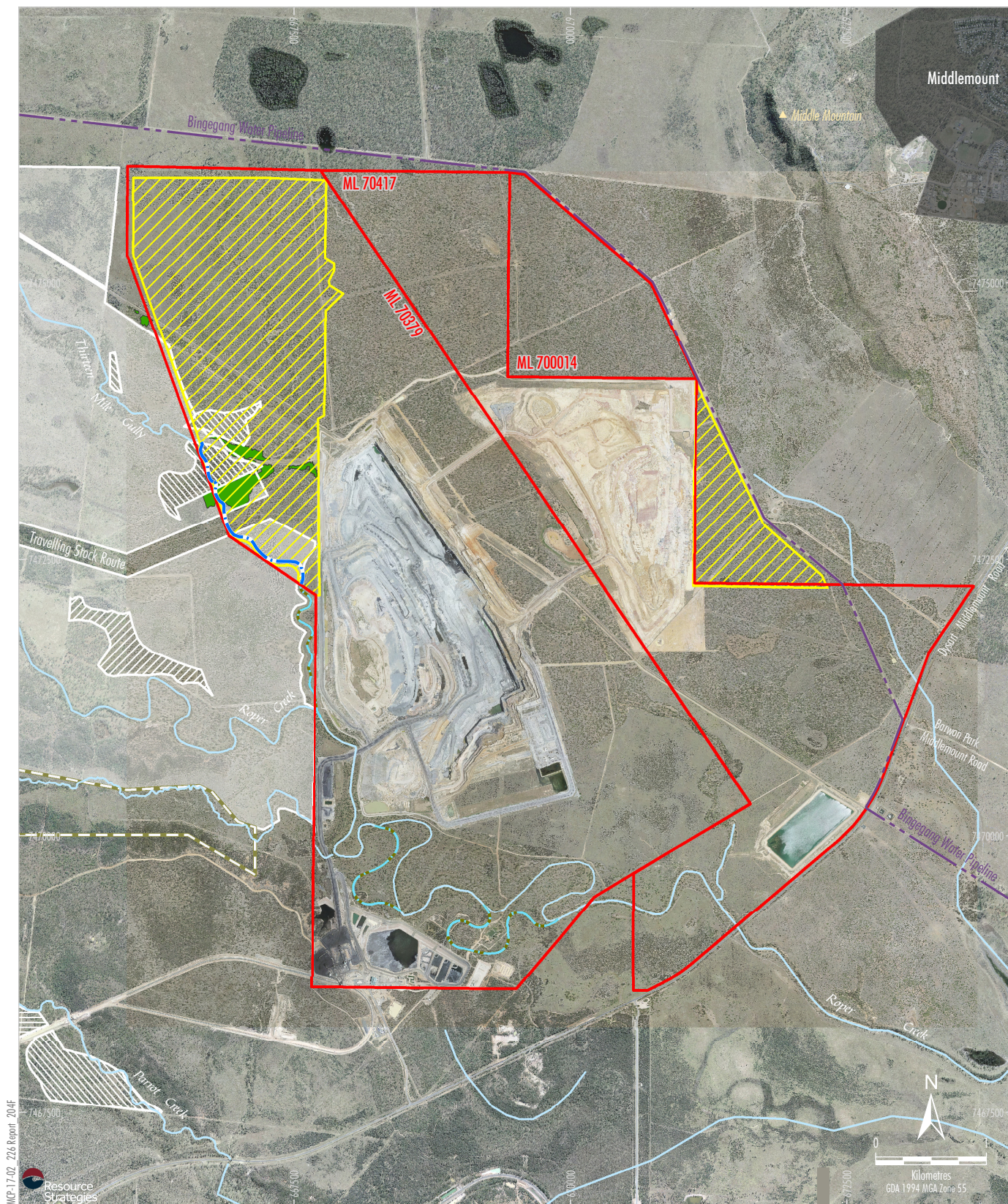
The scope of the environmental assessments relevant to the environmental values for biodiversity is described in Section 6.3.

4.4 CLIMATE – AIR AND NOISE

The Extension area experiences a sub-humid to semi-arid climate, with annual average rainfall in the order of 600 millimetres (mm) per year and significantly higher evaporation levels, in the order of 2,000 mm to 2,400 mm per year (MCPL, 2011). Easterly to north-easterly winds prevail during spring and summer, with calmer winds from the south to south-east being dominant during winter and autumn.

Meteorological and air quality monitoring stations have been established at the Middlemount Coal Mine in accordance with the EA. Two continuous, real time meteorological monitoring stations monitor wind speed, wind direction, temperature, rainfall and relative humidity. A portable, real time PM₁₀ air quality monitor is used to monitor air quality impacts.

No rural residences are located in the vicinity of the Extension, with the nearest sensitive places being within the Middlemount township, approximately 2.5 km to the north-east of the Extension area.



LEGEND

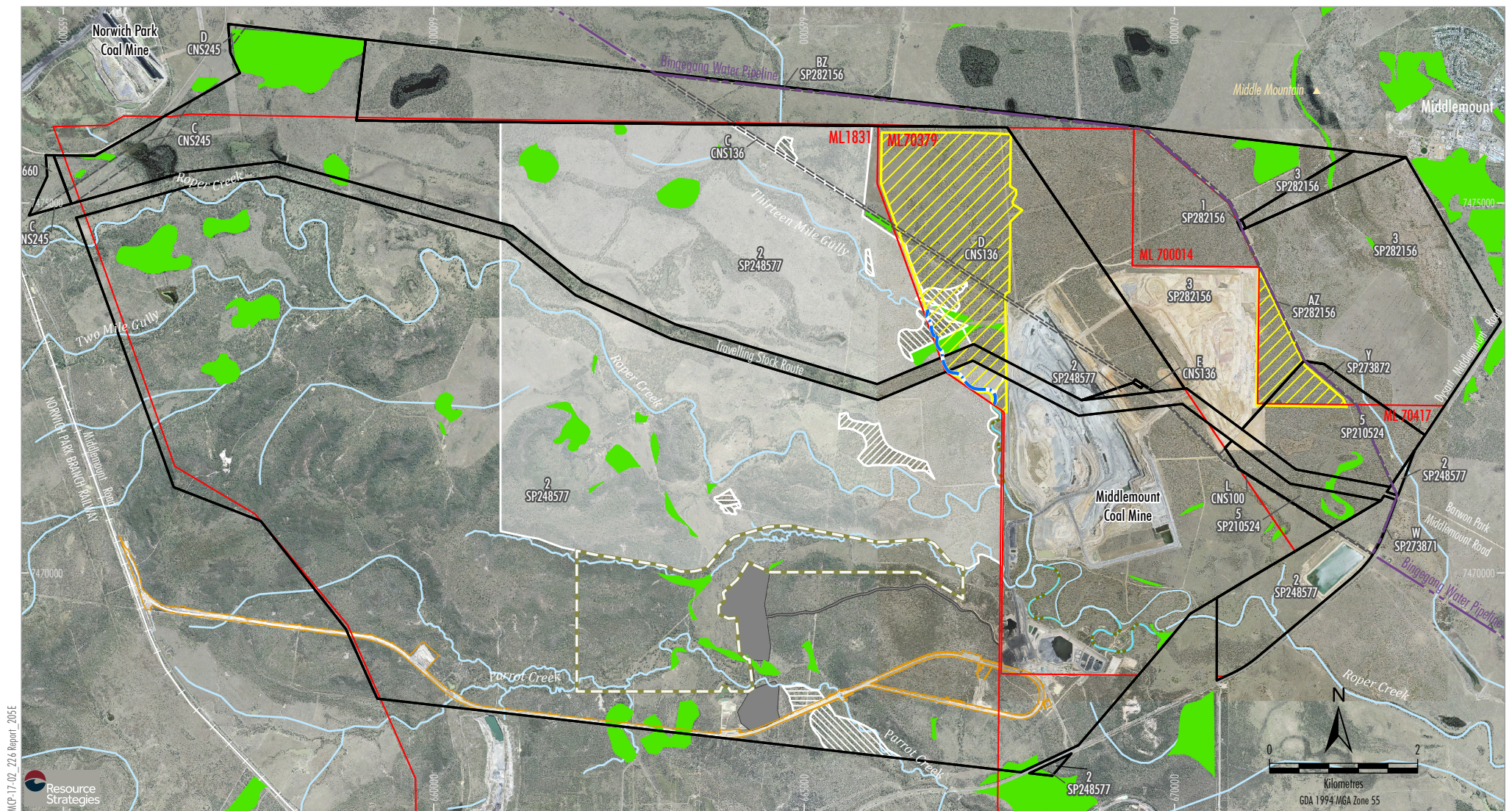
- Mining Lease Boundary (ML)
- Existing Offset Area - Stage 2 Project (EPBC 2010/5394) (Declared Area Map 2013/003919)
- Existing Offset Area - Thirteen Mile Gully Project (Declared Area Map 2013/003919)
- Existing Offset Area - Rail (Declared Area Map 2013/003919)
- Existing Offset Area - Parrot Quarry (Declared Area Map 2013/003919)
- Existing Offset Area - North-eastern Extension (EPBC 2016/7717)
- Category B Environmentally Sensitive Areas
- Ground-truthed Endangered Regional Ecosystems (Brigalow RE11.3.1 and RE11.4.9) (Nature Call, May 2017)
- Currently Approved Watercourse Diversion
- Western Extension Project
- Proposed Additional Surface Disturbance
- Proposed Watercourse Diversion

Source: MCPL (2017); Department of Natural Resources and Mines (2017)
Orthophoto: MCPL (Dec 2016, 2014)



WESTERN EXTENSION PROJECT
Category B Environmentally Sensitive Areas

Figure 4



MP-17-02 226 Report 205E

- LEGEND**
- Mining Lease Boundary (ML)
 - Middlemount Coal Owned Land
 - Parrot Quarry
 - Middlemount Rail Spur and Loop
 - Existing Offset Area - Stage 2 Project (EPBC 2010/5394) (Declared Area Map 2013/003919)
 - Existing Offset Area - Thirteen Mile Gully Project (Declared Area Map 2013/003919)
 - Existing Offset Area - Rail (Declared Area Map 2013/003919)
 - Existing Offset Area - Parrot Quarry (Declared Area Map 2013/003919)
 - Existing Offset Area - North-eastern Extension (EPBC 2016/7717)

- Brigalow Woodland
- Currently Approved Watercourse Diversion Western Extension Project
- Proposed Additional Surface Disturbance
- Proposed Watercourse Diversion

Source: MCPL (2014); Department of Natural Resources and Mines (2016);
 © State of Queensland (Department of Science, Information Technology
 and Innovation, 2017); Nature Call (2017)
 Orthophoto: MCPL (Dec 2016, 2014)



WESTERN EXTENSION PROJECT

Regional Ecosystems
 Representing Brigalow Woodland

Figure 5

The *Environmental Protection (Air) Policy, 2008* (EPP [Air]) lists the environmental values and the air quality objectives to enhance or protect the environmental values. As described in the EPP (Air), environmental values for air have been developed to protect the health and biodiversity of ecosystems, human health and wellbeing, aesthetics and agricultural use.

The following environmental values for air relevant to the Extension have been identified:

- The qualities of the air environment that are conducive to protecting the health and biodiversity of ecosystems.
- The qualities of the air environment that are conducive to human health and wellbeing.
- The qualities of the air environment that are conducive to protecting the aesthetics of the environment, including the appearance of buildings, structures and other property.
- The qualities of the air environment that are conducive to protecting agricultural use of the environment.

The *Environmental Protection (Noise) Policy, 2008* (EPP [Noise]) lists the environmental values and the acoustic quality objectives to enhance or protect the environmental values. As described in the EPP (Noise), environmental values of the acoustic environment have been developed to protect the health and biodiversity of ecosystems, human health and wellbeing and community amenity.

The following environmental values for the acoustic environment relevant to the Extension have been identified:

- The qualities of the acoustic environment that are conducive to human health and wellbeing, including by ensuring a suitable acoustic environment for individuals to sleep, study or learn, be involved in recreation, including relaxation and conversation.
- The qualities of the acoustic environment that are conducive to protecting the amenity of the community.
- The qualities of the acoustic environment that are conducive to protecting the health and biodiversity of ecosystems.

The scope of the environmental assessments relevant to the environmental values for air and the acoustic environment are described in Sections 6.4 and 6.5 respectively.

4.5 CULTURAL HERITAGE

MCPL has approved Cultural Heritage Management Plans (CHMPs) in place with the Barada Barna People and the Barada Barna, Kabalbara & Yetimarla People #4 (BBKY #4) native title claimants. Management of Aboriginal cultural heritage would continue to be conducted in accordance with the CHMPs. The Extension is only relevant to the CHMP with the Barada Barna People, which would be reviewed and amended where required to include the Extension.

5 PLANNING CONSIDERATIONS

As described in Section 1, this document has been prepared to support an EA amendment application in accordance with section 226 of the EP Act.

5.1 ENVIRONMENTAL PROTECTION ACT, 1994

Approval for the Extension is proposed via the EA amendment provisions under Chapter 5, Part 7 of the EP Act. This document has been prepared to provide EHP with a description of the Extension, to identify the environmental values relevant to the Extension, and to provide a summary of the potential impacts and mitigation measures for the Extension.

It is anticipated that EHP would use the information presented in this document to:

- Make an assessment level decision in accordance with section 228 of the EP Act.
- Decide whether to issue a “Decision to require a substituted way to give and publish the application notice”.
- Decide whether to give an Information Request in accordance with section 140 of the EP Act to request further information required to assess the EA amendment application. This consideration will include whether an EIS is required for the Extension under section 143 of the EP Act.

Section 226 of the EP Act states the requirements for EA amendment applications generally. These requirements, and how they are considered as part of the EA amendment application process are provided in Table 1.

Table 1
EP Act Section 226 – Requirements for Amendment Application Generally

Section 226 Requirement	Consideration
<i>An amendment application must</i>	
<i>(a) be made to the administering authority; and</i>	This report would accompany an amendment application submitted to the administering authority (EHP).
<i>(b) be made in the approved form; and</i>	The amendment application would be made in the approved form.
<i>(c) be accompanied by the fee prescribed under a regulation; and</i>	The prescribed fee would accompany the application.
<i>(d) describe the proposed amendment; and</i>	Sections 1 and 3 describe the Extension.
<i>(e) describe the land that would be affected by the proposed amendment; and</i>	The land affected by the Extension is summarised in Section 4.1.
<i>(f) describe any development permits in effect under the Planning Act for the carrying out of the relevant activity for the authority; and</i>	Not applicable.
<i>(g) state whether each relevant activity would, if the amendment is made, comply with any eligibility criteria for the activity; and</i>	The Extension would operate under an amended version of the existing Middlemount Coal Mine EA (site-specific EA).
<i>(h) if the application states that each relevant activity would, if the amendment is made, comply with any eligibility criteria for the activity - include a declaration that the statement is correct; and</i>	The Extension would operate under an amended version of the existing Middlemount Coal Mine EA (site-specific EA).
<i>(i) state whether the application seeks to change a condition identified in the authority as a standard condition; and</i>	There are no applicable ‘standard conditions’ for the Middlemount Coal Mine EA, which is a site-specific EA. The application does not seek to change a standard condition in the EA.

Table 1 (continued)
EP Act Section 226 – Requirements for Amendment Application Generally

Section 226 Requirement	Consideration
(j) <i>if the application relates to a new relevant resource tenure for the authority that is an exploration permit or GHG permit - state whether the applicant seeks an amended environmental authority that is subject to the standard conditions for the relevant activity or authority, to the extent it relates to the permit; and</i>	The application does not relate to a new exploration permit or greenhouse gas (GHG) permit.
(k) <i>include an assessment of the likely impact of the proposed amendment on the environmental values, including -</i> (i) <i>a description of the environmental values likely to be affected by the proposed amendment; and</i>	Environmental values relevant to the Extension are described in Section 4, and potential impacts to the environmental values are summarised in Section 6. Specialist studies conducted as part of the environmental assessments would further consider the potential impacts to the identified environmental values and compliance with model mining conditions.
(ii) <i>details of any emissions or releases likely to be generated by the proposed amendment; and</i>	Potential emissions and releases are identified in Sections 6.2, 6.4 and 6.5. Specialist studies conducted as part of the environmental assessments would further consider the potential impacts to the identified environmental values and compliance with model mining conditions.
(iii) <i>a description of the risk and likely magnitude of impacts on the environmental values; and</i>	A preliminary risk assessment has been conducted and is presented in Section 6.1 and would be reviewed as part of the environmental assessments.
(iv) <i>details of the management practices proposed to be implemented to prevent or minimise adverse impacts; and</i>	Potential management measures are summarised in Section 6. Specialist studies conducted as part of the environmental assessments would identify specific management measures to prevent or minimise adverse impacts associated with the Extension and verify compliance with model mining conditions.
(v) <i>details of how the land the subject of the application would be rehabilitated after each relevant activity ceases; and</i>	A summary of rehabilitation measures is presented in Section 3.4. MCPL would update the Plan of Operations and Rehabilitation Management Plan to describe rehabilitation of the Extension prior to commencement of Extension operations.
(l) <i>include a description of the proposed measures for minimising and managing waste generated by any amendments to the relevant activity; and</i>	A summary of waste management is provided in Section 3.5.
(m) <i>include details of any site management plan or environmental protection order that relates to the land the subject of the application; and</i>	Not applicable.
(n) <i>include any other document relating to the application prescribed under a regulation.</i>	Not applicable.

The information presented in this document would enable EHP to make an assessment level decision in accordance with section 228 of the EP Act. Consideration of the Extension against the minor amendment requirements of section 223 of the EP Act is presented in Table 2. MCPL considers that the application is a major amendment to the existing EA that does not require an EIS given the small scale of the proposed change to the existing mine.

Table 2
EP Act Section 223 – Minor Amendment Criteria

Minor Amendment Criteria	Consideration
Minor amendment , for an environmental authority, means an amendment that is – (a) a condition conversion; or	Not applicable.
(b) a minor amendment (threshold).	See below.
Minor amendment (threshold) , for an environmental authority, means an amendment that the administering authority is satisfied – (a) is not a change to a condition identified in the authority as a standard condition, other than – (i) a change that is a condition conversion; or (ii) a change that is not a condition conversion but that replaces a standard condition of the authority with a standard condition for the environmentally relevant activity to which the authority relates; and	Not applicable for the reason identified in Table 1. No changes to standard conditions are required.
(b) does not significantly increase the level of environmental harm caused by the relevant activity; and	The Extension's open cut extensions and associated out-of-pit spoil emplacements would increase the level of surface disturbance at the Middlemount Coal Mine.
(c) does not change any rehabilitation objectives stated in the authority in a way likely to result in significantly different impacts on environmental values than the impacts previously permitted under the authority; and	The proposed amendment does not change any rehabilitation objectives in a way likely to result in significantly different impacts on environmental values than the impacts previously permitted under the EA.
(d) does not significantly increase the scale or intensity of the relevant activity; and	The Extension would not involve a change to the annual ROM coal extraction rate.
(e) does not relate to a new relevant resource tenure for the authority ...; and	The Extension would require a new Mining Lease.
(f) involves an addition to the surface area for the relevant activity of no more than 10% of the existing area; and	The Extension would involve an addition to the surface area for the relevant activity of more than 10% of the existing area.
(g) for an environmental authority for a petroleum activity ...; and	Not applicable. The EA is not for a petroleum activity.
(h) if the amendment relates to a new relevant resource tenure for the authority that is an exploration permit or GHG permit...	Not applicable. The application does not relate to a new exploration permit or GHG permit.

5.2 ENVIRONMENTAL IMPACT STATEMENT TRIGGERS

Section 143 of the EP Act prescribes that an EIS may be required for particular site-specific applications for resource activities. The EHP Guideline *Triggers for Environmental Impact Statements under the Environmental Protection Act, 1994 for mining and petroleum activities* (EHP, 2014a) lists potential 'EIS triggers' for amendment applications for existing mining sites (brownfield sites) (Table 3).

MCPL considers that the application is a major amendment to the existing EA that does not require an EIS given:

- the small scale of the proposed change to the existing mine involving no increase in mining rate and four to five additional years of mine life;
- the Extension would involve activities in a Category B environmentally sensitive area (Brigalow Woodland RE 11.3.1), however:
 - the Brigalow Woodland to be cleared (14 ha) is small relative to the wider occurrence in the locality (approximately 395 ha of Brigalow is present on company-owned land [Figure 5]); and

- an offset would be provided for the Brigalow Woodland under the Qld *Environmental Offsets Act, 2014* (EO Act) and *Queensland Environmental Offsets Policy* (EHP, 2016a) resulting in a greater area of Brigalow conserved (established through a Voluntary Declaration under the Qld *Vegetation Management Act, 1999*).

5.3 MINERAL RESOURCES ACT, 1989

Concurrent to the EA amendment application process, MCPL is in the process of applying for surface rights across the recently acquired portion of ML 70379 and a Mining Lease for infrastructure to facilitate the extension of the East Dump.

5.4 STATUTORY APPROVALS

Table 4 describes the principal statutory approvals relevant to mining projects and establishes their relevance to the Extension. The list of approval requirements in Table 4 is confined to principal approval requirements and is not an exhaustive list of all approval requirements for the Extension.

Table 3
Mining Projects – Triggers for Brownfield Sites (Amendment Applications)

EIS Trigger	Relevance to the Extension
An EIS is required for a proposed major amendment of mining activities as a result of one or more of the following: for existing mines extracting between 2-10 million tonnes/year (t/y) ROM ore or coal, an increase in annual extraction of more than 100% or 5 megatonnes/y (Mt/y) (whichever is the lesser)	The Extension would not increase the currently approved maximum annual ROM coal extraction rate.
for existing mines extracting over 10 million t/y ROM ore or coal, an increase in annual extraction of more than 50% or 10 Mt/year (whichever is the lesser)	Not applicable.
for existing mines extracting more than 20 million t/y ROM ore or coal extraction, an increase in annual extraction greater than 25%	Not applicable.
proposed activities in a Category A or B environmentally sensitive area, unless previously authorised under Queensland legislation	The Extension would involve clearance of approximately 14 ha of Brigalow Woodland RE 11.3.1 (i.e. a Category B environmentally sensitive area) associated with the realigned Thirteen Mile Gully, which is required to maximise the coal resource that can be accessed and additional surface footprint available for out-of-pit emplacement. Brigalow Woodland is further discussed in Section 6.3.
a substantial change in mining operations, e.g. from underground to open cut, or (for underground mining), or a change from minor subsidence to potentially substantial subsidence	The Extension would not include a change in mining operations.
the introduction of a novel or unproven resource extraction process, technology or activity.	The Extension would not introduce a novel or unproven resource extraction process, technology or activity.

Table 4
Principal Statutory Approvals

Legislation	Administering Authority	Approval Trigger	Approval	Relevance to the Extension
<i>Commonwealth Native Title Act, 1993</i>	Attorney General's Department	The Commonwealth <i>Native Title Act, 1993</i> provides for the recognition and protection of native title rights in Australia. The Act provides a mechanism to determine whether native title rights exist and what the rights and interests are that comprise that native title rights.	Indigenous Land Use Agreements or right to negotiate processes will be undertaken with relevant native title claimants where applicable	Native Title has been extinguished over the Extension areas and is therefore not relevant.
EP Act	EHP	The EP Act regulates ERAs and provides the mechanism for authorising activities which cause or may cause environmental harm.	EA	Approval to carry out an ERA which is a mining activity. The existing EA would be amended as necessary to authorise the Extension.
MR Act	Department of Natural Resources and Minerals (DNRM)	The MR Act regulates mining activities in Qld and provides the mechanism for securing mining tenements, including Exploration Permits for Coal, Mineral Development Licences and Mining Leases.	Mining Lease	MCPL is in the process of applying for surface rights across the recently acquired portion of ML 70379 and a Mining Lease for infrastructure to facilitate the extension of the East Dump.
Water Act	DNRM	The Water Act regulates the taking of and/or interference with water within the State.	Water permit Water licence Riverine protection permit	The Extension would not change the current water take or interference associated with the Middlemount Coal Mine. No further approval under the Water Act is anticipated to be required for the Extension.
<i>Regional Planning Interests Act, 2014</i>	EHP	The Qld <i>Regional Planning Interests Act, 2014</i> regulates resource activities in areas of regional interest, including Priority Agricultural Areas, Priority Living Areas, Strategic Cropping Areas and Strategic Environmental Areas.	Regional Interests Authority	The Extension is not located within any Priority Agricultural Areas, Priority Living Areas, Strategic Cropping Areas or Strategic Environmental Areas and is therefore not anticipated to require a Regional Interests Authority.

Table 4 (Continued)
Principal Statutory Approvals

Legislation	Administering Authority	Approval Trigger	Approval	Relevance to the Extension
<i>Qld Aboriginal Cultural Heritage Act, 2003 (ACH Act)</i>	EHP	The ACH Act aims to provide effective recognition, protection and conservation of Aboriginal cultural heritage in Queensland. The ACH Act establishes a duty of care for activities that may harm Aboriginal cultural heritage, and requires the development of an approved CHMP.	CHMPs	The existing Middlemount Coal Mine CHMP with the Barada Barna People would be reviewed and amended as necessary to incorporate the Extension.
<i>Qld Nature Conservation Act, 1992 (NC Act)</i>	EHP	The NC Act regulates the disturbance of listed and protected flora and fauna.	Licences/Permits/ Approvals	The Extension area includes habitats containing species listed under the NC Act. MCPL would comply with the NC Act requirements by operating in accordance with a Species Management Program approved by the EHP.
<i>Qld Sustainable Planning Act, 2009 (SP Act)</i>	Department of State Development, Infrastructure and Planning	The SP Act is the principal legislation in Queensland for the co-ordination and integration of planning at the local, regional and state levels. The SP Act makes provisions for the Integrated Development Assessment System (IDAS) which establishes a framework for assessment of development applications. The SP Act also makes provisions for the development of State Planning Policies. Developments on a mining tenement, excluding building work and work on a Qld heritage place, are considered to be exempt development under the SP Act.	Development permit	No approvals under the SP Act would be required for the Extension as all development would be located entirely within a Mining Lease (subject to obtaining a Mining Lease to facilitate the extension of the East Dump).
<i>Qld Vegetation Management Act, 1999 (VM Act)</i>	EHP	The VM Act regulates the clearing of native vegetation.	Development Permit (IDAS under SP Act applies)	No approvals under the VM Act are required for the Extension as any vegetation cleared as part of the Extension would be within a Mining Lease (subject to obtaining a Mining Lease to facilitate the extension of the East Dump).

6 SCOPE OF ENVIRONMENTAL ASSESSMENTS

6.1 PRELIMINARY RISK ASSESSMENT

A preliminary risk assessment has been undertaken to identify the key environmental risks associated with the Extension and involved the following steps:

1. **Identification of Potential Risks** – Consideration of how the Extension is likely to affect the environmental values of the Extension area.
2. **Identification of Key Potential Environmental Risks** – From the potential risks above, what are the key risks, considering the extent of the potential impacts and the nature of the potential impacts.
3. **Preliminary Consideration of the Study Requirements** – Each of the key environmental risks identified above were considered with respect to the level and scope of assessment that would be required for the environmental assessments.

The key potential environmental risks identified by the preliminary risk assessment were:

- Surface water resources as a result of disturbance from open cut mining and site water management, including water quality impacts to receiving waters.
- Vegetation and habitat disturbance associated with land clearing.
- Air quality impacts at sensitive places.
- Noise impacts at sensitive places.

The preliminary assessment of the key potential environmental risks included consideration of:

- the existing environment using sufficient baseline data;
- potential impacts of all stages of the Extension;
- measures that could be implemented to avoid, mitigate, rehabilitate/remediate, monitor and/or offset the potential impacts of the Extension; and
- contingency plans and/or adaptive management for managing any potentially significant residual risks to the environment.

Sections 6.2 to 6.6 provide further detail on the potential impacts on environmental values and management measures, and the scope of the environmental assessments to be conducted. Assessment of the key risks would be undertaken by recognised specialist consultants.

6.2 WATER

Potential Impacts and Management Measures

The Extension has the potential to impact environmental values identified for water resources through direct disturbance associated with open cut mining, diversion of drainage features and through release of water to the surrounding environment. Potential impacts could include:

- changes to surface drainage and flooding regimes;
- changes to the hydrology and geomorphology of drainage features through construction of diversions;

- localised effects on surface and groundwater quality;
- local drawdown and depressurisation of the groundwater aquifers; and
- impacts to other water users in the region.

Realignment of the Thirteen Mile Gully Diversion would result in a change in hydraulics and morphology along the diverted reach of the drainage feature. Other components of the Extension would alter the topography and drainage characteristics within the Extension area (Figure 3) in a similar fashion to currently approved operations.

A Water Management Plan for the Middlemount Coal Mine (WRM, 2016) has been prepared in accordance with the EA conditions. The Water Management Plan includes a study of potential contaminants, a water balance model, a description of the site water management system, measures to manage and prevent saline and acid rock drainage, contingency procedures for emergencies and a monitoring and review program for the effectiveness of the water management plan.

The existing water management system would be progressively augmented to incorporate the Extension, including construction of new water management infrastructure (e.g. the realigned Thirteen Mile Gully Diversion, sediment basins, water storage dams, flood levees, clean water and mine affected water diversions).

Conceptual water management infrastructure is shown on Figure 3. The water diversions and sediment dams associated with the Extension would be subject of the surface water assessment and designed as part of further detailed mine planning. The revised water management system would be designed to protect the identified environmental values by separating runoff from disturbed, rehabilitated and undisturbed catchments. The site water balance would be revised to include the Extension and would identify any changes to discharges from the site. It is anticipated that there would be no significant changes to the potential impacts to receiving waters given Extension water releases would be consistent with the existing release practices at the Middlemount Coal Mine.

Extension of the open cut would likely result in a drawdown and depressurisation of the surrounding alluvial and coal seam aquifers in a similar manner to currently approved operations. The formation of an additional final void will result in changes to pit inflows post-mining relative to the approved mine.

An extensive surface water and groundwater monitoring network has been established at the Middlemount Coal Mine and would be augmented to incorporate the Extension.

Environmental Assessment

An assessment of potential impacts to water resources would be conducted to demonstrate how the Extension would be managed to protect the identified environmental values. A surface water assessment would be conducted, including:

- a description of how the Extension will be incorporated with the existing site water management system, and augmented as necessary;
- revision of the existing site water balance model;
- an assessment of potential impacts of any releases to the receiving environment;
- a review of the previous analysis for flooding along Thirteen Mile Gully and Roper Creek, and if required, an assessment of potential flooding impacts; and
- conceptual design of the drainage feature diversions.

The surface water assessment would identify the chemical and physical properties of surface waters within the area that may be affected by the Extension and assess the potential impacts of any releases (as determined by the revision of the site water balance model) on the quality and quantity of receiving waters.

An assessment in accordance with the *EHP Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (ESR/2016/1933)* (EHP, 2016b) would be conducted for any new water management infrastructure. Any new release points associated with the new water management infrastructure would be described.

A groundwater assessment would also be conducted as part of the environmental assessments to predict potential impacts to groundwater levels and quality, groundwater users and associated impacts to surface water resources (including numerical modelling). The results of the groundwater assessment would be used to address the information requirements for an EA amendment application as required by the *Qld Environmental Protection (Underground Water Management) and Other Legislation Amendment Bill, 2016*.

Consideration would be given to the EHP guidelines (EM 963) *Application Requirements for Activities with Impacts to Water* (EHP, 2014b) and *Requirements for site-specific and amendment applications – underground water rights* (EHP, 2016) during the development of the surface water and groundwater assessments to assist in identifying potential impacts to water resources (including changes due to the inclusion of an additional final void) and any improvements to existing management and mitigation measures at the Middlemount Coal Mine.

6.3 BIODIVERSITY

Potential Impacts and Management Measures

Vegetation and fauna habitat would be directly disturbed through clearing associated with the Extension. The Extension area is predominantly non-remnant vegetation (355 ha) with patches of remnant vegetation (totalling 215 ha) (overall footprint is approximately 570 ha).

The Extension would require the clearance of small areas of Brigalow Woodland RE 11.3.1 totalling approximately 14 ha. It is recognised that Endangered REs are 'Category B' environmentally sensitive areas and relevant to EIS triggers (Section 5.2), however the following is considered:

- the Brigalow Woodland to be cleared is small relative to the wider occurrence in the locality (approximately 395 ha of Brigalow is present on company-owned land [Figure 5]); and
- an offset would be provided for the Brigalow Woodland under the Queensland EO Act and *Queensland Environmental Offsets Policy* (EHP, 2016a) resulting in a greater area of Brigalow conserved.

For the above reasons, MCPL considers that the application is a major amendment to the existing EA that does not require an EIS.

As described in Section 4.3, MCPL manage a total of approximately 3,944 ha of land dedicated to conservation. The Extension would impact a very small portion (approximately 1%, 32 ha) of the Middlemount Coal (Stage 2) Project Offset Area (EPBC 2010/5394). The offset area has a total area of 3,280 ha on Declared Area Map 2013/003919 (Figure 5). The vegetation in the portion of the Middlemount Coal (Stage 2) Project Offset Area to be cleared comprises non-remnant (regrowth) vegetation, RE11.32 and RE11.3.1 (Naturecall, 2017). MCPL will engage with the Department of the Environment and Energy regarding modification of the Stage 2 offset area.

The Extension would impact a portion (approximately 26%, 22 ha) of the Middlemount Coal Mine Rail Loop and Spur Offset Area. The offset area has a total area of 86.2 ha on the Declared Area Map 2013/003919 (Figure 5). The vegetation in the portion of the Rail Loop and Spur Offset Area to be cleared comprises non-remnant (regrowth) vegetation (Naturecall, 2017).

Legally secured offset areas are recognised as Matters of State Environmental Significance under the *Qld Environmental Offsets Regulation, 2014*. The *Queensland Environmental Offsets Policy* (EHP, 2016a) states:

Where a prescribed activity will have a significant residual impact on a legally secured offset area, the offset is required for both the impact on:

- *the matters requiring offset as identified by the original authority requirements; and*
- *any other prescribed environmental matter that will be impacted as a result of the activity.*

If a site that is currently a legally secured offset area is to be affected in whole or part by a prescribed activity, that prescribed activity cannot commence until the mechanism for legal security has been removed from the area that will be impacted by the activity.

In addition, if the legally secured offset area is an environmental offset protection area declared under section 30 of the Environmental Offset Act 2014 or an area of high nature conservation value under section 19F of the Vegetation Management Act 1999, the mechanism cannot be removed until the proponent has entered into an agreed delivery arrangement in relation to providing an environment offset for significant residual impacts to the area.

MCPL propose to request the Chief Executive of the DNRM to end the existing Voluntary Declaration (VDec) under the VM Act (Declared Area Map 2013/003919) and create a new VDec over a modified offset area. A notice of election (and offset delivery plan) would be provided to seek an agreed delivery arrangement for the modified offset area.

The potential impacts to biodiversity would be minimised through avoidance, minimisation of clearance, conducting clearance in accordance with the Species Management Program, mitigation such as rehabilitation of the Extension area in accordance with rehabilitation objectives (Section 3.4) and through environmental offsets under the EO Act and *Queensland Environmental Offsets Policy* (EHP, 2016).

Environmental Assessment

An environmental assessment of the potential impacts to biodiversity would be conducted by MCPL. A Terrestrial Ecology Assessment would be conducted to assess the potential impacts to biodiversity associated with the Extension, including:

- field validated RE mapping;
- flora and fauna species, particularly threatened species listed under the NC Act;
- Environmentally Sensitive Areas; and
- Wetlands.

Direct impacts to the existing ecological environment would be assessed during each stage of the Extension, where relevant.

The assessment would describe proposed avoidance and mitigation measures to protect or enhance natural values, and propose indicators to monitor potential impacts. In particular, measures would be described to protect threatened or near-threatened species.

Consideration of biodiversity offset requirements would be included in the environmental assessment in accordance with the *Queensland Environmental Offsets Policy*. The assessment would describe the magnitude and duration of potential significant residual impacts and describe how the activity and any associated offset would be delivered.

Consideration would be given to the EHP Guideline *Application Requirements for Activities with Impacts to Land* (EHP, 2017a) during the development of the Terrestrial Ecology Assessment to identify potential improvements to management and mitigation measures.

6.4 AIR QUALITY

Potential Impacts and Management Measures

Open cut mining activities and the handling of spoil, ROM and product coal have the potential to generate particulate matter (i.e. dust) emissions in the form of:

- total suspended particulate matter (TSP);
- particulate matter with an equivalent aerodynamic diameter of 10 micrometres (μm) or less (PM_{10}) (a subset of TSP); and
- particulate matter with an equivalent aerodynamic diameter of 2.5 μm or less ($\text{PM}_{2.5}$) (a subset of TSP and PM_{10}).

The Extension would not increase the maximum production rate (5.7 Mtpa ROM coal) or the maximum mining fleet described in the *Middlemount Coal Project Stage 2 Environmental Impact Statement* (MCPL, 2011).

It is anticipated that potential air quality impacts at receivers at the Middlemount township would be minimal considering the distance from the Middlemount Coal Mine and the presence of intervening topography (i.e. Middle Mountain).

Exposure to small diameter suspended particulate matter (such as $\text{PM}_{2.5}$) can result in adverse health impacts. The likely risk of these impacts to a person depends on a range of factors including the size, chemical composition and concentration of the particulate matter, and the existing health of the person. Particulate matter also has the potential to cause nuisance (amenity) effects when it is deposited on surfaces.

As described in the EPP (Air), air quality objectives are prescribed to enhance or protect environmental values. The EPP (Air) prescribes air quality objectives for TSP, PM_{10} and $\text{PM}_{2.5}$, but does not prescribe air quality objectives for deposited dust. EHP's *Guideline (ESR/2016/1936) Model Mining Conditions* (EHP, 2016c) prescribe that a mining activity cannot result in an exceedance of 120 milligrams per square metre per day ($\text{mg}/\text{m}^2/\text{day}$) of deposited dust, averaged over one month, at a sensitive place. The air quality objectives for the indicators relevant to the Extension are presented in Table 5.

Table 5
Air Quality Objectives Relevant to the Extension

Indicator	Source	Environmental Value	Averaging Period	Criteria
TSP	EPP (Air)	Health and wellbeing	1 year	90 µg/m ³
PM ₁₀	EPP (Air)	Health and wellbeing	24 hours	50 µg/m ³
PM _{2.5}	EPP (Air)	Health and wellbeing	24 hours	25 µg/m ³
	EPP (Air)	Health and wellbeing	1 year	8 µg/m ³
Deposited dust	Model Mining Conditions	Amenity	1 month	120 mg/m ² /day

µg/m³ = micrograms per cubic metre.

The low sulphur content of Australian diesel, in combination with widely dispersed mining equipment over mine sites, is such that the air quality objectives for sulphur dioxide described in the EPP (Air) would not be exceeded. Similarly, nitrogen dioxide and carbon monoxide emissions from diesel combustion would be limited and widely dispersed. Accordingly, the air quality objectives for these indicators are not considered relevant to the Extension.

MCPL would continue to implement a range of air quality management and mitigation measures to minimise particulate matter emissions, including:

- progressive rehabilitation of waste rock emplacements and topsoil stockpiles;
- haul road and stockpile dust suppression;
- real time meteorological and air quality monitoring;
- blast management measures;
- dust suppression on drill rigs; and
- enclosure of bins and water sprays on CHPP conveyors.

Environmental Assessment

The potential air quality impacts associated with the Extension would be confirmed through an Air Quality Assessment as part of the environmental assessments. The previous air quality assessments, history of air quality monitoring, effectiveness of management measures and nature of the proposed extensions to the existing operations would be considered to assess the potential change in air quality impacts at nearby sensitive receivers.

Consideration would be given to the EHP Guideline *Application Requirements for Activities with Impacts to Air* (EHP, 2017c) during the development of the Air Quality Assessment to identify any additional management and mitigation measures.

6.5 NOISE

Potential Impacts and Management Measures

The hauling and emplacement of waste rock material has the potential to generate noise impacts at nearby sensitive places. The Extension would not increase the maximum production rate (5.7 Mtpa ROM coal) or the maximum mining fleet described the *Middlemount Coal Project Stage 2 Environmental Impact Statement* (MCPL, 2011).

It is anticipated that potential noise impacts at receivers at the Middlemount township would be minimal considering the distance from the Middlemount Coal Mine and the presence of intervening topography (i.e. Middle Mountain).

Noise may cause environmental nuisance or harm when it negatively affects environmental values, including human health and wellbeing, community amenity or the health and biodiversity of ecosystems.

As described in the EPP (Noise), acoustic quality objectives are prescribed to enhance or protect environmental values. The acoustic quality objectives for sensitive receptors relevant to the Extension area are presented in Table 6.

Table 6
Acoustic Quality Objectives Relevant to the Extension

Sensitive Place	Acoustic Quality Objective	
Dwelling (for outdoors) (daytime and evening)	$L_{Aeq,adj,1hr}$	50 dBA
	$L_{A10,adj,1hr}$	55 dBA
	$L_{A1,adj,1hr}$	65 dBA

Source: EPP (Noise).

dBA = A-weighted decibels.

L_{Aeq} = Equivalent continuous noise level.

L_{A10} = Noise level exceeded by 10% of the measured period.

L_{A1} = Noise level exceeded by 1% of the measured period.

Environmental Assessment

The potential noise impacts associated with the Extension would be confirmed through a Noise Assessment as part of the environmental assessments. The previous noise impact assessments, history of noise monitoring, effectiveness of management measures and nature of the proposed extensions to the existing operations would be considered to assess the potential change in noise impacts at nearby sensitive places.

Consideration would be given to the EHP Guideline *Application Requirements for Activities with Noise Impacts* (EHP, 2017d) during the development of the Noise Impact Assessment to identify any additional noise management and mitigation measures.

6.6 OTHER CONSIDERATIONS

Land

The Extension mining activities have the potential to directly and indirectly impact on the land resources and uses within the Extension area, including:

- temporary change of use of land as a result of open cut mining activities and development of surface infrastructure (before the land is rehabilitated);
- permanent landform change through the creation of a second final void;
- alteration of natural landscapes;
- impacts to soil health and condition; and
- impacts to the agricultural capacity of the land.

The natural landscape in the Extension area would be altered through in-pit and out-of-pit waste rock emplacements, final voids and flood levees.

An assessment of potential impacts to land would be conducted to demonstrate how the Extension would be managed to minimise the extent and severity of land disturbance and impact to existing land uses. The assessment would consider the staged development of the Extension, progressive rehabilitation and proposed post-mining land use.

The assessment would also describe how the Extension would be rehabilitated to ensure that following completion of mining activities, the site would be safe, stable and non-polluting and able to support the proposed post-mining land use.

Consideration would be given to the EHP *Guideline (EM961) Application Requirements for Activities with Impacts to Land* (EHP, 2017a) as part of the assessment to identify potential impacts to land and any improvements to existing management and mitigation measures at the Middlemount Coal Mine.

Non-Indigenous Heritage

A Non-Indigenous Heritage Assessment would be conducted which would build on the assessment conducted for Stage 2 (MCPL, 2011). The assessment would include searches of statutory registers associated with national, state and local legislation for non-indigenous heritage sites. If required, a field survey of the Extension area would be conducted (based on the outcomes of the desktop review).

Indigenous Cultural Heritage

CHMPs were formed with the Barada Barna People and the BBKY #4, respectively. The Extension is only relevant to the CHMP with the Barada Barna People, which would be reviewed and amended where required to include the Extension.

Consultation would be undertaken with the Barada Barna People who MCPL would engage to conduct cultural heritage surveys over the Extension areas. The surveys would be conducted in accordance with the CHMP ahead of any disturbance in the Extension area. Any potential impact to indigenous cultural heritage would be managed in accordance with the CHMP.

In a hierarchy of cultural heritage management options, the first and best strategy is to avoid impact on sites. However, given that the majority if not all sites would be or are likely to be directly impacted by the Extension, relevant mitigation measures described in the CHMP would be implemented.

Socio-economic

The Extension would provide continued employment for the existing workforce for the life of the Extension. Potential impacts to the community such as the demand for housing and community resources are not expected to increase as a result of the Extension, given that no increase to the existing workforce is proposed for the Extension.

Visual Amenity

The development of Extension components (e.g. vegetation clearance and development of out-of-pit emplacements) would alter the visual landscape of the Extension area similar to the impacts associated with the existing operation. Although impacts to visual amenity are not anticipated to be significant given the limited number of sensitive public viewpoints in the vicinity of the Extension, a Visual Assessment would be conducted which would consider the potential impacts associated with the Extension on private dwellings and publically accessible areas.

It is anticipated that potential visual amenity impacts at receivers at the Middlemount township would be minimal considering the distance from the Middlemount Coal Mine and the presence of intervening topography (i.e. Middle Mountain).

Road Transport

Given there is not anticipated to be an increase to the number of operational employees/contractors, there is not anticipated to be a change to road transport impacts associated with the operation of the Extension.

Waste Management

Given there are no proposed changes to the mining rate and number of employees associated with the Extension, it is not expected that annual non-mining waste volumes would increase. Accordingly, it is anticipated that the existing waste management practices employed would be suitable for the Extension.

As described in Section 3.5, general waste minimisation principles would be applied at the Extension in accordance with the *Qld Waste Reduction and Recycling Act, 2011* waste management hierarchy to minimise the quantity of wastes that require off-site disposal. In accordance with the *Qld Environmental Protection (Waste Management) Regulation, 2000*, MCPL would maintain a waste inventory and monitor all trackable wastes.

Geochemistry

There is no change proposed to mining operation methods and coal seams targeted for the Extension. Accordingly, it is anticipated that the geochemistry of coal and overburden would be similar to existing operations.

Consistent with existing operations, testing of overburden would be conducted to confirm a low to negligible risk of acid mine drainage and identify material with a high susceptibility for dispersion and slaking. Consistent with existing operations, any potentially acid forming material would not be used as capping material and would be buried within the overburden dump with material that has a positive acid neutralising capacity, and less dispersive material would be used as capping material. Coarse reject material would only be placed within in-pit waste rock dumps.

Hazards and Safety

The environmental due diligence assessments would identify the potential risks to people and property associated with the Extension and would describe the risk assessment that would be conducted as part of the detailed design phase of the Extension.

7 ENVIRONMENTALLY RELEVANT ACTIVITIES

Under section 19A of the EP Act, the mining activity authorised by the EA is taken to be comprised of the ancillary activities (being activities carried out under the EA as part of a resource activity which are also a prescribed ERA), as well as the other activities carried out under the EA as a resource activity.

The ancillary activities are taken to be resource activities for the purpose of the EA amendment application.

MCPL acknowledges that the ancillary activities are taken to be prescribed ERAs for the purposes of the power to impose conditions on the EA under Chapter 5, Part 5, Division 6 of the EP Act and the fees that apply to the EA under the EP Act.

Table 7 describes the resource activity and ancillary activities/prescribed ERAs that are the subject of the current EA for the Middlemount Coal Mine.

No changes to ERAs are expected as part of this application.

Table 7
Environmentally Relevant Activity and Location Details

Environmentally Relevant Activity(ies)	Location(s)
<i>Environmental Protection Regulation, 2008, Schedule 2A:</i> ERA 13 Mining black coal	ML 70379 ML 70417 ML 700014
<i>Environmental Protection Regulation, 2008, Schedule 2:</i> ERA 8 Chemical storage Threshold 3 – storing more than 500 m3 of chemicals of class C1 or C2 combustible liquids under AS 1940 or dangerous goods class 3 under subsection (1)(c). ERA 15 Fuel burning – using fuel burning equipment that is capable of burning at least 500 kg of fuel in an hour. ERA 31 Mineral processing Threshold 2(b) – processing, in a year, the following quantities of mineral products, other than coke – more than 100,000 t. ERA 63 Sewage treatment Threshold 1(a)(i) – operating 1 or more sewage treatments works at a site that have a total daily peak capability of 21 to 100 EP, if treated effluent is discharged from the works to an infiltration trench or through an irrigation scheme.	

8 STAKEHOLDER ENGAGEMENT

MCPL would hold a pre-lodgement meeting with the EHP, DNRM and the Isaac Regional Council regarding the Extension, and would continue to consult with these stakeholders during the EA amendment application assessment process.

If the EHP decides the application to be a major EA amendment, formal public notification and submission periods would be conducted during the notification stage of the process (in accordance with Part 4 of the EP Act).

9 REFERENCES

- Department of Environment and Heritage Protection (2011) *Mackenzie River Sub-basin Environmental Values and Water Quality Objectives*.
- Department of Environment and Heritage Protection (2014a) *Triggers for Environmental Impact Statements under the Environmental Protection Act, 1994 for mining and petroleum activities*.
- Department of Environment and Heritage Protection (2014b) *Guideline (EM 963) Application Requirements for Activities with Impacts to Water*.
- Department of Environment and Heritage Protection (2016a) *Queensland Environmental Offsets Policy*.
- Department of Environment and Heritage Protection (2016b) *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures*.
- Department of Environment and Heritage Protection (2016c) *Guideline (ESR/2016/1936) Model Mining Conditions*.
- Department of Environment and Heritage Protection (2017a) *Application Requirements for Activities with Impacts to Land*.
- Department of Environment and Heritage Protection (2017b) *WetlandMaps*.
Website: <http://www.ehp.qld.gov.au/wetlandmaps/>
Accessed: June 2017.
- Department of Environment and Heritage Protection (2017c) *Application Requirements for Activities with Impacts to Air*.
- Department of Environment and Heritage Protection (2017d) *Application Requirements for Activities with Noise Impacts*.
- Department of Natural Resources and Mines (2016) *Trigger Map for Strategic Cropping Land in Queensland – Version 3.4*.
- Department of Science, Information Technology and Innovation (2016) *Remnant Regional Ecosystem Map*.
- Frc environmental (2010) *Middlemount Coal Project EIS, Stage 2: Aquatic Ecology*.
- Middlemount Coal Pty Ltd (2011) *Middlemount Coal Project Stage 2 Environmental Impact Statement*. February 2011.
- Naturecall (2017) *Preliminary Field Survey Results for Proposed Western Extension, Middlemount Coal Mine, Middlemount QLD*. Unpublished results to MCPL.
- Thackway, R. and Cresswell, I.D. (1995) *An interim biogeographic regionalisation for Australia: a framework for setting priorities in the National Reserves System Cooperative Program, Version 4.0*.
- WRM Water and Environment (2016) *Middlemount Mine Water Management Plan*.