

Appendix 4 – Social Impact Assessment (Centennial Coal, 2017)

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Centennial Coal



LW 24 and 24a

Social Impact Assessment

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1. INTRODUCTION

This Social Impact Assessment (SIA) has been prepared in relation to the proposed extraction of coal from LW 24 and 24a (the Project). A SIA is a systematic enquiry that focuses on the human element of the environment and identifies how individuals and communities may be affected as a result of a proposed development (or policy or program).

Social impacts may be positive and/or negative; intended and/or unintended. The purpose of the SIA is therefore to:

- Assist in establishing the full facts about the Project, to support a well-informed decision about the appropriateness of the Project.
- Assess the social impacts of the Project including any impacts on local infrastructure and services.
- Assess the impacts of the Project on future generations.
- Inform the community and facilitate participation by the community in the planning and assessment process when appropriate.
- Enhance existing data to inform the planning and development assessment process.
- Recommend mitigation measures to minimise adverse impacts and maximise benefits of the Project.

The broad steps in compiling a SIA are:

1. Profiling: This involves understanding the scale and scope of the Project and identifying the stakeholders (determined by the areas of affectation).
2. Scoping: This involves identifying the likely impacts arising from the Project and includes consultation and feedback from identified stakeholders including other specialist consultants.
3. Assessment: This involves an assessment of the extent of the identified impacts, likely to arise from the Project.
4. Management: All impacts should be identified and those that are identified as having an adverse or detrimental effect need to be managed and mitigated where possible. It is not always possible to manage all adverse impacts however identification of these impacts and how they can be managed must be taken into account. Similarly, impacts that are identified as being positive need to also be identified and capitalised upon where possible and appropriate. This allows for an assessment as to whether the proposal meets net community benefit criteria.
5. Monitoring: Strategies to monitor identified impacts may need to be identified to ensure that management strategies are adhered to and those cumulative impacts are identified, monitored and taken into account for further development.



1.1 AUTHORS QUALIFICATIONS

This SIA has been prepared by James Marshall, Group Manager Stakeholder Engagement, Centennial Coal. James Marshall has over twenty years experience in the social planning sector with experience in local government (10 years), the NGO sector (5 years) and as a private consultant (7 years). During this time expert advice and support has been provided in relation to:

- Strategic social planning;
- Social Impact Assessment;
- Community and stakeholder engagement;
- Safer by Design (CPTED);
- Mediation;
- Community and social research;
- Feasibility studies; and
- Urban design and master planning.

2. PROJECT OVERVIEW

Mandalong Mine is an existing underground longwall coal mining operation producing thermal coal that is supplied to domestic and export markets. It is located approximately 35 kilometres south-west of Newcastle near Morisset in New South Wales. This Social Impact Assessment (SIA) has been prepared by Centennial Coal to support a modification to the Mandalong Mine Development Consent (SSD 5144) for the extraction of coal from longwall panels 24 and 24a beyond the approved mine plan.

Mandalong Mine operates under Development Consent SSD 5144 which was granted on 12 October 2015 by the NSW Planning Assessment Commission under Part 4, Division 4.1 of the NSW *Environmental Planning and Assessment Act 1979* (NSW Government) (EP&A Act), and provided for extension of the mining area with a production limit of 6 million tonnes per annum of thermal coal from the West Wallarah and Wallarah-Great Northern Seams. The currently approved Mandalong Mine comprises the following underground workings and surface infrastructure:

- The Mandalong Mine Access Site, encompassing underground workings and associated surface infrastructure near Morisset;
- Delivery of run-of-mine coal from the underground workings to the Cooranbong Entry Site. The coal handling and processing facilities are approved under the Northern Coal Logistic Project (SSD-5145);



- Delivery of run-of-mine coal from underground workings to the Delta Entry Site, located near Wyee at the Vales Point Rail Unloader Facility. The coal handling facility is approved under DA35-2-2004; and
- Mandalong South Surface Site (MSSS), which is yet to be constructed, encompassing ventilation shafts, ventilation fans and underground delivery boreholes located approximately 6 kilometres south-west of the Mandalong Mine Access Site.

An igneous sill exists to the west of approved longwall panels 22 to 24. Due to historic uncertainty associated with the extent of the igneous sill, longwall panels 22 to 24 were shortened as a conservative measure to mitigate the sill's impact on the mine's production. As a result of recent geological exploration and the successful extraction of adjacent longwall panels below the igneous sill, its extent and condition has become better understood. This has resulted in the proposed extension of longwall panel 24 and the addition of longwall panel 24a within the Project Application Area of SSD-5144. Figure 1 illustrates the proposed extension of chain pillars and longwall mining regarding these two panels.

Centennial Mandalong has prepared a Statement of Environmental Effects (SEE) to support an application seeking to modify Development Consent SSD-5144 under Section 96(2) of the EP&A Act. The modification is seeking to undertake the extended development of Maingate 24 and extended secondary extraction of longwall panel 24 in addition to the development of Maingate 24a and extraction of longwall panel 24a within the Project Application Area of SSD-5144 (the proposed Modification) as illustrated on Figure 1.

Outlined below are the primary components of the proposed Modification:

- Extension of Longwall 24 from 1,631 m to 2,570 m. This yields 1,030,813 additional tonnes beyond 1,766,912 tonnes already approved.
- Addition of Longwall 24a . Longwall 24a is proposed to be 2,470 m in length which yields an additional 2,679,560 tonnes.

There are no other operational changes associated with the proposed Modification.

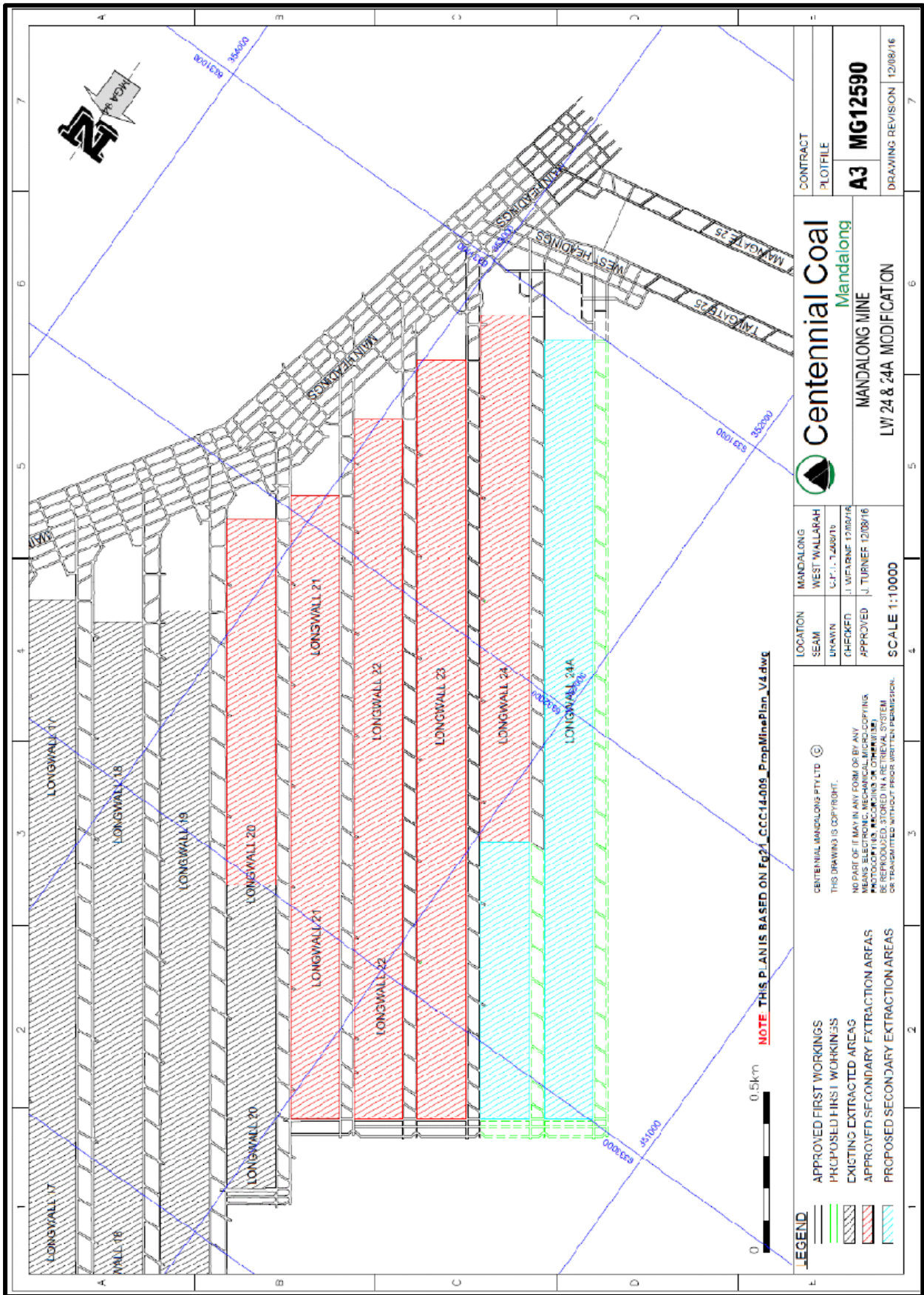


Figure 1: Project Application Area



3. MANDALONG POPULATION CHARACTERISTICS

3.1 OVERVIEW

The Project Application Area sits within the statistical state suburb of Mandalong. Settlement in the Mandalong area dates from the late 1800s with agricultural activities being the primary land use. Residential development occurred from the 1970's with the establishment of small holdings and hobby farms with a marked increase from the 1990's with a more intensive land use relating specifically to large lot residential development.

There is a significant amount of undisturbed natural vegetation located throughout the Mandalong Valley. The Mandalong Valley is currently occupied by:

- Mining operations from Mandalong Mine;
- Rural residential land;
- Community uses such as fire brigade shed on crown land;
- Agricultural lands including poultry operations, and
- Large pockets of undisturbed natural vegetation.

Figure 2 below illustrates the character of the Mandalong Valley.





Figure 2: Mandalong Characteristics

Mandalong's population has undergone some changes between the 2006 and 2011 census. Mandalong recorded a population of 388 people (2011 ABS Census) which is a decrease from the 2006 census where a population of 417 people was recorded. The median age has risen from 37 years to 38 years during this period.

The indigenous population has increased from 2.6% of the population in 2006 to 4.4% of the population in 2011.

The area remains relatively affluent with the median weekly household income being recorded at \$1,281 compared to \$1,109 in 2006. Median weekly rent has increased to \$310 per week from \$196 per week in 2006 and the median loan repayment is now \$2,400 per month compared with \$1,929 per month in 2006.

Between the 2006 and 2011 census, full-time employment participation increased slightly from 57.4% of the workforce to 61% of the workforce and part-time employment dropped from 28.4% of the workforce to 24.1% of the workforce. Unemployment has risen from 5.6% to 7%. 'Technical and Trades' is the main occupation and 'Residential Building Construction' is the main industry of employment. An overview of the population characteristics is outlined in Tables 1-3.



Table 1: Overview of Key Population Statistics

	Mandalong	Morrisset	Lake Macquarie LGA
Total Population	388	2,857	189,006
Males	190	1,420	92,311
Females	198	1,437	96,695
Median Age	38	55	41
Families	102	682	53,261
Average Children Per Family	2	1.9	1.8
All Private Dwellings	147	1,323	78,697
Average People Per Household	2.9	2	2.5
Median Weekly Household Income	\$1,281	\$621	\$1,117
Median Monthly Mortgage Repayments	\$2,400	\$1,647	\$1,733
Media Weekly Rent	\$310	\$220	\$255

Source: ABS Census 2011

Table 2: Occupation: Mandalong State Suburb

Occupation	2011
Tech and Trades Workers	25.3%
Managers	13.8%
Clerical and Admin Workers	13.8%
Professional	18.4%
Sales Workers	6.3%
Labourers	6.3%
Community and Personal Service Workers	7.5%
Machinery Ops And Drivers	4%

Source: ABS Census 2011



Table 3: Main Industry of Employment: Mandalong State Suburb

Industry of Employment	2011
Residential Building Construction	4.6%
Other Construction Services	2.9%
Veterinary Services	2.9%
Hospitals	2.9%
Machinery and Equipment Repair and Maintenance	2.9%

Source: ABS Census 2011

The major population settlements in this area are Morisset and Wye. Morisset is the major town located approximately 2.5 kilometres to the east of the existing Mandalong Mine Access Site. In the Lower Hunter Regional Strategy (Department of Planning 2006) (LHRS) Morisset is identified as an “Emerging Major Regional Centre” which is defined as a centre that is “expected to grow and take on the role of major centres in the future”.

Since the release of the LHRS in 2006, Morisset has emerged as a major commercial and retail centre for southern Lake Macquarie, complimented by a large industrial park, housing distribution and manufacturing industries. In recent times, the Morisset town centre has experienced substantial development with the establishment of the Morisset Square shopping complex in which there is a number of supermarkets, department stores and specialty shops. The current Draft Hunter Regional Plan maintains Morisset as a major regional centre for the area.

3.2 MANDALONG COMMUNITY

The Mandalong community hold the environment in very high regard and as such have formed the Mandalong Community Association (the Association) which facilitates and encourages engagement of residents / landholders on a range of matters including (but not limited to):

- Environmental matters;
- Community and social events;
- Community projects, and
- Mandalong Mine and related environmental and social impacts.

The Association has undertaken a range of community building activities including book and film clubs and a regularly updated web site.



There is a Mandalong Mine Community Consultation Committee (CCC) which meets three times a year. The purpose of the committee is to:

- Establish good working relationships between the company, the community and other stakeholders in relation to the mine.
- Provide for the ongoing communication of information on mining operations and the environmental performance of the mine, including:
 - On project assessment including scoping of issues for assessment and comment;
 - On the implementation of conditions of approval, the mining operations plan and any other management plans;
 - The results of environmental monitoring;
 - Annual environmental management reports; and
 - Outcomes of audit reports.
- Provide an opportunity for comment on the mine’s environmental performance.
- Discuss community concerns and review the resolution of community complaints.
- Discuss how best to communicate relevant information on the mine and its environmental performance to the broader community.
- Work together towards outcomes of benefit to the mine, immediate neighbours and the local and regional community.

During the recent Mandalong Southern Extension Project approval process there were a number of submissions from the Mandalong Community Association (MCA) and landowners. The main areas of concern were:

- Traffic and road safety;
- Noise;
- Water discharge;
- Flooding,
- Compensation.

3.3 CONSULTATION

Relevant stakeholders include but are not limited to:

- Any residents / landholder who will require a Property Subsidence Management Plan (PSMP).
- CCC which includes representatives from the MCA.
- Aboriginal and cultural heritage groups.
- Infrastructure owners (public and private).
- Any individual and group who has an interest in the mine.



Consultation across these groups has been undertaken and documented within the Statement of Environmental Effects (SEE). Consultation has included notifications, dissemination of reports and inclusion of stakeholders for land use surveys as required for heritage impact assessments and the like.

In the context of this SIA, community consultation has been undertaken via Mandalong Mine's CCC and specifically to affected landholders via the development of each Property Subsidence Management Plan (PSMP) for LW 24 and 24a. In total there are eleven properties within the area of affectation of LW 24 and 24a (including the angle of draw).

Consultation with the Mandalong CCC was undertaken on Tuesday 25 October 2016 and again on 21 February 2017. This consultation was in the form of presentations about the proposal to extend LW 24 and 24a. Key messages about the proposed Modification included but were not limited to:

- When the initial mine plan was prepared it was not believed that mining through the sill was possible however it has been determined that it can be (and has been) mined through.
- Subsidence predictions have been tested and verified and consultations with landholders has commenced in relation to the development of a PSMP for every affected landholder.
- A modification to the existing consent (consent number SSD-5144) will be submitted for LW 24 and 24a.
- The modification for LW 24 and 24a will result in no other changes to the consent (i.e. annual tonnes mined, surface infrastructure etc.).
- A SEE is also being prepared to accompany the modification. The SEE will investigate the following:
 - Land and agricultural resources
 - Subsidence and built features
 - Biodiversity
 - Flooding
 - Greenhouse
 - Aboriginal and European heritage
 - Water resources
 - Economic impacts.

Consultation with individual landholders has been undertaken in accordance with Mandalong Mine's Stakeholder Engagement Plan for the development of PSMP's. The key steps for developing a PSMP in consultation with each landholder is summarised below. This process has been the principle means of consultation with affected landholders and has been relied on in this report.



3.3.1 PSMP Phase 1: Initial Contact

The first contact with the landowner is a means of introduction and is undertaken to make a suitable time to meet to discuss the mine operations and the PSMP process. This contact is followed up by written notification which provides information relating to:

- Plan of the proposed longwall mining;
- The expected subsidence impacts of longwall mining below the landowners property based on the best available information;
- An offer to pay any reasonable costs for the landowner to obtain legal or other advice on the PSMP;
- The timing for later phases of landowner consultation, including finalising any relevant PSMP;
- Mine planning, Extraction Plan application and approval process;
- The relevant conditions of consent;
- Extraction Plan approvals process diagram;
- Arranging access to collect background information to assist in the production of a draft PSMP. Such information may include:
 - A detailed survey of the property, including soil and slope stability assessment;
 - Structural inspection of buildings / structures; and
 - Land use studies;
- Other relevant information requested by the landholder.

Phase 1 may commence 18 / 24 months prior to the commencement of coal extraction from the particular longwall for which the PSMP is being developed.

3.3.2 Phase 2: Draft PSMP

Each relevant landowner is given a draft PSMP for discussion. The draft PSMP (where possible) is presented to the Landowner in person by the appointed representative of Mandalong Mine. This allows any immediate concerns to be addressed and any further issues to be raised and discussed including:

- Predicted impacts and predicted consequences to any dwelling, improvement or land;
- Proposed mitigation / remediation measures for the individual property; and
- Information identifying the landowner's legal rights to acquisition and compensation in accordance with the consent, Mining Act 1992 and Mine Subsidence Board Compensation Act 1961.

3.3.3 Re-issue Draft (if required)

If required a revised PSMP is prepared to address any matters that are raised in Phase 2. The revised PSMP is then re-issued as a draft to the landholder. Note there may be multiple revisions required in Phase 3.



3.3.4 Final PSMP

The PSMP reflects the final position of the Landowner and Mandalong Mine in relation to the proposed longwall mining or secondary extraction.

4. SCOPING OF POTENTIAL SOCIAL IMPACTS

4.1 OVERVIEW

As stated in the introduction of this report, a SIA focuses on the likely impact on the human element of the environment and what likely changes may occur. The scoping of the potential social impacts arising from the extension of LW 24 and development and extraction of 24a has involved the following:

- Site visit;
- Understanding of the Modification components including:
 - Project Application Area;
 - Location of sensitive receptors (residences); and
 - Characteristics of the proposed Modification, including review of the PSMP and predicted subsidence.
- Feedback from the Project team in relation to consultation with land holders and the community via the CCC;
- Review of PSMP reports and consultation with the Mining Approvals Coordinator.
- Review of the following specialist consultants reports:
 - Land and agricultural resources
 - Subsidence and built features
 - Biodiversity
 - Flooding
 - Greenhouse
 - Aboriginal and European heritage
 - Water resources
 - Economic impacts
- Determination of the likely amenity impact / change arising from the proposed Modification and the scale of this impact.



4.2 ASSESSMENT OF SPECIALIST REPORTS

A summary of all specialist assessment reports has been undertaken in the preparation of this SIA. It is not the intent of the SIA to repeat what is documented in these reports but rather identify what social impacts are likely to arise from the proposed Modification.

4.2.1 Agricultural Impact Assessment (SLR April 2017)

The Agricultural Impact Assessment has found that any impacts resulting from longwall mining are expected to be minor and temporary, and can be managed through application of appropriate mitigation measures and management strategies.

4.2.2 Biodiversity Assessment Report (RPS April 2017)

The Biodiversity Assessment considers that the continual implementation of the regional and site specific Biodiversity Management Plan is sufficient for the detection and management of unforeseen impacts arising from the proposed Modification.

4.2.3 Biophysical Strategic Agricultural Land (BSAL) Assessment (SLR April 2017)

The report prepared by SLR concluded that there is no qualifying BSAL within the Study Area.

4.2.4 Heritage Impact Assessment (RPS November 2016)

Based on the predicted subsidence impacts to identified Aboriginal or European heritage sites are not expected as a result of the proposed Modification. There is no change in the expected level of impact from the original Development Consent (SSD 5144) as a result of the proposed Modification.

4.2.5 Economic Impact Assessment (Aigis Group October 2016)

The cost-benefit analysis (CBA) indicates a marginal incremental economic benefit associated with an increase in the recoverable resource as stated. The principal sources of this benefit are an increase in royalty revenue of approximately \$19 million, and the labour surplus accruing to the local/regional economy associated with the additional works required to recover the resource, of approximately \$9 million. These benefits are offset by an increase in the risk of certain environmental effects occurring with associated social considerations. For the purposes of assessing such risk, these are valued at approximately \$3.5 million. Overall, the Modification is estimated to result in beneficial socioeconomic impacts valued at approximately \$24 million. The assessment also identifies a positive Benefit-Cost Ratio (BCR) of 7.9. In the context of these matters, it is assessed that on balance, the Modification is supportable on the basis of its likely positive socioeconomic contribution.



4.2.6 Subsidence Impact Assessment (Seedsman Geotechnics March 2017)

Given the predicted strains and experiences to date at Mandalong, it is unlikely that there will be any tensile cracking or compressive buckling in soil or rock. The compressive strains may be sufficient to cause bulging of sealed roads.

With the low values of tilt and strain combined with the relatively gentle topography, there will be no far-field movements (defined as measurable horizontal movements without vertical movements in excess of 20 mm) and there will be no ‘upsidence’ in the water courses.

There are no cliffs in the area so there can be no cliff falls induced. The mining-induced changes in the slope of the terrain will not be sufficient to generate rock falls or rock rolls.

The mine layout was selected so that any impact to dwellings would render them safe, serviceable, and repairable and this has been demonstrated to date. The strains predicted to be imposed on Mandalong Road and Tobins Road are similar to those previously assessed, so similar impacts are likely. There may be some minor compression bumps develop in the bitumen seals of local roads.

The predicted subsidence should not adversely impact the functionality of power/telecommunication poles. The predicted strains will adversely impact the transmission towers and remediation works will be required in consultation with the utility provider.

4.2.7 Flood Assessment (Umwelt: April 2017) and Water Resources Impact Assessment (GHD: April 2017).

4.2.7.1 Overview of Flooding Impacts

The main impacts of mining of longwalls 24 to 24A on flooding predicted by Umwelt (2017) are:

- A total of seven structures had a decrease in freeboard as a result of the post-mining subsidence for the proposed Modification compared to the approved project.
- There was no change between approved and proposed scenarios for hazard ratings of structures.
- One property had an increase in flood hazard category for the access route for the proposed Modification compared to approved project for the 100 year ARI storm event.
- There were no increases to the flood hazard categories along access routes during the 1 year ARI storm event for the proposed scenario compared to the approved scenario.
- Changes in flooding regimes from subsidence related to mining of longwalls 24 and 24A will be limited to the zone of predicted subsidence.



- Potential remnant ponding areas increase in three areas for the proposed scenario when compared with the approved scenario (associated with longwall 24 and 24A and within properties 219, 218 and 213). Other areas of remnant ponding are predicted as a result of the proposed Modification, when compared to the approved project; however, these are less than or equal to the pre-mining conditions and hence are unlikely to cause an impact. Areas of predicted remnant ponding in association with existing water storages (farm dams, based on 2016 aerial imagery and field survey) have not been considered as areas of impact.

4.2.7.2 Predicted changes to flooding regime

Umwelt (2017) predicted flood depths and average channel grades as a result of subsidence for longwalls 18 to 24A. The predicted changes to flood behaviour are likely to be limited to the zone of predicted subsidence. Umwelt (2017) identified potential impacts to three specific channels that are relevant to longwalls 24 and 24A. These include:

- Channel 2, Tobins Creek – within the study area this channel flows in an approximately north-east direction, parallel to the northern side of Tobins Road through a number of properties. The creek line crosses Prickly Ridge Road just north of the road's juncture with Tobins Road. Within the study area, the creek has an average grade of 0.36%, with an average modelled flood depth of 1.45 m in the 100 year ARI storm event.
- Channel 3, Morans Creek – within the study area Morans Creek flows in an approximately northerly direction through a number of properties east of Mandalong Road. Within the study area, the creek has an average grade of 0.28%, with an average modelled flood depth of 1.40 m in the 100 year ARI storm event.
- Channel 4, unnamed tributary of Morans Creek – within the study area this channel flows in an approximately easterly direction through a number of properties north-west of Mandalong Road. Within the study area, the creek has an average grade of 0.38% with an average modelled flood depth of 1.10 m in the 100 year ARI storm event.

Whilst predicted flood depth was not found to vary between the approved and proposed conditions, the waterways average gradient was predicted to change marginally (typically less than 0.05%).

4.2.7.3 Predicted changes to ponding

Umwelt (2017) predicted an increase to remnant ponding areas as a result of underground mining associated with longwalls 24 to 24A compared to the approved project. Areas identified as at risk of remnant ponding were those within the zone of predicted subsidence for longwalls 24 and 24A or earlier stages of mining. Success in mitigating remnant ponding has been achieved on a number of private and Centennial owned properties, including road side areas near Deaves Road and Mandalong Road intersection.

It is noted by Umwelt (2017) that mining is now complete for longwalls 18 to 21 and hence ponding impacts over these longwalls have now been realised and are unlikely to change with the proposed modification.



4.2.8 Greenhouse Gas Emissions Summary (SLR April 2017)

The emissions associated with the proposed Modification represent the contribution of the extraction of this additional resource to the LOM emissions which are based on the maximum production rate of 6.5 Mtpa and the full 25 year life of the mine. The 3.7 Mt coal proposed to be extracted as part of the proposed Modification will be achieved within the current approved annual extracted rate and mine life and therefore no change in impacts associated with coal extraction were identified. Minor increases in Scope 1 emissions from diesel combustion (1,649 tonnes CO₂-e) and Scope 2 emissions from electricity consumption (63,251 tonnes CO₂-e) as a result of the proposed Modification were identified.

4.3 COMMENT ON POTENTIAL SOCIAL IMPACTS

Based on the assessment of specialist reports and understanding of the scope of the Project and land use characteristics, it is found that the potential for social impact relates to the change in flooding profile on private properties within the area. These impacts are summarised in Table 4.

Table 4: Summary of Flood Impacts

Component	Existing / Approved Mine Plan	Potential Impacts
Flooding	<ul style="list-style-type: none"> • Morans Creek flow width between 400 m and 670 m in a 100 year ARI storm event. Flow depths up to 1 m outside of the main channel. • Tobins Creek flow width between 50 m and 110 m in a 100 year ARI storm event. • Flood hazard varied from low to high categories. 	<ul style="list-style-type: none"> • Reduction in freeboard at some properties. • Increase in flood hazard at some properties, with one property access route having an increased hazard rating as a result of proposed Modification for the 100 year ARI event compared to approved conditions. • Changes in flooding regimes predicted to be limited to zone of predicted subsidence. • Increase in potential remnant ponding areas predicted to be limited to zone of predicted subsidence. As a result of a comparison between proposed and approved mine plan conditions, ponding increases specifically associated with longwalls 24 and 24A influenced three properties.

Source: Water Resources Impact Assessment (GHD, 2017: 111)



The properties within the area of affectation from LW24 and 24a (including the angle of draw) are listed in Table 5 along with a summary of identified water impacts that are predicted to occur as a result of the proposed Modification.

Table 5: Summary of Properties

Property Reference	Freeboard		Flood Category at Structures	Hazard at Property Access	Ponding
	cm +/-	Below 500mm 1:100 year flood level as a result of this Project Y/N	Change Y / N	Change Y / N	Change Y / N
90	0	N	N	Y (improved)	Y (paddock with remediation via drainage works) Y (Floodplain and channel with remediation via drainage works)
219	-7	Y	N	N	Y (Floodplain and channel with remediation via drainage works)
218	+1	N	Y (improved)	N	Y (channel with remediation via drainage works)
212a	-5	N	N	N	-
89	0	N	N	N	Y (Floodplain with remediation via drainage works)
88	0	N	N	N	-
205	+8	N	-	-	-
213	-20	N	N	N	Y (paddock with remediation via drainage works)
204	+20	N	-	-	-
207	-29	N	-	-	-
214	+18	N	-	-	-
73	-26	N	N	N	Y (channel with remediation via drainage works)
221	+3	N	N	N	-
220	+5	N	N	Y (improved)	Y (Floodplain with remediation via drainage works)
206	+14	N	N	Y - wading unsafe in channel.	-
74	-1	N	N	N	-

Source: Centennial Mandalong Flood Assessment (Umwelt: April 2017).

The assessment of social impacts is undertaken in Table 6 – Table 15. These tables allow the reader to understand how potential impacts have been assessed and the likelihood of social risk arising from the proposed Modification. Each area of assessment is ranked according to potential risk and allocated a score of 0, 1, 2 or 3. If no impact or a positive impact is identified, a zero score is allocated. Key impacts assessed include:

- Impacts to population characteristics
- Disadvantages and benefits to individuals from the proposed Modification



- Employment impacts
- Housing impacts
- Community infrastructure impacts
- Impacts to community support services
- Impacts to demands on services
- Impacts to potential conflicts in the community from the proposed Modification
- Impacts to community identity
- Impacts to cultural identity.



Table 6: Population Characteristics

Affect	Causes	Score			
		No / positive impact	Low Impact	Medium Impact	High Impact
		0	1	2	3
LW 24 and 24a will change the characteristics of the general population or persons who live or interact in or around any site in question.	Purchase property due to adverse social amenity impacts that cannot be mitigated.		1 (potential 219)		
	Existing landholders relocate from the area due to mine operations and loss of social fabric, knowledge, networking and sense of community.	0			
	Increased in the number of tenancies across the area due to property in mine ownership. This results in different values to the area, land management practices and loss of social fabric, neighbouring etc.).	0			
	FI/FO or DI/DO workers coming to the area resulting in positive financial contribution to some sectors however do not contribute to the sense of community and create other impacts such as increased housing costs.	0			
Total Score			1		
<p>Comment: Mandalong is a low lying valley and flood prone. While flood issues exist across the valley the proposed Modification will have a slight change on flood characteristics in some areas. The freeboard at the floor level of the dwelling located on property 219 will be reduced by 7cm as a result of the proposed Modification. This will result in an expected freeboard of 42cm above the flood level for the 100 year ARI storm event. Remedial works will be required at this dwelling, however acquisition of the property is not expected to be necessary and the occupant is not expected to have to permanently relocate as a result of the proposed Modification.</p>					



Table 7: Disadvantage and Benefit

Affect	Causes	Score			
		No / positive impact	Low Impact	Medium Impact	High Impact
		0	1	2	3
It is likely LW 24 and 24a will disadvantage or benefit individuals or groups (including specific target/population groups).	Positive pay packet effect in the immediate local area to some / all sectors.	0			
	Positive pay packet effect however not in the immediate area, but on a broader regional level.		1		
	Increase in housing rental and housing purchase prices due to demand brought about by the project.	0			
	Increased number of housing investors taking advantage of accommodation demand for mine personnel.	0			
	Artificial increase in pricing for certain commodities / goods / housing.	0			
	Sterilisation of land for private development.	0			
	Reduced access to publicly accessible land.	0			
Total Score			1		
Comment: The EIA has identified a positive economic contribution as a result of wages, royalties etc., however the benefit is not realised in the area of affectation hence recognising this as a low impact.					



Table 8: Employment

Affect	Causes	Score			
		No / positive impact	Low Impact	Medium Impact	High Impact
		0	1	2	3
Changes to employment opportunities	Direct and indirect employment created by the project.	0			
	Longevity / certainty of employment for existing employees and indirect employment.	0			
	Redistribution of employment patterns – i.e. mining attracting people due to higher wages whereas other sectors may not have this advantage.	0			
	Increased trade in other services (i.e. accommodation, retail) resulting in additional employment opportunities.	0			
Total Score		0			
Comment: The proposed Modification will not generate additional employment.					



Table 9: Housing

Affect	Causes	Score			
		No / positive impact	Low Impact	Medium Impact	High Impact
		0	1	2	3
Impacts on existing housing stock will occur	Increase in demand from FI/FO or DI/DO workers.	0			
	Increased demand for tenancies.	0			
	Increased / inflated housing costs making housing unaffordable for a larger cohort of the community.	0			
	Decrease in the availability of and access to affordable housing stock.	0			
Total Score		0			
Comment: The proposed Modification will not adversely impact on housing stock in the area.					



Table 10: Community Infrastructure

Affect	Causes	Score			
		No / positive impact	Low Impact	Medium Impact	High Impact
		0	1	2	3
Additional utilisation of community infrastructure will occur (roads, community halls, child care facilities, sporting and recreation etc.)	New services and facilities required ancillary to the project due to population increase arising from the project.	0			
	Increase in employee traffic to and from the site.	0			
	Ongoing use of existing services by existing workforce.	0			
Total Score		0			
Comment: No change identified					



Table 11: Community Support Services

Affect	Causes	Score			
		No / positive impact	Low Impact	Medium Impact	High Impact
		0	1	2	3
Additional support services will be required to meet the demands of any identified changes	New services and facilities required ancillary to the project due to population increase or decrease (in the case of mine closure).	0			
Total Score		0			
Comment: No change identified					

Table 12: Service Demand

Affect	Causes	Score			
		No / positive impact	Low Impact	Medium Impact	High Impact
		0	1	2	3
Existing support services will be utilised to an extent where they are unable to meet the demand	Ongoing use of existing services however demand increased as a result of mine closure.	0			
Total Score		0			
Comment: No change identified					



Table 13: Conflict

Affect	Causes	Score			
		No / positive impact	Low Impact	Medium Impact	High Impact
		0	1	2	3
The proposal is likely to cause conflict within the community (i.e. is not supported, or there is conflict between supporters and non-supporters)	Visual impact caused by the location of infrastructure, lighting etc.	0			
	Change in environmental conditions (e.g. adverse noise and air quality impacts from the mines operations, changes to water quality and availability).		1		
	Transport noise caused by rail / trucks and employee movements.	0			
Total Score			1		
<p>Comment: Mandalong is within a low lying flood plain. Subsidence will therefore change some of the flood characteristics, in particular ponding. In its early stages when subsidence impacts were not fully understood, Centennial Mandalong purchased a number of properties. This resulted in residents moving from the area which is a concern that has been raised by residents (e.g. the MCA) regarding a loss of social fabric in the area. Now subsidence behaviour is better understood, property acquisition is not common practice and is not expected to occur as a result of the proposed Modification.</p>					



Table 14: Community Identity

Affect	Causes	Score			
		No / positive impact	Low Impact	Medium Impact	High Impact
		0	1	2	3
An impact on community identity is likely.	Change in population structure (i.e. relocation of landholders due to property purchase).	0			
	Change in land characteristics that prevent use, development and / or access to certain areas.	0			
	Change to the social amenity due to noise, air quality, visual etc.	0			
Total Score		0			
Comment: Some flood characteristics will change as a result of the proposed Modification. Refer comments Table 13.					



Table 15: Cultural Identity

Affect	Causes	Score			
		No / positive impact	Low Impact	Medium Impact	High Impact
		0	1	2	3
An impact on cultural identity is likely	Loss of community / public access to certain areas.	0			
	Loss of or reduced access to sites of significance (indigenous and European)	0			
	Threat of a change in lifestyle for land holders.		1		
	New project proposed within an existing community	0			
Total Score			1		
Comment: Ponding may result in some areas however flood risk ratings are not affected as a result of the proposed Modification.					



As identified above the proposed Modification will not result in broad scale changes to the land use and / or environment characteristics of the area. The assessment of impacts arising from LW 24 and 24a has concluded that flooding predictions are the primary change in land use at private properties. It is noted that the Mandalong valley is flood prone so ponding and flood are not new, however there may be slight changes to the existing patterns of ponding and water flow. These changes are not expected to have an adverse impact on the current land uses or lifestyle of residents. One property (property ID 219) will have a reduction in freeboard of 7cm, reducing the freeboard at this property from 49cm to 42cm during flooding from a 1 in 100 ARI storm event.

Through this process and despite little impact identified, it is reasonable to assume that affected residents will have a degree of angst in relation to the effect of subsidence. Ongoing consultation will occur via the Property Subsidence Management Plan process with any exceedances of the risk ratings identified in Tables 6 to 15 triggering the need for the implementation of management and mitigation activities contained in the relevant Trigger Action Response Plans. Consultation with the affected landholders will be undertaken prior to and post mining in order to monitor the effect of subsidence and maintain contact with the landholder. Mitigation strategies documented in the Property Subsidence Management Plans will be adhered to along with conditions of consent relating to flood management.

5. CONCLUSION

This SIA has been prepared in relation to the proposed extension to LW 24 and 24a. The potential impacts have been identified using a worst case scenario.

The Project is being undertaken to achieve maximum coal extraction and is deemed possible due to knowledge that the sill does not pose a constraint to mining as previously thought.

It is found that there are no adverse impacts to amenity, land uses or residential dwellings. On that basis it is considered that the overall social impact is negligible. However ongoing consultation with each landholder within the area of affectation is required to keep them informed of the mining progress and any changes to the predicted impacts.