

Angus Place West

Application Number: **01126**Commencement Date: **28/04/2022**Status: **Locked**

1. About the project

1.1 Project details

Project title *

Angus Place West

Project industry type *

Mining

Project industry sub-type

Coal

Estimated start date *

1/01/2025

Estimated end date *

31/12/2040

1.2 Proposed Action details

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

Angus Place Colliery (Angus Place) is an underground thermal coal mining operation in the Western Coalfield of New South Wales (NSW). Angus Place is approximately 15 kilometres (km) west of Lithgow in the Lithgow local government area (LGA). Angus Place is owned by Centennial Springvale Pty Ltd and Boulder Mining Pty Ltd as part of a joint venture and is operated by Centennial Angus Place Pty Ltd (Centennial Angus Place), a wholly owned subsidiary of Centennial Coal Company Limited (Centennial).

Angus Place comprises a pit top, underground mining area, ventilation infrastructure and water management infrastructure. It is regulated under project approval MP 06_0021 which was granted in September 2006 by the then Minister for Planning under the now repealed Part 3A of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). The approval has been modified six times and declared to be State Significant Development (SSD) under Clause 6 of Schedule 2 of the NSW Environmental Planning and Assessment (Savings, Transitional and Other Provisions) Regulation 2017.

MP 06_0021 allows underground mining at a rate of 4 million tonnes per annum (Mtpa), coal handling at the pit-top and transportation off-site via private haul roads until 18 August 2024. Angus Place has been in care and maintenance since March 2015 and has not produced coal since this time. Angus Place continues to meet safety and environmental regulations and the site is appropriately maintained to enable operations to recommence.

Centennial Angus Place has completed extensive investigations into a long-term plan for Angus Place beyond the approved mine life under MP 06_0021 to meet the future coal supply demands of Mount Piper Power Station (MPPS) while balancing social, environmental and economic outcomes. Based on the outcomes of these investigations, Centennial Angus Place will be seeking approval for the Angus Place West Project (the project).

The project will comprise the continued operation of the pit top and first workings bord and pillar mining in two new mining areas adjacent to existing approved mining areas, to an extraction rate of up to 2 Mtpa. The first workings mine design involves the formation of roadways and pillars that are designed to be geotechnically long-term stable. This mining method is anticipated to result in approximately 20

millimetres (mm) of vertical subsidence at the ground surface level. To enable the project to be developed, a new SSD consent is required under Part 4, Division 4.1 of the EP&A Act.

The project will enable the efficient use of existing infrastructure to economically recover an additional 8.5 million tonnes (Mt) of run-of-mine (ROM) coal reserves within existing mining tenements. The project will provide ongoing employment for approximately 300 full time equivalent workers, as well as continuing the ongoing significant contribution to the local, regional and State economies through royalties and taxes.

The proposed action which forms the subject of this referral will be limited to the proposed underground mining activity only. The proposed action does not include the continued operation of the pit top and existing ancillary mining infrastructure or the transfer of water to other facilities. The proposed action area is shown in Figure 1. There will not be separate referrals submitted for other stages or related project elements.

The proposed action is within the south-western part of the Western Coalfield of the Sydney Basin and includes Centennial Angus Place's existing Mining Lease (ML) 1424, and Consolidated Coal Lease (CCL) 704. Centennial Angus Place will enter a sub-lease agreement with Shoalhaven Coal for the portion of CCL 702 that lies within the proposed action area.

The proposed action will target the Lithgow Seam within two new mining areas (APW1 and APW2 shown on Attachment A, Figure 1).

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

No

What Commonwealth or state legislation, planning frameworks or policy documents are relevant to the proposed action, and how are they relevant? *

Previous approvals

MP 06_0021

Prior to entering care and maintenance in March 2015, mining operations at Angus Place operated under MP 06_0021, which was granted in September 2006 under the now repealed Part 3A of the EP&A Act. MP 06_0021 has since been declared to be SSD under Clause 6 of Schedule 2 of the NSW Environmental Planning and Assessment (Savings, Transitional and Other Provisions) Regulation 2017.

MP 06_0021 allows extraction of up to 4 Mtpa of ROM coal until 2024 using longwall mining methods. It has been modified six times:

- Modification 1:
 - development of two new longwall panels (Longwall 910 and Longwall 900W); and
 - increase of the extraction rate to 4 Mtpa.
- Modification 2:
 - development of a ventilation facility and supporting infrastructure; and
 - approval for trial mining to support the surface exploration programme and pre-feasibility assessment for the available resource within the mining leases.
- Modification 3:
 - extend the length of Longwall 980 and Longwall 900W and increase in extraction height.
- Modification 4:
 - development of nominated roadways and headings associated with Longwall 1001 and Longwall 1003.
- Modification 5:
 - temporary treatment and discharge of mine water to the Coxs River catchment.
- Modification 6:
 - transfer water to MPPS for treatment;
 - construction and operation of a water softening plant at the pit top;
 - transfer treated mine water to Springvale Water Treatment Project (SWTP); and
 - underground storage of treated mine water.

EPBC 2011/5952

Centennial Angus Place received approval under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) on 17 April 2012 for the development and extraction of longwall panels LW910 and 900W at Angus Place (EPBC 2011/5952).

The approval is in place until 19 March 2032. Compliance reports are submitted annually and publicly available on Centennial's website.

LW910 has not been and is unlikely to be extracted.

Environment Protection Licence 467

Activities at Angus Place occur in accordance with Environment Protection Licence (EPL) 467 issued on 23 February 2000 under Section 3 of the NSW *Protection of the Environment Operations Act 1997*. EPL 467 allows for:

- coal works greater than 2,000,000 – 5,000,000 tonnes (t) annual handling capacity; and
- mining for coal greater than 3,500,000 – 5,000,000 t annual production capacity.

EPL 467 will be varied as required if the project is approved.

New development applicationAngus Place West (SSD-26254212)

The EP&A Act and NSW Environmental Planning and Assessment Regulation 2021 (EP&A Regulation) form the statutory framework for planning approval and environmental assessment in NSW. The statutory trigger for development consent is under Section 4.2(1) of the EP&A Act.

Division 4.1 in Part 4 of the EP&A Act provides for the assessment and determination of SSD. Under Section 4.36 of the EP&A Act, projects are classified as SSD if they are declared to be such by a State Environmental Planning Policy (SEPP). Section 2.6(1) of State Environmental Planning Policy (Planning Systems) 2021 (Planning Systems SEPP) states:

1. *Development is declared to be State significant development for the purposes of the Act if-*
2. *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 Act, and*
3. *the development is specified in Schedule 1 or 2.*

Schedule 1 of the Planning Systems SEPP identifies development for the purpose of coal mining as SSD.

Section 2.6(1)(a) of State Environmental Planning Policy (Resources and Energy) 2021 (Resources and Energy SEPP) provides that development for the purposes of underground mining requires development consent.

The project therefore meets the definition of SSD under Section 2.6(1) of Planning Systems SEPP and approval will be sought under Part 4, Division 4.7 of the EP&A Act.

Secretary's Environmental Assessment Requirements (SEARs) for the project were issued by NSW Department of Planning and Environment (DPE) on 17 September 2021. Centennial Angus Place is currently preparing an environmental impact statement (EIS) to address these SEARs.

The NSW Minister for Planning or the Independent Planning Commission (IPC) will be the consent authority for the project.

Describe any public consultation that has been, is being or will be undertaken regarding the project area, including with Indigenous stakeholders. Attach any completed consultation documentations, if relevant. *

Centennial and its entities undertake a range of engagement activities for their projects and have a longstanding relationship with the community across its Western Coalfield operations including Angus Place Colliery, Springvale Mine and Western Coal Services.

Stakeholder engagement for the project has to date focused on communicating with:

- private landholders and tenants to provide general information about the project;
- landholders with water bores that will be affected by the project;
- landholders where access has been required for technical assessments (including Aboriginal cultural heritage and biodiversity);
- Registered Aboriginal Parties (RAPs) as part of the Aboriginal cultural heritage assessment (ACHA) and associated field surveys;
- Western Region Combined Community Consultative Committee (Western Region CCC);
- Western Region Aboriginal Cultural Heritage Committee;
- stakeholder groups (eg Lidsdale Wallerawang Progress Association);
- Lithgow City Council; and
- Project Steering Committee.

The purpose of this engagement has been to understand who the key stakeholders are for the project and to understand the environmental and social issues for the community. This engagement has allowed the discussion of findings of specialist reports to date (including Aboriginal cultural heritage, subsidence and water resources), including facilitating direct engagement between landholders and technical experts (eg groundwater).

Engagement has also been undertaken to secure access to private land holdings enabling baseline biodiversity and Aboriginal cultural heritage surveys to be undertaken and to obtain water samples for the purpose of developing a water census.

As part of the ACHA for the project, RAPs will continue to be consulted in accordance with the protocols detailed in Centennial's *Western Region Aboriginal Cultural Heritage Management Plan (ACHMP)* (Centennial 2016) (Attachment F - Western Region Aboriginal Cultural Heritage Management Plan, Chapter 5, pp. 18-19) and *Aboriginal Consultation Requirements for Proponents* (DECCW 2010). Consultation with RAPs about the project has already commenced. RAPs participated in targeted archaeological surveys and the draft ACHA will be provided to RAPs for review and comment prior to finalisation.

Centennial Angus Place has also established a Social Pinpoint engagement tool, which will help to facilitate broader engagement with the local community:

https://centennial.mysocialpinpoint.com/angus-place-west/map#/sidebar/tab/stakeholder_survey

Further engagement will be undertaken prior to EIS lodgement and will include:

- updates for neighbouring landholders on the outcomes of technical assessments; and
- engagement with the broader community to present the findings of the technical assessments.

This engagement will assist with the completion of the social impact assessment and EIS.

1.3 Identity - Referring party

Privacy Notice:

Personal information means information or an opinion about an identified individual, or an individual who is reasonably identifiable.

By completing and submitting this form, you consent to the collection of all personal information contained in this form. If you are providing the personal information of other individuals in this form, please ensure you have their consent before doing so.

The Department of Agriculture, Water and the Environment (the department) collects your personal information (as defined by the Privacy Act 1988) through this platform for the purposes of enabling the department to consider your submission and contact you in relation to your submission. If you fail to provide some or all of the personal information requested on this platform (name and email address), the department will be unable to contact you to seek further information (if required) and subsequently may impact the consideration given to your submission.

Personal information may be disclosed to other Australian government agencies, persons or organisations where necessary for the above purposes, provided the disclosure is consistent with relevant laws, in particular the Privacy Act 1988 (Privacy Act). Your personal information will be used and stored in accordance with the Australian Privacy Principles.

See our Privacy Policy to learn more about accessing or correcting personal information or making a complaint. Alternatively, email us at privacy@awe.gov.au.

Confirm that you have read and understand this Privacy Notice *

Is Referring party an organisation or business? *

Yes

Referring party organisation details	
ABN	28141736558
Organisation name	EMM CONSULTING PTY LIMITED
Organisation address	Ground Floor, 20 Chandos St, St Leonards NSW 2065
Referring party details	
Name	David Richards
Job title	Senior Environmental Scientist
Phone	0405593675
Email	drichards@emmconsulting.com.au
Address	Ground Floor, 20 Chandos St, St Leonards NSW 2065

1.3 Identity - Person proposing to take the action

Are the Person proposing to take the action details the same as the Referring party details? *

No

Is Person proposing to take the action an organisation or business? *

Yes

Person proposing to take the action organisation details	
ABN	87101508945
Organisation name	Centennial Angus Place Pty Limited
Organisation address	1 Market Street, Sydney NSW 2000
Person proposing to take the action details	
Name	Edwina White
Job title	Group Manager Approvals
Phone	0458977675
Email	Edwina.White@centennialcoal.com.au
Address	Level 20, 1 Market Street, Sydney NSW 2000

Are you proposing the action as part of a Joint Venture? *

Yes

Joint Venture Name	Business Address	ABN/ACN	Responsible Person	Email
Boulder Mining Pty Ltd	Level 20, 1 Market Street, Sydney NSW 2000	85112796308	David Craft	angusplacecolliery.compliance@centennialcoal.com.au
Centennial Springvale Pty Ltd	Level 20, 1 Market Street, Sydney NSW 2000	64052096812	David Craft	angusplacecolliery.compliance@centennialcoal.com.au

Are you proposing the action as part of a Trust? *

No

Describe the Person proposing the action's history of responsible environmental management including details of any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against the Person proposing to take the action. *

Centennial Angus Place is committed to maintaining responsible environmental management practices that meet or exceed industry best practice. Environmental management is an integral part of every stage of the mining process to ensure that environmental impacts are minimised.

Prior to entering a period of care and maintenance in March 2015, operations at Angus Place were carried out in consideration of Centennial Angus Place's *Environmental Management Strategy* (EMS) (Centennial 2014) (Attachment G - Angus Place Colliery Environmental Management Strategy). The scope of the EMS was to fulfil Condition 1 of Schedule 5 of MP 06_0021.

The EMS provides a strategic framework for environmental management at Angus Place and incorporates all relevant approvals, policies and legislation to ensure best practice environmental management on-site. The EMS aims to ensure all employees and contractors on-site are aware of their environmental responsibilities and has been continuously improved to consider modifications to the existing approval

(MP 06_0021) and legislation updates.

Under its EMS, Centennial Angus Place has developed a number of environmental management and monitoring plans which provide guidance for minimising the impacts of its operations. These existing plans are publicly available on Centennial Angus Place's website.

As part of the EMS, Centennial Angus Place conducts environmental monitoring and auditing to gauge its compliance with regulatory requirements and to minimise impacts on the community and local environment.

Under MP 06_0021, Centennial Angus Place is required to commission independent environmental audits of Angus Place every three years (Condition 5 to 7 of Schedule 5 of MP 06_0021). Two separate audits have been completed in March 2011 and June 2014. The audit completed in March 2011 identified 51 conditions to be non-compliant or indeterminate. A significant improvement was seen with the results of the audit completed in June 2014, as 14 conditions were found to be non-compliant or indeterminate.

Where non-compliances were identified, recommendations for improved environmental management were provided. These recommendations were implemented by Centennial Angus Place within a timely manner. The findings of the audits, subsequent recommendations and Centennial Angus Place's responses to the audits are publicly available on Centennial Angus Place's website:

<https://www.centennialcoal.com.au/operations/angus-place/>

Centennial Angus Place has continued to conduct environmental monitoring for the site despite being placed into care and maintenance. Monthly monitoring reports from 2014 to 2021 are publicly available on Centennial Angus Place's website.

1.3 Identity - Proposed designated proponent

Are the Proposed designated proponent details the same as the Person proposing to take the action? *

Yes

Proposed designated proponent organisation details

ABN	87101508945
Organisation name	Centennial Angus Place Pty Limited
Organisation address	1 Market Street, Sydney NSW 2000

Proposed designated proponent details

Name	Edwina White
Job title	Group Manager Approvals
Phone	0458977675
Email	Edwina.White@centennialcoal.com.au
Address	Level 20, 1 Market Street, Sydney NSW 2000

1.3 Identity - Summary of allocation

Confirmed Referring party's identity

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

ABN	28141736558
Organisation name	EMM CONSULTING PTY LIMITED

Organisation address	Ground Floor, 20 Chandos St, St Leonards NSW 2065
Representative's name	David Richards
Representative's job title	Senior Environmental Scientist
Phone	0405593675
Email	drichards@emmconsulting.com.au
Address	Ground Floor, 20 Chandos St, St Leonards NSW 2065

Confirmed Person proposing to take the action's identity

The Person proposing to take the action is the individual, business, government agency or trustee that will be responsible for the proposed action.

ABN	87101508945
Organisation name	Centennial Angus Place Pty Limited
Organisation address	1 Market Street, Sydney NSW 2000
Representative's name	Edwina White
Representative's job title	Group Manager Approvals
Phone	0458977675
Email	Edwina.White@centennialcoal.com.au
Address	Level 20, 1 Market Street, Sydney NSW 2000

Confirmed Proposed designated proponent's identity

The Person proposing to take the action is the individual or organisation proposed to be responsible for meeting the requirements of the EPBC Act during the assessment process, if the Minister decides that this project is a controlled action.

Same as Person proposing to take the action information.

1.4 Payment details - Payment exemption and fee waiver

Do you qualify for an exemption from fees under EPBC Regulation 5.23 (1) (a)? *

No

Has the department issued you with a credit note? *

No

Have you applied for or been granted a waiver for full or partial fees under Regulation 5.21A? *

No

Are you going to apply for a waiver of full or partial fees under EPBC Regulation 5.21A? *

No

Would you like to add a purchase order number to your invoice? *

No

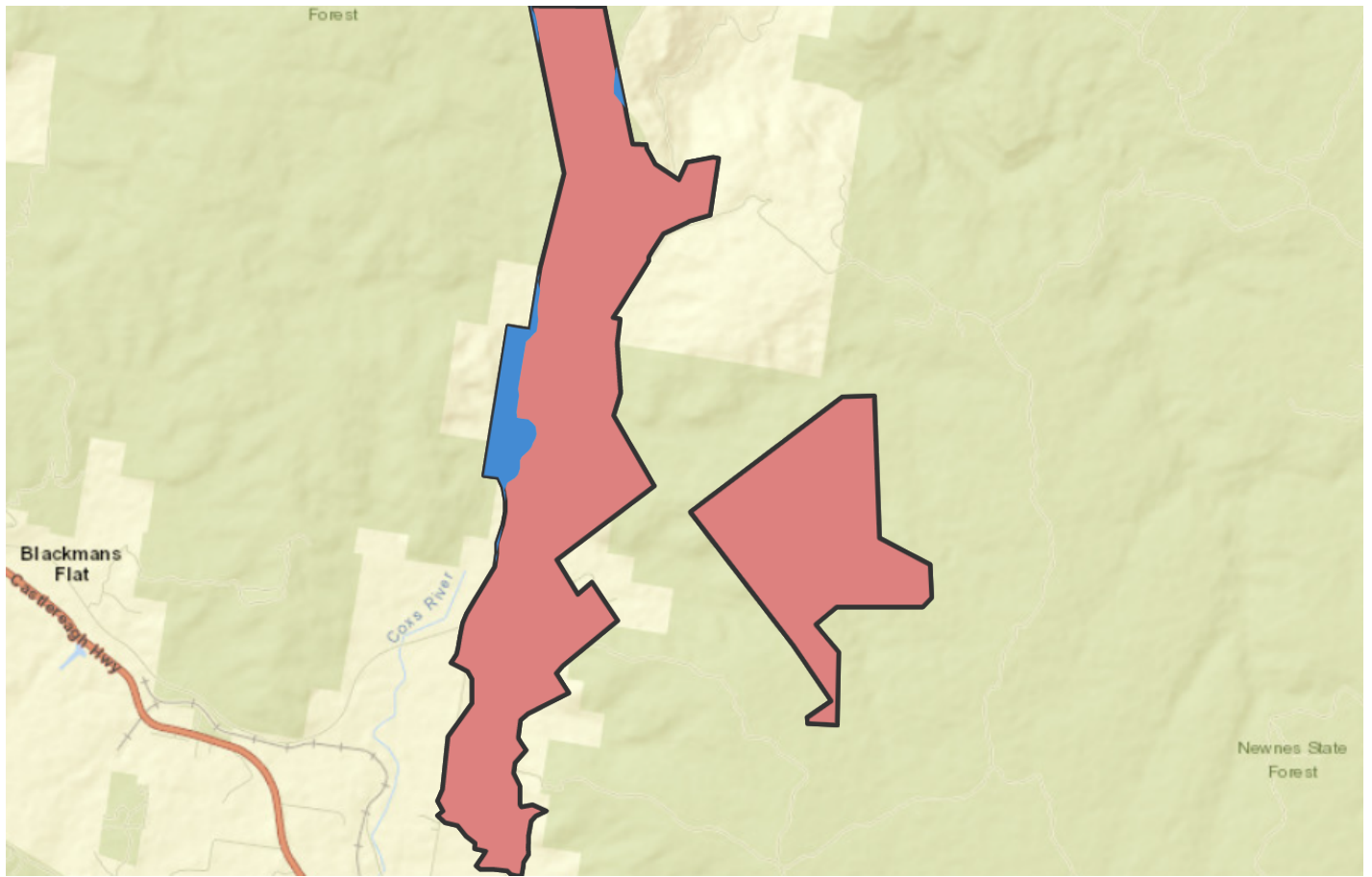
1.4 Payment details - Payment allocation

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

Person proposing to take the action

2. Location

2.1 Project footprint



2.2 Footprint details

What is the address of the proposed action? *

The address is 'Angus Place Colliery, Wolgan Road, Lidsdale NSW 2790'. Lot and DPs within the proposed action area are

Where is the primary jurisdiction of the proposed action? *

New South Wales

Is there a secondary jurisdiction for this proposed action? *

No

What is the tenure of the action area relevant to the project area? *

The proposed action area is on land owned by NSW National Parks and Wildlife Service (including Gardens of Stone State Conservation Area (SCA), formerly Newnes State Forest and Ben Bullen State Forest), Crown land, freehold land, NSW Government land and land owned by Centennial (and its subsidiaries).

As the address field did not allow use of attachments, the lot and DPs within the proposed action area are provided in Attachment B.

3. Existing environment

3.1 Physical description

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

The northern extent of APW1 comprises densely vegetated, undulating ridgelines, whilst the central and southern extent is primarily associated with open, generally cleared and flat valleys. APW1 includes bushland on private and Centennial-owned land, bushland belonging to Gardens of Stone SCA (formerly Ben Bullen State Forest and Newnes State Forest), as well as cleared and heavily disturbed areas associated with agriculture (primarily grazing), existing pit top infrastructure, private coal haul roads, public roads, access and fire trails, power infrastructure, private dwellings and ancillary infrastructure. Lambs Creek and Kangaroo Creek flow through APW1 into Coxs River, immediately west of APW1. The valley flats have some remnant patches of grassy woodland, ranging from paddock trees to small patches of canopy trees and mostly cleared understory. Moderate to good condition swamp meadow occurs within riparian areas associated with Coxs River and Lambs Creek.

APW2 is on Newnes Plateau with surface features comprising undulating ridgelines, narrow gorges and sandstone cliffs and pagodas. The majority of APW2 is covered by bushland associated with Gardens of Stone SCA (formerly Newnes State Forest). Kangaroo Creek also flows through APW2.

The northern extent of APW1 and the entire APW2 occur within Gardens of Stone SCA. Vegetation in Gardens of Stone SCA is primarily moderate to good condition. Vegetation communities range from swamp meadow along Kangaroo Creek and Lambs Creek flats, through to Montane/Southern Tableland Dry Sclerophyll Forests on hill slopes to Montane Heath on ridge tops. Vegetation in these areas is largely intact, with some past clearing of vegetation primarily for access tracks, as well as firewood collection and forestry activity.

In accordance with the Lithgow Local Environmental Plan 2014 (Lithgow LEP), the proposed action area is located within land zoned RU1 Primary Production, RU2 Rural Landscape and RU3 Forestry.

The proposed action area was severely burnt during the 2019-2020 bushfires (Gospers Mountain bushfire) and regeneration of vegetation is variable. The fire front passed through the Newnes Plateau and west to the Coxs River catchment through middle to late December 2019. Fire Extent and Severity Mapping (DPIE 2020) shows that APW2 experienced a medium to very high burn intensity, with very high burn intensity generally occurring toward the ridge tops, grading to medium burn intensity within the Kangaroo Creek valley. The majority of APW1 experienced a medium to high burn intensity. However, there were some sections of unburnt vegetation found adjacent the Mount Piper Haul Road and on private property.

Repeated inspections of the proposed action area following the fire revealed varying rates of vegetation regeneration, which has largely depended on the landscape position of the vegetation and condition prior to bushfire. Of importance to this referral, groundcover within swamp meadow had largely recovered at the time of surveys, which commenced in Spring 2021 (>21 months since the bushfire). At that point of bushfire recovery, only taller shrubs and trees appeared to be still impacted by the fire. Nevertheless, toward the ridge tops throughout the proposed action area, apart from some small pockets of vegetation that did not burn as intensely, vegetation communities in those areas were still considerably impacted by fire during the field surveys, with leaf litter, logs, and all strata still regenerating.

Describe any existing or proposed uses for the project area.

Land uses within the proposed action area include historical and existing mining operations and associated infrastructure (including Angus Place pit top and private haul roads), recreational activities within Gardens of Stone SCA (formerly associated with commercial forestry in Newnes State Forest and Ben Bullen State Forest), agricultural operations (primarily grazing) and rural residential properties.

The area surrounding the proposed action area is comprised of underground coal mining operations and supporting infrastructure. MPPS and the former Wallerawang Power Station are to the west and south of the proposed action area, respectively.

The Gardens of Stone SCA was reserved on 6 May 2022 and comprises of three former state forests (Newnes State Forest, Ben Bullen State Forest and Wolgan State Forest), as well as Crown land. The area has historically been used for a variety of recreation activities, including four-wheel driving, trail bike riding, mountain-biking, birdwatching, bushwalking and rock-climbing. Previously, Newnes State Forest and Ben Bullen State Forest comprised pine plantation and native hardwood forest that were selectively logged under Forestry Corporation of NSW tenure and management.

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

Key natural features within the locality include:

- Greater Blue Mountains Area – listed on the World Heritage List and National Heritage List and within 10 km of the proposed action area.
- Gardens of Stone State National Park – listed as a National Heritage Place and within 10 km of the proposed action area.
- Wollemi National Park – listed as a National Heritage Place and within 10 km of the proposed action area.
- Gardens of Stone SCA – within the proposed action area.

These items will be the subject of detailed assessment so that potential impacts are identified, and measures proposed to mitigate these impacts in consultation with the community and regulatory stakeholders.

The main tributaries within the proposed action area are Coxs River, Kangaroo Creek and Lambs Creeks. Drainage lines associated with the Wolgan River are also in the northern part of APW1. There are several small patches of freshwater wetland habitat (ie permanently or seasonally saturated land) associated with Coxs River, Kangaroo Creek and Lambs Creek. The largest of which is provided by Long Swamp, located along Coxs River in the western section of APW1. These wetland areas primarily occur toward the valley floor, where a relatively flat topography allows for the pooling of water. These wetland communities are typified by moderate to good condition sections of swamp meadow and Typha rushlands. Due to the nature of the proposed action (ie underground mining first workings), which may impact groundwater level, swamp meadow habitat is of particular importance for this referral as they are groundwater dependent.

Although not expected to be impacted by the proposed action, other outstanding natural features that provide habitat for Commonwealth-listed species include rocky pagoda and heath communities along ridgelines in APW1 and APW2 (eg caves, cliffs and rock); and mature woodland communities with hollow-bearing trees from valley flats to foot- and upper-slopes.

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

Angus Place lies in the south-western part of the Western Coalfield of the Sydney Basin. The proposed first workings will be extracted in the Lithgow Seam. The floor of the Lithgow Seam generally dips from west to east. The average seam dip across the proposed mining area is approximately 1.5%. The thickness of the Lithgow Seam within the proposed mining area varies between 2.4 m and 3.9 m. The depths of cover above the proposed mining area vary between approximately 43 m and 280 m.

There is considerable topographical variation within the proposed action area, ranging from 900 m to 1,140 m above sea level. Land surfaces on Newnes Plateau present the highest landforms, with features comprising undulating ridgelines, narrow gorges and sandstone cliffs and pagodas. The lowest extent of the proposed action area is associated with floors of creeks and gullies within open and flat valleys of the upper Coxs River and its tributaries.

3.2 Flora and fauna

Describe the flora and fauna within the affected area and attach any investigations of surveys if applicable.

Based on the nature of the proposed action (ie underground mining first workings), surveys were emphasised within swamp meadow that could be impacted by groundwater drawdown associated with the proposed action. Commonwealth-listed species with potential to occur in the proposed action area were firstly narrowed down to those with a moderate or greater likelihood of occurrence based on a likelihood of occurrence assessment (see Attachment D 'Biodiversity Investigation Report - Appendices A-E', Appendix D, pp.99-148). This assessment was based on information obtained from searches for Commonwealth-listed species within the Commonwealth's Protected Matters Search Tool and NSW Biodiversity Conservation Division's (BCD) BioNet database with a 10 km search criteria. Species were then categorised based on their potential to occur due to their geographical range and habitat association. Species' likelihood of occurrence was categorised as none, low, moderate, high or known. Key Commonwealth-listed species were defined as those with a moderate or greater chance of occurring in swamp meadow habitat, which may be potentially impacted by groundwater drawdown associated with the proposed action.

Surveys for key Commonwealth-listed species were undertaken within the proposed action area after allowing over 21 months of recovery from the 2019/2020 bushfire, which was considered sufficient recovery to allow for a representative survey effort in the well-recovered swamp meadow habitat. Threatened flora and fauna surveys were undertaken in accordance with Commonwealth Guidelines for threatened flora [*Xerochrysum palustre* (Swamp Everlasting; EPBC Act: Vulnerable), *Eucalyptus aggregata* (Black Gum; EPBC Act: Vulnerable) and *Boronia deanei* (Deane's Boronia; EPBC Act: Vulnerable)], Frogs [*Mixophes balbus* (Stuttering Frog; EPBC Act: Vulnerable), *Litoria littlejohnii* (Little Johns Tree Frog; EPBC Act: Endangered); *Heleioporus australiacus* (Giant Burrowing Frog; EPBC Act: Vulnerable)] and *Eulamprus laurensis* (Blue Mountains Water Skink; EPBC Act: Endangered). Details of the survey effort are provided in the Biodiversity Investigation Report (see Attachment C 'Biodiversity Investigation Report - Main Report', Section 3.2.6, pp.20-28 (flora); Section 3.3, pp.29-37 (fauna)).

Of the Commonwealth-listed species surveyed for in the swamp meadow habitat in the proposed action area, the following Commonwealth-listed species were detected and are considered relevant to this referral:

- *Xerochrysum palustre* (Swamp everlasting; EPBC Act: Vulnerable): approximately 762 individuals recorded within swamps associated with Coxs River, Lambs Creek and Kangaroo Creek (see Attachment C 'Biodiversity Investigation Report - Main Report', Figure 4.1, p.76), noting that the rhizomatous growth habit and dense clumps with large numbers of stems within clumps makes estimating numbers of plants difficult (Carter and Walsh 2011); and
- *Eucalyptus aggregata* (Black Gum; EPBC Act: Vulnerable): approximately 452 individuals recorded across Coxs River, Lambs Creek and Kangaroo Creek valley flats (see Attachment C 'Biodiversity Investigation Report - Main Report', Figure 4.1, p.76).

The following listed migratory bird was also detected in swamp meadow habitat in the proposed action area:

- *Gallinago hardwickii* (Latham's Snipe; EPBC Act: Migratory): Maximum sighting of 24 individuals recorded in Coxs River Swamp.

Other Commonwealth-listed species detected that are typically associated with woodland and or pagoda/ heath habitat, and hence not considered sensitive to the groundwater drawdown impacts that may occur as a result of the proposed action, were:

- *Callocephalon fimbriatum* (Gang-gang Cockatoo; EPBC Act: Endangered);
- *Chalinolobus dwyeri* (Large-eared Pied Bat; EPBC Act: Vulnerable);
- *Eucalyptus pulverulenta* (Silver-leaved Mountain Gum; EPBC Act: Vulnerable; planted individuals only);
- *Kunzea cabbagei* (EPBC Act: Vulnerable);
- *Merops ornatus* (Rainbow Bee-eater; EPBC Act: Migratory); and
- *Petauroides volans* (Greater Glider; EPBC Act: Vulnerable).

Locations of these recorded Commonwealth-listed species are provided in Figure 4.1 and Figure 4.2 of the Biodiversity Investigation Report (Attachment C 'Biodiversity Investigation Report - Main Report', Figure 4.1, p.76; Figure 4.2, p.80).

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

Eleven plant community types (PCTs; NSW classification system) were identified within the proposed action area. The Biodiversity Investigation Report (Attachment C 'Biodiversity Investigation Report - Main Report', Section 4.2.2.1 to Section 4.2.2.12, pp.53-65) provides justification for the PCTs selected and Figure 3.1 (Attachment C 'Biodiversity Investigation Report - Main Report', Figure 3.1, p.22) shows the vegetation community mapping within the proposed action area.

The PCTs within the proposed action area are:

- PCT 335 - Tussock grass - sedgeland fen - rushland - reedland wetland in impeded creeks in valleys in the upper slopes sub-region of the NSW South Western Slopes Bioregion (Moderate/Poor condition);
- PCT 677 - Black Gum grassy woodland of damp flats and drainage lines of the eastern Southern Tablelands, South Eastern Highlands (Moderate/Poor condition);
- PCT 708 - Blue Mountains Mallee Ash - Dwarf Casuarina heath of the upper Blue Mountains, Sydney Basin (Moderate/Good condition);
- PCT 797 - Derived grassland of the South Eastern Highlands Bioregion and South East Corner Bioregion (Moderate/Poor condition);
- PCT 1093 - Red Stringybark - Brittle Gum - Inland Scribbly Gum dry open forest of the tablelands, South Eastern Highlands (Moderate/Good condition);
- PCT 1100 - Ribbon Gum - Snow Gum grassy forest on damp flats, eastern South Eastern Highlands (Moderate/Good condition);

- PCT 1191 - Snow Gum - Candle Bark woodland on broad valley flats of the tablelands and slopes, South Eastern Highlands Bioregion (Moderate condition);
- PCT 1197 - Snow Gum - Mountain Gum tussock grass-herb forest of the South Eastern Highlands (Moderate/Good condition);
- PCT 1247 - Sydney Peppermint - Narrow-leaved Peppermint shrubby open forest on sheltered slopes of the Newnes Plateau, Sydney Basin (Moderate/Good condition);
- PCT 1248 - Sydney Peppermint - Silvertop Ash heathy open forest on sandstone ridges of the upper Blue Mountains, Sydney Basin (Moderate/Good condition); and
- PCT 1256 - Tableland swamp meadow on impeded drainage sites of the western Sydney Basin and South Eastern Highlands Bioregion (Moderate condition).

No Commonwealth listed threatened ecological communities were identified within the proposed action area.

Given the Temperate Highland Peat Swamp on Sandstone (THPSS) Endangered Ecological community (EEC) is known to occur on Newnes Plateau, particular emphasis was placed on confirming the absence of this EEC. To do this, cross-swamp transects sampling the flora of this vegetation were undertaken in Coxs River Swamp (APW1) and Kangaroo Creek Swamp (APW2). Seven transects were established at approximately 200 m intervals in each creek, where flora species and cover were recorded within 1 m² quadrats every 4 m along each transect. In total, 76 quadrats were measured in Coxs River and 64 in Kangaroo Creek for analysis with comparable data obtained from five THPSS swamps on the Newnes Plateau (n = 552 quadrats).

Floristic composition was compared between swamps in the proposed action area to THPSS swamps on the Newnes Plateau using multivariate analyses (Attachment C 'Biodiversity Investigation Report', Section 4.2.1, pp.49-51). The analyses revealed swamps in the proposed action area were <20% similar to those on the Newnes Plateau. Moreover, presence of a large number of flora species diagnostic of Montane Bog and Fen NSW listed EEC (PCT 1256 swamp meadow is commensurate with this EEC; 32 of 84 diagnostic species), consistency with past mapping of these swamps as Mountain Hollow Grassy Fen MU53 (DECC) and a suitable geology (ie alluvial soils) and landscape position best fitted the classification as PCT 1256 - Tableland swamp meadow on impeded drainage sites of the western Sydney Basin and South Eastern Highlands Bioregion (corresponding with BC Act listed Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions EEC). Note that this vegetation was also not consistent with EPBC Act listed Alpine Sphagnum Bogs and Fens EEC as swamp vegetation in the proposed action area occurs at approximately 900 m Above Sea Level (ASL), whilst that EEC typically occurs above 1600 m with lowest extent 1000 m ASL in NSW.

Soil landscape units present are Cullen Bullen, Hassans Walls, Lithgow, Long Swamp, Medlow Bath, Mount Sinai, Newnes Plateau, Warragamba and Wollangambe (Attachment C 'Biodiversity Investigation Report - Main Report', Table 1-1, pp.3-4).

3.3 Heritage

Describe any Commonwealth heritage places overseas or other places recognised as having heritage values that apply to the project area.

Statutory registers have been reviewed to determine potential for heritage values to occur within the proposed action area including:

- World Heritage List (WHL) – managed under the EPBC Act;
- National Heritage List (NHL) – managed under the EPBC Act;
- Commonwealth Heritage List (CHL) – managed under the EPBC Act;
- State Heritage Register (SHR) – managed under Part 3A of the NSW *Heritage Act 1977* (Heritage Act);
- s170 Heritage and Conservation Register – managed under Section 170 of the Heritage Act;
- Schedule 5 of the Lithgow LEP; and
- State Heritage Inventory (SHI), which was cross-checked with Schedule 5 of the Lithgow LEP and the s170 register. The SHI is not a single statutory register, but a central collection of locally listed statutory heritage items maintained by Heritage NSW.

Previous heritage assessments undertaken in support of development applications for mining activities at Angus Place have also been reviewed to identify known items of local, State and National significance.

The proposed action area sits outside of the curtilage of the WHL and NHL listings for the Greater Blue Mountains Area; however, it overlaps the 'Greater Blue Mountains – Additional values' (Item 105696) nominated listing (Attachment A, Figure 2).

Three items listed on the Lithgow LEP are located in, or adjacent to, the broader project area that forms part of the SSD application for the project:

- 'The Meadows' (Item I201) – south-west corner of project area (outside proposed action area);
- 'Maddox Lane Group' (Item I202) – western edge of project area (outside proposed action area); and
- 'The Cottage' (Item I191) – adjacent to southern boundary of project area (outside proposed action area).

No other listed items or places recognised as holding historic heritage values on the remaining statutory registers are known to exist within the proposed action area.

Should the 'Greater Blue Mountains – Additional values' nominated listing be accepted onto the NHL, approval may be required under the EPBC Act for any proposed works within the nominated area as per the MNES guidelines.

A historic heritage assessment (HHA) is being completed in accordance with the SEARs and relevant guidelines. Desktop research has identified numerous sites (including dwellings, factories, rails, roadways, mines and associated infrastructure) in both archaeological and built form within the proposed action area.

The proposed action is predicted to have approximately 20 mm vertical subsidence which is a negligible impact to the ground surface and is likened to regular swelling and shrinking of clays in Australian soils.

Surface disturbance associated with the project is limited to an area of approximately 20 m by 28 m of already disturbed land to facilitate the construction of a water transfer pipeline; however, this activity does not form part of the proposed action. With the exception of the pipeline and associated infrastructure, no new above ground infrastructure is required as part of the project and recommencement of mining at Angus Place.

There is a historic heritage management plan (HHMP) (Centennial 2018) (Attachment H - Western Region Historic Heritage Management Plan) in place for Angus Place and this will continue to be implemented as part of the project.

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

The Aboriginal Heritage Information Management System (AHIMS) database was reviewed to determine Aboriginal cultural heritage values within the proposed action area.

A search area of approximately 180 km² centred on the broader project area that forms part of the SSD application for the project identified 120 Aboriginal sites and one Aboriginal Place (Attachment A, Figure 3). Of these, five sites have been destroyed as a result of authorised impacts, and seven have been partially destroyed. Additionally, one site has been investigated and determined to not be an Aboriginal site, and one has been deleted from the AHIMS database.

The boundary of Maiyingu Marragu (Black Fellows Hand Reserve) (Aboriginal Place ID#20, State Heritage Inventory ID#5062850, AHIMS ID#45-1-0007) is adjacent to APW1 and the proposed action area. Direct undermining of Maiyingu Marragu will be avoided.

An ACHA is being prepared in accordance with the SEARs and relevant guidelines. The ACHA will document the results of archaeological and anthropological investigations undertaken to identify the extent and significance of any physical remains and intangible values of past Aboriginal visitation, use and occupation within the project area.

The ACHA will consider Aboriginal sites identified via the AHIMS search and will be prepared collaboratively with RAPs in accordance with Centennial's ACHMP and the *Aboriginal Consultation Requirements for Proponents* (DECCW 2010).

The objectives of the ACHA will be to:

- identify Aboriginal cultural heritage values relevant to the project area including:
 - Aboriginal objects and sites;
 - Aboriginal socio-cultural or historic values which might not be related to Aboriginal objects; and
 - areas of archaeological sensitivity.
- assess the significance of Aboriginal objects, sites and locations identified in the course of the archaeological investigations and through Aboriginal community consultation;
- assess the impact of the project on identified Aboriginal cultural heritage values; and
- propose appropriate management measures for potentially impacted Aboriginal cultural heritage values in response to their assessed significance.

EMM conducted an archaeological field survey of the proposed action area with the assistance of RAP site officers over six days between 22 February and 1 March 2021. The survey team identified a total of 18 new Aboriginal sites, of which 15 are on the surface above the proposed action area. In addition, there are four AHIMS registered sites on the surface above the proposed action area, providing a total of 19 Aboriginal sites on the surface above the proposed action area.

The predicted level of subsidence from the proposed first workings mining method will be approximately 20 mm and is therefore highly unlikely to directly or indirectly impact Aboriginal sites or objects on the surface above the proposed action area.

There is an ACHMP (Centennial 2016) (Attachment F - Western Region Aboriginal Cultural Heritage Management Plan) in place for Angus Place and this will continue to be implemented as part of the project.

3.4 Hydrology

Describe the hydrology characteristics that apply to the project area and attach any hydrological investigations or surveys if applicable. *

The proposed action includes underground mine first workings within the catchments of the Coxs River, Kangaroo Creek, Lambs Creek and a small part of the Wolgan River. Kangaroo Creek and Lambs Creek have headwaters on the western side of the Newnes Plateau and flow generally west to the Coxs River. In the vicinity of the Angus Place pit top, Kangaroo Creek is a third order (Strahler stream order)

watercourse before joining the Coxs River, classified as fifth order watercourse.

The Coxs River catchment is part of the Sydney drinking water catchment as defined by State Environmental Planning Policy (Biodiversity and Conservation) 2021 (previously referred to as State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011).

In the upper catchment of the Coxs River, drainage lines are typically poorly defined to non-existent with overland sheet flow being the typical mode of discharge during high rainfall events. Agricultural activities in properties along the Coxs River have resulted in some minor diversion works of waterways, removed riparian vegetation and created areas of bank erosion (due to stock grazing).

A significant alluvial zone (less than 9 m in depth) exists within Coxs River, adjacent to and within the proposed action area, which supports a number of swamps within the upper reaches of the river.

4. Impacts and mitigation

4.1 Impact details

Potential Matters of National Environmental Significance (MNES) relevant to your proposed action area.

EPBC Act section	Controlling provision	Impacted	Reviewed
S12	World Heritage	No	Yes
S15B	National Heritage	No	Yes
S16	Ramsar Wetland	No	Yes
S18	Threatened Species and Ecological Communities	Yes	Yes
S20	Migratory Species	No	Yes
S21	Nuclear	No	Yes
S23	Commonwealth Marine Area	No	Yes
S24B	Great Barrier Reef	No	Yes
S24D	Water resource in relation to large coal mining development or coal seam gas	Yes	Yes
S26	Commonwealth Land	No	Yes
S27B	Commonwealth heritage places overseas	No	Yes
S28	Commonwealth or Commonwealth Agency	No	Yes

World Heritage

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

—

Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The proposed action area sits outside of the curtilage of the WHL listing for the Greater Blue Mountains Area (Attachment A, Figure 2). Therefore, direct and/or indirect impacts on this listed item are considered unlikely.

National Heritage

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

—

Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The proposed action area sits outside of the curtilage of the NHL listing for the Greater Blue Mountains Area (Attachment A, Figure 2). Therefore, direct and/or indirect impacts on this listed item are considered unlikely.

The proposed action area sits within the 'Greater Blue Mountains – Additional values' (Item 105696) nominated listing (Attachment A, Figure 2). Should the 'Greater Blue Mountains – Additional values' nominated listing be accepted onto the NHL, approval may be required under the EPBC Act for any proposed works within the nominated area as per the MNES guidelines.

Ramsar Wetland

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

—

Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

There are no Ramsar Wetlands within or adjacent to the proposed action area.

The closest Ramsar Wetland is Towra Point, approximately 120 km south-east of the proposed action area.

A protected matters search identified four Ramsar Wetlands of relevance to the proposed action (see Attachment D 'Biodiversity Investigation Report - Appendices A-E', Appendix C, p.98); the closest of which is between 300 km and 400 km upstream of the proposed action area.

Given the large geographical separation between the closest Ramsar Wetlands and the proposed action area, no direct or indirect impacts to the wetlands are likely to occur as a result of the proposed action. Potential impacts from the proposed action are expected to be localised and not result in any direct or indirect impacts to the hydrological regime or ecological character of the identified wetlands.

Therefore, direct and/or indirect impacts on this listed item are considered unlikely.

Threatened Species and Ecological Communities

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

Threatened species

Direct impact	Indirect impact	Species
No	Yes	Eucalyptus aggregata
No	Yes	Xerochrysum palustre

Ecological communities

—

Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

Yes

Briefly describe why your action has a direct and/or indirect impact on these protected matters. *

The proposed action is unlikely to have a significant impact on any EPBC Act listed ecological communities as there were none identified in the proposed action area.

The proposed action may indirectly impact the following EPBC Act listed threatened species that associate with swamp meadow habitat (PCT 1256):

- *Xerochrysum palustre* (Swamp everlasting; EPBC Act: Vulnerable); and
- *Eucalyptus aggregata* (Black Gum; EPBC Act: Vulnerable).

X. palustre (Swamp Everlasting) habitat is seasonally wet areas of native grassland and heath communities (Carter and Walsh 2011). Hence, modification of the water table within swamp meadow habitat that may occur due to the proposed action may impact the local population of *X. palustre*. Approximately 762 individuals were recorded across swamps associated with Coxs River, Lambs Creek and Kangaroo Creek in the proposed action area, noting that the rhizomatous growth habit and dense clumps with large numbers of stems within clumps makes estimating numbers of plants difficult (Carter and Walsh 2011). Given this population is at the northern limit of the species range and is likely to be necessary for maintaining genetic diversity and a key source population for breeding/ dispersal, it is considered an important population as per the *Significant Impact Guidelines 1.1* (DoE 2013).

E. aggregata (Black Gum) grows on alluvial soils, in poorly-drained flats and hollows adjacent to swamps, creeks and small rivers and up adjoining slopes (up to 8 m above the waterline; TSSC 2015). Stunted Black Gum individuals may also grow within swamp meadow (DEC 2006). Due to the dependence of Black Gum on groundwater, potential drawdown of groundwater by the proposed action may impact this local population of *E. aggregata*. Approximately 452 individuals were recorded across Coxs River, Lambs Creek and Kangaroo Creek valley flats within the proposed action area. Given this site is identified as one of four important sites for the species in the EPBC Act Conservation Advice (TSSC 2015; identified as part of the Wallerawang population), being a large and more viable stand of Black Gum within NSW, it is considered an important population of the species. Moreover, as it is estimated that 6,300-8,100 mature Black Gum individuals occur in NSW (TSSC 2015), the 452 individuals within the proposed action area are considered a substantial proportion of this overall population (ie ~5 – 7%).

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

Yes

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

The proposed action has potential to impact important populations of *X. palustre* (Swamp Everlasting) and *E. aggregata* (Black Gum) by drawdown of groundwater.

Preliminary assessment results indicate the proposed action will not have a significant impact on groundwater or surface water quality; however, this will be assessed further in the water resources impact assessment.

As noted above, should mining cause movement or activation of known faults within the proposed action area there is the potential for new or enhanced connection between the proposed action area and overlying groundwater sources and/or surface water and associated receptors. If it occurs, this enhanced connection has the potential to alter surface water and groundwater interactions and contribute to potential leakage from surface water features to groundwater.

If groundwater drawdown associated with the proposed action coincides with these important populations of *X. palustre* (Swamp Everlasting) and *E. aggregata* (Black Gum), based on existing knowledge at the time of this referral, significant impacts may occur to these species. That is, drying out of habitat for these species by the proposed action may lead to a long-term decrease in the size and area of occupancy of these important populations.

The detailed groundwater and geomechanics assessments are still in progress; however, as the proposed action involves underground mining in proximity to the upper Coxs River and swamps where these important populations of *X. palustre* (Swamp Everlasting) and *E. aggregata* (Black Gum) occur, Centennial Angus Place is taking a precautionary approach and referring the proposed action as having the potential to significantly impact on these two species.

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

Yes

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

As the proposed action will intercept groundwater and has the potential, based on existing knowledge at the time of this referral, to result in changes to the existing groundwater and surface water regime in the upper Coxs River and swamps, a significant impact may occur for important populations of *X. palustre* (Swamp Everlasting) and *E. aggregata* (Black Gum) due to water drawdown. As such, Centennial Angus Place is taking a precautionary approach and referring the proposed action as a controlled action as it may have the potential to significantly impact on these two species noting that detailed impact groundwater and geomechanics assessments are still in progress.

Please describe any avoidance or mitigation measures proposed for this action and attach any supporting documentation for these avoidance and mitigation measures. *

Relevant measures to avoid and mitigate potential impacts on the important habitat for *X. palustre* (Swamp Everlasting) and *E. aggregata* (Black Gum) are:

- Undertaking first-workings only to minimise potential impacts on swamp habitat associated with subsidence and groundwater drawdown;
- Buffering of mine workings to avoid undermining of the main tributary of the Coxs River; and
- Avoidance of mining beneath a land-parcel comprising an approved BioBanking Agreement (BA 427).

A first workings mine design also allows for the avoidance of potential impacts by readily applying adaptive management in the case that unexpected impacts may occur.

The avoidance area shown on Figure 1 (Attachment A, Figure 1) is consistent with the measures listed above. Further details of these avoidance measures are documented in Section 4.3 of this referral.

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

If required, offset requirements are proposed to be assessed and satisfied under the NSW Biodiversity Offset Scheme (BOS) in accordance with the NSW Bilateral Agreement under the EPBC Act. A Biodiversity Development Assessment Report (BDAR) is being prepared for the proposed action in accordance with the *NSW Biodiversity Assessment Method* (BAM) (DPIE 2020).

Migratory Species

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

—

Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

An important permanent wetland habitat for *Gallinago hardwickii* (Latham's Snipe; Migratory) was identified within Coxs River and Long Swamp toward the west of APW1. Here, 24 individuals were recorded in one sighting, which exceeds the 18 individual criteria to constitute important habitat, as per DoEE (2017). However, undermining of the area where *G. hardwickii* were observed will be avoided, and therefore no indirect or direct impacts on this species are expected as a result of the proposed action. Moreover, undermining of the Coxs River upstream of this location will also be avoided, so downstream impacts on this species are not anticipated.

The proposed action is not expected to have a significant impact on known migratory species since, as per guidelines in DoEE (2017):

- The proposed action is not expected to substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles) Latham's Snipe habitat and no destruction or isolation of habitat for Latham's Snipe is anticipated;
- The proposed action is not expected to result in the establishment of an invasive species that is harmful to the migratory species as no surface works in native vegetation (including swamp meadow habitat) will be undertaken as part of the proposed action (i.e. negligible risk of introduction or increase in an invasive species that could compromise this migratory species); and
- The proposed action is not expected to seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species. No surface disturbance operations will be undertaken as part of the proposed action that may disrupt this population of migratory birds. Further, undermining of this important habitat will be avoided.

The important habitat for the Latham's Snipe will be avoided from being undermined. That is, the Coxs River will not be undermined. There are no surface works proposed that may directly impact swamps and impacts to groundwater levels in identified Latham's Snipe habitat are not expected to occur.

Nuclear

Is the proposed action likely to have any direct and/or indirect impact on this protected matter? *

No

Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The proposed action is not a nuclear action. This matter of national environmental significance is not relevant.

Commonwealth Marine Area

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

—

Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The proposed action area is not within a Commonwealth Marine Area. Therefore, direct and/or indirect impacts on Commonwealth Marine Areas are considered unlikely.

Great Barrier Reef

Is the proposed action likely to have any direct and/or indirect impact on this protected matter? *

No

Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The proposed action area is not within the Great Barrier Reef Marine Park. Therefore, direct and/or indirect impacts on the Great Barrier Reef Marine Park are considered unlikely.

Water resource in relation to large coal mining development or coal seam gas

Is the proposed action likely to have any direct and/or indirect impact on this protected matter? *

Yes

Briefly describe why your action has a direct and/or indirect impact on this protected matter. *

Surface water resources in the area of the proposed action include the Coxs River and Wolgan River catchments, managed under the Water Sharing Plan for the Greater Metropolitan Region Unregulated River Water Sources 2011: Hawkesbury and Lower Nepean Rivers Water Source and Upper Nepean and Upstream Warragamba Water Source.

The porous rock groundwater system is managed under the Water Sharing Plan for the Greater Metropolitan Region Groundwater Sources 2011 and includes: Sydney Basin North, Sydney Basin Richmond and Sydney Basin Coxs River Groundwater Sources. The groundwater sources include all water contained within all aquifers below the surface, including minor alluvial groundwater systems and regional, porous rock (Tertiary and Permian-aged) groundwater systems.

The proposed action will intercept groundwater and has the potential to result in changes to the existing groundwater and surface water regime. The potential significance of the incremental impact on water resources is being assessed as part of the water resources impact assessment that is currently underway. This assessment will include consideration of the impacts that existing, approved mining activities have also had on water resources within and adjacent to the proposed action area.

To assess the potential impacts of the proposed action on water resources, groundwater and surface water studies, comprising site investigations, conceptual assessment and numerical modelling are being undertaken. This work will further quantify potential impacts and will be presented in the EIS. The existing groundwater model and water and salt balance model have been used to assess the potential impacts of the proposed action, which has been calibrated using historical records from Centennial's surface water and groundwater monitoring network.

The proposed action will depressurise the geological strata directly intersected by mining, creating a zone of depressurisation in the Permian strata around the proposed action area. Drawdown is predicted to occur in the Lithgow Seam and is expected to extend to the uppermost watertable. However, due to the thinner overburden thickness under the north-eastern arm of the Coxs River swamp system, minor alluvial drawdown is predicted in this area.

There are 35 groundwater works (excluding exploration and/or monitoring bores) in the proposed action area, the majority of which have licensed water entitlement. Preliminary modelling results shows two bores on two different properties may be affected by the proposed action.

There are a number of mapped groundwater dependent ecosystems (GDEs) associated with the Coxs River and tributaries, including: Coxs River Swamp, Long Swamp, Kangaroo Creek Swamp and Lambs Creek Swamp (Attachment A, Figure 4). Generally, the overburden thickness between the swamps and the target coal seam limits potential drawdown impacts, with the exception of the north-eastern arm of the Coxs River swamp system.

The proposed action is predicted to result in vertical subsidence of approximately 20 mm. Preliminary assessment results indicate the potential for changes to surface water-groundwater interaction to be minimal. However, there are numerous faults (minor to major) in the proposed action area that potentially extend from basement to ground surface. Should mining cause movement or activation of these faults there is the potential for new or enhanced connection between the proposed action area and overlying groundwater sources and/or surface water and associated receptors. If it occurs, this enhanced connection has the potential to alter surface water and groundwater interactions and contribute to potential leakage from surface water features to groundwater.

Potential impacts to surface water resources are expected to be minimal, with mine water discharges from Angus Place ceasing in 2020 and not proposed to recommence as part of the proposed action.

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

Yes

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

Preliminary assessment results indicate the proposed action will not have a significant impact on groundwater or surface water quality; however, this will be assessed further in the water resources impact assessment.

As noted above, should mining cause movement or activation of known faults within the proposed action area there is the potential for new or enhanced connection between the proposed action area and overlying groundwater sources and/or surface water and associated receptors. If it occurs, this enhanced connection has the potential to alter surface water and groundwater interactions and contribute to potential leakage from surface water features to groundwater.

The detailed assessments are still in progress; however, as the action involves underground mining in proximity to the upper Coxs River and swamps, Centennial Angus Place is taking a precautionary approach and referring the action as having the potential to significantly impact a water resource.

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

Yes

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

The proposed action will intercept groundwater and has the potential to result in changes to the existing groundwater and surface water regime. The potential significance of the incremental impact on water resources is being assessed as part of the water resources impact assessment that is currently underway.

As the proposed action involves underground mining in proximity to the upper Coxs River and swamps, Centennial Angus Place is taking a precautionary approach and referring the action as a controlled action.

Please describe any avoidance or mitigation measures proposed for this action and attach any supporting documentation for these avoidance and mitigation measures. *

To minimise surface and groundwater interactions, the proposed action will utilise a first workings, bord and pillar mining method. Bord and pillar mining is a reliable and consistent mining method that will provide operational flexibility at Angus Place to navigate geological structures, adverse geotechnical conditions and sensitive surface features. The bord and pillar mining method will minimise groundwater depressurisation and subsidence. The method leaves significant coal resources in situ in the form of pillars to support the strata above the extracted parts of the coal seam.

The proposed action area has established a mining exclusion zone for the Coxs River and direct undermining will be avoided within a 60-m-wide exclusion area from the centreline of the river. In addition, prior to the commencement of mining, a buffer will be established using the 26.5° angle of draw of the proposed first workings and the known extent of Long Swamp.

The proposed action will require underground dewatering within APW1 and APW2. Dewatering will likely use a combination of air pumps, dedicated sumps, and high flow/low head pumps to transfer water from defined in-seam sump areas. Groundwater generated during mining activities associated with the proposed action will be transferred to Angus Place's existing underground water management system (primarily the 800 underground storage area). From there, water inflows will either be transferred to:

- the existing pit top for storage and reuse; or
- Springvale Water Treatment Project (SWTP) for treatment and subsequent reuse at MPPS (via existing infrastructure); or
- Mount Piper Power Station (via existing infrastructure); or
- Springvale Coal Services Site (SCSS) for reuse in accordance with the Western Coal Services Project (SSD-5579) (via proposed infrastructure subject to the approval of a modification application associated with SSD-5579); or
- McPhillamys Gold Project (SSD-9505) (via proposed infrastructure subject to the approval of the McPhillamys Gold Project).

Approval will also be sought as part of the project to receive and temporarily store surplus stormwater from SCSS within Angus Place's underground water management system. Infrastructure required to facilitate the transfer of surplus stormwater from SCSS to Angus Place forms part of the application for the McPhillamys Gold Project.

The only additional surface infrastructure proposed as part of the project will occur on disturbed land south of the existing pit top and is limited to an area of 20 m by 28 m within an area already heavily disturbed. This infrastructure will facilitate the transfer of water between Angus Place and the McPhillamys Gold Project. It does not form part of the proposed action.

Water transferred to Angus Place's existing pit top, MPPS, SCSS and McPhillamys Gold Project will be used in the operation of these facilities and will be managed in accordance with the relevant site's water management plans.

Mine water discharges at Angus Place ceased in 2020 and are not proposed to resume as part of the project or the proposed action. All mine water discharges will be managed by transfer to the facilities listed above without the need to discharge to the environment. Stormwater may still be discharged from the existing pit top as a result of rainfall and pit top water management requirements in accordance with Angus Place's existing water management plan and EPL 467.

Groundwater monitoring for mining areas will continue as part of the proposed action with the program augmented to cover the proposed APW1 and APW2 mining areas and to provide an opportunity for hydrogeology validation and recalibration. These augmentations to the monitoring program will include monitoring at private landowner bores.

Centennial Angus Place will continue to monitor the surface water environment for quality and quantity as it relates to mining activities. These programs will be augmented as necessary to support predictive models used for understanding potential impacts. Changes to the surface mining support infrastructure will be minimal and hence, stormwater management activities are unlikely to change.

Detailed studies on potential impacts to water resources are still being undertaken. The results of these studies will be used to identify appropriate additional monitoring and mitigation measures to be implemented for the proposed action. A plan of management will be included in the EIS that focuses on measures to avoid, mitigate and manage the impacts of the proposed action. The existing surface and groundwater monitoring network will be complemented by additional monitoring to provide for ongoing baseline data collection.

The Angus Place Water Management Plan (Centennial 2021) (Attachment I and Attachment J - Angus Place Colliery Water Management Plan) will be updated following project approval.

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

No offsets are currently proposed.

Commonwealth Land

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The proposed action area is not within a Commonwealth land area. Therefore, direct and/or indirect impacts on areas of Commonwealth land are considered unlikely.

Commonwealth heritage places overseas

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The proposed action area is in the Lithgow local government area of NSW. Therefore, direct and/or indirect impacts on Commonwealth heritage places overseas are considered unlikely.

Commonwealth or Commonwealth Agency

Is the proposed action to be taken by the Commonwealth or a Commonwealth Agency? *

No

4.2 Impact summary

Conclusion on the likelihood of significant impacts

You have indicated that the proposed action will likely have a significant impact on the following Matters of National Environmental Significance:

- Threatened Species and Ecological Communities (S18)
- Water resource in relation to large coal mining development or coal seam gas (S24D)

Conclusion on the likelihood of unlikely significant impacts

You have indicated that the proposed action will unlikely have a significant impact on the following Matters of National Environmental Significance:

- World Heritage (S12)
- National Heritage (S15B)
- Ramsar Wetland (S16)
- Migratory Species (S20)
- Nuclear (S21)
- Commonwealth Marine Area (S23)
- Great Barrier Reef (S24B)
- Commonwealth Land (S26)
- Commonwealth heritage places overseas (S27B)
- Commonwealth or Commonwealth Agency (S28)

4.3 Alternatives

Do you have any possible alternatives for your proposed action to be considered as part of your referral? *

No

Describe why alternatives for your proposed action was not possible. *

The re-commencement of underground mining at Angus Place has been carefully considered by Centennial Angus Place. Extensive investigations have considered the future supply demands of Mount Piper Power Station (MPPS) whilst balancing social, environmental and economic outcomes. As a result, multiple alternatives to the proposed action and the project have been considered and ultimately deemed unfeasible.

Centennial Angus Place has considered higher levels of coal extraction from multiple areas within its existing mining leases; however, these have not been pursued due to associated social, environmental and economic impacts.

In 2016, Centennial Angus Place lodged an SSD application (SSD-5602) to introduce a new area of longwall mining at Angus Place. This project is known as the Angus Place Mine Extension Project (APMEP). In 2019, an amended project application for the APMEP was submitted to DPE. The amended application for the APMEP has since been withdrawn.

Angus Place West represents a more immediate and suitable coal supply option for MPPS than APMEP. Whilst it is acknowledged that the target coal resource nominated for extraction by APMEP is not proposed to be extracted as part of Angus Place West, Centennial Angus Place are prioritising Angus Place West as it is predicted to result in reduced impacts to surface features and Matters of National Environmental Significance (when compared with APMEP).

Angus Place West will service the changing needs of MPPS through to the facility's scheduled closure in 2040. Should Angus Place West not proceed, it would risk the local stable and secure supply of thermal coal to MPPS and electricity supply to approximately 1.2 million homes annually.

The project has the ability to be scaled up and down according to the needs of MPPS and reducing any risk posed by a shortfall in supply from Centennial's other Western Region operations, namely Airly Mine and Clarence Colliery. Ultimately, the energy security gained by the project would not be realised in the event that the proposed action does not proceed.

Alternative timelines

Over the past few years, Springvale Mine has experienced significant geological challenges underground whilst also managing environmental surface impacts, both of which have impacted coal quality, restricted production and resulted in changes to the mine plan. As a result, Springvale Mine's anticipated life of mine has been shortened to approximately 2026.

The proposed action will ensure both continuity of coal supply to MPPS and employment for the Springvale Mine workforce, while also delivering a low impact mining operation, using a more flexible mining method that will meet MPPS's coal supply needs.

The completion of the proposed action aligns with the projected closure of MPPS, the only intended market for coal extracted as part of the proposed action.

An alternative timeline is not considered feasible as a later commencement date and earlier completion date would both inhibit Centennial's ability to meet the coal supply needs of MPPS.

Alternative locations

Centennial Angus Place has considered the partial extraction of coal from multiple areas; however, these have not been pursued due to associated social, environmental and economic impacts. First workings beneath, and to the west of, the Coxs River have also been considered as part of the proposed action; however, a 60-m-wide exclusion area from the centreline of the Coxs River has been introduced ('avoidance area' shown on Attachment A, Figure 1). Mining in this area has the potential to impact a known population of Latham's Snipe and important habitat for this species. Impacts on previously recorded Black Gum individuals, mapped BC Act listed threatened ecological communities and potential threatened species habitat can also be avoided by excluding mining in this location.

Alternative activities

The activity that is the subject of the proposed action is underground coal mining employing a first workings mining technique. The mine planning and design process has considered various alternatives, substitution measures and engineering controls with the ultimate goal being to minimise and manage potential adverse environmental impacts associated with the proposed action while maintaining a productive and safe mine. In these respects, the mine design selected for the proposed action has considered:

- feasibility of mine development (ie practical considerations associated with access to and extraction of the coal resource);
- geotechnical conditions;
- long term pillar stability;
- maximising extractable reserves;
- coal quality; and
- avoidance of sensitive surface features.

An alternative mining technique would likely contribute to increased subsidence-related impacts within the proposed action area.

5. Lodgement

5.1 Attachments

1.2 Overview of the proposed action

#1.	Attachment A - Figures 1-4	Document	Figures 1, 2, 3 and 4 that support information in the referral form.
-----	----------------------------	----------	--

1.2 Public consultation regarding the project area

#1.	Attachment F - Western Region Aboriginal Cultural Heritage Management Plan	Document	Aboriginal cultural heritage management plan for Centennial's Western Region operations (including approved activities at Angus Place Colliery).
-----	--	----------	--

1.3 (Proposer's identity) Proposer's history of responsible environmental management

#1.	Attachment G - Angus Place Colliery Environmental Management Strategy	Document	Environmental management strategy for Angus Place Colliery's existing approved operations.
-----	---	----------	--

2.2 Tenure of the action area relevant to the project area

#1.	Attachment B - Address	Document	Lot and DPs within the proposed action area.
-----	------------------------	----------	--

3.2 Flora and fauna within the affected area

#1.	Attachment C - Biodiversity Investigation Report - Main report	Document	Report supporting assessment of potential impacts on biodiversity-related MNES.
#2.	Attachment D - Biodiversity Investigation Report - Appendices A-E	Document	Appendices supporting assessment of potential impacts on biodiversity-related MNES.
#3.	Attachment E - Biodiversity Investigation Report - Appendices F-I	Document	Appendices supporting assessment of potential impacts on biodiversity-related MNES.

3.2 Vegetation within the project area

#1.	Attachment C - Biodiversity Investigation Report - Main report	Document	Report supporting assessment of potential impacts on biodiversity-related MNES.
-----	--	----------	---

3.3 Commonwealth heritage places overseas or other places that apply to the project area

#1.	Attachment A - Figures 1-4	Document	Figures 1, 2, 3 and 4 that support information in the referral form.
#2.	Attachment H - Western Region Historic Heritage Management Plan	Document	Historic heritage management plan for Centennial's Western Region operations (including approved activities at Angus Place Colliery).

3.3 Indigenous heritage values that apply to the project area

#1.	Attachment A - Figures 1-4	Document	Figures 1, 2, 3 and 4 that support information in the referral form.
#2.	Attachment F - Western Region Aboriginal Cultural Heritage Management Plan	Document	Aboriginal cultural heritage management plan for Centennial's Western Region operations (including approved activities at Angus Place Colliery).

4.1 (World Heritage) Why your action is unlikely to have a direct and/or indirect impact

#1.	Attachment A - Figures 1-4	Document	Figures 1, 2, 3 and 4 that support information in the referral form.
-----	----------------------------	----------	--

4.1 (National Heritage) Why your action is unlikely to have a direct and/or indirect impact

#1.	Attachment A - Figures 1-4	Document	Figures 1, 2, 3 and 4 that support information in the referral form.
-----	----------------------------	----------	--

4.1 (Ramsar Wetland) Why your action is unlikely to have a direct and/or indirect impact

#1.	Attachment D - Biodiversity Investigation Report - Appendices A-E	Document	Appendices supporting assessment of potential impacts on biodiversity-related MNES.
-----	---	----------	---

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

#1.	Attachment A - Figures 1-4	Document	Figures 1, 2, 3 and 4 that support information in the referral form.
-----	----------------------------	----------	--

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

#1.	Attachment A - Figures 1-4	Document	Figures 1, 2, 3 and 4 that support information in the referral form.
-----	----------------------------	----------	--

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

#1.	Attachment I - Angus Place Colliery - Water Management Plan - Part 1	Document	Water management plan for Angus Place's existing approved operations.
#2.	Attachment J - Angus Place Colliery - Water Management Plan - Part 2	Document	Water management plan for Angus Place's existing approved operations.

4.3 Why alternatives for your proposed action was not possible

#1.	Attachment A - Figures 1-4	Document	Figures 1, 2, 3 and 4 that support information in the referral form.
-----	----------------------------	----------	--

5.2 Declarations

Completed Referring party's declaration

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

ABN	28141736558
Organisation name	EMM CONSULTING PTY LIMITED
Organisation address	Ground Floor, 20 Chandos St, St Leonards NSW 2065
Representative's name	David Richards
Representative's job title	Senior Environmental Scientist
Phone	0405593675
Email	drichards@emmconsulting.com.au
Address	Ground Floor, 20 Chandos St, St Leonards NSW 2065

- Check this box to indicate you have read the referral form. *
- I would like to receive notifications and track the referral progress through the EPBC portal. *
- By checking this box, I, **David Richards of EMM CONSULTING PTY LIMITED**, declare that to the best of my knowledge the information I have given on, or attached to this EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence. *
- I would like to receive notifications and track the referral progress through the EPBC portal. *

Completed Person proposing to take the action's declaration

The Person proposing to take the action is the individual, business, government agency or trustee that will be responsible for the proposed action.

ABN	87101508945
Organisation name	Centennial Angus Place Pty Limited
Organisation address	1 Market Street, Sydney NSW 2000
Representative's name	Edwina White
Representative's job title	Group Manager Approvals
Phone	0458977675
Email	Edwina.White@centennialcoal.com.au
Address	Level 20, 1 Market Street, Sydney NSW 2000

- Check this box to indicate you have read the referral form. *
- I would like to receive notifications and track the referral progress through the EPBC portal. *
- I, **Edwina White of Centennial Angus Place Pty Limited**, declare that to the best of my knowledge the information I have given on, or attached to the EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence. I declare that I am not taking the action on behalf or for the benefit of any other person or entity. *

- I would like to receive notifications and track the referral progress through the EPBC portal. *

Completed Proposed designated proponent's declaration

The Proposed designated proponent is the individual or organisation proposed to be responsible for meeting the requirements of the EPBC Act during the assessment process, if the Minister decides that this project is a controlled action.

Same as Person proposing to take the action information.

- Check this box to indicate you have read the referral form. *
- I would like to receive notifications and track the referral progress through the EPBC portal. *
- I, **Edwina White of Centennial Angus Place Pty Limited**, the Proposed designated proponent, consent to the designation of myself as the Proposed designated proponent for the purposes of the action described in this EPBC Act Referral. *
- I would like to receive notifications and track the referral progress through the EPBC portal. *