



Submissions Report

SSD-5581 Mod 3

Airly Mine

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Abbreviations

Biodiversity Conservation Division	BCD
Centennial Airly Pty Limited	Centennial Airly
Centennial Coal Company	Centennial
Department of Planning, Industry & Environment	DPIE
Department of Primary Industries	DPI
Division of Resource and Geoscience	DRG
Endangered Ecological Community	EEC
Environment Protection Authority	EPA
Environmental Protection and Biodiversity Conservation	EPBC
Environmental Planning and Assessment Act	EP&A Act
Full time equivalent	FTE
Joint Ore Reserves Committee	JORC
Lithgow City Council	LCC
Million tonnes per annum	Mtpa
National Parks and Wildlife Service	NPWS
Registered Aboriginal Parties	RAPs
Roads and Maritime Services	RMS
Run of mine	ROM
State Environmental Planning Policy	SEPP
State significant development	SSD
Transport for NSW	TfNSW

1 INTRODUCTION

1.1 Background

Centennial Airly Pty Limited (Centennial Airly) is proposing to modify (Modification 3) Airly Mine's State significant development (SSD) 5581 consent under Section 4.55(2) of the Environmental Planning and Assessment Act 1979 (EP&A Act) to allow for:

- an increase in the run-of-mine (ROM) production rate from the approved 1.8 million tonnes per annum (Mtpa) to 3.0 Mtpa
- an increase in workforce from the approved 155 full time equivalent (FTE) personnel to 200 FTE personnel
- an increase in the movement of laden coal trains and water trains leaving the site from the approved average of 2 trains per day to 3 trains per day over any calendar year but maintaining the approved maximum 5 trains per day leaving the site on any day
- underground blasting (or shot-firing) activities for the removal of geological structures in the event they are encountered within the mining areas
- an amendment to the approved 20-year mine schedule for the increased production rate.

Airly Mine's consent SSD-5581 was granted on 15 December 2016 for the Airly Mine Extension Project (the Project) and will lapse on 31 January 2037. The consent has been modified two times previously.

The Modification Report supporting the Modification 3 application was placed on public exhibition from 8 November 2019 to 24 November 2019.

1.2 Request for Submissions Report

On 6 December 2019, the Planning & Assessment Division from within the Department of Planning, Industry & Environment (DPIE), requested the preparation of a Submissions Report to address matters raised in the submissions received during the public exhibition period of the Modification Report.

This Submissions Report has been prepared by Centennial Coal Company Limited (Centennial) to respond to the submissions received. This Submissions Report builds on information presented in the Modification Report and is to be read in conjunction with that document.

2 ANALYSIS OF SUBMISSIONS

2.1 Overview

A total of 18 submissions from stakeholders were received during the public exhibition period of the Modification Report. These submissions are broken up as follows:

Government Agency Submissions

10 submissions were from government agencies comprising the following:

- Division of Resource and Geoscience (DRG)
- WaterNSW
- Department of Primary Industries (DPI)
- Lithgow City Council (LCC)
- Environment Protection Authority (EPA)
- Resources Regulator
- Transport for NSW (TfNSW)
- Biodiversity Conservation Division (BCD) and National Parks and Wildlife Service (NPWS)
- DPIE Hazards Team
- Roads and Maritime Services (RMS)

In addition, the Planning & Assessment Division requested the Submissions Report address matters set out in Attachment A of the DPIE request for the preparation of a Submissions Report dated 6 December 2019.

All submissions from government agencies were in the form of comments with no submissions from government agencies objecting to the proposed modification.

Organisation / Company Submissions

Two organisation submissions were received, these were from The Australia Institute and Ibbai Waggon-Wirradjuri People provided submissions objecting to the proposed modification. One submission from a private company, WesTrac, was received which was in support of the proposed modification.

Individual Community Member Submissions

Five submissions were received from individual community members. All five submissions from individual community members objected to the proposed modification. Three of those objections came from individual community members from within local towns surrounding the Airly Mine including Bogee, Capertee Valley and Glen Davis. Two individual community member objections were from towns considered more regional from the Airly Mine being the townships of Lithgow and Dargan.

A register of all issues and comments made in submissions received in relation to the proposed modification are provided in **Appendix 2** along with a reference as to where in this Submissions Report these matters have been addressed.

2.2 Categorisation of Issues

Matters raised in submissions have been classified into five broad categories being:

- Project Issues - includes issues raised in relation to the project design
- Procedural issues - includes issues raised in relation to statutory requirements or stakeholder engagement.
- Environmental, Social or Economic Issues - includes issues associated with the environmental, social or economic impacts of the project.
- Project Merit Issues - includes issues associated with the justification of the project or consistency of project with Government plans, policies or guidelines.
- Other Issues - includes issues that are beyond the scope of the project or are broader policy issues.

These matters have been further broken down into the following sub categories:

Project Issues

- Matters in relation to the on site Sewage Treatment Plant
- Matters in relation to the existing employment levels at the Airly Mine
- Need and justification for blasting activities
- Issues relating to the ongoing importation of water and the projects viability
- Questions regarding the total coal extraction from the proposed modified project

Procedural issues

- Environment Protection Licence (EPL) variation requirements
- Mining Operations Plan (MOP) variation requirements
- Extraction Plan variation requirements
- Consultation requirements
- Transportation of explosives

Environmental, Social or Economic Issues

- GHG emissions and impacts
- Air quality impacts
- Bushfire risks
- Subsidence impacts
- Blasting impacts
- Groundwater and surface water impacts
- Biodiversity impacts
- Mine water discharge impacts
- Traffic impacts
- Economic analysis

Project Merit Issues

- Climate change and climate change policy

- Consideration of EPBC Matters of National Environmental Significance
- Substantially the same development test

Other Issues

- Health and safety matters
- Matters relating to future monitoring
- Matters associated with the approval process

Appendix 1 provides a summary of the number of matters raised in submission against each of the above categories.

2.3 Conclusion

Of the 19 submissions received (18 submissions and one additional information request from DPIE), 26 different issues were raised. Five issues were project related issues, five issues were related to procedural matters, ten were related to impacts resulting from the proposed modification, three were related to the merits of the project and 3 were considered to be other matters. The main issue raised by government agencies was in relation to the operation of the on site sewerage treatment plant when the additional employees were on site. The main issues raised by community individuals were in relation to impacts from the proposed blasting activities and in relation to the projects contribution to climate change. Overall, impacts from the proposed blasting activities were the most dominant issue raised in the submissions.

3 ACTIONS TAKEN SINCE EXHIBITION

Following the public exhibition period of the Modification Report, further consultation on the proposed modification has been undertaken with the following stakeholders with the discussion points and meeting outcomes indicated.

3.1 DPIE Site Visit and Presentation

Representatives from the DPIE Planning & Assessment Division, compliance branch and BCD attended an underground site visit at the Airly Mine on 3 December 2019. A presentation of the sites current and approved operations was provided along with an overview of the proposed modification. An opportunity to ask questions and clarify elements of the modification was provided.

Representatives from LCC were also invited to attend the site visit and presentation, however were unavailable to do so.

3.2 Transport for New South Wales

Centennial Coal's Logistics Manager met up with the representatives of TfNSW and John Holland Rail (JHR) on 31 October 2019 to discuss:

- Airly Mine's proposal to increase train movements on the Gwabegar-Wallerawang and the Main Western rail lines, and the availability of train pathing on the two lines
- Provide requested information on the mining areas where blasting could be undertaken, and distances from the rail loop and the Gwabegar-Wallerawang rail line.

The JHR blasting guideline for infrastructure was provided for review and inclusion in the Airly Mine Blasting Management Plan, as relevant, as has been proposed to be developed in the Modification Report.

3.3 Division of Resource and Geosciences

3.3.1 Coal Resource and Economic Assessment Data Request

Information and responses to audit aspects relating to mining, geology and project economics and Airly Mine's 2018 Joint Ore Reserves Committee (JORC) Statement was supplied to DRG on 1 November 2019 to allow the Division to undertake their independent resource and economic assessment for the proposed modification.

3.3.2 Airly Mine Underground Visit

Officers of DRG visited Airly Mine on 8 November 2019 to further discuss the information supplied (refer **Section 3.3.1**) and inspect the underground mining areas to assess the geotechnical environment.

3.4 Registered Aboriginal Parties

Updates on the Modification 3 progress was discussed in the six-monthly meeting with the Registered Aboriginal Parties (RAPs) on 27 November 2019. These six-monthly meetings with the RAPs are held in accordance with the Western Region Aboriginal Cultural Heritage Management Plan.

4 RESPONSE TO SUBMISSIONS

4.1 Project Issues

4.1.1 Sewage Treatment Plant

Various concerns were raised regarding the current capacity of the on site Sewage Treatment Plant at the Airly Mine. More specific concerns were raised in relation to the potential requirement to upgrade the on site Sewage Treatment Plant and how the current on site Sewage Treatment Plant would be managed and operated either in the period prior to any upgrades to the Sewage Treatment Plant being completed or in the event that the Sewage Treatment Plant upgrades are not approved.

Response

As noted in Section 4.12 and Section 5.2.4 of the Modification Report, the capacity of the existing Sewage Treatment Plant at the Airly Mine pit top is rated for 150 FTE personnel. Centennial Airly are currently preparing an application to Lithgow City Council for the required upgrades to the on site Sewage Treatment Plant to increase the capacity in order to manage the increase in workforce personnel. It is currently anticipated that the upgrades to the on site Sewage Treatment Plant will be completed prior to the number of FTE personnel operating at the Airly Mine exceeding 150. In the event that these upgrades are not completed prior to this occurring, a scheduled pump out and offsite disposal alternative will be commissioned in the interim.

4.1.2 Employment

A request was received to confirm the current full-time equivalent staffing at the Airly Mine. Concerns were raised that the mine has limited job opportunities and definitely not producing employment for FTE 155, let alone providing an increase of jobs to 200. Increasing mining staff now will mean a shorter mine life, and so less jobs in the future.

Response

The current FTE employees operating at the Airly Mine is 124. The number of FTEs operating at the mine fluctuates on a monthly basis depending on what activities are being undertaken. The current maximum number of FTE employees approved to operate at the Airly Mine is 155. Additional staff are required to operate additional equipment which will be installed to facilitate the proposed increase in ROM coal production. Additional equipment to be installed will comprise an additional continuous miner (increase from the existing 3 continuous miners to 4 continuous miners) and one additional set of panel and pillar extraction equipment.

The operation of an additional set of panel and pillar extraction equipment will see a reduction in the timeframe that panel and pillar mining operations will be conducted within the Panel and Pillar Mining Zone. However, once the panel and pillar mining operations within the Panel and Pillar Mining Zones are completed, reserves still remain within the Cliff Line Zone and Zone of First Workings, the Partial Pillar Extraction Zone and Shallow Zone where first workings and pillar splitting and quartering may continue to be undertaken. As such, no change to the overall life of the consent is sought as a result of this modification.

4.1.3 Blasting

Concerns regarding the need and justification for blasting were not well explained within the Modification Report.

Response

Blasting operations are not required for surface activities. Therefore all blasting would be undertaken underground. This makes any blasting remote from sensitive receptors on the surface. Blasting is also not required for day to day mining activities underground. Only exceptional circumstances would necessitate the use of blasting. Examples of such exceptional circumstances include, but are not limited to:

- excessive strata movements causing mining equipment clearance issues
- removal of very hard rock material (such as igneous dykes) that can not be removed using mining equipment
- the excavation of large openings for specialised equipment installations that can not be achieved using mining equipment.

The scale of blasting proposed is limited, both in area but also in intensity. Blasting in coal mines uses permitted explosives to prevent the risk of methane ignitions. Such explosives are by nature reduced in strength compared to regular mining explosives. Guidelines for the use of explosives in coal mines also limit the amount of explosive that can be charged into a given shot hole. Additionally, the amount of delay timing between shots is limited and thus limits the size of each blasting round. Thus the total amount of explosive involved is limited to the range of 100-200kg of explosive per round rather than the hundreds of tonnes typical of open cut mining blasts. As a result, explosion energies are very low compared to open cut mining and vibrations are rarely felt more than a few hundred metres from the blast site. This again should be compared with blasting in open cut environments where damaging vibrations are measured in kilometres.

Blasting activities at Airly are therefore likely to be rare, limited in scope and not likely to create vibrations that could cause impacts to either critical infrastructure, neighbouring residences or sensitive surface features.

4.1.4 Water Supply

If the mine has run out of water, it must render the mine unviable. The mine should not be importing water from Charbon to facilitate its mining operations.

Response

The Airly Mine Extension Project development consent SSD 5581, as modified, authorises the importation of up to 170 ML/year of water from Charbon Colliery by rail. The need for importing water to the Airly Mine arose because of shortfalls in process water demand on site from the three main on site water sources, namely, groundwater inflows, surface dams and the existing production bores. These reasons were discussed in detail in the Airly Mine Extension Project Modification 2 Modification Report.

Site water balance assessments presented in Section 8.4 of the Modification Report show that the volumes of water available from site sources and the 170 ML/year water imported from Charbon Colliery will not be sufficient to meet the total process water demand in a dry year. There will be a deficit of 42 ML/year in a dry year for all currently approved operations (including the CPP and the REA), however no deficits identified have been identified for the wet year and on average.

The proposed modification is not seeking to increase the volume of water imported from Charbon Colliery. Given the construction of the CPP and the REA are not in Airly Mine's current five-year business plan, a site water balance without the operation of the CPP and the REA confirms that the mine can operate at 3 Mtpa production rate and 200 FTE personnel within the constraints of the existing water management and process water availability at the site, including in a dry year. As such, the viability of the mine and security of the current and proposed workforce can be maintained within the constraints of the current approved water sources available to Airly Mine.

As detailed in the Airly Mine Extension project MOD 2 Modification Report, the supply of additional water to the Airly Mine from the Charbon on site water storages was identified as the preferred water source

due to it reusing on site water at Charbon or water already allocated to industrial purposes.

4.1.5 Total Coal Extraction

It is not clear from the documentation how much coal could be physically mined from the approved zones under the proposed increased rate of production. On the basis of the assumptions in the Economic Assessment, the proponent seeks an increase not just annual but total approved production.

Response

The EIS was approved for a total of 33 Mt of ROM coal production for the life of mine. Following a recent review of the coal reserves of the Mine as reported in the 2018 JORC Statement and with the implementation of the adaptive management practices through the Extraction Plan Process (refer Section 4.3.6.2 of the Modification Report), the total coal reserves to be mined over the life of the mine remains unchanged at approximately 33 Mt. Further detail as to how this information has been represented in the Economic Assessment is provided in **Appendix 4** to this Submissions Report which was developed in response to the submission by the Australia Institute.

4.2 Procedural Issues

4.2.1 EPL Variation Requirements

The EPA identified that the increase in the run-of-mine coal production rate at the Airly Mine would require Centennial Airly to submit an application to vary the Environment Protection Licence (EPL 12374). The EPA also noted that they considered it appropriate to vary EPL 12374 to include the location of relevant sensitive receptors and associated noise criteria relevant to the consent.

Response

As noted in Table 10 of the Modification Report, Airly Mine will submit an EPL variation application to the EPA, when the proposed modification is approved, to vary condition A1.1 of EPL 12374 to accommodate the proposed increase in the annual production rate. The fee scale for the increase in the activity scale to 2000000 – 3500000 tonne annual production capacity will also be varied. As part of the EPL variation application, Centennial Airly will consult with the EPA regarding the inclusion of the noise monitoring points on the EPL 1274 to align with the noise monitoring locations currently being monitored in accordance with the approved Western Region Noise Management Plan.

4.2.2 MOP Variation Requirements

The submission from the Resources Regulator advised that the lease holder, Centennial Airly, must apply to the Minister to amend the current Airly Coal Mine MOP to reflect proposed Modification 3 changes.

Response

A MOP variation will be submitted to the Resources Regulator to incorporate administrative changes required in relation to the approved number of full time equivalent employees able to operate at the Airly Mine and incorporate the required upgrades associated with the on site Sewage Treatment Plant.

4.2.3 Extraction Plan Variation Requirements

The combined BCD and NPWS submission requested that any relevant Extraction Plans and subsidence monitoring programs should be updated to reflect changes in rate of coal production and to ensure the overlying geodiversity and other sensitive features are protected.

Response

The area that would be impacted by an increase in the rate of extraction is the area within the Panel and Pillar Mining Zone. An existing approved Extraction Plan is in place for the Panel and Pillar Mining Zone within Mount Airly. The Extraction Plan was developed in accordance with the requirements of Schedule 3 Condition 7 of the development consent. A review of the Extraction Plan, and associated management plans will be undertaken following approval of this modification and updated where necessary in accordance with the requirements of Schedule 6 Condition 3 of the development consent.

Any new Extraction Plans required to be developed for the Airly Mine will be developed in consultation with relevant stakeholders as required by the conditions of the development consent and reflect the approved rate of coal production at that time.

4.2.4 Consultation

The submission from Transport for NSW (TfNSW) requested Centennial Airly consult John Holland Rail (JHR) regarding:

- rail noise levels, to ensure that the Modification has no adverse impact on JHR's Environmental Protection Licence 1342;
- pathing availability; and
- train management including safe working and system capability.

Response

Consultation with JHR in relation to the network capacity has commenced (refer **Section 3.2**). Centennial Coal will continue to consult with JHR in terms of the pathing availability and train management including safe working and system capability as is currently undertaken for rail operations on the Wallerawang-Gwabegar and Main Western rail lines.

Section 8.7.7.2 of the Modification Report states that the increase in average noise levels for both day and night time periods are predicted to be <2 dB and would meet the EPL 1342 day and night time noise levels of 65 dB and 60 dB, respectively. Regardless, Centennial Airly will continue to engage with JHR in relation to rail noise levels from its rail operations on the Wallerawang-Gwabegar and Main Western rail lines.

4.2.5 Transportation of explosives

The transportation of explosives required for the proposed blasting activities to site is to be undertaken in accordance with and subject to the Australian Explosives Code in conjunction with the legislation applicable in each jurisdiction. Further to this, TfNSW supports the provision of the Explosives Control Plan being prepared for the handling and management of explosives in transit as part of this proposal.

Response

The transportation of explosives required for the proposed blasting activities to site will be undertaken in accordance with the Australian Explosives Code in conjunction with the applicable legislative requirements. As detailed in Section 8.13.3 of the Modification Report, an Explosives Control Plan will be prepared which will include controls around the handling and management of explosives in transit. This Explosives Control Plan will be prepared prior to the transport or receipt of explosives or detonators to the Airly Mine.

4.3 Environmental, Social or Economic Issues

4.3.1 Air Quality

More coal trains means more dust during generated through the transport of the coal.

Response

The proposed modification seeks an increase in the run-of-mine (ROM) coal production rate from the approved 1.8 million tonne per annum (Mtpa) to 3.0 Mtpa. As a result of the increase in ROM coal production, the proposed modification seeks an increase in the movement of trains leaving the site from the approved average frequency of 2 trains per day to 3 trains per day over any calendar year but maintaining the approved maximum 5 trains per day leaving the site on any day.

An Air Quality Impact Assessment and Greenhouse Gas Assessment was prepared by SLR and provided as Appendix K to the Modification Report. The results of the Air Quality Impact Assessment were summarised in Section 8.9 of the Modification Report. The Air Quality Impact Assessment and Greenhouse Gas Assessment predicted that Total Suspended Particulate (TSP), PM₁₀, PM_{2.5} and dust deposition levels from the Airly Mine, as a result of the proposed modification, would meet all relevant air quality criteria and comply with the existing SSD 5581 conditions of consent.

4.3.2 Bushfire Risks

Spontaneous combustion of stockpiled coal might present an off-site hazard due to bushfire propagation, particularly as the coal stockpiling is within close proximity to the State Conservation Area. It is therefore recommend engagement with the Rural Fire Service be undertaken to discuss appropriate actions and measures to minimise escalation of bushfires off-site.

Response

Although not a specific requirement of the Airly Mine Extension project development consent, Centennial Airly has recently commenced the developed a Bushfire Management Plan for the Airly Mine. The current version of the Bushfire Management Plan for the Airly Mine is in draft form and has been provided to the Rural Fires Service and Lithgow City Council for comment. The draft Bushfire Management Plan for the Airly Mine considers all hazards at the Airly Mine and identifies actions and measures to minimise the escalation of bushfires off-site.

4.3.3 Blasting Impacts

Impacts from blasting have not been assessed and there is no evidence to support the adequacy of the blast design criteria that has been adopted for archaeological and geological structures. The impacts from blasting on surface features and the wildlife is unknown. Significant blasting has previously been felt and heard raising concerns regarding impacts from blasting on the surrounding landscape.

Response

No underground blasting has been undertaken at Airly Mine to date as there has been no need for it. The reason Centennial Airly is now seeking approval to undertake blasting activities is detailed in **Section 4.1.3**.

To assess the potential for impacts to surface infrastructure and sensitive surface features, SLR 2019 have identified the relevant criteria that should be adopted to minimise the risk of impact from vibration. Safe working distances have been identified that would be required to be met in order to comply with the assessment criteria. As discussed in Section 8.8 of the Modification Report, if blasting were to be undertaken, a blast design with a high level of conservatism will be implemented to ensure the applicable blast criteria at the sensitive locations will not be exceeded. Due to the nature of the underground blasting activities, impacts are unlikely to be detectable at the surface and no impacts to sensitive surface features are anticipated.

To further justify the adequacy of the blast design criteria adopted for archaeological and geological structures the following additional references should be noted:

- Langford and Kilstrom (1973) proposed a PPV criteria of 305 mm/s for the falling of rock in unlined tunnels.
- Oriard (1982) proposed that most rock masses suffer some damage at a PPV above 635 mm/s.
- Bauer and Calder (1970) observed that with PPV levels of <254 mm/s there was no fracturing of intact rock.

As identified in the Modification Report, a high-risk activity notification for any blasting will be provided to the NSW Resources Regulator seven days prior to the activity to meet the requirements of Work Health and Safety (Mines and Petroleum Sites) Regulation 2014 and a Blasting Management Plan will be prepared prior to any blasting activity which will include blast monitoring and evaluation, and blast notification protocol for all relevant stakeholders.

4.3.4 Greenhouse Gas Emissions

A request was received by Planning and Assessment to advise the change in Scope 1, 2 and 3 greenhouse gas emissions over the life of the mine, in comparison to emissions assessed and approved as part of the original Environmental Impact Statement. Further submissions noted that the impacts from GHG Emissions are dismissed within the Modification Report as being small however the Modification Report is not dismissive of the employment increase which is even a smaller percentage of Australia or NSW's total employment.

Response

The EIS was approved for a total of 33 Mt of ROM coal production for the life of mine. Following a recent review of the coal reserves of the Mine as reported in the 2018 JORC Statement and with the implementation of the adaptive management practices through the Extraction Plan Process (refer Section 4.3.6.2 of the Modification Report), the total coal reserves to be mined over the life of the mine remains unchanged at approximately 33 Mt. An assessment of life of mine greenhouse gas emissions from the current approved and proposed project has been completed and is provided as **Appendix 5** to this Submissions Report. In summary:

- The total direct annual average (Scope 1) emissions from the proposed MOD 3 operations are identical to those estimated for approved operations. The total Life of Mine Scope 1 emissions over 20 years would therefore also be identical.

- The Scope 2 annual average emissions are slightly higher for MOD 3 compared to the current approved operations, as are the estimated Scope 3 emissions, however these differences are negligible (1% or lower).
- The GHG emissions intensity values calculated for each scenario are not significantly different, further demonstrating that while MOD 3 has potential to result in increased annual emissions when ROM throughput is at the peak proposed limit, on average, and over the life of the Mine, there is no significant difference in the GHG contribution of the Mine to Australia's national inventory as a result of MOD 3.

Furthermore, Airly Mine will have an operational 2 MW Solar Farm in 2020 which will reduce the mine's Scope 2 emissions by approximately 25%.

4.3.5 Groundwater and Surface Water Impacts

NPWS is concerned about the level of drawdown in Gap Creek and Genowlan Creek which is higher than then the predictions within the 2014 environmental impact statement. Drawdown will result in baseflow reductions to watercourses, impacting on the water quality and quantity that flows through the Grotto, the Oasis and the adjacent World Heritage Area (Gardens of Stone National Park), and impact on water availability for elevated plant communities. The Modification Report does not consider impact on groundwater or surface water dependent ecosystems.

Response

Section 8.2.3 of the Modification Report notes that it is not scientifically valid to compare the drawdown predictions for the proposed 3 Mtpa scenario presented from Airly Mine's recalibrated groundwater model with the drawdown predictions included in the 2014 EIS for Gap Creek or Genowlan Creek (1.1 m) for the reason these predictions are from different numerical groundwater models (although the conceptual model is the same).

Since the time of the 2014 EIS, the groundwater model has been re-calibrated with more contemporary monitoring data discussed in Section 4.11 and Section 5.3 of the Modification Report. Section 8.2.3.2 of the Modification Report notes the differences in the EIS predictions for the 1.8 Mtpa scenario and the predictions included in the Modification Report are attributable to the recent recalibration of the groundwater model which has modified hydraulic conductivity and storage properties of the strata to better match observed or monitored data,

Given the update of the numerical groundwater model since the time of the EIS, the recalibrated groundwater model was run for the 1.8 Mtpa scenario (yielding drawdown predictions of 2 m for Gap Creek and 1.9 m for Genowlan Creek) so that the impact of the proposed 3 Mtpa condition on drawdowns in these two watercourses could be assessed. In this regard, from Table 11 in the Modification Report it can be seen the change in drawdowns in Gap Creek decreases slightly from 2 m to 1.9 m (an insignificant change which is within the uncertainty of model predictions and climatic variations), and in the case of Genowlan Creek it remains unchanged at 1.9 m. This conclusion is noted on page 82 of the Modification Report (text below Table 11) and it hence can be concluded that the proposed modification shows predicted drawdowns which are not significantly different from the 1.8 Mtpa approved conditions based on the outputs from the recalibrated groundwater model.

Given that the drawdowns predicted for the proposed 3 Mtpa condition is not significantly different from the 1.8 Mtpa condition (recalibrated model predictions) the impacts of the proposed modification on groundwater dependent ecosystems e.g. stygofauna are expected to be negligible. These impact discussions are included in Section 8.2.4.2 and Section 8.2.5.3 of the Modification Report.

A better indicator for gauging the environmental consequence of the proposed modification's impacts on watercourses overlying the mining area is to determine the change in their flows due to baseflow reductions

for the modelled 1.8 Mtpa and 3 Mtpa conditions. Section 8.3.3 of the Modification Report discusses the modelled streamflow predictions for Gap Creek (Figure 22) and Genowlan Creek (Figure 23) due to change in modeled baseflow reductions. The modelled results were presented for Gap Creek and Genowlan Creek locations shown in Figure 21 of the Modification Report. For both these watercourses no change in flows are expected under proposed 3 Mtpa condition compared to the 1.8 Mtpa condition. Given negligible changes it can be concluded the ecosystems within these watercourses will not be impacted due to the proposed modifications.

Given the above discussions on no changes in streamflows in Genowlan Creek due to the proposed modification, impacts at the Oasis and the Grotto on the Genowlan Creek (refer Figure 5, Modification Report) due to the proposed modification are not expected.

With respect to impacts to Gardens of Stone National Parks, Section 8.2.4.2 of the Modification Report states:

Depressurisation of less than 0.2 m is predicted at the boundary of the Gardens of Stone National Park under both approved and proposed conditions. This minor depressurisation at the boundary of the Gardens of Stone National Park is within the resolution of uncertainty associated with modelling predictions and the expected climatic fluctuations.

Given the above conclusion, impacts to the groundwater dependent ecosystems within the National Park are not expected.

4.3.6 Mine Water Discharge Impacts

Concerns raised that the discharge of water from the mine would affect water quality, especially in Airly Creek, and the release of water with higher salt content is concern for aquatic ecology of the SCA.

Response

Section 4.8.1.2 of the Modification Report lists the management controls to minimise discharges of the harvested surface run-off and imported water from Charbon Colliery to Airly Creek via LDP001. Discharges will only occur when the total rainfall exceeds 44 mm over any consecutive 5-day period, which is allowed under EPL 12374.

Section 8.4.4.3 of the Modification Report discusses daily discharges through LDP001 with reference to modelled discharges off site for the approved conditions and under the proposed modifications. Under approved conditions, modelling shows discharges off site through LDP001 to Airly Creek are expected only due to rare rainfall events, and discharges are predicted for <2% of days modelled. Under the proposed conditions the already rare discharges are forecast to be even less frequent.

The Surface Water Assessment (GHD, 2019) and the Statement of Environmental Effects (Centennial Coal, 2019) for Airly Modification 2 discussed the potential environmental consequences on the aquatic ecology of Airly Creek, in the event any discharges via LDP001 to occur. The water quality impacts and environmental consequences on the aquatic ecology were assessed as negligible.

Since discharges to no other watercourses occur, e.g. Gap Creek or Genowlan Creek, no water quality or flow impacts to these watercourses through discharges are possible.

4.3.7 Subsidence

Limited information on subsidence impacts and potential changes to these due to the increased rate of coal extraction is provided in the EIA. Increased extraction from 1.8 to 3 Mtpa by blasting and extracting the coal at a faster rate will increase the risk of subsidence impacts causing interruption to stream flows above &

below ground. Increases in the rate of mining will increase the risk of error and subsidence is more likely.

Response

Section 5.2.1.2 of the Modification Report states that the increase in the production rate will not result in increases in the magnitude of subsidence impacts, rather, the predicted impacts would develop more quickly. Subsidence predictions were provided by Golder Associates as part of the Airly Mine Extension Project 2014 Environmental Impact Statement. These subsidence predictions are refined as part of the development of each Extraction Plan. The Extraction Plan is used to identify the monitoring and management methods that will be adopted to ensure the environmental consequences of mining remain within the approved performance criteria as defined within the development consent.

Given there is no proposed change in mining methods or mining zones as a result of the modification, no changes to impacts from subsidence are predicted beyond those assessed and approved as part of the original 2014 EIS.

In relation to the influence of blasting on the extraction rate, blasting is only used to fracture hard geological structures that can not be mined through using the underground mining equipment operated at the mine. Blasting is not used to facilitate coal extraction.

4.3.8 Traffic

The increase in vehicles per hour (vph) accessing the Airly Coal Mine as a part of this modification in conjunction with the light and heavy vehicles associated with the construction of the Airly Colliery solar farm will result in a cumulative safety and traffic impact on the Castlereagh Highway and Glenn Davis Road. For this reason the increase in the production of coal from 1.8Mtpa to 3.0Mtpa should be delayed until the completion of the construction of the Airly Solar Farm. Shuttle bus services from Kandos and Rylestone to the Airly Coal Mine should be considered by the proponent to reduce any safety risks to employees associated with the driving task to and from the Airly Coal Mine.

Response

The construction of the Airly Solar Farm is anticipated to be completed in Q1 2020. No increase in full time equivalent employees above the current approved 155 will occur until construction of the Airly Solar Farm has been completed.

Centennial Airly has considered a shuttle bus service from Rylestone and Kandos however this service would only benefit a small percentage of the workforce that operate in these towns. Offering this service to employees in these two areas would be seen as a disadvantage to employees who travelled from other areas such as Lithgow and Bathurst. The impacts of a shuttle transfer service would also need to consider parking availability and impacts in these townships.

4.3.9 Economic Analysis

Significant issues are present in the Economic Assessment specifically the application of:

- Economic benefits and discount rates;
- Employment and employment benefits;
- Viability of the mine; and
- Cost of GHG emissions.

Response

A detailed response to the matters raised by The Australia Institute in relation to the Economic Assessment for the project is provided in **Appendix 4** to this Submissions Report.

4.3.10 Biodiversity Impacts

The land is critical habitat and the modification will affect threatened species, populations or ecological communities.

Response

The proposed modification will not result in any impacts to threatened species, populations or ecological communities beyond those impacts previously assessed and approved.

4.4 Project Merits**4.4.1 Climate Change & Climate Change Policy**

Airly MOD 3 conflicts with the Australia's commitments to the Paris Agreement to make substantial reductions in GHG emissions. Australia should not be increasing the fossil fuels it is producing which contributes to global warming. The State and Federal governments should be phasing out coal production to limit the effects of climate change and impacts on the environment in the mining areas. The increase in the total approved direct (scope 1 and 2) emissions from the Project is in contrast with Australia's commitment to reduce emissions by 26% by 2030 on 2005 levels, and the further commitment to increase the target over time.

Response

The 26% reduction in GHG emissions by 2030 refers to GHG reductions from all developments and other sources in Australia, not a 26% reduction from each development. There is no commitment to shut down every emitter that cannot achieve a greater than 26% decrease in GHG. The individual merits of projects and developments are considered by the consent authority based on the Government's triple bottom line approach, which considers the environmental, social and economic impacts of the development.

Australia's path to reducing GHG emissions relies on a wide range of measures including introduction of renewable energy sources, abatement measures to reduce GHG emissions and use of energy efficient plant and equipment. Airly Mine has been proactive in reducing its carbon footprint through the implementation of GHG emission reduction measures noted in Section 8.10.6 of the Modification Report and SLR's GHG Assessment. Moreover, Airly Mine will have an operational 2 MW Solar Farm in 2020 which will reduce the mine's Scope 2 emissions by approximately 25%. The Solar Farm will also supply excess electricity generated to the grid.

4.4.2 Scope 3 Emissions

The project 'justification' focuses entirely on scope 1 and 2 emissions and ignores the large increase in annual approved scope 3 or 'downstream' emissions. The Modification Report ignores the requirements of Clause 14(2) of the State Environmental Planning Policy (Mining, Petroleum and Extractive Industries 2007 (Mining SEPP) which includes a requirement to consider downstream emissions and precedents from the Land and Environment Court and the Independent Planning Commission (IPC) in relation to the Rocky Hill Mine, United Wambo Mine and Bylong Mine.

Response

Scope 3 emissions are not required to be reported by Airly Mine as it is reported by the end-user of the mine's coal. This is the rationalisation for not including the Scope 3 emissions when providing a justification for the modification. It was valid to use only Scope 1 and 2 emissions for the evaluation of merits for the Project.

It is also important to understand that the estimated annual emissions are based on the maximum proposed annual production rate of up to 3 Mtpa. They are therefore conservative estimates of peak estimated annual emissions. These peak emissions will not occur every year of the project life. This is illustrated by Table 24 of SLR's GHG Assessment, in which the estimated annual Scope 1 and 2 emissions for the current approved operations at 1.8 Mtpa is 37.9 kt CO₂-e, however the emissions for the 2017/2018 financial year were significantly lower, at less than 25.1 kt CO₂-e. As noted in **Section 4.3.4** of this Submissions Report, the total GHG emissions over the life of the Project as modified will not be significantly different from the Project as approved.

Scope 3 emissions were not the main consideration in the IPC's refusal of Rocky Hill and Bylong developments. As also stated above, each project is assessed by the consent authority on its own merits using a triple bottom line approach that considers the environmental, social and economic impacts of a project.

Scope 3 emissions (downstream emissions) have been calculated in SLR's GHG assessment appended to the Modification Report as Appendix K. Table 40 in the Modification Report shows Modification 3 (3 Mtpa production rate) will generate approximately 7 Mt CO₂-e per annum of Scope 3 emissions. The Modification Report therefore has considered Clause 14(2) of the Mining SEPP and the information is available for the consent authority to consider during the assessment stage of the modification.

4.4.3 Substantially the Same Development

How is the modification substantially the same as the original development? The environmental impact has already occurred and they are not minimal to the environment.

Response

The Airly Mine Extension Project, as proposed to be modified, would remain substantially the same development as originally approved. The proposed modification represents a minor alteration of the approved project and will not result in any significant change in impacts beyond those previously assessed and approved. Any impacts that have occurred as a result of mining operations at the Airly Mine are within assessed and approved performance criteria

4.4.4 Matters of National Environmental Significance

Potential impacts on Matters of National Environmental Significance under the EPBC Act have not been assessed.

Response

The proposed modification will not result in any impacts to Matters of National Environmental Significance to those previously assessed and approved by EPBC approval 2013/7076 granted on 18 May 2017.

4.5 Other Matters

4.5.1 Health and Safety

Operations at the Airly Mine will require compliance with the Work Health and Safety (Mines and Petroleum Sites) Act 2013 and the subordinate mining legislation will be required for the management of risk to worker health and safety.

Response

Centennial Airly has a comprehensive health and safety management system in place to manage risks to workers health and safety in compliance with the requirements of the Work Health and Safety (Mines and Petroleum Sites) Act 2013.

4.5.2 Monitoring

NPWS noted that they will not approve the installation of monitoring infrastructure in the Genowlan Point Area. Vehicular access to the Genowlan Point will be restricted due to the sensitive features of the area and which include threatened species and an Endangered Ecological Community (EEC).

Response

The subsidence monitoring currently being undertaken, and proposed to be undertaken in the future at Airly Mine, is described in Section 4.14.3.1 of the Modification Report and comprises remote monitoring methods of the surface environment. These remote monitoring methods include the use of high resolution 3D photogrammetry, high definition LiDAR surveys and aerial visual inspections. The monitoring program for mining within the Genowlan Point area will be detailed within the Subsidence Monitoring Program developed as part of future extraction plans in consultation with the BCD. Installation of monitoring infrastructure on Genowlan Point and vehicular access to Genowlan Point for monitoring purposes will not be proposed.

4.5.3 Approval Process

The Ibbai Waggan People object to the Airly Mine Mod 3 due to the unlawful application and approval process.

Response

Centennial Airly seeks to modify Airly Mine's SSD 5581 consent under Section 4.55(2) of the EP&A Act. The application has been made compliant with the requirements of the EP&A Act.

5 MITIGATION MEASURES

An updated list of mitigation measures and management controls proposed to be implemented at the Airly Mine should the proposed modification be approved, is provided in **Appendix 3** to this Submissions Report.

APPENDIX 1 – SUMMARY OF SUBMISSIONS

Issue	Project Design					Procedural					Environmental / Social / Economic										Project Merits			Other		
	Sewerage Treatment Plant	Employment	Blasting	Water Supply	Coal Extraction	EPL Variation	MOP Variation	Extraction Plan Variation	Consultation	Transportation of explosives	GHG Emissions	Air Quality	Bushfire	Subsidence Impacts	Blasting Impacts	Groundwater and Surface Water Impacts	Biodiversity Impacts	Mine Water Discharge Impacts	Traffic Impacts	Economic Analysis	Climate Change & Policy	EPBC assessment	Substantially the same development	Health and Safety	Monitoring	Approval Process
Submitter																										
Government Agencies																										
Division of Resources and Geosciences																										
WaterNSW																										
Department of Primary Industries																										
Planning & Assessment	1	1									1															
Lithgow City Council	1																									
Environment Protection Authority	1					2																				
Resources Regulator							1																	1		
Transport for NSW									1																	
Roads and Maritime Services										1									1							
Biodiversity Conservation Division			1					1						1	2	2		1				1			1	
Hazards Team													1													
Sub Total	3	1	1	0	0	2	1	1	1	1	1	0	1	1	2	2	0	1	1	0	0	1	0	1	1	0
Organisation / Company																										
WesTrack																										
Ibbai Waggan-Wirradjuri People																										1
The Australia Institute					1						1									1	1					
Sub Total	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
Individual Community Members																										
Carol Henry		1													1		1						1			

Issue	Project Design					Procedural					Environmental / Social / Economic										Project Merits			Other			
	Sewerage Treatment Plant	Employment	Blasting	Water Supply	Coal Extraction	EPL Variation	MOP Variation	Extraction Plan Variation	Consultation	Transportation of explosives	GHG Emissions	Air Quality	Bushfire	Subsidence Impacts	Blasting Impacts	Groundwater and Surface Water Impacts	Biodiversity Impacts	Mine Water Discharge Impacts	Traffic Impacts	Economic Analysis	Climate Change & Policy	EPBC assessment	Substantially the same development	Health and Safety	Monitoring	Approval Process	
Submitter																											
Geoffery Miell																					1						
Mary Thirlwall				1											1												
Community Individual (Name Withheld 1)				1										1							1						
Community Individual (Name Withheld 2)		1										1			1						1						
Sub Total	0	2	0	2	0	0	0	0	0	0	0	1	0	1	3	0	1	0	0	0	3	0	1	0	0	0	0
TOTAL	3	3	1	2	1	2	1	1	1	1	2	1	1	2	5	2	1	1	1	1	4	1	1	1	1	1	1

APPENDIX 2 – REGISTER OF SUBMITTERS AND MATTERS RAISED

Table A provides summaries of matters provided by government agencies and identifies where within this submissions Report the matter has been addressed.

Table A: Summary of Matters in Submissions from Government Agencies

Government Agency	Comment / Issue	Section Reference
Division of Resources and Geosciences	<p>The Division has determined that the Project:</p> <ul style="list-style-type: none"> Will ensure an appropriate return to the state of A\$39 million in royalties (current dollars) Will generate total revenue (value of coal produced) of A\$540 million (current dollars). Satisfies section 3A objects of the Mining Act 1992 and the requirements of clause 15 of the State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007. Represents an efficient development and utilisation of coal resources which will foster significant social and economic benefits. <p>Overall:</p> <ul style="list-style-type: none"> The proposed mine design and mining method submissions adequately recover coal resources, maximise mining efficiency and will provide an appropriate return to the state. Efficient and optimised resource outcomes can be achieved, and any identified risks or opportunities can be effectively regulated through the conditions of mining authorities issued under the <i>Mining Act 1992</i>. 	<p>Noted</p> <p>No requirement to address this matter further within the Submissions Report</p>
WaterNSW	<p>The proposal is not located near any WaterNSW land, assets or infrastructure, therefore we have no particular comments or requirements regarding the proposal.</p>	<p>Noted</p> <p>No requirement to address this matter further within the Submissions Report</p>
Department of Primary Industries	<p>The Department of Primary Industries has reviewed the proposed modification and has no comment.</p>	<p>Noted</p> <p>No requirement to address this matter further within the Submissions Report</p>

Government Agency	Comment / Issue	Section Reference
Planning & Assessment	Regarding the proposed upgrade or replacement of the ECOMAX sewage management system, which is subject to approval by Lithgow City Council: <ul style="list-style-type: none"> If the system is approved, advise how wastewater generated by the additional 45 FTE employees would be managed prior to the completion of the upgrade/replacement. If the system is not approved, advise how Centennial would manage additional wastewater generated by the additional 45 FTE employees. 	4.1.1
	Advise the change in Scope 1, 2 and 3 greenhouse gas emissions over the life of the mine, in comparison to emissions assessed and approved as part of the original Environmental Impact Statement.	4.3.2
	Confirm the current full-time equivalent staffing at the mine.	4.1.2
Lithgow City Council	<p>The existing Onsite Wastewater Management System approved by Council on 7 June 2011 (034/10S68) was designed and installed to treat a maximum wastewater load of 19,980 litres/day (up to 150 persons/day). Accordingly, the proposed staff increase from 150 to 200 may exceed the design capacity of the Onsite Wastewater Management System.</p> <p>It is requested that certification prepared by a suitably qualified wastewater consultant be submitted to Council to verify that the existing Onsite Wastewater Management System is capable of treating the additional proposed wastewater loads whilst maintaining its current level of performance.</p> <p>In the event that the wastewater consultant finds the existing Onsite Wastewater Management System is undersized and/or cannot maintain its current level of performance, an application made under Section 68 of the Local Government Act 1993 is to be furnished to Council for the upgrade of the Onsite Wastewater Management System.</p>	4.1.1
Environment Protection Authority	The proposed increase in the run-of-mine coal production rate would require the licensee to submit an application to vary the Environment Protection Licence (EPL 12374). The current fee scale for 'Mining for coal' would need to be varied to increase the activity scale to 2000000 – 3500000 tonne annual production capacity.	4.2.1
	Whilst the noise predictions suggest that activities associated with the proposed modification will continue to meet the consent noise criteria, the EPA notes that EPL 12374 does not include monitoring points to highlight each sensitive receptor and the noise criteria	4.2.1

Government Agency	Comment / Issue	Section Reference
	relevant to the consent, and as such considers it appropriate to add these points to the licence if the proposal is approved.	
	The existing ECOMAX sewage treatment facility at Airly Mine is currently rated for 150 FTE personnel. Relevant approvals would need to be sought prior to the upgrade or replacement works to accommodate the proposed additional 45 FTE personnel in excess of this 150 FTE personnel treatment facility limit.	4.1.1
NSW Resources Regulator	The Resources Regulator notes that the lease holder must apply to the Minister to amend the current Airly Coal Mine Mining Operations Plan (MOP) to reflect proposed Modification 3 changes.	4.2.2
	The Resources Regulator notes that Management of the risk to worker health and safety and compliance with the Work Health and Safety (Mines and Petroleum Sites) Act 2013 and the subordinate mining legislation is required.	4.5.1
Transport for New South Wales	TfNSW requested that the proponent consult JHR regarding: <ul style="list-style-type: none"> Rail noise levels to ensure that the Modification has no adverse impact on JHR's Environmental Protection Licence 1342. Pathing availability; and train management including safe working and system capability. 	4.2.4
Transport for New South Wales – Roads and Maritime Services	The transportation of explosives required for the proposed blasting activities to site is to be undertaken in accordance with and subject to the Australian Explosives Code in conjunction with the legislation applicable in each jurisdiction. Further to this, TfNSW supports the provision of the Explosives Control Plan being prepared for the handling and management of explosives in transit as part of this proposal.	4.2.5
Biodiversity Conservation Division & National Parks and Wildlife Service	The need for blasting has not been well explained	4.1.3
	Limited information on subsidence impacts and potential changes to these due to the increased rate of coal extraction is provided.	4.3.7
	The impacts of blasting on sensitive features in the Mugii Murum-ban State Conservation Area, its biodiversity or associated threatened species has not been assessed. Impacts from blasting should be assessed through a geotechnical report.	4.3.3
	The justification for the blast design criteria that has been considered as being applicable to archaeological and geological	4.3.3

Government Agency	Comment / Issue	Section Reference
	structures is not supported by evidence.	
	Potential impacts on Matters of National Environmental Significance under the EPBC Act have not been assessed.	4.4.4
	Extraction Plans and the subsidence monitoring program should be updated to reflect changes in the rate of coal extraction.	4.2.3
	Discharge from mine operations will affect water quality, especially Airly Creek, and release of water with higher salt content is concern for aquatic ecology of the SCA.	4.3.6
	NPWS concerns over surface water quantity and quality that flow through the Grotto, the Oasis and the adjacent World Heritage Area (Gardens of Stone National Park)	4.3.5
	NPWS is concerned about the level of drawdown in Gap Creek (as 1.9 metres) and Genowlan Creek (1.9 metres, which is higher than the 1.1 metres predicted in the 2014 environmental impact statement resulting in baseflow reductions to watercourses and water availability for elevated plant communities. The Modification Report does not consider impact on groundwater or surface water dependent ecosystems.	4.3.5
	NPWS advises that they will not approve installation of monitoring infrastructure, including subsidence monitoring infrastructure, in the Genowlan Point area.	4.5.2
Department of Planning, Industry & Environment Hazards Team	Spontaneous combustion of stockpiled coal might present an off-site hazard due to bushfire propagation, particularly as the coal stockpiling is within close proximity to the State Conservation Area. It is therefore recommend engagement with the Rural Fire Service be undertaken to discuss appropriate actions and measures to minimise escalation of bushfires off-site.	4.3.2

Table B provides a summary of matters raised by organisations and private companies and identifies where within this submissions Report the matter has been addressed.

Table B: Summary of Matters in Submissions from Organisations and Private Companies

Organisation / Company	Comment / Issue	Section Reference
WesTrac	<p>WesTrac NSW would like to register their support for the Airly Mine MOD 3. When approved this expansion will ensure the existing operation continues to generate employment and maintain the financial, community and environmental benefits that coal mining provides for the local, state and federal environs.</p> <p>WesTrac has continued to invest in new facilities and expanded our workforce to increase our capacity to support our mining customers. Extension of operations at the Airly Mine will provide us with the certainty to continue making these investments and provide ongoing skilled employment opportunities in regional NSW.</p>	<p>Noted</p> <p>No requirement to address this matter further within the Submissions Report</p>
Ibbai Waggan-Wirradjuri People	The Ibbai Waggan People object to the Airly Mine Mod 3 for the unlawful application and approval process.	4.5.3
The Australia Institute	It is not clear from the documentation how much coal could be physically mined from the approved zones under the proposed increased rate of production. On the basis of the assumptions in the Economic Assessment, the proponent seeks an increase not just annual but total approved production.	4.1.5
	<p>Significant issues are present in the Economic Assessment specifically the application of:</p> <ul style="list-style-type: none"> Economic benefits and discount rates; Employment and employment benefits; Viability of the mine; and <p>Cost of GHG emissions.</p>	4.3.9
	Impacts from GHG Emissions are dismissed within the Modification Report as being small however the Modification Report is not dismissive of the employment increase which is even a smaller percentage of Australia or NSW's total employment.	4.3.4
	The increase in the total approved direct (scope 1 and 2) emissions from the Project is in contrast with Australia's commitment to reduce emissions by 26% by 2030 on 2005	4.4.1

Organisation / Company	Comment / Issue	Section Reference
	levels, and the further commitment to increase the target over time.	
	The project 'justification' focuses entirely on scope 1 and 2 emissions and ignores the large increase in annual approved scope 3 or 'downstream' emissions. The Modification Report ignores the requirements of Clause 14(2) of the State Environmental Planning Policy (Mining, Petroleum and Extractive Industries 2007 (Mining SEPP) which includes a requirement to consider downstream emissions and precedents from the Land and Environment Court and the Independent Planning Commission in relation to the Rocky Hill Mine, United Wambo Mine and Bylong Mine.	4.4.2

Table C provides a summary of matters raised in submissions from individual community members and identifies where within this submissions Report the matter has been addressed.

Table C: Summary of Matters in Submissions from Individual Community Members

Individual	Comment / Issue	Section Reference
Carol Henry	How is the modification substantially the same as the original development? The environmental impact has already occurred and they are not minimal to the environment.	4.4.3
	Blasting will have impacts to the Capertee Valley escarpments which is contradictory to efforts to preserve such a delicate environment	4.3.3
	The land is critical habitat and the modification will affect threatened species, populations or ecological communities.	4.3.10
	The mine has limited job opportunities and definitely not producing employment for FTE 155, let alone providing an increase of jobs to 200.	4.1.2
Geoffery Miell	Airly MOD 3 conflicts with the Australia's commitments to the Paris Agreement to make substantial reductions in GHG emissions.	4.4.1
Name Withheld 1	The mine should not be importing water from Charbon to facilitate its mining operations	4.1.4
	Increases in the rate of mining will increase the risk of error and subsidence is more likely	4.3.7
	Australia should not be increasing the fossil fuels it is producing which contributes to global warming.	4.4.1
Name Withheld 2	Concerns regarding blasting under the State Conservation Area as the impacts on surface features and the wildlife is unknown.	4.3.3
	The State and Federal governments should be phasing out coal production to limit the effects of climate change and impacts on the environment in the mining areas.	4.4.1
	More coal trains means more dust during generated through the transport of the coal.	4.3.1
	Increasing mining staff now will mean a shorter mine life, and so less jobs in the future.	4.1.2

Individual	Comment / Issue	Section Reference
Mary Thirlwell	If the mine has run out of water, it must render the mine unviable.	4.1.4
	Extraction will increase from 1.8 to 3 Mtpa by blasting and extracting the coal at a faster rate will increase the risk of subsidence impacts causing interruption to stream flows above & below ground.	4.3.7
	Significant blasting heard and felt a few weeks ago from as far away as Bogee, raising concerns of serious impacts on the surrounding landscape.	4.3.3

APPENDIX 3 – UPDATED MITIGATION MEASURES

Aspect	Mitigation measure
Sewerage Treatment Plant	The upgrades to the on site Sewage Treatment Plant will be completed prior to the number of FTE personnel operating at the Airly Mine exceeding 150. In the event that these upgrades are not completed prior to this occurring, a scheduled pump out and offsite disposal alternative will be commissioned in the interim.
Hazardous Materials	The existing Hazardous Materials Management Plan will be updated to include explosives and detonators prior to any underground blasting (shot-firing) being undertaken.
	Transportation of explosives required for the proposed blasting activities to site will be undertaken in accordance with the Australian Explosives Code in conjunction with the applicable legislative requirements.
	An Explosives Control Plan will be prepared for the transport, handling of explosives and detonators required for underground blasting prior to the transport or receipt of explosives or detonators to the Airly Mine.
Blasting	A Blasting Management Plan will be prepared prior to any blasting activity and will include blast monitoring and evaluation and blast notification for all stakeholders.
Social and Community	A Social Impact Management Plan will be developed to address the ongoing concerns of the local community.
	The frequency of CCC meetings will be increased to a minimum of four meetings in a year, and will include discussions of environmental monitoring results, as agreed with members.
	An annual summary report on Airly Mine's water monitoring data will be provided to the local community in the form of a newsletter.
Groundwater	The site's existing groundwater quality monitoring program will be supplemented by the monitoring of two additional landowner groundwater bores,

Aspect	Mitigation measure
	subject to access agreements and adequate existing pumping facilities available at the bores. The Airly Mine Water Management Plan will be updated to reflect the additional monitoring.
EPL	Airly Mine will submit an EPL variation application to the EPA, when the proposed modification is approved, to vary condition A1.1 of EPL 12374 to accommodate the proposed increase in the annual production rate. The fee scale for the increase in the activity scale to 2000000 – 3500000 tonne annual production capacity will also be varied.
	Centennial Airly will consult with the EPA regarding the inclusion of the noise monitoring points on the EPL 1274 to align with the noise monitoring locations currently being monitored in accordance with the approved Western Region Noise Management Plan.
MOP	A MOP variation will be submitted to the Resources Regulator to incorporate administrative changes required in relation to the approved number of full time equivalent employees able to operate at the Airly Mine and incorporate the required upgrades associated with the on site Sewage Treatment Plant.
Extraction Plans	A review of the Extraction Plan, and associated management plans will be undertaken following approval of this modification and updated where necessary in accordance with the requirements of the development consent.
	Any new Extraction Plans required to be developed for the Airly Mine will be developed in consultation with relevant stakeholders as required by the conditions of the development consent and reflect the approved rate of coal production at that time.
Consultation	Centennial Coal will continue to consult with JHR in terms of the pathing availability and train management including safe working and system capability
Employment	No increase in full time equivalent employees above the current approved 155 will occur until

Aspect	Mitigation measure
	construction of the Airly Solar Farm has been completed.

APPENDIX 4 – RESPONSE TO TAI SUBMISSION



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2 December 2019

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**RE: CENTENNIAL AIRLY MINE MODIFICATION 3 – SUBMISSION TO DPE BY THE
AUSTRALIA INSTITUTE (TAI)**

Dear Nagindar,

Thank you for forwarding a copy of the submission by TAI referred to above, in relation to the economic assessment (EA) prepared by this firm for Airly Modification 3. Based on the firm's review of the submission and our discussion of the matters addressed in it, the substantive issues, as interpreted by this firm, are addressed below. It is noted that some of the matters raised by TAI relating to environmental aspects generally and specifically to greenhouse gas emissions and climate change, are contained in the main Submission Report. These are not addressed in detail in this letter, unless they directly refer to the EA.

1. General approach to the economic assessment

- The overarching assumption on which the EA was based is that as a modification, the proposal does not change the approved operating parameters, with particular regard to approved 'mine life' and total approved production. As such, the intent of the EA was to develop a comparative assessment of operations as presently approved and alternatively, under the modification. That is, the focus was on the relativities of incremental or decremental economic effects as between the two operating models.
- Section 1.1 and Section 2 of the EA provided a detailed explanation of the approach taken to preparation of the report. In summary, as noted in the EA, '*Consequent to its status as a modification, the approach to preparation and presentation of this EA differs from a corresponding report for a major proposal*' (Section 1.1; 2019:5); and '*the EA has been developed to comply with the guidelines to the extent practicable, given the limitations associated with the nature of the proposal*' (Section 2.1; 2019:9). Variations from the guidelines are explained in detail at relevant parts of



the EA. Therefore, in respect of TAI's general assertions of 'non-compliance', the EA is explicit in acknowledging that the EA contains variations on the guidelines. This material is not acknowledged by TAI.

- Further in respect of compliance, the TAI submission does not acknowledge the Local Effects Analysis (LEA) component of the EA in any detail, with the result that the local and regional effects required to be assessed under the guidelines apparently do not warrant consideration in the view of TAI, notwithstanding that this is an integral element of the EA, particularly in the context of this regionally-based mine.

2. Influence on assessment of specific aspects of the modification

- TAI incorrectly asserts that the modification seeks an *'increase not just in annual output but total approved production'* (2019:5); and further; *'if, as it appears, the modification allows an increase in total production, this is not a minor modification as claimed but an expansion...'* (2019:5). Notwithstanding that the modification will allow the extraction of more coal than is presently modelled under the approved conditions, based on Centennial's advice, total production remains within the existing consent parameter, at approximately 33 Mt. Consequently, there is no increase in total approved production sought under the proposed modification over the life of the mine. Evidently, TAI's assertion is based on a misinterpretation of information presented in the EA and the Modification Report generally.
- TAI queries the viability of the proposal. It is noted that the examples it relies on ignore the role that corporate strategic objectives have in industry and in this particular instance. The exclusion of commercially sensitive material (discussed above in relation to variations advised in the EA) is addressed in the EA in the following terms; *'This information is excluded from this economic impact assessment on that basis [i.e. commercial confidentiality], but can be made available to the relevant consent authorities as required'* (p.10). As such, that material is understood to remain available to DPIE for it to assess as the consent authority, in respect of the underlying business case for the modification.

3. Economic benefit and discount rates

- Under the heading 'mining more coal, earlier' (2019:7), TAI states that with respect to employment benefit 'the claimed benefit is the result of 'discounting' later benefits more than earlier ones', based on its interpretation of the content of the EA. The assertion appears to imply that this firm has applied differential metrics to influence the relative outcomes between the BAU and modification cases. In preparation of the EA, the same NSW Treasury-mandated discount rates are applied for the two production scenarios, throughout the periods assessed. In calculating the present values of future sums, it is mathematically axiomatic that discounting acts to reduce the present values of future sums more than present or earlier sums in relative terms, a fact that this firm assumes would be known to TAI.
- As stated previously, the additional achievable output under the modification remains within the currently approved total production for the mine. This firm



understands that Centennial Airly will address this matter in the context of JORC evidence to support this conclusion.

4. Employment benefit

- Under the heading 'reduction in employment' (2019:7-8), TAI extrapolates a different measure of employment to produce a reduction in the employment effect. The focus of this firm's employment-related assessment is the relative economic effects of additional employment between the approved operating model and the proposed modification. This is consistent with the overall approach described previously. As is the case in respect of the discussion on discounting of economic benefit (as above), in terms of assessing a present value of employment benefit, whether the additional 'job years' extrapolated by TAI counteract the effects of discounting of employment benefit to present values, is not explained by TAI in the submission.
- The average income for Airly employees was provided by the company (which is identified in Annexure 1 [p.44] of the EA) and includes base salary, allowances and bonuses. The firm notes your confirmation of this of 28 November 2019. Whether the latter elements are included in the industry wage relied upon in calculating the labour surplus, or those cited by TAI, is unclear. Other considerations, such as mine location, are presumed to also influence employee incomes at individual mines. The method used to assess employment benefit includes alternative employment outcomes (alternative employment in the mining industry or unemployment) in calculating the comparative reservation wage. This by definition recognises broader industry wage levels.
- TAI (2019:9) states that the bases for the claimed employment benefit 'is not discussed in the analysis'. Section 3.1.2 of the EA addresses this matter, and refers to the supporting explanatory material in Annexure 1, which runs to more than two pages of explanation and analysis. In this firm's view, that annexure (and the others included in the EA relating to other content) form part of the complete analysis. The employment-related implications for the regional economy discussed in the LEA component of the EA also form part of that analysis. These are particularly relevant in establishing the contribution of mine employee incomes relative to those in other regional industries, and cites Department of Premier and Cabinet Centre for Economic and Regional Development (CERD) with Lithgow City and Mid-Western Regional Councils, evidence, which recognises the relative contribution of mining to regional economic performance generally (EA, Sections 4.2.8, 4.1.1.1 and 4.1.1.2).

5. Greenhouse gas emission assessment

- There is an inaccuracy in the data in Table 7 of the EA, as identified by TAI (2019:5). It is also advised that the table reports Scope 1 emissions only. However, the GHG cost assessments presented in Table 8 of the report and other related material and references, are based on complete Scope 1 and 2 emissions data as prepared by SLR Consulting for the modification.



- TAI legitimately identifies that there are a range of measures indicated in the guidelines for providing alternative economic assessments for GHG effects. As stated in previous comments on the overall approach to the EA, the focus was on establishing the comparative outcomes for the approved and modification cases. As such, the actual price identified in the guidelines was adopted for this purpose.
- As you are aware, in relation to pending project proposals that involve mine extension/expansion, assessments have been prepared that use the other market-based valuation methods referred to in the guidelines and by TAI. Please refer to the attached annexure in relation to alternative estimates and their effects. The material presented in the annexure is based on this firm's research for the larger-scale proposals mentioned above. Table 1 in the annexure also provides sensitivity analyses based on the NSW Treasury/DPIE mandated discount rates (4%, 7% and 10%).
- This firm notes the information disclosed by Centennial Airly on 27 November 2019 in respect of approval, construction and operation of the Airly solar farm and the 25% reduction in emissions this will produce as part of the mine's emissions abatement activities. These avoided emissions are interpreted as Scope 2 (electricity consumption), consistent with the definitions in SLR's assessment report for this project. Assessments taking this into consideration are also reported in the annexure. It is necessary to reiterate that the key output is the difference between the approved (BAU) production schedule and the modification production schedule in each instance.

The firm also notes that in the Resource and Economic Assessment report prepared by DPIE DRG for the modification, an overall increase in royalties of \$33 million is estimated to result from the modification should it proceed. This firm's assessment can be deduced from Table 2 in the EA (Modification 3 less BAU). That assessment of the increase in royalties is \$30.7 million. Based on comparison of the method applied by this firm and the content of DRG's report, this difference is apparently a consequence of the pricing assumptions adopted. However, this suggests that the firm's approach to the assessment can be considered as conservative.

6. Comment on other matters raised

Finally, I should also address comments made by TAI that are directly critical of this firm. Firstly, I suggest that by including one particular directly critical statement produced by TAI itself (TAI 2019:1), and subsequently reasserting that statement within the same submission (TAI 2019:7), does not make TAI's view any less subjective, nor any more authoritative. Secondly, TAI has chosen to essentially deride this firm in relation to assessments made five years ago. TAI's criticism, perhaps defensibly, does not comment on the full process of engagement with DPE (now DPIE), the Centre for International Economics (CIE), Centennial Coal and this firm that ensued from CIE's initial peer reviews¹, and the subsequent approval

¹ CIE's initial review severally addressed EAs for concurrent project proposals for Airly, Angus Place and Springvale mines.



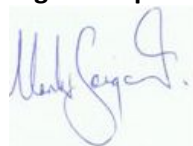
of the consent application, based on revised assessments prepared by this firm and informed by that process.

I also note that TAI also draws the contemporaneous (i.e. circa 2014-2015) Angus Place Colliery consent into its criticisms (TAI 2019:9-10). While continuing to be highly critical of Aigis Group and in this instance Centennial Coal, TAI has evaded acknowledgement of the fundamentally flawed approach that it employed in reviewing royalty assessments for Angus Place (refer to the media article annexed to this letter) at that time, which evidently corrupted its own critique of the EA for that project.

I trust that the material presented herein addresses the substantive matters raised in the submission. Please contact me at your convenience to discuss the EA or the content of this letter.

Yours sincerely

Aigis Group



Dr Mark Sargent

Principal

Aigis Group/Mark Sargent Enterprises

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Annexure: Alternative GHG estimates

Carbon price ranges referenced by TAI

TAI appears to predicate its ultimate conclusion on GHG cost estimation on an assumed carbon cost/price ranging between the upper bound of the cited Bloomberg New Energy Finance range of €35/tonne (TAI 2019:14) and €55/tonne, the latter based on the assumption; *‘if the European Commission ultimately legislates to align the bloc’s current emissions target with the Paris climate agreement’* (TAI 2019:15). The latter eventuality cannot be validly assumed in terms of if or when that might occur, which is evidenced to some extent by the market-based data discussed below. As such, and in view of the market-based information presented below, that estimate is not adopted for these analyses.

European Emissions Exchange (EEX) European Emissions Allowance Futures (EUA) price data² are presented in the figure overleaf. The nominal futures price at December 2019 (€25.11) can be assumed as the current or commencing cost. The December 2027 cost is €27.72, as priced by the market. Extrapolating the annual increment between 2019 and 2027 out to 2031 allows development of a full price schedule for the modification production period, culminating in a 2031 price of €29.02.

Adopting the long-run Reserve Bank of Australia (RBA) exchange rate of 1 AUD = 0.695 EUR³, the market-based price schedule ranges between AUD \$36.13 (2019) and AUD \$41.76 (2031). In the analysis below, the exchange rate adjusted schedule was used for the modification case. For the BAU case, the same approach was adopted, however, the lower bound of the speculative range assessed by TAI is applied to the subsequent out-years.

Table 1: GHG assessments based on EEX EUA futures (PV)

	7% DR	10% DR	4% DR
Mod 3 (EUA)	\$16,696,933	\$14,520,974	\$19,486,265
BAU (EUA)	\$12,078,383	\$9,978,951	\$15,014,061
Differential	\$4,618,550	\$4,542,023	\$4,472,204
Mod 3 with Solar Farm (EUA)	\$14,164,029	\$12,318,160	\$16,530,222
BAU with Solar Farm (EUA)	\$10,156,309	\$8,390,966	\$12,624,822
Differential	\$4,007,720	\$3,927,194	\$3,905,400
Mod 3 (per EA)	\$5,180,605	\$4,526,565	\$6,016,198
BAU (per EA)	\$3,559,066	\$2,983,166	\$4,353,505
Differential	\$1,621,539	\$1,543,399	\$1,662,693
Mod 3 solar farm (EUA) less Mod 3 EA	\$8,983,424	\$7,791,595	\$10,514,024
BAU solar farm (EUA) less BAU EA	\$6,597,243	\$5,407,800	\$8,271,317

²As noted in the table, the data were recorded on 28 November 2019.

³ January 2010 to September 2019. Reserve Bank of Australia (RBA), Exchange Rates (Historical Data) webpage, accessed 17-10-19 < <https://www.rba.gov.au/statistics/historical-data.html#exchange-rates> >



As noted in the body of the letter of which this annexure forms part, as the Airly solar farm is committed and will be operational in 2020, the EUA-based assessment that includes that assumption is adopted for comparison in the tables below.

Table 2: CBA BAU & Modification 3 alternate case summaries (PV/NPV @ 7%)

Assessment (\$ million)	BAU EA	Mod 3 EA	BAU EUA	Mod 3 EUA
Total economic benefit	199.0	231.7	199.0	231.7
Quantified economic cost	24.2	22.3	30.8	31.3
Net economic benefit	174.9	209.4	168.2	200.4

Table 3: Comparison of EA and EUA Mod 3 & BAU cases (\$ million)

	Net economic benefit Mod 3	Net economic benefit BAU	Difference
Economic assessment	209.4	174.9	34.5
EUA-based assessment	200.4	168.2	32.2

As was observed in the letter of which this annexure forms part, the focus of the EA (and accordingly these additional estimates) is the difference between the outcomes for the BAU case and the modification. Table 3 demonstrates that the outcomes applying the market-based EUA data result in a marginally lower but positive return than was estimated in the EA. Aspects of this return such as the residual employment benefit and commercial transactions between the mine and locally and regionally-based businesses are of particular economic value in the regional context. These are discussed in detail in the LEA component of the EA



European Emissions Exchange (EEX) EUA futures at 28 November 2019

<div> <div>2019-11-28</div> <div> <div>Month</div> </div> </div>						
Name	Last Price	Last Volume	Settlement Price	Volume Exchange	Volume Trade Registration	Open Interest
Dec/19	25.09	3,000	25.11	354,000	-	350,085
Jan/20	-	-	25.13	-	-	0
Mar/20	24.85	2,000	25.16	4,000	-	9,003
Jun/20	-	-	25.21	-	-	0
Sep/20	-	-	25.24	-	-	0
Dec/20	25.30	5,000	25.27	259,000	-	140,911
Mar/21	-	-	25.38	-	-	2,008
Jun/21	-	-	25.43	-	-	0
Sep/21	-	-	25.48	-	-	0
Dec/21	24.96	8,000	25.52	9,000	-	32,019
Mar/22	-	-	25.59	-	-	0
Jun/22	-	-	25.68	-	-	0
Sep/22	-	-	25.74	-	-	0
Dec/22	-	-	25.85	-	-	9,165
Dec/23	-	-	26.21	-	-	6,388
Dec/24	-	-	26.58	-	-	40
Dec/25	-	-	26.96	-	-	40
Dec/26	-	-	27.34	-	-	0
Dec/27	-	-	27.72	-	-	0

Source: <https://www.eex.com/en/market-data/environmental-markets/derivatives-market/european-emission-allowances-futures>



NEWCASTLE HERALD

newcastleherald.com.au

SEPTEMBER 15 2014 - 9:00PM

OPINION: Digging up the real value of coal royalties

• Rod Campbell.



THE three hardest words in the English language: I. Was. Wrong.

In submissions to the Planning Department about several coalmines, I made errors relating to how expenses are deducted from coal royalties. My mistakes mean I potentially underestimated the mines' royalty payments.

My submission on the Bulga Optimisation Project was published in the Newcastle Herald and included this error. I apologise to Bulga Coal and the Planning and Assessment Commission for my mistake.



I was wrong. But when it comes to coal royalties, I'm not alone.

The average Hunter resident thinks coal royalties make up 20per cent of NSW government revenue, according to a survey by The Australia Institute last year.

The number is 2per cent. This means that 98per cent of the funding for state government expenses such as schools, hospitals and emergency services does not come from coal.

The fact that we think coal is 10times more important than it is shows how effective lobbyists such as the NSW Minerals Council are, with their regular claims that coal is an industry "that this state cannot do without". The Minerals Council is just doing its job, and doing it well.

The same cannot be said for our elected representatives.

Government ministers claimed in Parliament recently that it was coal royalties that are "ensuring ongoing funding for the construction of vital infrastructure such as roads, schools and hospitals".

Ninety-eight per cent of the time, this just isn't true. NSW government ministers either don't know very much about their own finances, or they're deliberately exaggerating the importance of the coal industry.

Others who make mistakes on royalties are the mining companies that pay them, and the public servants who collect them. That was the conclusion of the NSW Auditor-General in 2010: "[The Department of Trade and Investment] cannot assure the people of NSW that all royalties owed are being paid in full. This is because it does not have sufficiently robust systems and processes to identify what is owed and to make sure it is paid."

As of July 2014, a different department, the Office of State Revenue, is now in charge of collecting coal royalties. But with the complex set of deductions relating to everything from coal processing to bad debts, challenges will remain. All these deductions mean that NSW gets less money for its coal.

It is very difficult for the public to see if mistakes have been made with coal royalties. While industry supporters love to talk about the \$1.2billion paid last year, there is no transparency around how much has been paid by any particular mine, company or region.

You would think that if companies were really paying for a serious chunk of our schools and hospitals, they would be only too happy to stand up and say how much they pay us for our coal.

(Disclosure: The same error was made in The Australia Institute's submission on the Stratford Mine extension in Gloucester and the Angus Place and Springvale Colliery expansions near Lithgow.)

APPENDIX 5 – LIFE OF MINE GHG ANALYSIS

9 January 2020

610.18385-L01-v1.1.docx

Centennial Coal
Glen Davis Road
CAPERTEE
NSW 2846

Attention: James Wearne

Dear James

Airly Mine MOD3 Greenhouse Gas Calculations - Life of Project

In response to your request for additional information regarding the total Life of Mine greenhouse gas (GHG) emissions estimated for the current and proposed operations at Centennial's Airly Mine, this letter presents the results of additional calculations performed by SLR to provide the data requested.

As discussed late last year, the GHG emission inventories presented in the MOD 3 Air Quality Impact Assessment and GHG Assessment report prepared by SLR for the proposed MOD 3 operations (ref, 610.13835-R01, dated 30 August 2019) are the maximum annual emissions based on the maximum approved and proposed coal production rates (1.8 million tonnes per annum [Mtpa] and 3.0 Mtpa respectively). These estimates were then compared to State and National GHG emission inventories to assess the potential significance of the Mine's operations in the context of Australia's annual GHG emissions.

The total amount of coal that could be recovered by the Airly Mine is understood to be 33.5 Mt and the total volume of coal that can be recovered by the project remains unchanged. This means that, while MOD 3 is projected to give rise to an increase in annual emission rate should production occur at the limit of the proposed increased annual extraction rate, the total emissions over the life of the project is not expected to change significantly. The additional equipment that is proposed to operate at the mine as part of MOD 3 will result in a slight increase in Scope 2 emissions, however any increase in Scope 2 emissions would be offset (and more) by the installation and operation of the 2 MW solar farm that is anticipated to be operational by March 2020.

Table 1 presents the results of additional calculations performed to estimate the annual average emissions for both the current approved and proposed operations based on 33.5 Mt of ROM coal being extracted over the approved 20 year project life (which is not proposed to change under MOD 3). In performing the calculations:

- Fuel/oil/grease consumption, coal/water transport, and product coal combustion emissions were scaled based on the ratio of the annual maximum and annual average ROM coal throughputs.
- Fugitive emissions from the ventilation system accounting for the additional ventilation requirements for the MOD 3 scenario associated with the panel and pillar equipment.
- Emissions associated with SF₆ leakage were assumed to remain constant, regardless of ROM coal throughput.

- Emissions from worker commuting and solid waste were conservatively assumed to remain constant (ie that the workforce would remain constant at 155 employees for current operations and at 200 employees for proposed operations, regardless of ROM coal throughput).
- Electricity consumption for the annual average scenarios were scaled based on the ratio of the annual maximum and annual average ROM coal throughputs.

Table 1 GHG Emission Inventory – Average and Maximum Annual Emissions

Activity/Source	Estimated Annual GHG Emissions (tonnes CO ₂ -e/annum)			
	Current Approved		Proposed (MOD 3)	
	Maximum Coal Extraction Rate (1.8 Mtpa)	Average Life of Mine Extraction Rate (33.5 Mt / 20 years)	Maximum Coal Extraction Rate (3.0 Mtpa)	Average Life of Mine Extraction Rate (33.5 Mt / 20 years)
Scope 1				
Diesel combustion	1,163.4	1,082.6	1,938.9	1,082.6
Oil consumption	59.0	54.9	98.4	54.9
Grease consumption	0.3	0.3	0.6	0.3
SF6 leakage	4.9	4.9	4.9	4.9
Fugitive emissions	8,872.1	8,447.6	17,100.4	8,447.6
Sub-Total – Scope 1	10,099.7	9,590.2	19,143.1	9,590.2
Scope 2				
Electricity consumption	17,687.8	16,459.5	29,538.6	16,492.4
Sub-Total – Scope 1 + Scope 2	27,787.5	26,049.7	48,681.7	26,082.6
Scope 3				
Diesel combustion	59.7	55.5	99.4	55.5
Oil consumption	15.2	14.2	25.4	14.2
Grease consumption	0.3	0.3	0.6	0.3
Electricity consumption	2,157.0	2,007.3	6,832.1	2,011.3
Coal transport by rail	4,989.3	4,642.8	8,682.6	4,847.8
Water transport by rail	0.0	0	93.9	52.4
Staff commuting	1,059.5	1,059.5	1,367.2	1,367.2
Solid waste	446.6	446.6	576.3	576.3
Coal combustion - Australia	2,500,923.8	2,327,248.5	2,084,103.2	1,163,624.3
Coal combustion - Overseas	1,667,282.5	1,551,499.0	4,862,907.4	2,715,123.3
Sub-Total – Scope 3	4,176,934.0	3,886,973.7	6,961,458.1	3,887,672.4
Life of Mine Scope 1&2 Emissions (20 years)		520,994		521,653
GHG Emissions Intensity (t CO₂-e/t ROM coal)	0.015	0.016	0.016	0.016

The estimated emissions shown in **Table 1** show that:

- The total direct annual average (Scope 1) emissions from the proposed MOD 3 operations are identical to those estimated for approved operations. The total Life of Mine Scope 1 emissions over 20 years would therefore also be identical.
- The Scope 2 annual average emissions are slightly higher for MOD 3 compared to the current approved operations, as are the estimated Scope 3 emissions, however these differences are negligible (1% or lower).
- The GHG emissions intensity values calculated for each scenario are not significantly different, further demonstrating that while MOD 3 has potential to result in increased annual emissions when ROM throughput is at the peak proposed limit, on average, and over the life of the Mine, there is no significant difference in the GHG contribution of the Mine to Australia's national inventory as a result of MOD 3.

It is noted that in performing these additional calculations, a typographical error in the MOD 3 Air Quality Impact Assessment and GHG Assessment report was identified. On page 61 the report states:

Based on these estimates, the GHG intensity of the proposed MOD 3 operations is estimated to be 0.016 tCO₂-e/t ROM coal produced (Scope 1 and Scope 2), compared to 0.019 t CO₂-e/t ROM coal for the current approved operations.

The value of 0.019 t CO₂-e/t ROM coal actually related to the estimated emissions for the 2017-2018 financial year. As shown in **Table 1**, the value for the current approved operations at maximum ROM throughput is 0.015 t CO₂-e/t ROM coal.

We trust that the above information is sufficient to address your requirements. Should you have any further questions, please don't hesitate to contact me.

Yours sincerely



KIRSTEN LAWRENCE
Kirsten

Checked/
Authorised by: GS