



Appendix C

Socio-economic impacts analysis





**Clarence Colliery DA 504-00
Modification 6**

**Charbon Colliery SSD 08_211
Modification 2**

**Transport of Coarse Coal Reject
Clarence Colliery to Charbon Colliery**

Socioeconomic Impacts Analysis

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Abbreviations

ABS	Australian Bureau of Statistics
AQIA	Air Quality Impact Assessment
CBA	Cost Benefit Analysis
CCR	Coarse Coal Reject
DPIE	Department of Planning, Industry and Environment (NSW)
EA	Economic Assessment
EIS	Environmental Impact Statement
FTE	Full Time Equivalent
L_{Amax}	Maximum A-weighted sound pressure level received during a measurement interval.
LCC	Lithgow City Council
LCIA	Level Crossing Impact Assessment
LEA	Local Effects Analysis
LGA	Local Government Area
NMP	Noise Management Plan
NVIA	Noise and Vibration Impact Assessment
PNTL	Project Noise Trigger Level
REA	Reject Emplacement Area
SEIA	Socioeconomic Impact Assessment
SIA	Social Impact Assessment
SSR	Southern Shorthaul Railway Company
WRA	Water Resources Assessment



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1 Introductory material

1.1 Purpose of report

This socioeconomic impact analysis (SEIA) has been prepared in relation to consent modifications being concurrently sought by Clarence Colliery (Clarence) and Charbon Colliery (Charbon). The modifications are described in Section 2. The SEIA has been prepared to comply with the requirements of the NSW *Environmental Planning & Assessment Act 1979* (EP&A Act) in respect of requirements for social and economic assessments of mining projects, to the extent practicable for a project of this nature. The assessments are discussed in detail in Section 1.2.

1.2 Approach

Based on the scope of the modifications, it has been concluded that a full social impact assessment (SIA) and economic assessment (EA) are not required. Rather, the relevant aspects of the modifications are assessed and presented as an integrated assessment. As social and economic impacts commonly represent two alternative mechanisms for assessing similar effect/s, such integration is considered as not derogating from appropriate assessment of either social or economic impacts for modifications of this scope and scale. As such, limited application of the NSW Department of Planning, Industry and Environment (DPIE) guidelines for the assessment of social impacts¹ and economic impacts² is submitted as being appropriate for these modifications.

1.2.1 Assessment of social impacts

As noted, given the relatively limited scope of the modifications, social impacts are assessed in compliance with DPIE's *Social Impact Assessment Guideline for State Significant Mining, Petroleum Production and Extractive Industry Development* (DPIE 2017) (the guideline), to the extent practicable. It is noted that a further limitation on scope was the relatively low number of third parties that may be directly affected by the modifications. At both sites, relevant works will be conducted on established mining areas within current disturbance areas, with rail movements carried out on the existing corridors.

Consistent with the approach required under the guideline, the SIA scoping tool was applied to determine the extent of reporting required for potential impacts. The impacts indicated as requiring further assessment are addressed in this report, in compliance with the requirements, and with particular regard to stakeholders who may potentially be affected.

¹ Social impact assessment guideline for State significant mining, petroleum production and extractive industry development. DPIE, September 2017.

² Guidelines for the economic assessment of mining and coal seam gas proposals. DPIE, December 2015.

Technical Notes supporting the Guidelines for the Economic Assessment of Mining and Coal Seam Gas Proposals. DPIE, April 2018.



1.2.2 Application of DPIE SIA scoping tool and outputs

The preliminary assessment of potential social impacts based on the DPIE scoping tool identified that the matters listed in Table 1 required further investigation. The majority of identified impacts were deemed in the Environmental Impact Statement (EIS) scoping stage as being appropriately addressed in a scoping report for a full EIS assessment. At the SIA scoping stage only one matter (access, road & rail network) was assessed as requiring a standard SIA. These assessments are consistent with the relatively limited scale of the modifications. Consequent to these assessments, the matters recommended to be addressed at the orthodox scoping report stage are addressed within this modified SEIA.

Table 1: Matters identified for further investigation; DPIE SIA scoping tool

Matter	Description	Probability	Particulars	Assessment required
Amenity	Acoustic	Likely	Plant and equipment movement at Charbon and Clarence; and train movements between sites.	Scoping report. Specialist assessment conducted
Built environment	Public infrastructure	Likely	Rail infrastructure, including level crossings.	Scoping report
Access	Road and rail network	Likely	Additional train paths (≤ 6) per week (two way), including movements across 21 level crossings.	Standard SIA. Specialist assessment conducted³
Community	Health	Unlikely	Emissions; however, not material in scale.	Scoping report
Community	Safety	Likely	Train movements across level crossings.	Scoping report
Economic	Natural resource use	Likely	Effective reuse of Clarence CCR	Scoping report. Specialist assessment conducted
Air	Particulate matter	Likely	Diesel emissions/dust from plant movements on-site at Clarence and Charbon; and train movements between sites.	Other issue. Specialist assessments conducted (air quality & GHG)
Land	Stability and/or structure; soil chemistry; capability; topography	Unlikely	Assumed as covered by existing consents at both sites.	Scoping report
Water	Water quality	Unlikely	-	Scoping report. Specialist assessment conducted

³ Level crossing impact assessment (EMM Consulting). The report also addresses matters identified in the 'built environment – public infrastructure' and 'community – safety' categories.

1.2.3 Assessment of economic impacts

As is the case with social impacts, assessment of economic impacts is limited by the scope of the proposed modifications. However, to the extent practicable, the assessment has been prepared to comply with DPIE's (2015) *Guidelines for the Economic Assessment of Mining and Coal Seam Gas Proposals* and the supporting *Technical Notes* (DPIE 2018) (the guidelines).

The limited scope of the modifications does not necessitate preparation of a cost-benefit analysis (CBA), as there are no changes to annual or total production limits or related aspects, which would result in changes to, for example, NSW Government royalty revenues. No changes to current workforce size (employee and contract) are required for the proposed operations. There will be an effective increase in employment for Clarence's rail transport provider, consequent to the additional transport task associated with the modifications. This is assessed in detail in Section 4.2.1.

Consequent to these considerations, the approach adopted is consistent with the Local Effects Analysis (LEA) component of the holistic economic assessment directed under the guidelines. This approach is considered appropriate, as the effects are likely to be highly localised, and potentially more likely to be assessed and explained qualitatively rather than quantitatively, for an application of this nature.

1.2.4 Other social, economic and environmental outcomes

To the extent that environmental outcomes can be qualitatively assessed from a socioeconomic perspective, the proposed modifications are likely to result in positive outcome by contributing to rehabilitation and reestablishment of the landform at Charbon.

The modifications have been developed with a view to minimising the potential for impacts on third parties, particularly in relation to avoidance of using the regional road network to complete the operations. This notionally has positive connotations with regard to road safety, road maintenance requirements and other operational impacts such as noise.

Considering these matters jointly, it can be validly concluded that the proposed modifications are an efficient and effective solution to several environmental issues. Positive resolution of those issues also has the additional benefit of notionally favourable socioeconomic outcomes.

2 Modification background & objective

Clarence operates under three separate development consents, including DA 504-00. Charbon operates under SSD 08_0211. In 2015, mining operations ceased following the depletion of Charbon's approved coal reserves. Since the cessation of mining, Charbon Coal has been progressively rehabilitating the site. The proposed operations will require modifications to both DA 504-00 and SSD 08_0211. The proposed modifications are sought to permit Charbon to import coarse coal reject (CCR) material from Clarence by train, to backfill historical open cut voids requiring rehabilitation.

The transfer of CCR from Clarence to Charbon will assist Charbon Coal to better develop a final landform that is sustainable and free draining.

The CCR will be containerised for transport by rail, utilising the existing coal loading facility at Clarence. On delivery to Charbon using existing on-site rail infrastructure, the containers will be unloaded and transported by truck to the areas being rehabilitated, for emplacement. The use of the existing rail network will avoid impacts on the local and regional road network associated with alternative transport methods (i.e. road transport).

2.1 Key elements of modification

The key elements of the modification are:

- CCR will be reclaimed from existing reject emplacement area (REA) 6 at Clarence, as well as from ongoing production once REA6 is completely reclaimed.
- CCR will be loaded directly into containers on trains at Clarence via the existing train loading facilities. The containers are then unloaded from the trains at Charbon via special container forklift at a dedicated container unloading area and then transported by truck directly to the voids, before being emptied and returned to the unloading area.
- 300,000 to 350,000 tonnes of CCR will be transported per annum from Clarence to Charbon.
- Maximum 1 train per day (i.e. two rail movements).
- Trains are loaded in the morning at Clarence and unloaded and transported to the rehabilitation sites (Western Open Cut, 8 Trunk Open Cut and Central Open Cut Box Cut) during daylight hours at Charbon (between the hours of 7 am and 6 pm).
- A nominal fleet of three (3) trucks will transport the containers from the dedicated container unloading area to the voids.
- Campaign is expected to take up to 5 years.



3 Assessment of social impacts of modification

Section 1.2.2 and Table 1 summarised the initial outputs of the application of DPIE's SIA scoping tool. The analyses based on the scoping process and the material presented in this SEIA is summarised in Table 2. DPIE's social risk matrix, on which the assessment is based, is reproduced in Figure 1 for reference.

Figure 1: Social risk matrix

			Consequence Level				
			1	2	3	4	5
			Minimal	Minor	Moderate	Major	Catastrophic
Likelihood Level	A	Almost certain	A1	A2	A3	A4	A5
	B	Likely	B1	B2	B3	B4	B5
	C	Possible	C1	C2	C3	C4	C5
	D	Unlikely	D1	D2	D3	D4	D5
	E	Rare	E1	E2	E3	E4	E5
Social Risk Rating							
	Low		Moderate		High		Extreme



Table 2: Summary of assessment of social impacts

Impact description			Impact assessment (with mitigation)		
Impact	Timing	Affected parties	Impact characteristics	Social Risk Rating	Residual Risk Description
Air quality - Clarence	During operations under the modifications, nominally 5 years.	Possible receptors in the vicinity of site.	Particulate emissions relating to plant operation, material handling and train movements.	C1	Low, due to relative location of operations and mitigation measures.
GHG emissions – Clarence	During operations under the modifications, nominally 5 years.	Global	No increase in current Scope 1 and Scope 2 emissions will result from the proposed operations. Scope 3 emissions relating to train movements will increase by 79t CO ₂ -e per year due to the proposed operations. This represents an increase of ≈ 0.001% on current level.	A1	Risk associated with additional emissions is assessed as low, as the quantum of the emissions is not material. Mitigation of GHG emissions will continue to be conducted in accordance with Centennial's <i>Air Quality and Greenhouse Gas Management Plan – Western Region</i> .
Air quality - Charbon	During operations under the modifications, nominally 5 years.	Possible receptors in the vicinity of site.	Particulate emissions relating to plant operation, material handling and train movements.	C1	Low, due to relative location of operations and mitigation measures.
GHG emissions - Charbon	During operations under the modifications, nominally 5 years.	Global	Changes due to proposed operations relate to additional diesel used for transport of CCR and are reported for Clarence.	E1	Low. Refer to GHG emissions (Clarence)



Impact	Timing	Affected parties	Impact characteristics	Social Risk Rating	Residual Risk Description
Noise & vibration - Clarence	During operations under the modifications, nominally 5 years.	Identified receptors	Noise associated with train movements on rail loop.	C2	Moderate, however restriction on train times will largely mitigate potential issues
Noise & vibration - Charbon	During operations under the modifications, nominally 5 years.	Receptors in the vicinity of sites; other road users.	Noise associated with plant operation and train movements.	B1	Low, due to relative location of operations and mitigation measures.
Ground & surface water – Charbon (CCR emplacement)	Ongoing.	Surrounding groundwater receptors/users.	Potential impacts of CCR on water quality.	D1	Impacts assessed as low risk; however, monitoring recommended.
Railway level crossings	During operations under the modifications, nominally 5 years.	Relevant road users at 21 level crossings.	Interruptions to flow of traffic coinciding with train movements; management of safety risks.	E4	Majority of level crossings are low traffic volume intersections. Modelled interruptions are minimal. Compliance with regulations by crossing users (train and vehicle) likely to maintain safety level and minimise potential for incidents



3.1 Operational impacts

The modifications will result in an increase in loading activity at Clarence, unloading activity at Charbon and associated train movements between the two sites. These elements will result in impacts on air quality and noise in particular, relating to the operation of plant and equipment at each site, and train movements, with particular regard to the passage of trains across level crossings. The content of the specialist reports identified in Tables 1 and 2 in respect of key impacts are discussed in the following sections.

Each specialist report included mitigation recommendations, which are also presented for each effect. With the exception of the movement of CCR by train, on-site operations are consistent with those already being conducted at both Charbon (rehabilitation activity) and Clarence (reject emplacement). Consequently, impacts of these aspects of the proposed operations are generally unlikely to result in perceptible changes in impacts being experienced by third-party receptors.

3.1.1 Air quality

Air quality impact assessments (AQIAs) have been prepared by EMM Consulting for the modifications at both sites.

3.1.1.1 Charbon Colliery

The following material is extracted from the Charbon AQIA (EMM 2020).

The predicted concentrations and deposition rates for all pollutants (TSP, PM₁₀, PM_{2.5}) and averaging periods are below the applicable NSW EPA assessment criterion at all assessment locations. Except for dust deposition, the assessment criteria listed are applicable to cumulative concentrations.

Cumulative impacts were assessed by combining modelled Charbon impacts with recorded ambient background levels. The cumulative results showed that compliance with applicable NSW EPA impact assessment criteria is predicted at all assessment locations for all pollutants and averaging periods.

Charbon currently implements dust control measures that are consistent with accepted best practice mitigation measures for all significant operational sources of particulate matter emissions wherever practical to do so. These include the use of water carts on unpaved roads, grading routes and exposed areas.

The AQIA indicates that potential incremental and cumulative impacts of operations at Charbon are unlikely to result in material impacts on third parties in the vicinity.



3.1.1.2 Clarence Colliery

The following material is extracted from the Clarence AQIA (EMM 2020).

The results of the modelling show that the predicted concentrations and deposition rates for incremental particulate matter (TSP, PM₁₀, PM_{2.5} and dust deposition) were below the applicable impact assessment criteria at all assessment locations for both the existing and proposed scenarios. There was a negligible difference in predicted concentrations and deposition rates between the existing and proposed scenarios, indicating that the proposed modification will not adversely change air quality impacts at Clarence from those associated with existing operations.

Cumulative impacts were assessed by combining modelled impacts with recorded ambient background levels and predictions for the adjacent Hanson sand quarry. The cumulative results showed that concentrations and deposition rates for all pollutants and averaging periods were below the applicable NSW EPA assessment criterion at all assessment locations with the exception of a single additional exceedance of the 24-hour average PM₁₀ impact assessment criterion at four assessment locations (R3, R4, R5 and R6) in both the existing and proposed scenarios.

Analysis showed that all exceedances occurred on the same day, with the cumulative concentrations dominated by an elevated background level of 49.2 µg/m³ associated with a regional dust storm event. The corresponding incremental contribution to the exceedance was below 1.2 µg/m³ at all receptors. It is unlikely that the proposed modification will result in significant adverse air quality impacts at nearby assessment locations.

The AQIA indicates that potential incremental and cumulative impacts of operations at Clarence are unlikely to result in material impacts on third parties in the vicinity.

3.1.1.3 Train operations

The CCR will be containerised for transport by rail. As containers are enclosed, the escape of particulate matter is unlikely in transit. It is noted that a greenhouse gas emissions assessment has been prepared that addresses diesel use of the required locomotives. The findings of that assessment indicate a negligible increase in Scope 3 emissions as they relate to Charbon and Clarence.

3.1.1.4 Summary of social impacts – air quality

Comprehensive modelling has been carried out on proposed operations at both sites. Modelled impacts are assessed as being compliant with relevant assessment criteria with the exception of a single additional exceedance at four assessment locations at Clarence.

The operations are consistent with current activity at both sites. Accordingly, EMM (2020) notes that appropriate pollutant management and mitigation activity is already undertaken at both sites. These established activities will be continued in relation to the proposed

operations. Taking mitigation into consideration, air quality impacts are unlikely to materially affect third parties.

3.1.2 Greenhouse gas (GHG) emissions

3.1.2.1 Charbon Colliery

The additional GHG emissions in respect of the proposed modifications are discussed in Section 3.1.2.2 in relation to operational changes at Clarence. Scope 3 emissions relating to train movements between sites are also discussed in Section 3.1.2.2. No material change in emissions was assessed for Charbon (EMM 2020).

3.1.2.2 Clarence Colliery

Material from the Clarence GHG assessment (EMM 2020) is as follows:

- *Annual average GHG emissions (Scope 1 and 2) generated by Centennial in the existing and proposed scenarios represent approximately 0.043% of total GHG emissions for NSW and 0.010% of total GHG emissions for Australia, based on the National Greenhouse Gas Inventory for 2018.*
- *The proposed modification will not result in an increase in annual Scope 1 and 2 GHG emissions at Clarence. Scope 3 emissions from Clarence are 6,597,053 t CO₂-e per year under the existing scenario and 6,597,132 t CO₂-e per year under the proposed scenario. The increase is related to diesel used by trains to transport CCR from Clarence Colliery to Charbon Colliery in the proposed scenario.*

No increases in Scope 1 and Scope 2 GHG emissions on existing levels are predicted as a result of the proposed operations. The increase in Scope 3 emissions associated with diesel combustion for the additional train movements will not be material, thus largely negating the magnitude of social risk.

3.1.3 Noise and vibration

EMM (2020) has prepared noise and vibration impact assessments (NVIA) for Charbon and Clarence. Summary findings are presented in the following sections.

3.1.3.1 Charbon Colliery

EMM (2020) has produced the following conclusions for the Charbon site. It is noted that the conclusions specifically relate to train movements in addition to impacts of on-site operations.

Operational noise emissions from Charbon are predicted to satisfy the daytime project noise trigger levels (PNTLs) at all assessment locations.

Noise emissions from Charbon will continue to be managed in accordance with the existing Noise Management Plan (NMP). The NMP will be updated following determination of the proposed modification [as required].



Potential impacts relating to additional train movements are specifically addressed in the NVIA (refer to Section 3.1.2.3). In other respects, impacts are assessed as being likely to be consistent with current operations. Consequently, it is considered unlikely that material impacts will result from the modification.

3.1.3.2 Clarence Colliery

EMM's (2020) conclusions in relation to noise and vibration impacts of operations at Clarence are summarised below.

Operational noise emissions from existing and proposed activities are predicted to be above the PNTLs at seven of the nine assessment locations. Three assessment locations do not currently have dwellings on the property. An assessment of feasible and reasonable noise mitigation options concluded that negotiated agreements will be pursued with potentially affected residents.

Noise emissions from Clarence will continue to be managed in accordance with the existing NMP. All feasible and reasonable mitigation measures will be considered. The NMP will be updated following determination of the proposed modification [as required].

With the proposed mitigation measures put in place, it is likely that any impacts on third parties can be effectively managed. The potential for exceedances largely relates to trains using the rail loop as part of operations. As was noted in the description of the key elements of the modification (Section 2.1), operations under the modification are planned for a maximum five-year period, further limiting the extent of potential impacts.

3.1.3.3 Train movements at and between sites

The following material addresses impacts relating to the movement of trains on the rail loops at the Charbon and Clarence sites.

The Charbon NVIA (EMM 2020) concluded that; 'Preliminary results of noise modelling indicated the potential for noise emissions above the Project Noise Trigger Levels (PNTL) during the evening and night period at Residence 'P' due to noise from trains on the rail loop. Consequently, Charbon Coal has committed to limiting train movement on the rail loop to daytime only [i.e. 7 am–6 pm]'

The Clarence NVIA (EMM 2020) notes:

Predicted maximum noise levels excluding a train on the rail loop are below the relevant LA_{max} sleep disturbance screening level. When a train is on or exiting the rail loop the predicted maximum noise levels are above the relevant LA_{max} sleep disturbance screening level. However, LA_{max} noise is expected to be unchanged from existing activities at Clarence as a result of the proposed modification. Residences where maximum noise levels are predicted to be above the relevant screening levels are the subject of ongoing consultation regarding negotiated agreements.



As part of the proposed modification, one CCR-laden train will be used per day (i.e. two rail movements). The number of trains between Clarence and Charbon will be within the existing capacity of the rail network and no additional rail paths are required. This is also within previously assessed and approved limits on train movements during the day period at Charbon (i.e. eight rail movements between 7 am and 10 pm). A detailed assessment of off-site rail noise impacts has not been included as part of the NVIAs.

Assuming adoption of the proposed time limitations on movements (i.e. daytime only), the impacts are likely to be consistent with current operations at both sites⁴, with all train movements being within those permitted under existing consent criteria. Consequently, specialist analysis indicates that impacts can be satisfactorily managed and or mitigated.

Planning for the modifications implies adequate capacity on the relevant sections of the rail network on which operations will occur. On this basis, no effect on the broader community is anticipated. The use of rail for CCR transfer is in itself a mitigatory action, as it eliminates the alternative movement of the material by road.

3.1.3.4 Summary of social impacts – noise and vibration

The modifications will result in similar operations to those currently occurring at the two sites. Use of the railway line is also consistent with its existing use. This being the case, and assuming appropriate adoption of mitigation recommendations (including pursuit of negotiated agreements with potentially affected residences near Clarence), it is likely that material impacts on third parties can be avoided. The crucial mitigation measure in this respect is the restriction of operating hours for train movements.

3.1.4 Water resources – Charbon Colliery

An assessment of the implications of emplacement of CCR from Clarence, in lieu of other material for rehabilitation has been undertaken by EMM (2020). As activities at Clarence are essentially consistent with existing operations, a corresponding assessment was not prepared for that site. Material from the water resources assessment (WRA) in relation to potential impacts and mitigation approaches is presented below.

The large transport times modelled and the small percentage of solute reaching neighbouring receptors suggest that the risk of metal/metalloids and other contaminants being transported to, and discharged at, the groundwater receptors as a result of the proposed modification is low. The beneficial use of groundwater at receptors close to Charbon is therefore not expected to decrease as a result of the proposed modification.

Impacts to the surface water environment are only expected to occur if there is a significant change in the hydrological properties and characteristics of Clarence CCR material compared to existing material available on-site at Charbon.

⁴ Current rail movements at Charbon relate to the transfer of water from Charbon to Airly Mine.

To reduce potential for contamination to occur as a result of the importation of CCR material:

- *The geochemical properties of Clarence CCR will be assessed as it is being excavated (ie CCR from REA6) or as it is generated from Clarence's coal handling and preparation plant. This may be conducted at Clarence and may include rapid turn-around laboratory analysis. Active management of Clarence CCR will reduce the acid and metalliferous drainage (AMD) risk to the receiving environment at Charbon. Active management of Clarence CCR may include screening material with higher AMD that is unsuitable for use in Charbon rehabilitation activities or the addition of buffering capacity in the form of limestone.*
- *The final landform at Charbon will be representative of existing landforms within and adjacent to the site. The areas proposed to receive Clarence CCR will be 'water shedding' as they are all hillside rehabilitation landforms. A 3-metre-thick multi-layer moderate hydraulic conductivity cover will be developed on the sloping landforms with store-and-release characteristics. This will allow plant establishment and growth, while minimising deep drainage (potential AMD seepage) and mitigating upward migration of soluble salts.*

Groundwater and surface water monitoring and management will include:

- *actively monitoring groundwater quality at existing monitoring bores (PB2 and PB3), as well as three additional monitoring bores to detect changes to groundwater quality during ongoing rehabilitation activities; and*
- *ongoing monitoring and management of surface water consistent with the WMP (including inspections of existing water management structures and sediment control structures for capacity, structural integrity and effectiveness).*

By implementing the proposed management measures, the residual impacts of the proposed modification on the groundwater and surface water environment have been assessed to be low risk.

Assuming adoption of the recommended mitigation measures, material impacts are unlikely to be imposed on stakeholders in the vicinity of the site.

3.1.5 Rail movements – level crossing impacts

The Level Crossing Impact Assessment [LCIA] (EMM 2020), described activity at the relevant rail and road intersections as:

Each train will traverse a total of 21 level crossings requiring negotiation with vehicular traffic including a combination of:

- *passive crossings (14 locations);*

- *active - flashing lights and bells (4 locations); and*
- *active - boom barrier, flashing lights and bells (3 locations).*

The extent of activity at the crossings is described as:

- *the highest average number of additional daily vehicles delayed at an active level crossing due to the proposed additional train movements is likely to be 8 vehicles per day for which a typical additional delay of between 84 and 101 seconds will occur; and*
- *at most of the existing passive level crossings, the daily traffic volumes are sufficiently low that there is a negligible number of daily vehicles affected by either the existing or proposed train operations.*

EMM (2020) concluded that:

The existing level of safety (including either active or passive controls) of all assessed level crossings is considered to be appropriate and acceptable.

Assuming that individuals using the level crossings do so in compliance with their regulatory obligations (e.g. road rules), any material impacts can be appropriately managed.

3.2 Other social impacts

Given the limited extent of the modifications in terms of the scale and location of operations and the proposed limit on their duration, no other material social impacts are likely to be experienced by third parties. The exception to this is the households of train crew deployed on the additional work created by the modification. The economic assessment of these impacts is presented in Section 4.2.1. The economic impacts will support the engagement of those households in the local and regional economies and communities.

3.3 Summary of social impacts

The proposed modifications are limited in scale, both operationally, and in terms of duration. With respect to onsite operations, appropriate management and mitigation measures are proposed in relation to potential sources of impact. Train movements will involve possible interruptions to vehicular traffic; however, the LCIA (EMM 2020) indicates that these interactions are likely to be limited.

Based on material from specialist assessments, the prospects of material negative impacts being experienced by third parties is considered as relatively low. There will be a small number of households that will enjoy the benefit of additional available employment, which will support their lifestyles and livelihoods.

4 Assessment of economic impacts of modifications

4.1 Changes to existing consent parameters

No changes to consent parameters for Clarence, as a productive operation, will result from the proposed modification. Approved production limits and rates will remain unchanged. As such, the modifications will have no effect on royalty returns to the State. There is no increase in the maximum permissible workforce size, as all work conducted on both sites will be carried out by existing employees and/or contractors. As identified in Section 1.2.3, there are no material changes to major elements that would normally be subject of a CBA. The matters addressed in this section are therefore presented in the form of the LEA generally forming part of a full economic assessment.

There will be economic activity associated with the acquisition of specialised equipment required for containerisation of CCR and loading and unloading of containers. At this point, the mechanism for that acquisition remains unresolved. Regardless of this, some level of economic benefit will accrue to firms involved; however, the net benefit is unlikely to be material.

4.2 Local effects analysis

Due to the scale and limited duration of operations under the modifications, the potential for resulting, material economic effects is minimal, as is demonstrated by the references to specialist consultant assessments presented in Section 3. Operations will take place on the existing sites and will be relatively consistent with existing activity. There are likely to be effects that some elements of the community will experience negatively (e.g. notional time costs of delays at level crossings) and some that will be experienced positively (e.g. incidental expenditure with local businesses). Given that notionally, there is significant uncertainty around assessing the magnitude and frequency of these interactions, a qualitative recognition of such prospective outcomes is considered appropriate.

There will be a discernible economic effect in relation to additional employment. This is assessed in Section 4.2.1. However, as will be demonstrated by the assessment, this effect is also unlikely to be material in the regional context.

4.2.1 Employment effects

Existing employees on both sites will carry out the operations proposed under the modifications, as noted in Section 1.2.3. As a consequence, there is no distinguishable increase in direct employment on the two sites that can be specifically attributed to the modifications.

There will be an effective increase in the rail freight task for Clarence's rail haulage contractor, currently Southern Shorthaul Railway (SSR), which will result in a minor increase in employment opportunities. Contextually, this increase in employment is unlikely to be material in the regional and broader contexts. However, the effects of the additional



employment are summarised in Table 3, based on the approach and assumptions detailed in Annexure 1.

Table 3: Summary of incremental employment effects

Description	Measure
Additional full-time equivalent (FTE) employees	2
Total gross wages (p.a.)	\$240,000
Total disposable income	\$105,600
Total disposable income disbursed locally/regionally	\$42,134

Section 2.1 identified that the modifications are planned to continue for a period of five (5) years. This relatively limited project duration is further evidence that the employment-related effects are unlikely to be material in the regional economic context.

4.3 Other economic effects

There is a limited likelihood of other material economic effects resulting from the modifications. This is chiefly due to the proposed operations' consistency with those already undertaken on the two mine sites and the railway line. It is proposed to continue to operate pumping infrastructure to load trains with water at Charbon to enable Charbon Coal to continue to transport up to 170 ML/year of water to Airly by rail. Charbon Coal requests an extension to the approved water transfer activities from Charbon to Airly to 31 January 2037 to align with Airly's development consent (SSD-5581).

With respect to the railway line, a notional ('opportunity') cost may be ascribed to delays imposed on motorists at level crossings. However, given that the longest assessed delay is likely to be approximately 101 seconds, any such value is assessed as unlikely to be material.

4.4 Summary of economic impacts

There are no material economic benefits or costs expected to accrue to external parties at State level as a result of the modifications. As identified in Section 4.2, there will be an increase in business activity for the firm/s involved in supply of equipment for the modification operations; however, at present this cannot be assessed quantitatively. On these bases, a qualitative acknowledgement only of this effect is warranted.

Economic benefit accruing to the local/regional community is essentially restricted to the creation of two FTE positions with the rail services contractor, over the five-year term of the modification. This is also unlikely to be material in magnitude.

5 Conclusions

The modifications essentially represent a variation on existing operations at Charbon Colliery and Clarence Colliery and an increase in use of the rail line, which can evidently be absorbed by existing network capacity.

Potential for impacts on third parties, such as nearby land users, have been assessed by specialist consultants as generally being of limited likelihood and consequence.

Two important mitigatory factors of the modifications is that operations can be efficiently conducted within daylight hours, to avoid more apparent impacts. Furthermore, operations are limited to an operational period of 5 years.

The containment of works on existing sites and infrastructure will limit the extent to which social impacts may be more broadly experienced. Similarly, the distribution of economic impacts is very limited, although beneficial in respect of the most affected (employee) parties.

Based particularly on specialist assessments of potential impacts, it is concluded that on balance, the social and economic impacts of the project will be beneficial, albeit not to an extent that would meet conventional thresholds of materiality at a regional or State level.

It is noted that relevant specialist consultant reports include detailed recommendations with respect to management and mitigation of modelled impacts. Although this report does not provide any specific recommendations, those proposed by the specialist consultants should be adopted, to ensure the minimisation of the risk of impacts, to the extent practicable.

Annexure 1: Method for estimation of net economic benefit to workers

Assumptions

The additional employment will relate to locomotive crews employed by Centennial's rail service provider (currently SSR). Similar rail-based operations for the transport of water from Charbon Colliery to Centennial's Airly Mine indicate a crew of two (2) drivers (alternating as driver and observer) for each train movement. The available information indicates that workers are likely to be resident in the immediate region.

Estimation method & results

The assessment method presented below permits calculation of the residual or surplus economic contribution (labour surplus) of employment relating to the modifications, in the local and/or regional economies. This is based on the assumption that the majority of consumption activity undertaken by employee households will occur locally and/or regionally.

The Australian Government Job Outlook website⁵ was referenced to obtain information to inform supporting assumptions in terms of income levels and employment terms. Findings for locomotive drivers are included in Table A1.

Table A1: Job Outlook information

Occupation	Average hours/week	Unemployment	Employment growth	\$/week	\$ annualised
Train driver	46	Unavailable	Moderate	2,304	≈ \$120,000

Data source: Job Outlook, July 2020.

Table A2 provides ABS (2017) data⁶ to support underlying assumptions for the proportion of this income that is likely to be spent in the regional economy, based on assumed residence in the local/regional area.

⁵ Australian Government, 2020. Job Outlook website. < <https://joboutlook.gov.au/> > Information current at July 2020.

⁶ Catalogue no. 6540.0 Microdata: Household Expenditure, Income and Housing, 2015-16.



Table A2: Average weekly expenditure

Goods and services	%
Current housing costs (selected dwelling)	2.0
Domestic fuel and power	0.7
Food and non-alcoholic beverages	0.7
Alcoholic beverages	2.1
Tobacco products	5.1
Clothing and footwear	2.6
Household furnishings and equipment	3.7
Household services and operation	3.9
Medical care and health expenses	2.3
Transport	1.9
Communication	1.0
Recreation	2.3
Education	6.1
Personal care	2.0
Miscellaneous goods and services	3.5
Total goods and services expenditure	39.9
Selected other payments	%
Income tax	3.3
Mortgage repayments – principal (selected dwelling)	4.8
Other capital housing costs	14.6
Superannuation and life insurance	7.1
	29.8

Based on ABS (2019) data⁷, mean weekly equivalised disposable household income represents approximately 44% of mean weekly gross household income. Applying this proportion to the annual gross income estimate (\$120,000), disposable income is assumed at approximately **\$52,800** per annum. Based on the composition of household expenditure presented in Table A2, it is assumed that the total goods and services component (i.e. excluding 'selected other payments'), would take place in the local/regional economy. Applying that proportion (39.9%) to disposable income, it is estimated that approximately **\$21,067** per employee would be spent locally regionally.

The average number of train movements per week is four (4), with average hours per week for train drivers being 46 hours [Job Outlook 2020] (i.e. this approximates 4 x 12-hour shifts). On this basis two (2) FTE positions are assumed, as previously observed.

⁷ 6523.0 - Household Income and Wealth, Australia, 2017-18.