Title of Proposal - Newstan Mine 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.

Centennial Newstan is seeking approval for the continuation of mining within the West Borehole seam at Newstan Colliery. The Newstan Mine Extension Project (the Proposed Action) proposes to extract up to 25.9 million tonnes (Mt) over a fifteen year period at a maximum production rate of 4 million tonnes per annum of Run of Mine (ROM) coal (Mtpa) using bord and pillar mining. The proposed underground mining activities within the West Borehole seam will be undertaken using a combination of first workings, partial extraction and total extraction. Mining activities are proposed within the Extension of Mining Area, as shown on the attached Figure 3. A mix of metallurgical and thermal coal will be extracted from the West Borehole seam. ROM coal will be delivered to the Newstan Colliery Surface Site via a series of existing underground conveyors at which point the coal handling, processing and transportation will be undertaken as part of the (separate) Northern Coal Logistics Project.

Proposed mining

A combination of first workings, partial and total extraction using bord and pillar mining has been adopted to mitigate potential subsidence impacts on sensitive surface features. Historical mining undertaken by the former Awaba Colliery in the overlying Great Northern seam will result in some areas of multi-seam conditions. The potential reactivation of subsidence in these historic mining areas by the project has been extensively considered with regard to the proposed mine design.

The development of first workings only (i.e. no secondary extraction) will occur beneath certain sensitive surface features in both single-seam and multi-seam conditions. The proposed partial extraction zones will extract three of the four rows of pillars, leaving a spine pillar (i.e. one row of pillars) within each panel, thereby reducing the mining span and consequently the subsidence effect. Total extraction, where all pillars in a panel are removed, is proposed to the south of the existing Awaba workings (i.e. single-seam conditions) and in some areas beneath the existing workings (multi-seam conditions) where sensitive surface features are not present.

Gas drainage

Centennial Newstan propose to use in-seam gas drainage methods to manage gas during mining. Gas captured during the in-seam drainage system will be transferred to a gas flaring facility to be constructed at the Awaba Colliery Surface Site.

Ventilation

Approved but yet to be constructed fans will be installed at the existing ventilation shaft at the Awaba Colliery Surface Site.

Access and egress

Personnel and materials will be transported down the existing men and materials drift at Newstan Colliery Surface Site. The project proposes to use specialised underground vehicles for both personnel and material transport. No additional access portals are proposed for the Awaba Colliery Surface Site.

Coal processing, transportation and coal reject.

ROM coal will be transported from the underground workings to the Newstan Colliery Surface Site by a conveyor system at a rate of up to 4 Mtpa. Once the coal reaches the surface at Newstan Colliery Surface Site it will be handled in accordance with the approved operations for the Northern Coal Logistics Project, managed by Centennial Coal's Northern Coal Services business unit. Coal reject management activities will be undertaken in accordance with the approved operations for the Northern Coal Logistics Project and do not form part of the Proposed Action.

Construction activities and facilities

Construction activities proposed for the Awaba Colliery Surface Site include the construction of gas flares and drainage facilities, service delivery boreholes and additional surface water management infrastructure. Where possible, construction activities will be undertaken within previously disturbed areas.

Workforce

The construction workforce is expected to peak at approximately 50 Full Time Equivalent (FTE) personnel. The operational workforce is expected to peak at approximately 320 FTE personnel.

Hours of operation

Operation activities will occur 24 hours a day, seven days a week, consistent with existing operations.

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
Proposed Area	1	-33.066587358529	151.51689932671
Proposed Area	2	-33.054502407186	151.48891852226
Proposed Area	3	-33.043423077722	151.47089407768

Area	Point	Latitude	Longitude
Proposed Area	4	-33.022699552347	151.47810385551
Proposed Area	5	-32.982389860123	151.51501105156
Proposed Area	6	-32.944366714064	151.56496451225
Proposed Area	7	-32.962372137321	151.58436224785
Proposed Area	8	-32.977205849298	151.6018717083
Proposed Area	9	-32.991173183628	151.5958635601
Proposed Area	10	-33.005138307886	151.60084174004
Proposed Area	11	-33.015646685889	151.60049841728
Proposed Area	12	-33.016654272783	151.57921240654
Proposed Area	13	-33.023707058639	151.58401892509
Proposed Area	14	-33.051337026719	151.56513617363
Proposed Area	15	-33.069896043946	151.54633925285
Proposed Area	16	-33.066515429204	151.51681349602
Proposed Area	17	-33.066587358529	151.51689932671

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

The project is located in the Lake Macquarie LGA, approximately 25 kilometres south west of Newcastle and 140 kilometres north of Sydney, NSW. The Proposed Action Area encompasses three distinct areas: Newstan Colliery, the proposed Extension of Mining Area, and Awaba Colliery. The locations of these areas are described below and shown on Figure 3.

Newstan Colliery

Newstan Colliery pit top and surface infrastructure (Newstan Colliery Surface Site) is located at Fassifern, approximately four kilometres north of Toronto. Access is via Miller Road, Fassifern. Parts of the Newstan Colliery Surface Site also operate under SSD-5145 for the Northern Coal Logistics Project.

Newstan Colliery also incorporates the existing underground mining areas within Great Northern, Fassifern, West Borehole, Borehole, Young Wallsend and Yard seams. The existing workings within the Fassifern, Great Northern and Borehole seams are utilised as underground water storages that integrate with the Northern Coal Logistics Project.

Extension of Mining Area

The majority of the proposed Extension of Mining Area (i.e. area where underground mining activities are proposed) is located below undulating, unpopulated bushland. Lake Macquarie and the surrounding residential suburbs of Toronto, Rathmines, Balmoral, Buttaba, Arcadia Vale, and Wangi Wangi are located to the east of the area. To the south lies the Eraring Power Station and associated infrastructure including the Eraring Ash Dam. To the west lies the M1

Pacific Motorway. The Main Northern Railway traverses the area in a north-south direction. The Extension of Mining Area is bordered by previous Newstan Colliery mine workings to the north and northwest while the western area of the proposed mining area is overlain with the Awaba Colliery mine workings in the Great Northern seam.

The Extension of Mining Area is also partially overlain by a biodiversity offset site known as the Awaba Biodiversity Conservation Area, which applies to all of Lot 463 DP 1138964, 304 Wilton Road, Awaba. The site is owned by Lake Macquarie City Council and managed for biodiversity conservation in accordance with the terms of an agreement established under the EPBC Act.

Awaba Colliery

The Awaba Colliery Surface Site is located approximately one kilometre south of the Awaba village and 5.5 kilometres south-west of Toronto, adjacent to the Newstan-Eraring private haul road. The site is accessed via Wilton Road, Awaba.

Awaba Colliery also incorporates the existing underground mining area within the Great Northern seam, which is utilised for the storage of groundwater.

Land ownership

Land ownership within and surrounding the Proposed Action Area includes:

Crown land, Crown roads and Crown reserves Private land State Forest managed by the Forestry Corporation of NSW State Conservation Area Land owned by Lake Macquarie City Council Land owned by the energy utility company Origin Energy Land managed by the NSW Government agency RailCorp.

The majority of land that has the potential to be affected by mining within the Proposed Action Area is Crown land or land owned by Origin Energy. Land ownership within the Proposed Action Area is shown on the attached Figure 5.

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 Proposed Action Area is approximately 6761.9 ha. The Extension of Mining Area is approximately 1256 ha.

1.7 Is the proposed action a street address or lot?

Lot

1.7.2 Describe the lot number and title. Refer to Attachment 1

1.8 Primary Jurisdiction.

New South Wales

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 01/2021

End date 12/2036

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

Context

The Proposed Action is located within an existing underground mining precinct that has been established for over 130 years. Underground coal mining operations commenced on the western side of Lake Macquarie in the area now known as Newstan Colliery in 1887 and, upon the introduction of the EP&A Act, operated pursuant to continuing use rights in accordance with Part 4, Division 10 of the EP&A Act (continuing use rights) until 1999. On 14 May 1999 the (then) Minister for Urban Affairs and Planning granted Development Consent DA 73-11-98 under Part 4 of the EP&A Act for the Newstan Colliery Life Extension Area. This approval enabled mining to continue within the existing mining areas as well as the expansion into areas that had not previously been mined. Development Consent DA 73-11-98 has been modified on eight occasions, with the most recent modification approved on 17 January 2019.

The majority of the proposed Extension of Mining Area is located below undulating, unpopulated bushland. However, the Extension of Mining Area also underlies the Eraring Power Station and associated infrastructure including the Eraring Ash Dam. The proposed Extension of Mining Area is bordered by previous Newstan Colliery mine workings to the north and northwest while the western and northern area of the proposed Extension of Mining Area is partially overlaid with mine workings from the Awaba Colliery in the Fassifern and Great Northern coal seams.

Lake Macquarie and the surrounding residential suburbs of Toronto and Rathmines border the Proposed Action Area to the east. To the south lie the suburbs of Dora Creek and Myuna Bay. To the west lies the M1 Pacific Motorway. The Main Northern Railway dissects the Proposed Action Area in a north-south direction.

The Newstan Colliery Surface Site is located in Fassifern approximately 4 kilometres north of the township of Toronto. The Awaba Colliery surface site is located approximately one kilometre south of the Awaba village and 5.5 kilometres south-west of Toronto, adjacent to the Newstan-Eraring private haul road.

Planning framework and State government requirements

Accredited assessment process

Centennial Newstan is seeking to have the Proposed Action assessed via an accredited assessment (case by case) process. Under this arrangement, the Proposed Action's impacts on MNES under the EPBC Act would be assessed following an accredited State assessment process that has been endorsed by the Commonwealth Minister for the Environment. To this end, Centennial Newstan met with the Commonwealth Department of Energy and the Environment (DoEE) on 24 July 2019 to introduce the Proposed Action and discuss the possibility of gaining the Minister's endorsement for an accredited assessment (case by case).

Applicability of Division 4.7 of Part 4 of the EP&A Act

The EP&A Act and EP&A Regulation provide the legal basis for environmental planning and assessment in NSW. Part 4 of the EP&A Act prescribes the processes for development assessment. Division 4.7 relates specifically to the assessment of development deemed to be SSD.

Under Section 4.36 of the EP&A Act, a class of development, such as mining, may be declared as SSD by a State Environmental Planning Policy.

Clause 8 of the State Environmental Planning Policy (State and Regional Development) 2011 (State and Regional Development SEPP) provides that the development is declared to be SSD for the purposes of the EP&A Act if:

The development on the land concerned is, by the operation of an environmental planning instrument, not permissible without Development Consent under Part 4 of the EP&A Act (first criterion); andThe development is specified in Schedule 1 or 2 (second criterion).

With respect to the first criterion, the Proposed Action may be carried out only with development consent under Part 4 of the EP&A Act, pursuant to Clause 7 of the State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 (Mining SEPP) (described below).

With regard to the second criterion, development for the purpose of mining that is coal or mineral sands mining, or has a capital investment value of more than $30 million, is specified in Schedule 1, Item 5 as being SSD.

The Proposed Action is development for the purpose of coal mining and has a capital investment value of more than $30 million. Therefore, the Proposed Action is considered to be SSD.

The Minister for Planning is the consent authority for SSD, however the Minister for Planning may delegate their functions to determine SSD applications to either senior officers of the DP&E or the NSW Independent Planning Commission (IPC).

A development application for SSD must be accompanied by an EIS, prepared in accordance with the EP&A Regulation.

Operation of Section 4.63(3) of the EP&A Act

The Proposed Action proposes the ongoing use of some of the infrastructure and mining areas authorised by the existing development consents for Newstan Colliery (DA 73-11-98) and Awaba Colliery (PA 10_0038) and it is proposed that these development consents will be surrendered subject to consent being granted for the Proposed Action.

Section 4.63(3) of the EP&A Act provides that:

If a development consent is to be surrendered as a condition of a new development consent and the development to be authorised by that new development consent includes the continuation of any of the development authorised by the consent to be surrendered:

a) the consent authority is not required to re-assess the likely impact of the continued development to the extent that it could have been carried out but for the surrender of the consent, and

b) the consent authority is not required to re-determine whether to authorise that continued development under the new development consent (or the manner in which it is to be carried out), the works already authorised under the planning approvals proposed to be consolidated and surrendered as part of the Project, do not require re-assessment in the EIS.

Accordingly, only works which are in addition to those currently approved under DA 73-11-98 for Newstan Colliery and PA 10_0038 for Awaba Colliery will be assessed in the EIS.

Permissibility of the project

The Proposed Action is located within the Lake Macquarie LGA and is therefore subject to the provisions of the Lake Macquarie Local Environmental Plan 2014 (Lake Macquarie LEP).

Land zonings within the Proposed Action Area pursuant to the Lake Macquarie LEP are:

B1 Neighbourhood Centre

B2 Local Centre

B4 Mixed Use

E1 National Parks and Nature Reserves

E2 Environmental Conservation

E3 Environmental Management

IN2 Light Industrial

R2 Low Density Residential

R3 Medium Density Residential

RE1 Public Recreation

RE2 Private Recreation

RU2 Rural Landscape

RU3 Forestry

RU4 Rural Small Holdings

RU6 Transition

SP1 Special Activities

SP2 Infrastructure

SP3 Tourist

W1 Natural Waterways.

Clause 8 of the Mining SEPP outlines its relationship to other environmental planning instruments:

8 Determination of permissibility under local environmental plans

(1) If a local environmental plan provides that development for the purposes of mining, petroleum production or extractive industry may be carried out on land with development consent if provisions of the plan are satisfied:

(a) development for that purpose may be carried out on that land with development consent without those provisions having to be satisfied, and

(b) those provisions have no effect in determining whether or not development for that purpose may be carried out on that land or on the determination of a development application for consent to carry out development for that purpose on that land.

(2) Without limiting subclause (1), if a local environmental plan provides that development for the purposes of mining, petroleum production or extractive industry may be carried out on land with development consent if the consent authority is satisfied as to certain matters specified in the plan, development for that purpose may be carried out on that land with development consent without the consent authority having to be satisfied as to those specified matters.

On this basis, any provision in the Lake Macquarie LEP that would otherwise operate to prohibit the Proposed Action has no effect due to Clause 8 of the Mining SEPP, and accordingly, the Proposed Action is permissible with development consent on the land over which it would be carried out within the Lake Macquarie LGA.

Further, clause 11 of the State Environmental Planning Policy (State and Regional Development) 2011 (State and Regional Development SEPP) excludes the application of development control plans for State significant development, as follows:

Development control plans (whether made before or after the commencement of this Policy) do not apply to:

State significant development, or

Development for which a relevant council is the consent authority under section 4.37 of the Act.

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

Newstan Colliery has operated from its current site for over a century and therefore has well-established local community networks and relationships with landholders and other stakeholders.

Centennial Newstan has consulted with a number of community members, Aboriginal groups, infrastructure owners and government agencies to present the Proposed Action and, where relevant, seek feedback on key mine design considerations and areas for investigation during the EIS.

Key stakeholders for the Proposed Action include local community members, Aboriginal groups, Centennial Newstan employees, infrastructure owners and Government (Federal, State and Local).

Centennial Newstan has sought and received recommendations for mine design parameters from government agencies to manage direct and indirect subsidence-related impacts to key infrastructure assets such as the Main Northern Railway, Eraring Power Station and Eraring Ash Dam. These recommendations have formed an integral part of the mine design process and these consultations will continue for the EIS.

Whilst community consultation specific to the Proposed Action is in its infancy, community stakeholders consulted to date have indicated they would like to be kept up to date on important details as more information becomes available.

Many community sentiments are yet to be understood, however, anecdotally there is particular interest in:

The Proposed Action’s potential subsidence-related interactions with sensitive built and natural features, including the Eraring Power Station and Ash Dam. In particular, there is an interest in the potential for mining activities to create a pathway for leachate from Eraring Ash Dam to enter groundwater aquifers and migrate into Lake Macquarie. The potential contribution of the Proposed Action to cumulative impacts.

Key infrastructure owners Origin Energy (owners of Eraring Power Station and Eraring Ash Dam) and Transport for NSW (managers of the Main Northern Railway) have been given an introduction to the Proposed Action and an opportunity to review the preliminary mine plan and subsidence predictions. Feedback received to date has indicated that an open and consultative approach to the mine design process is generally supported and that information sharing should continue throughout the EIS.

Centennial Newstan will lead the stakeholder and community consultation for the EIS. A detailed Stakeholder Engagement Plan has been developed to provide a framework to identify and appropriately consult with stakeholders that may be influenced by or have an interest in the Proposed Action.

All Aboriginal consultation for the Proposed Action will be undertaken in accordance with section 80C of the NSW National Parks and Wildlife Regulation 2009, the guideline titled Aboriginal Cultural Heritage Consultation Requirements for Proponents (NSW Department of Environment, Climate Change and Water, 2010), and the SEARs.

The feedback received from Centennial Newstan's stakeholder engagement activities will help to identify key concerns to be addressed in the EIS and ensure the Proposed Action optimises environmental, social and economic outcomes.

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.

Centennial Newstan is seeking planning approval for the Proposed Action under Part 4, Division 4.7 of the EP&A Act. An EIS is a requirement of the approval process. Before preparing an EIS, terms of reference must be established. In NSW, the terms of reference for an EIS are referred to as the Secretary's Environmental Assessment Requirements (SEARs). In order for a proponent to receive SEARs, an application must be made to the Secretary of the NSW Department of Planning and Environment (DP&E). The application is to be accompanied by a Scoping Report prepared in accordance with the requirements of Part 2 of Schedule 2 of the NSW Environmental Planning and Assessment Regulation 2000 (EP&A Regulation).

Centennial Newstan prepared a Scoping Report and lodged a request to the Secretary of DP&E for SEARs for the Proposed Action on 16 May 2019. SEARs for the Proposed Action were subsequently issued by the DP&E on 12 June 2019. The SEARs outline the relevant State matters and impacts requiring detailed consideration in the EIS, which include the Proposed Action's potential subsidence, groundwater, surface water, terrestrial and aquatic ecology, air quality and greenhouse gas, noise and vibration, traffic and transport, soil and land resources, Aboriginal and historic heritage, visual amenity, socio-economic, hazard, bushfire and waste impacts.

Suitably qualified and experienced technical specialists have been commissioned to conduct the impact assessment studies supporting the EIS, and independent peer reviews will be completed for select key studies in consideration of the NSW Government's draft Peer Review guideline (2017) (or its latest version).

Through seeking an accredited assessment (case by case), it is intended that the EIS will also assess the impacts associated with the Proposed Action on MNES, as required under the EPBC Act.

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

Yes

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

Exclusion of Mod 8 First Workings

In January 2019 Centennial Newstan received planning approval under the NSW Environmental Planning and Assessment Act 1979 (EP&A Act) to modify the development consent for the Newstan Colliery (DA 73-11-98). This most recent modification represents the eighth modification to DA 73-11-98 (Mod 8) and permits first workings mining within the West Borehole seam in the southern portion of the Newstan Colliery mining lease area. The first workings aim to improve Centennial Newstan's understanding of the geology within the West Borehole seam, including the presence, throw and strike of a major fault zone projected from the historic Newstan workings.

The first workings approved under Mod 8 do not form part of the Proposed Action. The Mod 8 first workings area is shown on the attached Figure 3. Detailed subsidence modelling completed for Mod 8 indicates that natural and built features are predicted to experience vertical subsidence of less than 20 millimetres (mm) due to the development of these first workings in the West Borehole seam. The value of 20 mm of vertical subsidence represents the limit of detection for vertical ground movement and thus negligible impacts can be expected from this degree of subsidence. Further, the development of these first workings is not expected to change the potential for ground movements and impacts due to existing subsidence associated with the old Awaba workings including pillar instability, pillar run and potential environmental impacts. The first workings approved under Mod 8 are also not expected to impact on surface flows, water quality, stream health, or watercourse stability, nor are they predicted to result in any drawdown of alluvial groundwater, or impact on groundwater dependent ecosystems. The first workings will also not affect Commonwealth land and its environment.

On this basis, the first workings approved under Mod 8 are not likely to have a significant impact on any matters of National Environmental Significance listed under the EPBC Act, including a water resource as described in the Significant Impact Guidelines 1.3: Coal seam gas and large coal mining developments – impacts on water resources (Department of the Environment, 2013). Consequently, the Mod 8 first workings are not considered part of the Proposed Action.

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).

Eraring Power Station and Eraring Ash Dam

The proposed Extension of Mining Area is partially overlaid by the Eraring Power Station and Eraring Ash Dam. Origin Energy own and operate these assets, which are located on Rocky Point Road at Eraring.

Centennial Newstan understands that Origin Energy lodged an application on 10 August 2018 to modify its planning approval under the EP&A Act (Project Approval 07_0084) to augment the Eraring Ash Dam using an alternate placement strategy and landform design to maintain operational flexibility and extend the storage life of the dam in the short to mid-term whilst continuing to support long term ash placement strategies towards 2032.

The proposed ash dam augmentation would involve the placement of ash in a series of upstream raises or terraces, or through placement from a pipe (or pipes) from the edges of the dam to form a 'beach' extending across the length of the ash dam operational area to achieve ash deposition to Relative Level (RL) 140 m. The design shares similarities with the existing project approval in terms of the overall landform profile and ash placement techniques. However the augmented landform requires a western saddle embankment, improved stormwater diversion system and remediation of mine voids underlying the Eraring Ash Dam (AECOM, 2018).

Centennial Newstan has commenced consultation with Origin Energy regarding the interaction of the Proposed Action with the ongoing and proposed operations at Eraring Power Station and Eraring Ash Dam. This consultation will continue during the EIS.

The interaction of the Proposed Action with these assets has been a key consideration during the design of the Proposed Action. Centennial Newstan understands there is significant community and government agency interest regarding the potential for leachate from Eraring Ash Dam to enter the historic Awaba workings and then mobilise via groundwater aquifers into Lake Macquarie. Centennial Newstan has placed considerable effort into understanding these risks as part of the preliminary mine planning process.

Whilst Centennial Newstan is cognisant of the proposed ash dam augmentation project, Origin Energy's application to modify Project Approval 07_0084 remains subject to ongoing assessment and approval under the EP&A Act. Consequently, it is possible that elements of the proposed ash dam augmentation project will change as the approval process progresses. Therefore, Centennial Newstan will continue to focus on known constraints and interactions between the Proposed Action and Eraring Ash Dam with the objective of optimising resource recovery in the context of Origin Energy's current approved project under Project Approval 07_0084.

Notwithstanding, the Proposed Action's potential to interact with the Eraring Power Station and Eraring Ash Dam will be a key focus for environmental impact assessment investigations during the EIS, particularly with regard to mine planning and the assessment and management of subsidence, groundwater, and surface water impacts.

Northern Coal Logistics Project

Newstan Colliery is integrated with the Northern Coal Logistics Project, under which Northern Coal Services provides the coal handling, processing and transport facilities to deliver coal from Mandalong Mine and Newstan Colliery to domestic and export markets. These activities are approved under Development Consent SSD-5145, with facilities comprised of the Newstan Colliery Surface Site, Cooranbong Entry Site, private haul roads and rail loading infrastructure.

Activities that occur at Newstan Colliery Surface Site, as approved under SSD-5145 for the

Northern Coal Logistics Project, include:

Processing of 8 Mtpa ROM coal through the Newstan Coal Processing Plant.Exporting product coal through the Newstan Colliery rail loading facilities by train to the Port of Newcastle.Haulage of coal to the Vales Point Power Station.Receiving coal from the Cooranbong Entry Site and Awaba Colliery by truck utilising the Cooranbong and Newstan-Eraring private haul roads.Transporting reject material from the Newstan Colliery Coal Processing Plant to the Northern and Southern Reject Emplacement Areas and Hawkmount Quarry.Discharge of water from Licensed Discharge Points.

Once ROM coal from the Newstan Colliery underground workings reaches the surface at the Newstan Colliery Surface Site, it forms part of the Northern Coal Logistics Project. The Northern Coal Logistics Project is approved to receive, handle and process up to 8 Mtpa of ROM coal, of which up to 4.5 Mtpa may be received from Newstan Colliery. The 4 Mtpa of ROM coal proposed to be extracted as part of the project would be received, handled and processed at the Newstan Colliery Surface Site in accordance with the approved operations under SSD-5145.

All surface water management at the Newstan Colliery Surface Site, including operation of licenced discharge points, forms part of the Northern Coal Logistics Project (SSD-5415).

Awaba Colliery

Awaba Colliery is approved under Development Consent PA 10_0038, which provides approval for:

Bord and pillar development and pillar extraction using continuous miners within the ‘Main South’ and ‘East B’ underground mining areas. Production, handling and distribution of up to 880,000 Mtpa ROM coal using existing surface facilities. Use of existing ancillary surface facilities. Expansion of the existing Pollution Control Dam.Delivery of coal to the Newstan Colliery Surface Site and/or the Eraring Power Station using the existing private haul road/transport facilities.

With coal reserves exhausted, Awaba Colliery ceased operating as a producing mine in March 2012. However, the surface infrastructure is still being used as a service facility for Newstan Colliery. The existing workings within the Great Northern seam also continue to be utilised for the storage of groundwater.

In 2018, Centennial Newstan also received approval under Part 4 of the EP&A Act (DA/477/2018) to construct and operate a 200 kW prefabricated photovoltaic solar farm within the confines of the existing parking facilities at the Awaba Colliery Surface Site. The solar farm will provide power to onsite air compressors that supply compressed air to underground workings at Newstan Colliery.

Owing to the long history of activities at Awaba Colliery dating back to 1947, the site contains a number of previously disturbed areas. To minimise environmental impacts, Centennial Newstan proposes to make use of these existing disturbance areas for the siting of new infrastructure as part of the project.

The Proposed Action proposes the ongoing use and upgrade of the surface infrastructure at

Awaba Colliery Surface Site in addition to the construction and operation of a number of new facilities. The following activities are proposed at Awaba Colliery Surface Site as part of the Proposed Action:

Ongoing use of the administration offices and parking facilities, excluding the footprint of the Awaba photovoltaic solar farm (DA/477/2018). The construction and operation of a gas flaring facility within the existing disturbance footprint of the site.Installation of two new ventilation fans. The fans would be installed at the site of the existing approved ventilation shaft and operating during extraction of the West Borehole seam. Upgrade and ongoing use of the underground water supply and communications infrastructure.Drilling of boreholes into the workings for the supply of bulk materials, gas drainage infrastructure, electricity, compressed air, and water.

In addition to the proposed continued operation of the Awaba Colliery Surface Site, the Proposed Action proposes the ongoing use of the existing underground workings for the ongoing storage of groundwater.

It is proposed that Project Approval 10_0038 be surrendered subject to consent being granted for the Proposed Action.

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
Anthochaera phrygia (Regent Honeyeater)	The preferred Swamp Mahogany foraging habitat is a dominant canopy or emergent species in PCTs 1649 and 1718 A total of 38.5

Species	Impact
	ha of potential habitat exists in the Project Area, as indicated in Figure 11. However, the Project is only likely to contain foraging habitat, because the nearest confirmed breeding habitat is located in the Cessnock LGA. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019).
Grantiella picta (Painted Honeyeater)	A total of 1048.4 ha of potential habitat is present within the Project Area (Figure 12). Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019).
Lathamus discolor (Swift Parrot)	The preferred Swamp Mahogany foraging habitat is a dominant canopy or emergent species in PCTs 1649 and 1718 which comprises 948.7 ha of the Project Area. Further foraging habitat is available throughout much of the site with Forest Redgum being a dominant in PCT 1588 and 1598 and Red Bloodwood also occurring in PCTs 1619,1636 and 1638. However, Swift Parrots are not known to breed on the mainland, and they migrate from their breeding grounds in Tasmania. Potential habitat on-site for Lathamus discolour is shown in Figure 13. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019). Subsidence related impacts from mining are not considered as a major threat to this species. Consequently, assessments of significance in line with the Significant Impact Guidelines 1.1 (DoEE 2013) have not been conducted at this stage.
Rostratula australis (Australian Painted Snipe)	A total of 47.7 ha of potential habitat exists within the Project Area, including dams that could support the presence of Australian Painted Snipes (Figure 14). Subsidence impacts could alter the hydrology of some water bodies in which this species could inhabit. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019).
Heleioporus australiacus (Giant Burrowing Frog)	Perennial non-flooding creeks and permanent pools occur within the Project Area which could support this species. Figure 15 indicates a total of 503.8 ha of potential habitat on-site. Fracturing of rock underlying drainage lines or

Species	Impact
	permanent pools from subsidence may divert flows further downstream or away from their natural pooling location. This may impact breeding habitat for the Giant Burrowing Frog. According to the Approved Conservation Advice for this species (Department of the Environment 2014), hydrological changes caused by longwall mining subsidence is a main threat to this species. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019).
Litoria aurea (Green and Golden Bell Frog)	Green and Golden Bell Frogs are known to occur in Muddy Lake, which is situated within 3 km of the Project Area. Surveys have not yet been performed within the Project Area to determine the presence of Green and Golden Bell Frogs, though there is habitat that could support their presence. There is a total of 1048.7 ha of potential habitat for the Green and Golden Bell Frog, which is displayed in Figure 16. Whilst impacts from subsidence are not listed as a main threat to the Green and Golden Bell Frog, changes to hydrology and reduction in water quality, which can be caused by subsidence, are threats to this species (Department of the Environment 2014b). Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019).
Litoria littlejohni (Littlejohn's Tree Frog)	A total of 149.1 ha of potential habitat was identified in the Project Area, which includes dams, ponds and permanent steams (Figure 17). However, the Project area only has an elevation of up to approximately 90m and it is not located on the eastern slopes of the Great Dividing Range. In the absence of surveys for this species it has been conservatively included herewith. Whilst impacts from subsidence are not listed as a main threat to the Littlejohn's Tree Frog, changes to hydrology and reduction in water quality, which can be caused by subsidence, are likely to have some negative influence on this species. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019).
Mixophyes balbus (Stuttering Frog)	A total of 85.6 ha of potential habitat was identified within the Project Area Figure 18.

Species	Impact
	Whilst impacts from subsidence are not listed as a main threat to the Stuttering Frog, a reduction in water quality, which can be caused by subsidence, may have some negative influence on this species. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019).
Mixophyes iteratus (Giant Barred Frog)	A total of 85.6 ha of potential habitat was identified within the Project Area Figure 18. Whilst impacts from subsidence are not listed on the Conservation Advice as a main threat to the Giant Barred Frog (TSSC 2017), a reduction in water quality, which can be caused by subsidence, may have some negative influence on this species. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019).
Chalinolobus dwyeri (Large-eared Pied Bat)	The Project Area contains suitable breeding habitat for Large-eared Pied Bat, which includes rocky outcrop areas which potentially contain crevices, an old Awaba mine shaft, derelict buildings, bridges and culverts (DoEE 2010; OEH 2018f). Figure 18 shows a total of 948.7 ha of potential habitat for this species. Alteration of habitat following subsidence due to longwall mining is a key threatening process that relates to the Large-eared Pied Bat (DERM 2011). Underground mining operations can destabilise Large-eared Pied Bat habitat such as cliffs and rocky outcrops through subsidence (DERM 2011). This is particularly problematic if nursery roosts occur where underground mining is proposed. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019).
Dasyurus maculatus maculatus (Spotted-tailed Quoll)	A total of 1048.4 ha of suitable habitat for Spotted-tailed Quolls exists within open forest which occurs within the Project Area, as shown in Figure 12. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019) affecting the potential habitat availability of Spotted-tailed Quolls.
Petaurus volans (Greater Glider)	The Project Area is highly connected to bushland to the south and west. The largest of these is the Watagan Mountains to the west.

Species	Impact
	This vegetation is largely intact and incorporates the Watagan National Park; as well as Olney and Watagan State Forests. However, this species typically occurs at higher elevations further to the west and it has been conservatively included herewith in the absence of targeted surveys. A total of 1048.4 ha of potential habitat for this species is identified in the Project Area, as indicated in Figure 12. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019) affecting the potential habitat availability of the Greater Glider.
Phascolarctos cinereus (Koala)	Koalas inhabit eucalypt forests and woodlands. The suitability of these forests for habitation depends on the size and species of trees present, soil nutrients, climate and rainfall. A total of 948.7 ha of potential koala habitat was identified in the Project Area (see Figure 13). Koala observations were made within the Project Area (364535, 6346875) in 2006 as part of the 'Dan Lunney's Community Wildlife Survey'. There are also primary and secondary feed tree species present within the Project Area. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019) affecting the potential habitat availability of Koalas.
Potorous tridactylus tridactylus (Long-nosed Potoroo)	PCTs 1649 and 1619, 1627, 1636, 1638, 1649, 1716 and 1718, totalling 1048.4 ha, may provide habitat for this species within the Project Area. This habitat is shown in Figure 19. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019) affecting habitat potential for this species.
Pseudomys novaehollandiae (New Holland Mouse)	PCTs 1588, 1619, 1627, 1636, 1638, 1649, 1716 and 1718, totalling 1048.4 ha, provide suitable heathy dense understorey habitat for this species within the Project Area. This habitat is shown in Figure 19. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019) affecting habitat potential for this species.
Pteropus poliocephalus (Grey-headed Flying-	A total of 948.7 ha of potential habitat for the

Species	Impact
fox)	Grey-headed Flying Fox occurs within the Project Area (Figure 20) and can be found within the majority of PCTs on site excluding PCT 1736 and PCT 1737. None of the vegetation communities used by the Grey-headed Flying-fox produce continuous foraging resources throughout the year. As a result, the species has adopted complex migration traits in response to ephemeral and patchy food resources. The Project Area is highly connected to bushland to the south and west. The largest of these is the Watagan Mountains to the west. This vegetation is largely intact and incorporates the Watagan National Park; as well as Olney and Watagan State Forests. These conservation areas provide a wide range of Eucalypt woodlands and forests, which this species may occupy (DoEE 2016). Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019) affecting habitat potential for this species.
Acacia bynoeana (Bynoe's Wattle)	Acacia bynoeana is known to be associated with Red Bloodwood in the overstorey and this species occurs in PCTs 1619, 1636 and 1638 within the Project Area, which totals 902.9 ha. Acacia bynoeana has been recorded in the north west of the Project Area within and adjacent to a powerline easement in an area mapped as PCT 1636. Potential habitat for this species is shown in Figure 21. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019) affecting habitat potential for this species.
Angophora inopina (Charmhaven Apple)	Angophora inopina has been located within the Project Area during January threatened species surveys within PCT 1636 'Scribbly Gum – Red Bloodwood – Angophora inopina heathy woodland on lowlands of the Central Coast. A total of 948.7 ha of potential habitat occurs in the Project Area, which is shown in Figure 20. PCTs in which this species is known to occur are not likely to experience subsidence related impacts such that the associated habitat values would be adversely impacted.
Caladenia tessellata (Thick-lip Spider Orchid)	PCT 1598 provides suitable grassy sclerophyll habitat for this species within the Project Area.

Species	Impact
	Targeted surveys of the Project Area during the flowering period have failed to detect this species and it has been included herewith as a conservative approach. A total of 22.8 ha of potential habitat occurs in the Project Area, which is shown in Figure 22. PCTs in which this species is known to occur are not likely to experience subsidence related impacts such that the associated habitat values would be adversely impacted.
Genoplesium insignis (Syn. Corunastylis insignis) (Wyong Midge Orchid 1)	Surveys for Genoplesium insignis were undertaken in potential habitat during October 2018. This survey was undertaken during the flowering period detailed by OEH (2018e) resulting in its detection within a disturbed powerline easement. These observations indicate that potential habitat may be associated with PCTs 1619, 1636 and power easements. A total of 902.9 ha of potential habitat occurs in the Project Area, which is shown in Figure 23. PCTs in which this species is known to occur are not likely to experience subsidence related impacts such that the associated habitat values would be adversely impacted.
Cryptostylis hunteriana (Leafless Tongue-orchid)	Cryptostylis hunteriana is known to be associated with PCTs 1619, 1636 and 1638 within the Project Area, with occurrences potentially related to the distribution and dominance of Red Bloodwood. A total of 993.06 ha of potential habitat occurs in the Project Area, which is shown in Figure 24. As this species occurs in such a wide variety of habitat types, subsidence impacts may alter habitats in which this species occurs. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019).
Cynanchum elegans (White-flowered Wax Plant)	PCT 1598 provides potentially suitable habitat for this species within the Project Area; although, no occurrences of this species have been observed. A total of 85.6 ha of potential habitat occurs in the Project Area, which is shown in Figure 25. Subsidence impacts may alter habitats in which this species occurs. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019).

Species	Impact
Diuris praecox (Rough Doubletail)	Areas in the south east of the Project Area which are closer to the coast may provide habitat that is potentially suitable for this species. This species is known to be associated with PCT 1627 which occurs within the Project Area. A total of 1005.9 ha of potential habitat occurs in the Project Area, which is shown in Figure 26. PCTs in which this species is known to occur are not likely to experience subsidence related impacts such that the associated habitat values would be adversely impacted.
Eucalyptus camfieldii (Camfield's Stringybark)	PCTs 1649 and 1619 may provide habitat that is potentially suitable for this species within the Project Area. This habitat is shown in Figure 15 This species has not been recorded during targeted surveys and it has been included herewith as a conservative approach. PCTs in which this species is known to occur are not likely to experience subsidence related impacts such that the associated habitat values would be adversely impacted.
Eucalyptus parramattensis subsp. decadens (Earp's Gum)	PCTs 1649 and 1619 may provide habitat suitable for this species within the Project Area. This habitat is totals 20.7 ha, as shown in Figure 27. This species has not been recorded during targeted surveys and it has been included herewith as a conservative approach. PCTs in which this species is known to occur are not likely to experience subsidence related impacts such that the associated habitat values would be adversely impacted.
Grevillea parviflora subsp. parviflora (Small-flowered Grevillea)	Smooth-barked Apple - Red Bloodwood - Brown Stringybark - Hairpin Banksia heathy open forest of coastal lowlands (PCT 1619) is listed as an associated vegetation type for this species (OEH 2018a), which is common throughout the northern half of the Project Area. Project Area surveys in January 2019 targeted G. parviflora subsp. parviflora in areas of identified potential habitat, totalling 902.9 ha, as shown in Figure 28. This species was detected within the Project Area. The patch of Grevillea parviflora subsp. parviflora within the Project Area appears to be part of the Lake Macquarie population, as identified by OEH (2018b). PCTs in which this species is known to occur are not likely to experience subsidence related impacts such that the associated habitat values would

Species	Impact
	be adversely impacted.
Microtis angusii (Angus's Onion Orchid)	Areas within the Project Area such as; the powerline easements, road verges and existing disturbed areas provide potential habitat for this species. A total of 64.2 ha of potential habitat occurs in the Project Area, which is shown in Figure 29. Subsidence impacts may alter habitats in which this species occurs. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019).
Melaleuca biconvexa (Biconvex Paperbark)	Suitable habitat for Melaleuca biconvexa (Biconvex Paperbark) is present within the damp parts of the Project Area, including low-lying areas on alluvial soils of low slopes or sheltered aspects (OEH 2018c). A total of 20.9 ha of potential habitat occurs in the Project Area, which is shown in Figure 30. Project Area surveys for Melaleuca biconvexa were undertaken in January 2019. This species has not been recorded during targeted surveys and it has been included herewith as a conservative approach. Across the Sydney Basin, there are known populations of this species within five IBRA sub-regions in the Sydney Basin, with no geographic restrictions to populations within the Wyong region (OEH 2018c). On the Central Coast of NSW, there are two key areas prioritised for conservation of this species; Wyong and Lisarow (Bell 2016). The Project Area is well outside of these priority areas, whilst larger and more extensive tracts of M. biconvexa are located within the Mandalong Valley. Subsidence impacts may alter habitats in which this species occurs. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019).
Rutidosis heterogama (Heath Wrinklewort)	PCTs 1649 and 1619 provide suitable heathy understorey and moist areas in PCTs 1598 and 1588 may provide habitat for this species within the Project Area. Potential habitat, totalling 927.9 ha, is shown in Figure 31 This species has not been recorded during targeted surveys and it has been included herewith as a conservative approach. PCTs in which this species is known to occur are not likely to experience subsidence related impacts such

Species	Impact
	that the associated habitat values would be adversely impacted.
Syzygium paniculatum (Magenta Lilly Pilly)	There are some small gullies in the Project Area that contain some rainforest species which provide some potential sub-optimal habitat for this species. A total of 20.7 ha of potential habitat occurs in the Project Area, which is shown in Figure 27. Subsidence impacts may alter habitats in which this species occurs. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019).
Tetratheca juncea (Black-eyed Susan)	Of the vegetation types present within the Project Area, Smooth-barked Apple - Red Bloodwood - Brown Stringybark - Hairpin Banksia heathy open forest of coastal lowlands (PCT 1619) is listed as an associated vegetation type for this species (OEH 2018a). Tetratheca juncea has been recorded at numerous locations within several PCTs throughout the Project Area during the January 2019 survey. A total of 987.3 ha of potential habitat occurs in the Project Area, which is shown in Figure 32. PCTs in which this species is known to occur are not likely to experience subsidence related impacts such that the associated habitat values would be adversely impacted.
Thesium australe (Austral Toadflax)	Several areas within the Project Area contain the host plant Themeda triandra with PCT 1598 potentially offering more suitable habitat due to its grassy open forest formation. A total of 94.4 ha of potential habitat occurs in the Project Area, which is shown in Figure 33. PCTs in which this species is known to occur are not likely to experience subsidence related impacts such that the associated habitat values would be adversely impacted.

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
Cuculus optatus (Oriental Cuckoo, Horsfield's Cuckoo)	This species may intermittently utilise aquatic habitats and riparian vegetation during their migration visits to the Proposed Action Area. Habitats that are sensitive to mine subsidence cracking and/or pooling, may be permanently or temporarily impacted by the Proposed Action. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019). Surface cracking may occur with larger and more localised cracking potentially occurring in the bases of streams or on the side of steep slopes. Ponding could occur along riparian zones potentially incrementally increasing wetland habitats for areas in the vicinity of approximately 0.3m and 200 m in length.
Hirundapus caudacutus (White-throated Needletail)	This species may intermittently utilise aquatic habitats and riparian vegetation during their migration visits to the Proposed Action Area. Habitats that are sensitive to mine subsidence cracking and/or pooling, may be permanently or temporarily impacted by the Proposed Action. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019). Surface cracking may occur with larger and more localised cracking potentially occurring in the bases of streams or on the side of steep slopes. Ponding could occur along riparian zones potentially incrementally increasing wetland habitats for areas in the vicinity of approximately 0.3m and 200 m in length.
Monarcha melanopsis (Black-faced Monarch)	This species may intermittently utilise aquatic habitats and riparian vegetation during their migration visits to the Proposed Action Area. Habitats that are sensitive to mine subsidence cracking and/or pooling, may be permanently or temporarily impacted by the Proposed Action. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019). Surface cracking may occur with larger and more localised cracking potentially occurring in the bases of streams or on the side of steep slopes.

Species	Impact
	Ponding could occur along riparian zones potentially incrementally increasing wetland habitats for areas in the vicinity of approximately 0.3m and 200 m in length.
Monarcha trivirgatus (Spectacled Monarch)	This species may intermittently utilise aquatic habitats and riparian vegetation during their migration visits to the Proposed Action Area. Habitats that are sensitive to mine subsidence cracking and/or pooling, may be permanently or temporarily impacted by the Proposed Action. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019). Surface cracking may occur with larger and more localised cracking potentially occurring in the bases of streams or on the side of steep slopes. Ponding could occur along riparian zones potentially incrementally increasing wetland habitats for areas in the vicinity of approximately 0.3m and 200 m in length.
Motacilla flava (Yellow Wagtail)	This species may intermittently utilise aquatic habitats and riparian vegetation during their migration visits to the Proposed Action Area. Habitats that are sensitive to mine subsidence cracking and/or pooling, may be permanently or temporarily impacted by the Proposed Action. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019). Surface cracking may occur with larger and more localised cracking potentially occurring in the bases of streams or on the side of steep slopes. Ponding could occur along riparian zones potentially incrementally increasing wetland habitats for areas in the vicinity of approximately 0.3m and 200 m in length.
Myiagra cyanoleuca (Satin Flycatcher)	This species may intermittently utilise aquatic habitats and riparian vegetation during their migration visits to the Proposed Action Area. Habitats that are sensitive to mine subsidence cracking and/or pooling, may be permanently or temporarily impacted by the Proposed Action. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019). Surface cracking may occur with larger and more localised cracking potentially occurring in the bases of streams or on the side of steep slopes.

Species	Impact
	Ponding could occur along riparian zones potentially incrementally increasing wetland habitats for areas in the vicinity of approximately 0.3m and 200 m in length.
Rhipidura rufifrons (Rufous Fantail)	This species may intermittently utilise aquatic habitats and riparian vegetation during their migration visits to the Proposed Action Area. Habitats that are sensitive to mine subsidence cracking and/or pooling, may be permanently or temporarily impacted by the Proposed Action. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019). Surface cracking may occur with larger and more localised cracking potentially occurring in the bases of streams or on the side of steep slopes. Ponding could occur along riparian zones potentially incrementally increasing wetland habitats for areas in the vicinity of approximately 0.3m and 200 m in length.
Actitis hypoleucos (Common Sandpiper)	This species may intermittently utilise aquatic habitats and riparian vegetation during their migration visits to the Proposed Action Area. Habitats that are sensitive to mine subsidence cracking and/or pooling, may be permanently or temporarily impacted by the Proposed Action. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019). Surface cracking may occur with larger and more localised cracking potentially occurring in the bases of streams or on the side of steep slopes. Ponding could occur along riparian zones potentially incrementally increasing wetland habitats for areas in the vicinity of approximately 0.3m and 200 m in length.
Arenaria interpres (Ruddy Turnstone)	This species may intermittently utilise aquatic habitats and riparian vegetation during their migration visits to the Proposed Action Area. Habitats that are sensitive to mine subsidence cracking and/or pooling, may be permanently or temporarily impacted by the Proposed Action. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019). Surface cracking may occur with larger and more localised cracking potentially occurring in the bases of streams or on the side of steep slopes.

Species	Impact
	Ponding could occur along riparian zones potentially incrementally increasing wetland habitats for areas in the vicinity of approximately 0.3m and 200 m in length.
Calidris acuminata (Sharp-tailed Sandpiper)	This species may intermittently utilise aquatic habitats and riparian vegetation during their migration visits to the Proposed Action Area. Habitats that are sensitive to mine subsidence cracking and/or pooling, may be permanently or temporarily impacted by the Proposed Action. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019). Surface cracking may occur with larger and more localised cracking potentially occurring in the bases of streams or on the side of steep slopes. Ponding could occur along riparian zones potentially incrementally increasing wetland habitats for areas in the vicinity of approximately 0.3m and 200 m in length.
Calidris canutus (Red Knot, Knot)	This species may intermittently utilise aquatic habitats and riparian vegetation during their migration visits to the Proposed Action Area. Habitats that are sensitive to mine subsidence cracking and/or pooling, may be permanently or temporarily impacted by the Proposed Action. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019). Surface cracking may occur with larger and more localised cracking potentially occurring in the bases of streams or on the side of steep slopes. Ponding could occur along riparian zones potentially incrementally increasing wetland habitats for areas in the vicinity of approximately 0.3m and 200 m in length.
Calidris ferruginea (Curlew Sandpiper)	This species may intermittently utilise aquatic habitats and riparian vegetation during their migration visits to the Proposed Action Area. Habitats that are sensitive to mine subsidence cracking and/or pooling, may be permanently or temporarily impacted by the Proposed Action. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019). Surface cracking may occur with larger and more localised cracking potentially occurring in the bases of streams or on the side of steep slopes.

Species	Impact
	Ponding could occur along riparian zones potentially incrementally increasing wetland habitats for areas in the vicinity of approximately 0.3m and 200 m in length.
Calidris melanotos (Pectoral Sandpiper)	This species may intermittently utilise aquatic habitats and riparian vegetation during their migration visits to the Proposed Action Area. Habitats that are sensitive to mine subsidence cracking and/or pooling, may be permanently or temporarily impacted by the Proposed Action. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019). Surface cracking may occur with larger and more localised cracking potentially occurring in the bases of streams or on the side of steep slopes. Ponding could occur along riparian zones potentially incrementally increasing wetland habitats for areas in the vicinity of approximately 0.3m and 200 m in length.
Califris ruficollis (Red-necked Stint)	This species may intermittently utilise aquatic habitats and riparian vegetation during their migration visits to the Proposed Action Area. Habitats that are sensitive to mine subsidence cracking and/or pooling, may be permanently or temporarily impacted by the Proposed Action. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019). Surface cracking may occur with larger and more localised cracking potentially occurring in the bases of streams or on the side of steep slopes. Ponding could occur along riparian zones potentially incrementally increasing wetland habitats for areas in the vicinity of approximately 0.3m and 200 m in length.
Charadrius bicinctus (Double-banded Plover)	This species may intermittently utilise aquatic habitats and riparian vegetation during their migration visits to the Proposed Action Area. Habitats that are sensitive to mine subsidence cracking and/or pooling, may be permanently or temporarily impacted by the Proposed Action. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019). Surface cracking may occur with larger and more localised cracking potentially occurring in the bases of streams or on the side of steep slopes.

Species	Impact
	Ponding could occur along riparian zones potentially incrementally increasing wetland habitats for areas in the vicinity of approximately 0.3m and 200 m in length.
Charadrius leschenaultii (Greater Sand Plover, Large Sand Plover)	This species may intermittently utilise aquatic habitats and riparian vegetation during their migration visits to the Proposed Action Area. Habitats that are sensitive to mine subsidence cracking and/or pooling, may be permanently or temporarily impacted by the Proposed Action. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019). Surface cracking may occur with larger and more localised cracking potentially occurring in the bases of streams or on the side of steep slopes. Ponding could occur along riparian zones potentially incrementally increasing wetland habitats for areas in the vicinity of approximately 0.3m and 200 m in length.
Charadrius mongolus (Lesser Sand Plover, Mongolian Plover)	This species may intermittently utilise aquatic habitats and riparian vegetation during their migration visits to the Proposed Action Area. Habitats that are sensitive to mine subsidence cracking and/or pooling, may be permanently or temporarily impacted by the Proposed Action. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019). Surface cracking may occur with larger and more localised cracking potentially occurring in the bases of streams or on the side of steep slopes. Ponding could occur along riparian zones potentially incrementally increasing wetland habitats for areas in the vicinity of approximately 0.3m and 200 m in length.
Gallinago hardwickii (Latham's Snipe, Japanese Snipe)	This species may intermittently utilise aquatic habitats and riparian vegetation during their migration visits to the Proposed Action Area. Habitats that are sensitive to mine subsidence cracking and/or pooling, may be permanently or temporarily impacted by the Proposed Action. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019). Surface cracking may occur with larger and more localised cracking potentially occurring in the bases of streams or on the side of steep slopes.

Species	Impact
	Ponding could occur along riparian zones potentially incrementally increasing wetland habitats for areas in the vicinity of approximately 0.3m and 200 m in length.
Limicola falcinellus (Broad-billed Sandpiper)	This species may intermittently utilise aquatic habitats and riparian vegetation during their migration visits to the Proposed Action Area. Habitats that are sensitive to mine subsidence cracking and/or pooling, may be permanently or temporarily impacted by the Proposed Action. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019). Surface cracking may occur with larger and more localised cracking potentially occurring in the bases of streams or on the side of steep slopes. Ponding could occur along riparian zones potentially incrementally increasing wetland habitats for areas in the vicinity of approximately 0.3m and 200 m in length.
Limosa lapponica (Bar-tailed Godwit)	This species may intermittently utilise aquatic habitats and riparian vegetation during their migration visits to the Proposed Action Area. Habitats that are sensitive to mine subsidence cracking and/or pooling, may be permanently or temporarily impacted by the Proposed Action. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019). Surface cracking may occur with larger and more localised cracking potentially occurring in the bases of streams or on the side of steep slopes. Ponding could occur along riparian zones potentially incrementally increasing wetland habitats for areas in the vicinity of approximately 0.3m and 200 m in length.
Numenius madagascariensis (Eastern Curlew, Far Eastern Curlew)	This species may intermittently utilise aquatic habitats and riparian vegetation during their migration visits to the Proposed Action Area. Habitats that are sensitive to mine subsidence cracking and/or pooling, may be permanently or temporarily impacted by the Proposed Action. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019). Surface cracking may occur with larger and more localised cracking potentially occurring in the bases of streams or on the side of steep slopes.

Species	Impact
	Ponding could occur along riparian zones potentially incrementally increasing wetland habitats for areas in the vicinity of approximately 0.3m and 200 m in length.
Numenius phaeopus (Whimbrel)	This species may intermittently utilise aquatic habitats and riparian vegetation during their migration visits to the Proposed Action Area. Habitats that are sensitive to mine subsidence cracking and/or pooling, may be permanently or temporarily impacted by the Proposed Action. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019). Surface cracking may occur with larger and more localised cracking potentially occurring in the bases of streams or on the side of steep slopes. Ponding could occur along riparian zones potentially incrementally increasing wetland habitats for areas in the vicinity of approximately 0.3m and 200 m in length.
Pandion haliaetus (Osprey)	This species may intermittently utilise aquatic habitats and riparian vegetation during their migration visits to the Proposed Action Area. Habitats that are sensitive to mine subsidence cracking and/or pooling, may be permanently or temporarily impacted by the Proposed Action. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019). Surface cracking may occur with larger and more localised cracking potentially occurring in the bases of streams or on the side of steep slopes. Ponding could occur along riparian zones potentially incrementally increasing wetland habitats for areas in the vicinity of approximately 0.3m and 200 m in length.
Pluvialis fulva (Pacific Golden Plover)	This species may intermittently utilise aquatic habitats and riparian vegetation during their migration visits to the Proposed Action Area. Habitats that are sensitive to mine subsidence cracking and/or pooling, may be permanently or temporarily impacted by the Proposed Action. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019). Surface cracking may occur with larger and more localised cracking potentially occurring in the bases of streams or on the side of steep slopes.

Species	Impact
	Ponding could occur along riparian zones potentially incrementally increasing wetland habitats for areas in the vicinity of approximately 0.3m and 200 m in length.
Tringa brevipes (Grey-tailed Tattler)	This species may intermittently utilise aquatic habitats and riparian vegetation during their migration visits to the Proposed Action Area. Habitats that are sensitive to mine subsidence cracking and/or pooling, may be permanently or temporarily impacted by the Proposed Action. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019). Surface cracking may occur with larger and more localised cracking potentially occurring in the bases of streams or on the side of steep slopes. Ponding could occur along riparian zones potentially incrementally increasing wetland habitats for areas in the vicinity of approximately 0.3m and 200 m in length.
Tringa nebularia (Common Greenshank, Greenshank)	This species may intermittently utilise aquatic habitats and riparian vegetation during their migration visits to the Proposed Action Area. Habitats that are sensitive to mine subsidence cracking and/or pooling, may be permanently or temporarily impacted by the Proposed Action. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019). Surface cracking may occur with larger and more localised cracking potentially occurring in the bases of streams or on the side of steep slopes. Ponding could occur along riparian zones potentially incrementally increasing wetland habitats for areas in the vicinity of approximately 0.3m and 200 m in length.
Tringa stagnatilis (Marsh Sandpiper, Little Greenshank)	This species may intermittently utilise aquatic habitats and riparian vegetation during their migration visits to the Proposed Action Area. Habitats that are sensitive to mine subsidence cracking and/or pooling, may be permanently or temporarily impacted by the Proposed Action. Bord-and-pillar mining in the study area has the potential to cause subsidence, sinkholes, cracking and ponding (MSEC 2019). Surface cracking may occur with larger and more localised cracking potentially occurring in the bases of streams or on the side of steep slopes.

Species	Impact
	Ponding could occur along riparian zones potentially incrementally increasing wetland habitats for areas in the vicinity of approximately 0.3m and 200 m in length.

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
Hydrological characteristics	Significant impact criterion (a): Changes in the water quantity, including the timing of variations in water quantity Impact: The surface expression of mine subsidence above areas of partial and total extraction has the potential to result in changes to surface water flow regimes. These impacts may include ponding within drainage lines, or surface water losses to groundwater through surface cracking and sinkholes (in extreme cases). Dewatering of mine workings and subsidence impacts resulting in fracturing of strata overlying the mine workings have the potential to depressurise groundwater and reduce the groundwater available to registered users and

Water Resource	Impact
	groundwater dependent ecosystems. Impacts to water quantity will be assessed as part of the detailed surface water and groundwater impact assessments prepared in accordance with relevant guidelines, policies and assessment requirements, and in consultation with government agencies and other stakeholders. The findings will be documented in the EIS. Significant impact criterion (b): Changes in the integrity of hydrological or hydrogeological connections, including substantial structural damage (e.g. large scale subsidence) Impact: The subsidence impacts from the Proposed Action have the potential to result in long-term changes to local groundwater conditions. The expected subsidence may cause long-term changes to the integrity of hydrological and hydrogeological connections, including substantial structural damage to the overlying strata. This may affect stream base flows, through surface and groundwater connectivity and has the potential to result in alteration of groundwater flow paths above the proposed workings. Similarly, the surface expression of mine subsidence above areas of partial and total extraction has the potential to result in changes to surface water flow regimes. These impacts may include ponding within drainage lines, or surface water losses to groundwater through surface cracking and sinkholes (in extreme cases). The subsidence impacts from the Proposed Action have the potential to cause depressurisation of fractured and porous rock groundwater sources, particularly where there is fracturing of the overlying rock. This may result in: — Alteration of groundwater flow paths above the proposed workings. — Ingress of leachate from the Eraring Ash Dam into aquifers above the proposed workings, including the existing Awaba workings, resulting in groundwater quality impacts. — Increased seepage of underground water within the existing Awaba workings into aquifers above the proposed workings. — Localised changes to groundwater levels and potentiometric surface levels. — Impacts to local groundwater users including agricultural activities. — Impacts to groundwater dependent ecosystems (GDEs).

Water Resource	Impact
	The subsidence impacts from the Proposed Action have the potential to cause ingress of leachate from the Eraring Ash Dam into aquifers above the proposed workings, including the existing Awaba workings, resulting in groundwater quality impacts. Hydraulic connection between the coal seam, overlying aquifers and water contained in the overlying Awaba workings has the potential to occur due to subsidence induced fracturing, although a continuous hydraulic connection is unlikely. The Proposed Action also has the potential to result in pillar failure within the existing Awaba workings, resulting in increased recharge from the surface. Hydraulic connection between the coal seam, overlying aquifers and water contained in the overlying Awaba workings has the potential to occur due to subsidence induced fracturing, although a continuous hydraulic connection is unlikely. This may increase seepage of underground water within the existing Awaba workings into aquifers above the proposed workings. Impacts to the integrity of hydrological or hydrogeological connections will be assessed as part of the detailed surface water, groundwater, and subsidence impact assessments prepared in accordance with relevant guidelines, policies and assessment requirements, and in consultation with government agencies and other stakeholders. The findings will be documented in the EIS. Significant impact criterion (c): Changes in the area or extent of a water resource Impact: Catchment and drainage modifications may occur from construction of surface infrastructure at the Awaba Colliery as part of the Proposed Action. However, this would likely be mitigated by locating, where possible, all new surface infrastructure within pre-existing disturbed areas at the Awaba Colliery Surface Site. Impacts to the area of extent of a water resource will be assessed as part of the detailed surface water and groundwater impact assessments prepared in accordance with relevant guidelines, policies and assessment requirements, and in consultation with government agencies and other stakeholders.

Water Resource	Impact
	The findings will be documented in the EIS.
Water quality	Significant impact criterion (a): There is a risk that the ability to achieve relevant local or regional water quality objectives would be materially compromised, and as a result the action: (i) creates risks to human or animal health or to the condition of the natural environment as a result of the change in water quality; Impact: The Proposed Action has the potential to create risks to the condition of the natural environmental due to impacts to water quality as a result of the following: — Ingress of leachate from the Eraring Ash Dam into aquifers above the proposed workings, including the existing Awaba workings, resulting in groundwater quality impacts. — Impacts to water quality during construction or operation of surface infrastructure, such as from erosion and sediment entrainment in surface runoff. However, this would be mitigated through all surface infrastructure for the Proposed Action being located, where possible, within pre-existing disturbed areas at the Awaba Colliery Surface Site and generally managed in accordance with the existing water management system. — Impacts to receiving environments from any release of treated water to nearby watercourses (under licence) or supply to others for irrigation or other uses (if either of these options is adopted to manage water not re-used on-site). (ii) substantially reduces the amount of water available for human consumptive uses or for other uses, including environmental uses, which are dependent on water of the appropriate quality; Impact: Dewatering of mine workings and subsidence impacts resulting in fracturing of strata overlying the mine workings have the potential to depressurise groundwater and reduce the groundwater available to registered users and groundwater dependent ecosystems. (iii) causes persistent organic chemicals, heavy metals, salt or other potentially harmful substances to accumulate in the environment; Impact: The subsidence impacts from the Proposed Action and their associated hydraulic fracturing have the potential to increase the ingress of leachate from the Eraring Ash Dam

Water Resource	Impact
	into aquifers above the proposed workings, including the existing Awaba workings, resulting in groundwater quality impacts. The leachate from the Eraring Ash Dam is a potential source of harmful substances which may accumulate in the environment. (iv) seriously affects the habitat or lifecycle of a native species dependent on a water resource; or Impact: The Proposed Action's potential impacts to the habitat or lifecycle of a native species dependent on a water resource as a result of changes to water quality are not yet understood. These impacts will be assessed as part of the detailed surface water, groundwater, and terrestrial and aquatic biodiversity impact assessments prepared in accordance with relevant guidelines, policies and assessment requirements, and in consultation with government agencies and other stakeholders. The findings will be documented in the EIS. (v) causes the establishment of an invasive species (or the spread of an existing invasive species) that is harmful to the ecosystem function of the water resource. Impact: The potential for the Proposed Action to cause the establishment of an invasive species (or the spread of an existing invasive species) that is harmful to the ecosystem function of the water resource is considered low given the limited extent of the proposed surface disturbance activities, which will mostly be located within the existing disturbance footprint of the Awaba Colliery Surface Site. Notwithstanding, the Proposed Action's impacts on the establishment and spread of invasive species will be assessed as part of the detailed surface water, groundwater, and terrestrial and aquatic biodiversity impact assessments prepared in accordance with relevant guidelines, policies and assessment requirements, and in consultation with government agencies and other stakeholders. The findings will be documented in the EIS. Significant impact criterion (b): There is a significant worsening of local water quality (where current local water quality is superior to local or regional water quality objectives) Impact: The quality of mine water to be discharged to LT Creek is expected

Water Resource	Impact
	to be similar to existing mine water discharge. There is a risk that subsidence impacts will result in the ingress of leachate from the Eraring Ash Dam into aquifers above the proposed workings, including the existing Awaba workings, resulting in groundwater quality impacts as well as a deterioration of water quality in the Awaba seepage area. Significant impact criterion (c): High quality water is released into an ecosystem which is adapted to a lower quality of water Impact: The Proposed Action is unlikely to result in water quality impacts such that high quality water is released into an ecosystem which is adapted to lower quality of water. The Proposed Action's impacts on local and regional water quality will be assessed as part of the detailed surface water and groundwater, impact assessments prepared in accordance with relevant guidelines, policies and assessment requirements, and in consultation with government agencies and other stakeholders. The findings will be documented in the EIS.

2.9.2 Do you consider this impact to be significant?

Yes

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.

Flora

Vegetation has been characterised on-site using a combination of desktop assessment, Rapid Data Points (RDPs) and Biodiversity Assessment Method (BAM) plots. The Study Area for the characterisation of biodiversity values relevant to the Proposed Action is shown on the attached Figure 8 and Figure 9. It covers the areas where potential impacts from the Proposed Action may occur within the Proposed Action Area, including the proposed Extension of Mining Area, Awaba Colliery Surface Site and a buffer of approximately 100 m surrounding these areas.

Initial vegetation mapping Lake Macquarie Council (Bell, S. 2016) was utilised in order to give an indicative representation of the Plant Community Types (PCTs) present on-site. BAM plot data was obtained and used to further improve the accuracy of the vegetation classification and mapping.

A total of 11 PCTs were identified within the Study Area, including:

1588 – Grey Ironbark – Broad-leaved Mahogany – Forest Red Gum shrubby open forest on Coastal Lowlands of the Central Coast;1598 – Forest Red Gum grassy open forest on floodplains of the lower Hunter;1619 – Smooth-barked Apple – Red Bloodwood – Brown Stringybark – Hairpin Banksia heathy open forest of coastal lowlands;1627 – Smooth-barked Apple – Turpentine – Sydney Peppermint heathy woodland on sandstone ranges of the Central Coast;1636 – Scribbly Gum – Red Bloodwood – Angophora inopina heathy woodland on lowlands of the Central Coast;1638 – Smooth-barked Apple – Red Bloodwood – Scribbly Gum grass – shrub woodland on lowlands of the Central Coast;1649 – Smooth-barked Apple – Red Mahogany – Swamp Mahogany – Melaleuca sieberi heathy swamp woodland of coastal lowlands;1716 – Prickly-leaved Paperbark forest on coastal lowlands of the Central Coast and Lower North Coast;1718 – Swamp Mahogany – Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast;1736 – Water Couch – Tall Spike Rush freshwater wetland of the Central Coast and lower Hunter; and1737 – Typha Rushland.

None of the vegetation communities identified within the Study Area are consistent with any Commonwealth listed Endangered Ecological Communities.

Fauna

The Study Area for the characterisation of biodiversity values relevant to the Proposed Action is shown on the attached Figure 8 and Figure 9. It covers the areas where potential impacts from the Proposed Action may occur within the Proposed Action Area, including the proposed

Extension of Mining Area, Awaba Colliery Surface Site and a buffer of approximately 100 m surrounding these areas.

Habitat values identified within the Study Area include ephemeral tributaries (i.e. upper catchment creeks), loose sandstone rocks (typically <1m diameter) and hollow-bearing trees (hollow-bearing trees are continuing to be mapped within the Extension of Mining Area).

Through a Likelihood of Occurrence analysis, EPBC Act Protected Matters Search, an OEH Threatened Species Record Search and a Candidate species report from the BAM Calculator; 32 EPBC Act listed threatened species were found to have potential to occur.

Field surveys commenced in October 2018 and another targeted survey was conducted in January 2019. Further targeted flora surveys are being conducted currently in May to June 2019 and further surveys ongoing for August and October 2019. Primarily opportunistic fauna surveys have been conducted in October 2018 and January 2019 and further surveys are ongoing for June, September and October 2019. In total there are six separate rounds of seasonal surveys which have been scheduled with the aim of targeting the appropriate flowering periods for cryptic threatened flora, peak activity for threatened fauna or appropriate timing for breeding habitat detection. Targeted flora transects are being undertaken to detect and quantify threatened flora, with reference to OEH (2016) guidelines for the listed EPBC Act listed threatened species which have been deemed likely to occur.

Further targeted surveys for threatened fauna will involve terrestrial and arboreal Elliot trapping, spotlighting, Anabat recordings, hair tubes, avifauna spot assessments, call playback, Koala searches (Spot Assessment Technique; Phillips and Callahan 2011) and opportunistic sightings. These surveys were also guided by DEC (2004) survey guidelines.

These surveys detected 136 flora species; 130 native and 6 weed species (3 are Weeds of National Significance) within the Study Area. To date, five EPBC Act listed threatened flora species have been detected as follows; Acacia bynoeana (Bynoe’s Wattle), Angophora inopina (Charmhaven Apple), Genoplesium insignis (Syn. Corunastylis insignis) (Wyong Midge Orchid 1), Grevillea parviflora subsp. parviflora (Small-flowered Grevillea) and Tetratheca juncea (Black-eyed Susan). The majority of the targeted fauna surveys are yet to be conducted and as such at this stage, no EPBC Act listed threatened fauna have been detected.

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

Surface Water

The Proposed Action Area is located within the catchment area of Lake Macquarie, Australia’s largest coastal lake. The following first, second and third order streams traverse the Proposed Action Area:

Lords Creek.Diega Creek.Palmers Creek.LT Creek.Mudd Creek.Stony Creek.Kilaben Creek.Stockyard Creek.Crooked Creek.Some unnamed creeks and tributaries.

Of these, Stony Creek, Kilaben Creek, Stockyard Creek, Crooked Creek and a number of unnamed creeks and tributaries traverse the Extension of Mining Area.

The hydrology of the Proposed Action Area is shown on the attached Figure 7.

Groundwater

Newstan Colliery water management system

The main groundwater management features within the Proposed Action Area are the Fassifern Underground storage and West Borehole seam workings. The Fassifern Underground Storage is the void formed by previous mining activity in the Fassifern and Great Northern seams at Newstan Colliery.

The West Borehole seam workings receive groundwater inflows and can be supplied with water for underground operations from Newstan Colliery Surface Site. Water is collected in sumps and pumped to the Fassifern Underground Storage.

The Fassifern Underground Storage receives inflows as a result of infiltration from the surface catchment, groundwater inflows and transfers from Newstan Colliery Surface Site. Water levels in the storage are managed by transferring water to Newstan Colliery Surface Site. During wet periods when water within the Fassifern Underground Storage rises above 16.6 m below ground level (6.4 m AHD), the storage discharges water by gravity through two 600 mm diameter pipes into Stony Creek via Newstan Licensed Discharge Point (LDP) 017.

A water management and monitoring station was commissioned at Newstan LDP 017 in 2013 to allow for emergency discharges in a controlled manner in order to ensure the safety of personnel in the underground workings at Newstan Colliery.

Awaba Colliery water management system

Dewatering of the Awaba underground workings ceased in 2012 with the cessation of mining. The existing mine workings at Awaba Colliery form an underground void in the Great Northern seam. When mining activities were concluded and dewatering ceased, water levels in the underground void began to return to natural pre-mining levels due to a combination of inflows of surrounding groundwater, infiltration from the surface, and the pumping of runoff water collected at the Awaba Colliery Surface Site. As water levels equilibrated with the surrounding groundwater, infiltration from the surface became the dominant inflow and water from the void began to seep out through a series of natural faults at the south end of the void. This area is known as the Awaba Seepage.

The Awaba Seepage discharges to the surface water environment via an unnamed creek that flows into Muddy Lake and then Lake Macquarie. Centennial Coal monitors water quality in the unnamed creek as part of ongoing surface water management activities at Awaba Colliery.

Water levels in the underground void in the vicinity of Eraring Ash Dam are also managed as required by infrequently pumping water to the Eraring Ash Dam.

Groundwater levels

Groundwater flow in the region is generally to the south-east towards Lake Macquarie.

A groundwater monitoring network has been progressively established at Newstan Colliery since 2005 and consists of monitoring bores installed in alluvium, overburden rock and coal seam strata to monitor potential impacts of mining on groundwater sources and/or provide baseline data for the assessment of impacts from future workings. The bores are generally monitored monthly or quarterly for groundwater levels and groundwater quality, although some alluvial bores also contain water level loggers.

Alluvial monitoring is undertaken within Lords Creek, Kilaben Creek, Stockyard Creek and Stony Creek alluvium. Alluvial groundwater levels fluctuate with rainfall and have not been impacted by previous mining at Newstan Colliery.

Coal seam monitoring previously consisted of vibrating wire piezometers (VWPs) which ceased to operate in October 2009. The piezometric head data collected prior to this time indicates that the head of groundwater in the West Borehole seam is in the order of 0 – 20 m AHD.

Groundwater inflows

Based on Centennial Newstan's water transfer data, average groundwater inflow into the existing Newstan workings within the West Borehole seam was calculated to be approximately 1.4 ML/day during 2013, reducing over time to approximately 0.7 ML/day in 2018. This is based on the assumption that the workings are fully dewatered.

Centennial Newstan's groundwater model predicts existing groundwater inflows into the Newstan workings to be approximately 1.1 ML/day.

Groundwater quality

Alluvial groundwater quality monitoring indicates that historical mining activities have not impacted groundwater quality. Based on available monitoring data, no change or lowering of the beneficial use category is evident over the period 2006 to 2009 when longwall panels were being developed in the vicinity of these bores. It is considered that in most cases the variability in pH and EC is the result of rainfall and natural conditions.

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

Soils

The soil landscapes within the Proposed Action Area have been previously mapped by the former Department of Land and Water Conservation (DLWC) at a scale of 1:100,000 as Doyalson, Wyong, Warners Bay, Gateshead, and Awaba soil landscapes.

Awaba Soils are characterised by steep and low rolling hills on predominantly coarse-grained or hard setting soils. The Awaba soils consist of shallow Lithosols on the steeper slopes and transition to moderate to deep Soloths on the gentler slopes. In the drainage lines Yellow and Gleyed Podzolic soils are formed on fine-grained substrates. These soils are considered to be a very high erosion hazard and are prone to rill and sheet erosion with a moderate erodibility for non-concentrated flows and a high erodibility for concentrated flows. The soils are strongly acidic with typically a low fertility.

Doyalson Soils have similar properties to the Awaba soil landscape but are located on the higher elevations in the area. The Doyalson soils are moderately deep Yellow Earths, Yellow Podzolic and Soloths overlaying the Conglomerate Sandstone and Yellow Leached Earths, Grey Earths and Gleyed Podzolic soils. These soils occur on the drainage lines and they typically have a high erosion hazard with a high erodibility for both non-concentrated and concentrated flows. The soils are strongly acidic and have low fertility and are prone to seasonal waterlogging.

Gateshead Soils are generally stable when disturbed and of low fertility due to low pH. The soils are generally located within cleared woodland, open forest and are dominated by Yellow Podzolic Soils, Yellow Soloths, Tenosols and Red Podzolic Soils. The soil unit is a well to moderately drained soil dependent upon the position vertically within the unit (SLR, 2014).

Gateshead Soils are typical of the Newstan Colliery Surface Site only.

Warners Bay Soils are moderately deep to deep Grey and Yellow Podzolic soils and structured loams. The soils are predominantly located on steep slopes and have potential for mass movement. These soils are considered a high erosion hazard which is prone to rill and sheet erosion with a moderate erodibility for non-concentrated flows and a moderate to high erodibility for concentrated flows. They are strongly acidic with low fertility.

Wyong Soils are poorly drained deltic soils of the floodplain and alluvial flats. The soils are predominately deep Yellow Podzolic, Brown Podzolic soils with Soloths and Humus Podzols around the lake edges. The soils are prone to waterlogging and are strongly acidic with low fertility.

Vegetation characteristics

The Proposed Action Area is generally typical of vegetation patterns observed in the Gosford - Cooranbong Coastal Slopes Mitchell Landscape (NPWS 2002). According to the description of the Gosford - Cooranbong Coastal Slopes Mitchell Landscape, this area is characterised by open forest and woodland of Smooth-barked Apple (Angophora costata), Red Bloodwood (Corymbia gummifera), Brown Stringybark (Eucalyptus capitellata), Sydney Peppermint (Eucalyptus piperita), Spotted Gum (Corymbia maculata), Thick-leaved Mahogany (Eucalyptus carnea), Northern Grey Ironbark (Eucalyptus siderophloia) and Grey Gum (Eucalyptus punctata) on hills and slopes. Small areas of closed forest with; Turpentine (Syncarpia glomulifera), Lilly Pilly (Acmena smithii), Mountain Cedar Wattle (Acacia elata), Coachwood (Ceratopetalum apetalum), Sassafras (Doryphora sassafras) and Water Gum (Tristaniopsis laurina) occur in gullies under high escarpments. Prickly-leaved tea-tree (Melaleuca stypheliodes) and other shrubs with Swamp Mahogany (Eucalyptus robusta), Swamp Oak (Casuarina glauca), sedges and Common Reed (Phragmites australis) occur on swampy creek flats (NPWS 2002).

However, it is important to note that some elements of this description are absent from the biodiversity Study Area (refer to Figure 8 and Figure 9), notably forested wetlands dominated by Swamp Oak (Casuarina glauca).

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

There are no outstanding natural features or important or unique values relevant to the Proposed Action Area. The area has been impacted by mining activity for more than 100 years.

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

Native vegetation within the Proposed Action Area grades from highly disturbed through to good quality. Highly disturbed areas generally lack a canopy and consist of a depauperate community of shrubs and ground cover.

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 of the Proposed Action Area generally consists of rolling low hills with short side slopes and numerous closely spaced drainage lines, on predominately coarse grained sediments of the Narrabeen Group and Newcastle Coal Measures. Slope gradients are generally 10 – 25 percent and local relief is between 20 metres and 110 metres Australian Height Datum (AHD).

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

The quality of the environment ranges from poor to good. The poorest environmental states are found in areas of existing infrastructure and associated access tracks. Edge effects are experienced throughout the Proposed Action Area that result from disturbance and anthropogenic activity. Foraging by introduced animals (e.g. pigs and deer) has also disturbed the ground, particularly in pockets of wet sclerophyll forest.

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

Not applicable

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

The Proposed Action Area is located within the traditional lands of the Awabakal people and in the administrative boundaries of the Biraban Local Aboriginal Land Council (LALC). The exact traditional boundaries of the Awabakal tribes are unknown, but the broad geographical and cultural boundaries are relatively consistent between sources. The Awabakal appear to have been people of the coast, estuaries, lakes and wetlands, but also with attachment to the rugged sandstone country through the Sugarloaf and Watagan Ranges. The traditional country of the Awabakal people was bounded to the north by the Worimi, to the west by the Wonnarua, to the south west by the Darkinjung and to the south along the coast by the Kuring-gai people.

Historical records identify several different clans as occupying the region, with the Awabakal people being located in the Newcastle and Lake Macquarie area. There is limited information

available regarding the Aboriginal occupation of the area given the impacts of European settlement. Abundant sources of marine and terrestrial resources were available in the Newcastle area. As such, the area was likely occupied both transiently, when ephemeral water sources were accessible, and more permanently where a continual water source, such as Lake Macquarie, was available. Both of these environments would have provided a variety of seasonal and annual floral and faunal resources.

A review of the NSW Aboriginal Heritage Information Management System (AHIMS) (OEH, 2019) indicates there are six recorded Aboriginal heritage sites within the Extension of Mining Area. These are comprised of:

Two isolated artefact sites (ID 45-7-0300; ID 45-7-0301). Three scarred trees (ID 45-7-0318; ID 45-7-0319; ID 45-7-0324).One artefact scatter (ID 45-7-0302).

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

The tenure of the land within and surrounding the Proposed Action Area includes:

Crown land, Crown roads and Crown reserves, Freehold land State Forest managed by Forestry Corporation of NSW and State Conservation Area.

The following mining tenements have been granted over the Proposed Action Area:

Consolidated Coal Leases

CCL 727CCL 764CCL 763CCL 746

Mining Purposes Leases

MPL 304MPL 305MPL 327MPL 328

Mining Leases

ML 1380ML 1452ML 1480ML 1586ML 1587

Private Lands Leases

PLL 497

The majority of land that will be affected by mining within the Extension of Mining Area is Crown land or freehold land owned by Origin Energy (the owner of Eraring Power Station).

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

The Proposed Action is proposed within an established mining precinct that has been operating for over 130 years. The land use within the Proposed Action Area is defined by a range of large

scale industrial activities related to underground mining and power generation, contiguous with areas of native tree cover extending beyond existing mining operations.

Land use in the vicinity of the Extension of Mining Area includes remnant woodland vegetation, large scale industrial development (e.g. Eraring Power Station and associated electrical infrastructure), as well as rural residential areas primarily to the west, and denser urban development to the east fringing Lake Macquarie.

Natural and built features above the Extension of Mining Area include:

Stony Creek, Kilaben Creek, Stockyard Creek, Crooked Creek, and a tributary of Lords Creek. These creeks are second and third order ephemeral streams with shallow incisions in the natural surface soils. Aboriginal heritage sites, comprising isolated finds, artefact scatters and scarred trees. Terrestrial and aquatic habitats and ecological communities. Slopes with natural gradients typically up to 1 in 2.The Main Northern Railway. A railway loop line. The Eraring Power Station. The Eraring Ash Dam.An overland conveyor. 132 kV transmission line and substation.

There are no dwellings above the Extension of Mining Area.

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 Proposed Action will continue to be refined in consultation with the community, regulatory agencies, infrastructure owners, and other stakeholders to maximise environmental, social and economic outcomes by following the ‘avoid, minimise, offset’ hierarchy.

Mine design

Centennial Newstan has gone through numerous iterations of the mine design in order to develop a mine plan that responds to two key considerations:

The coal resource is a public asset owned by the State of NSW and it is therefore in the public interest to optimise resource recovery.The Proposed Action is constrained by a range of sensitive built and natural environmental features and their protection throughout all development phases must be a priority.

The current proposed bord and pillar mine plan aims to strike a balance between optimising resource recovery and protecting sensitive environmental features. It has been developed based on extensive modelling of subsidence impacts and through consultation with key government agencies and infrastructure owners.

Centennial Newstan proposes to vary the coal recovery within the West Borehole seam depending on the natural and built features located directly above these workings and the potential for compound subsidence impacts associated with the overlying Awaba workings in the Great Northern seam.

Modelling of the proposed interaction between the seams (MSEC 2018; 2019) has indicated that by the application of a spine pillar type layout, the risk for compound subsidence can be managed. The combination of first workings only, partial extraction, and total extraction mining methods will reduce multi-seam subsidence impacts associated with the overlying Awaba workings.

This combination of first workings, partial and total extraction has also been adopted to mitigate impacts on sensitive surface features. The development of first workings only (i.e. no secondary extraction) is proposed beneath certain sensitive surface features in both single-seam and multi-

seam conditions. This includes under second and third order streams and the Eraring Ash Dam wall.

The proposed partial extraction will mine three of the four rows of pillars, leaving a spine pillar (i.e. one row of pillars) within each panel. Partial extraction is proposed under the Ulan Rail Loop and under the sections of an existing 132 kV transmission line that are subject to multi-seam conditions.

Total extraction, where all pillars within each panel are removed, is only proposed to the south of the existing Awaba workings (i.e. single-seam conditions) and in some areas beneath the existing workings (multi-seam conditions) where sensitive surface features are not present.

With the presence of the overlying Awaba mine workings and larger than previously encountered volume of gas within the West Borehole seam and overlying seams, which will be released by the mining process, this mining system allows for greater control of subsidence, particularly with regard to minimising multi-seam subsidence, improved gas management, and superior flexibility to deal with geological anomalies. It also allows for recovery of the resource to be optimised.

Some of the key processes and strategies Centennial Newstan has adopted for managing key subsidence impacts and gas drainage risks as part of the mine design are described in further detail below.

Hydrogeological risks in proximity to Eraring Ash Dam

The Eraring Ash Dam is located above the southern ends of the proposed workings in the West Borehole seam. Total extraction is proposed in this area. There are no existing workings in the Great Northern seam beneath the current extent of the Eraring Ash Dam.

Centennial Newstan has commissioned preliminary subsidence predictions for the current mine design to understand the potential for continuous and discontinuous fracturing above the West Borehole seam following subsidence (MSEC, 2019). This work has been undertaken to gain a preliminary understanding of the risk of leachate from the Eraring Ash Dam migrating into the underground workings. The preliminary predictions indicate only minor changes to the permeability within the surface zone are predicted as a result of the proposed workings within the West Borehole seam and that the migration pathways for leachate to enter the workings will be limited.

The findings of these preliminary assessments will be used as background for the more detailed subsidence, surface water, groundwater and geotechnical models to be developed for the EIS.

Mining in proximity to Awaba Biodiversity Conservation Area

Centennial Newstan understands that Lake Macquarie City Council has established a biodiversity offset area (the Awaba Biodiversity Conservation Area) on Lot 463 DP 1138964, which is located within the Extension of Mining Area. Potential impacts to this offset area have been considered by proposing first workings only within the 2nd and 3rd order watercourses within this area. Extraction of the coal resource is proposed outside these watercourses in accordance with the mine plan.

Further investigations will be undertaken during the EIS to ensure potential impacts to the Awaba Biodiversity Conservation Area from the Proposed Action are managed appropriately in consultation with Lake Macquarie City Council.

Surface infrastructure design

The surface infrastructure design has been developed to provide a number of environmental benefits. The ways in which it has been optimised and the associated benefits are summarised below.

Minimising surface disturbance

Where possible the Proposed Action has sought to make use of the existing surface infrastructure facilities at Newstan and Awaba Collieries. All new major surface infrastructure is proposed within the existing approved disturbance footprint at Awaba Colliery Surface Site. The proposed adoption of in-seam gas drainage methods, with underground piping of the gas, has further reduced surface disturbance requirements by minimising the number of drill pads and gas pipelines required on the surface.

Access to key infrastructure

The Proposed Action will supply ROM coal to the existing approved Newstan Coal Logistics Project at Newstan Colliery Surface Site. As such, additional impacts associated with the construction and operation of new coal handling, processing and transportation infrastructure have been avoided. Traffic and transport impacts have also been minimised through the Proposed Action’s proposed use of the existing access and parking facilities at the Newstan and Awaba Collieries.

Land availability

Centennial Newstan’s proposed use of the existing surface infrastructure facilities at Newstan and Awaba Collieries and the proposed underground mining method has minimised the area of land required to develop the Proposed Action.

Proximity to sensitive receptors and sensitive environments

The Proposed Action is proposed within an established mining precinct that has been operating for over 130 years. The proposed use of the existing surface infrastructure facilities as Newstan and Awaba Collieries has minimised the Proposed Action’s potential for intrusions on the amenity of sensitive receptors and sensitive environments not already impacted to some extent by mining operations.

Proximity to underground mining areas

The proposed Extension of Mining Area is located immediately to the south of the existing Awaba Colliery Surface Site. They are also a continuation of the existing Newstan workings within the West Borehole Seam, which are accessed via a men and materials drift at Newstan Colliery Surface Site. The proposed workings will be accessed via this existing drift portal, thus eliminating the need for construction of a new drift portal.

Similarly, the Extension of Mining Area will be ventilated through the utilisation of the existing ventilation fans at Newstan Colliery Surface Site and the site of the approved ventilation fans at Awaba Colliery Surface Site. Surface disturbance and amenity impacts associated with the construction and operation of a new ventilation fan site have consequently been minimised, if not avoided.

Centennial Newstan will continue to pursue opportunities to refine the Proposed Action design in response to the outcomes of the detailed environmental and technical investigations that will be undertaken during the EIS.

Offsetting

Following the application of all reasonable measures to avoid and mitigate impacts to MNES, any residual significant impacts to threatened species and ecological communities will be offset in accordance with the NSW Biodiversity Offsets Policy for Major Projects and the EPBC Act Environmental Offsets Policy.

Rehabilitation

A detailed rehabilitation strategy for the Proposed Action will be developed in consultation with stakeholders and with consideration of the detailed environmental investigations undertaken as part of the EIS. Conceptually, the rehabilitation strategy for the Proposed Action will include:

Progressively rehabilitating minor surface disturbance areas (e.g. drill pads, access tracks, surface cracking) to their previous land use. Removing underground plant and equipment at the completion of mining. Filling and sealing mine accesses (drifts and shafts) in accordance with relevant guidelines and standards. Removing mine infrastructure at Awaba Colliery Surface Site and rehabilitating surface disturbance areas.

The final rehabilitation strategy will be developed in consultation with stakeholders and with consideration of the outcomes of other specialist studies completed for the EIS, including the soils and land resources, groundwater, surface water and biodiversity assessments. It will describe the:

Potential post-mining land uses, with consideration of relevant strategic land use planning or resource management plans or policies. Conceptual final landform, including topography, vegetation, drainage, and retained infrastructure. Stakeholder engagement strategy to be implemented during mine closure planning to ensure stakeholder views are considered and the potential impacts of mine closure on local businesses, employees and others are understood and managed appropriately. Site rehabilitation objectives and completion criteria, consistent with the potential post-mining land uses and conceptual final landform. Methodologies proposed to achieve the site rehabilitation objectives. Monitoring and maintenance program to be implemented to evaluate progression towards achieving the target rehabilitation outcomes. Indicative mine closure planning schedule.

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

The Proposed Action is in the early stages of the comprehensive assessment and approval processes required by Commonwealth and State legislation. The Proposed Action's environmental assessment has already commenced. The next step for Centennial Newstan is to undertake detailed impact assessments and develop environmental mitigation, management, monitoring and offset measures to enhance the Proposed Action's benefits and address any impacts, including potential adverse impacts to MNES from the Proposed Action. The impact assessments will include detailed subsidence, groundwater, surface water, terrestrial and aquatic ecology, air quality and greenhouse gas, noise and vibration, traffic and transport, soil and land resources, Aboriginal and historic heritage, visual, socio-economic, hazard, bushfire, and waste assessments.

The assessments will be prepared in accordance with relevant guidelines, policies and assessment requirements, and in consultation with government agencies and other stakeholders. Specifically, the terrestrial and aquatic ecology, surface water and groundwater impact assessments will include detailed assessments undertaken in accordance with the Significant Impact Guidelines 1.1 – Matters of National Environmental Significance (DEWHA, 2013), and Significant Impact Guidelines 1.3: Coal seam gas and large coal mining developments – impacts on water resources (DoE, 2013). The findings of all assessments will be documented in the EIS.

Following the application of all reasonable measures to avoid and mitigate impacts to MNES, any residual significant impacts to threatened species and ecological communities will be offset in accordance with the NSW Biodiversity Offsets Policy for Major Projects and the EPBC Act Environmental Offsets Policy.

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

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

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.

Yes

Centennial Newstan values its role in sustainable development and manages all aspects of its activities with due consideration of environmental, economic and social outcomes. Centennial Newstan is committed to the continual improvement of health, safety, environment and community management and performance.

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.

There are no current proceedings against Centennial Newstan under a Commonwealth or State law.

In October 2010, Centennial Newstan was prosecuted under s120(1) of the Protection of the Environment Operations Act 1997 and ordered by the NSW Land and Environment Court to pay $105,000 following a discharge of 1.8 ML of mine water into Stony Creek via the Stony Creek pipeline (now LDP 017) that occurred in August 2008. Since this time, Centennial Newstan has implemented mine water management systems to reduce the risk of discharge at this location and a licensed discharge point has been established. The mine water management system includes the installation of a water treatment plant at the Newstan Colliery Surface Site.

In October 2006, Centennial Newstan was prosecuted for a mine water discharge into LT Creek that occurred in February 2005. Centennial Newstan were ordered to pay $50,000 towards the rehabilitation of LT Creek. The mine water discharge was associated with auger mining activities, which are no longer undertaken at Newstan Colliery.

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.

Centennial Coal's Environment and Community Policy forms part of a broader Environmental Management Strategy. This Environmental Management Strategy has been developed to ensure that Centennial Coal's strategic outlook for environmental management is more clearly and concisely articulated. The Strategy includes objectives to assist Centennial Coal's operations in meeting the principles within the Environment and Community Policy. Underpinning the Environmental Management Strategy, Centennial Coal's Environmental Management System (EMS) reflects the objectives and principles of the Strategy and Policy.

6.4 Has the person taking the action previously referred an action under the EPBC Act, or been responsible for undertaking an action referred under the EPBC Act?

Yes

6.4.1 EPBC Act No and/or Name of Proposal.

2006/2542 – the proposal was withdrawn

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
Refer to attached reference list in section 6	N/A	N/A

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?

The long history of mining at the Newstan and Awaba Collieries, and the associated environmental monitoring and management activities that have been undertaken over many years, has provided Centennial Newstan with a large amount of baseline information to help guide the development of the Proposed Action. Centennial Newstan has also undertaken extensive detailed Proposed Action-specific geological, engineering, environmental, financial and other technical investigations over several years to develop and refine the Proposed Action. These investigations have been undertaken in consultation with the community, regulatory agencies, infrastructure owners, and other stakeholders to maximise environmental, social and economic outcomes by following the ‘avoid, minimise, offset’ hierarchy.

A review of feasible alternatives to the proposed development has been undertaken to demonstrate that the preferred option constitutes the most appropriate scenario to meet the identified project needs. The following alternatives have been considered by Centennial Newstan during the preliminary planning for the Proposed Action:

Not proceeding with the Proposed Action. Alternative locations and designs for various infrastructure components of the Proposed Action. Alternative methods for extraction of the resource. Alternative environmental management techniques for moderate or higher risk impacts.

The potential impacts of the Proposed Action have been minimised by maximising the use of existing surface infrastructure and equipment, developing a lower-impact and flexible mine design, minimising surface disturbance for gas drainage and greenhouse gas abatement, and proposing a complementary suite of mitigation measures and management strategies to be implemented during construction, operation, and closure.

The combination of first workings only, partial extraction, and total extraction using bord and pillar mining methods has been adopted to minimise subsidence impacts to sensitive built and natural surface features and to mitigate multi-seam subsidence impacts associated with the Awaba workings in the overlying Great Northern seam. There is inherent flexibility in the proposed bord and pillar mining method as it provides Centennial Newstan with the ability to vary mining activities as required in response to unforeseen geological or environmental constraints. Conservative buffers have also been adopted in the mine design to minimise subsidence impact risks to sensitive surface features such Eraring Ash Dam, Stockyard Creek, Kilaben Creek, and Stony Creek.

8.1 Select the relevant alternatives related to your proposed action.

8.27 Do you have another alternative?

No

Section 9 – Contacts, signatures and declarations

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

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

Organisation

9.2 Organisation

9.2.1 Job Title

Approvals Coordinator

9.2.2 First Name

Iain

9.2.3 Last Name

Hornshaw

9.2.4 E-mail

iain.hornshaw@centennialcoal.com.au

9.2.5 Postal Address

PO Box 1000
Toronto NSW 2283
Australia

9.2.6 ABN/ACN

ABN

68101508865 - Centennial Newstan Pty Limited

9.2.7 Organisation Telephone

(02) 4935 8901

9.2.8 Organisation E-mail

iain.hornshaw@centennialcoal.com.au

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

Not applicable

Small Business Declaration

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

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

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

No

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

Person proposing the action - Declaration

I, IAIN HORNSHAW, 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: 1/11/2019

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

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

9.3 Is the Proposed Designated Proponent an Organisation or Individual?

Organisation

9.5 Organisation

9.5.1 Job Title

Approvals Coordinator

9.5.2 First Name

Iain

9.5.3 Last Name

Hornshaw

9.5.4 E-mail

iain.hornshaw@centennialcoal.com.au

9.5.5 Postal Address

PO Box 1000
Toronto NSW 2283
Australia

9.5.6 ABN/ACN

ABN

68101508865 - Centennial Newstan Pty Limited

9.5.7 Organisation Telephone

(02) 4935 8901

9.5.8 Organisation E-mail

iain.hornshaw@centennialcoal.com.au

Proposed designated proponent - Declaration

I, IAIN HORNSHAW, the proposed designated proponent, consent to the designation of myself as the proponent for the purposes of the action described in this EPBC Act Referral.

Signature: ..... Date: 1/11/2019

9.6 Is the Referring Party an Organisation or Individual?

Organisation

9.8 Organisation

9.8.1 Job Title

Approvals Coordinator

9.8.2 First Name

Iain

9.8.3 Last Name

Hornshaw

9.8.4 E-mail

iain.hornshaw@centennialcoal.com.au

9.8.5 Postal Address

PO Box 1000
Toronto NSW 2283
Australia

9.8.6 ABN/ACN

ABN

68101508865 - Centennial Newstan Pty Limited

9.8.7 Organisation Telephone

(02) 4935 8901

9.8.8 Organisation E-mail

iain.hornshaw@centennialcoal.com.au

Referring Party - Declaration

I, IAIN HORNSHAW, 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: 1/11/2019

Appendix A - Attachments

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

1. 144208 Figure 10 EPBC - Infrastructure_A A3L 20191024.pdf
2. 144208 Figure 11 EPBC-Regent Honeyeater_A A3L 20191024.pdf
3. 144208 Figure 12 EPBC-Painted Honeyeater_A A3L 20191024.pdf
4. 144208 Figure 13 EPBC-Swift Parrot_LePBat_A A3L 20191024.pdf
5. 144208 Figure 14 EPBC- Painted Snipe_A A3L 20191024.pdf
6. 144208 Figure 15 EPBC- GBFrog_E.camfieldii_A A3L 201910241.pdf
7. 144208 Figure 16 EPBC- Green_Golden Bell Frog_A A3L 20191024.pdf
8. 144208 Figure 17 EPBC- Littlejohn's_Tree_Frog_A A3L 20191024.pdf
9. 144208 Figure 18 EPBC- Syn._Stuttering_Frog_GBF_A A3L 20191024.pdf
10. 144208 Figure 19 EPBC-Long-nosed Potoroo_A A3L 20191024.pdf
11. 144208 Figure 20 EPBC- GHFlyingFox_Charmhaven Apple_A A3L 20191024.pdf
12. 144208 Figure 21 EPBC- Bynoe's_Wattle_A A3L 20191024.pdf
13. 144208 Figure 22 EPBC- Thick-lip_Spider_Orchid_A A3L 20191024.pdf
14. 144208 Figure 23 EPBC- Syn._Corunastylis_insignis_A A3L 20191024.pdf
15. 144208 Figure 24 EPBC- Leafless_Tongue-orchid_A A3L 20191024.pdf
16. 144208 Figure 25 EPBC- White-flowered_Wax_Plant_A A3L 20191024.pdf
17. 144208 Figure 26 EPBC- Rough Doubletail_A A3L 20191024.pdf
18. 144208 Figure 27 EPBC- Earp's_Gum_Magenta_Lilly_Pilly_A A3L 20191024.pdf
19. 144208 Figure 28 EPBC- Small-flowered_Grevillea_A A3L 20191024.pdf
20. 144208 Figure 29 EPBC- Angus's_Onion_Orchid_A A3L 20191024.pdf
21. 144208 Figure 30 EPBC- Biconvex Paperbark_A A3L 20191024.pdf
22. 144208 Figure 31 EPBC- Heath_Wrinklewort_A A3L 20191024.pdf
23. 144208 Figure 32 EPBC- Black-eyed_Susan_A A3L 20191024.pdf
24. 144208 Figure 33 EPBC- Austral_Toadflax_A A3L 20191024.pdf
25. 2220261_EPBC001_Locality_0_20190902.pdf
26. 2220261_EPBC002_ExgApprovedOperations_0_20190902.pdf
27. 2220261_EPBC003_ProposedActionArea_0_20190902.pdf
28. 2220261_EPBC004_SurfaceInfrastructure_0_20190902.pdf
29. 2220261_EPBC005_LandOwnership_0_20190902.pdf
30. 2220261_EPBC006_MiningTenements_0_20190902.pdf
31. 2220261_EPBC007_Hydrology_0_20190902.pdf
32. 2220261_EPBC008_ThreatSpecies_0_20190902.pdf
33. 2220261_EPBC009_Veg_TECs_0_20190902.pdf
34. Attachment 1 Schedule of land.pdf
35. Attachment 2 Newstan MOD 8 Consolidated Consent.pdf
36. CEY Environment and Community Policy Aug 2019.pdf
37. PAA Shape Files.zip
38. Section 7 References.pdf