

Stratford Mining Complex Statement of Environmental Effects

MAIN REPORT AND APPENDICES A - F

TABLE OF CONTENTS

Section		Page
EXECUTIVE SUMMARY	ES-1	4
1 INTRODUCTION	1	
1.1 OVERVIEW OF STRATFORD MODIFICATION 1	1	
1.2 LEGISLATIVE FRAMEWORK	1	
1.2.1 Environmental Planning Instruments	6	
1.2.2 Other Approvals	17	
1.3 CONSULTATION	17	
1.3.1 State and Local Government Agencies	17	
1.3.2 Public Consultation	18	
1.4 DOCUMENT STRUCTURE	19	
2 EXISTING AND APPROVED STRATFORD MINING COMPLEX	20	
2.1 OVERVIEW	20	
2.2 STRATFORD MINING COMPLEX APPROVALS HISTORY	20	
2.2.1 Stratford Coal Mine	20	
2.2.2 Bowens Road North Open Cut	20	
2.3 STRATFORD EXTENSION PROJECT	20	
2.4 MINING OPERATIONS	21	
2.5 COAL HANDLING AND PREPARATION PLANT	21	
2.6 PRODUCT COAL AND RAIL TRANSPORT	23	
2.7 WATER MANAGEMENT INFRASTRUCTURE	23	
2.8 CHPP REJECT MANAGEMENT	23	
2.9 WASTE ROCK MANAGEMENT	24	
2.10 INFRASTRUCTURE AND SERVICE FACILITIES	24	
2.10.1 Electricity Supply and Distribution	24	
2.11 ENVIRONMENTAL MONITORING AND MANAGEMENT	24	
2.12 REHABILITATION, WILDLIFE CORRIDORS AND OFFSETS	25	
2.13 WORKFORCE	26	
2.14 CONSTRUCTION AND DEVELOPMENT	26	
2.15 TRANSPORT	26	
3 STRATFORD MODIFICATION 1	27	
3.1 MINE LIFE	27	
3.2 COAL PROCESSING	27	
3.3 RAIL LOADING	27	
3.4 WATER SUPPLY AND WATER MANAGEMENT	27	
3.5 CHPP REJECT MANAGEMENT	27	
3.6 GENERAL INFRASTRUCTURE	29	
3.7 REHABILITATION	29	
3.8 WORKFORCE	29	
3.9 CONSTRUCTION AND DEVELOPMENT	29	
3.10 TRANSPORT	31	
3.11 MANAGEMENT OF DANGEROUS GOODS	31	
ENVIRONMENTAL ASSESSMENT		32
4.1 NOISE		32
4.1.1 Existing Environment		32
4.1.2 Potential Impacts		34
4.1.3 Mitigation Measures, Management and Monitoring		36
4.2 AIR QUALITY AND GREENHOUSE GAS EMISSIONS		36
4.2.1 Existing Environment		36
4.2.2 Potential Impacts		39
4.2.3 Mitigation Measures, Management and Monitoring		40
4.2.4 Greenhouse Gas Emissions		40
4.3 SURFACE WATER		41
4.3.1 Existing Environment		41
4.3.2 Potential Impacts		42
4.3.3 Mitigation Measures, Management and Monitoring		42
4.4 ABORIGINAL CULTURAL HERITAGE		43
4.4.1 Existing Environment		43
4.4.2 Potential Impacts		45
4.4.3 Mitigation Measures, Management and Monitoring		45
4.5 TERRESTRIAL ECOLOGY		45
4.5.1 Existing Environment		45
4.5.2 Potential Impacts		46
4.5.3 Mitigation Measures, Management and Monitoring		46
4.6 AQUATIC ECOLOGY		47
4.6.1 Existing Environment		47
4.6.2 Potential Impacts		48
4.6.3 Mitigation Measures, Management and Monitoring		48
4.7 ROAD TRANSPORT		48
4.7.1 Existing Environment		48
4.7.2 Potential Impacts		49
4.7.3 Mitigation Measures, Management and Monitoring		50
4.8 VISUAL CHARACTER		50
4.8.1 Existing Environment		50
4.8.2 Potential Impacts		50
4.8.3 Mitigation Measures, Management and Monitoring		50
4.9 NON-ABORIGINAL HERITAGE		50
4.9.1 Existing Environment		50
4.9.2 Potential Impacts		52
4.9.3 Mitigation Measures, Management and Monitoring		52
4.10 SOCIAL AND ECONOMIC ASPECTS		52
4.11 HYDROGEOLOGY		52
CONCLUSION	5	54
REFERENCES	6	55

TABLE OF CONTENTS (continued)

LIST OF TABLES

Table 1	Summary Comparison of the Stratford Mining Complex and Modification
Table 2	SEE Content Required by DP&E
Table 3	Indicative Modification Mine Schedule
Table 4	Proposed ROM Coal Truck Fleet
Table 5	SEP Development Consent Daytime Noise Criteria
Table 6	Criteria for Particulate Matter Concentrations
Table 7	Criteria for Dust Deposition (Insoluble Solids)
Table 8	Annual Average PM ₁₀ Concentrations
Table 9	Annual Average PM _{2.5} Concentrations

LIST OF FIGURES

Figure 1	Regional Location
Figure 2	General Arrangement and Private Haul Road
Figure 3	Relevant Land Ownership Plan
Figure 4	Relevant Land Ownership Plans Stratford and Craven
Figure 5	Relevant Land Ownership List
Figure 6	CHPP and Infrastructure Areas
Figure 7	Private Haul Road and Wenham Cox Road Intersections
Figure 8	Relevant Noise and Blasting Monitoring Sites
Figure 9	Relevant Meteorological and Air Quality Monitoring Sites
Figure 10	Private Haul Road and Wenham Cox Road Conceptual Intersection Design

LIST OF PLATES

Plate 1	SMC CHPP and Product Coal Stockpile
Plate 2	Existing irrigation infrastructure at the SMC on rehabilitated land to pasture
Plate 3	Revegetated Stratford Waste Emplacement used for cattle agistment
Plate 4	Typical configuration of sized ROM coal haul truck
Plate 5	Typical improved pasture vegetation that makes up the majority of the Modification area
Plate 6	Pool of standing water in Dog Trap Creek in Modification area

LIST OF CHARTS

Chart 1	Complaints at the SMC from 2011 to 2016 (to date)
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LIST OF APPENDICES

Appendix A	Noise Assessment
Appendix B	Air Quality and Greenhouse Gas Assessment
Appendix C	Surface Water Assessment
Appendix D	Aboriginal Cultural Heritage Assessment
Appendix E	Terrestrial and Aquatic Ecology Assessment
Appendix F	Road Transport Assessment

EXECUTIVE SUMMARY

Stratford Coal Pty Ltd (SCPL), a wholly owned subsidiary of Yancoal Australia Ltd, proposes to share coal handling, processing and transportation infrastructure at the Stratford Mining Complex (SMC) with the nearby proposed Rocky Hill Coal Project (RHCP), which is owned by a separate entity, Gloucester Resources Limited.

Approval for the proposal to share infrastructure is sought as a Modification to SCPL's Stratford Extension Project Development Consent (SSD-4966) under Section 96(2) of the New South Wales (NSW) *Environmental Planning and Assessment Act, 1979*.

Specifically, the Modification would facilitate:

- the haulage of RHCP run-of-mine coal via a private haul road through SCPL's existing mining tenements; and
- the processing of RHCP coal using existing infrastructure at the SMC and transportation of product coal via rail to the Port of Newcastle.

The Modification would allow for the more efficient use of SMC's existing infrastructure and is substantially the same as the original SMC because the Modification would not change the existing/approved:

- open cut mining operations;
- operational hours;
- waste rock production and emplacement areas;
- ROM coal processing rate;
- average or maximum daily number of product coal trains dispatched from the SMC;
- coal handling and processing infrastructure; and
- water supply, water management infrastructure and CHPP rejects storage areas and management.

This document is a Statement of Environmental Effects which has been prepared to assess potential environmental impacts associated with the Modification. Potential environmental impacts are limited because:

- haulage of RHCP's coal would occur during daytime hours only, Monday to Saturday, which would reduce the potential for noise and air quality impacts;
- additional surface disturbance is limited because haulage would primarily use existing/approved haul roads, with a short section of new, sealed haul road to be constructed; and
- existing/approved infrastructure would be used with only minor augmentation necessary to accommodate the Modification.

The private haul road would include an intersection with Wenham Cox Road (a rural access road which provides access to one private property). The intersection design would include boom gates on Wenham Cox Road for the safety of road users, and also on the private haul road to prevent access into the SMC and RHCP.

Based on the above and comparative analysis of the key elements, it is concluded that the Modification is substantially the same as the originally approved Stratford Extension Project and is justified as it would facilitate increased utilisation of existing infrastructure at the SMC.

1 INTRODUCTION

Stratford Coal Pty Ltd (SCPL), a wholly owned subsidiary of Yancoal Australia Ltd (Yancoal), is preparing a Statement of Environmental Effects (SEE) to facilitate the modification of the Stratford Extension Project (SSD-4966) under Section 96(2) of the New South Wales (NSW) *Environmental Planning and Assessment Act, 1979* (EP&A Act) (the Modification).

The existing and approved operations of the Stratford Mining Complex (SMC) incorporates the approved Stratford Extension Project (SSD-4966). The approved Stratford Extension Project provides for the continuation and extension of open cut coal mining and processing at the SMC and was approved by the NSW Planning and Assessment Commission in May 2015. SCPL is the owner and operator of the SMC.

1.1 OVERVIEW OF STRATFORD MODIFICATION 1

The Modification relates to proposed interactions between the SMC and the amended Rocky Hill Coal Project (RHCP) (SSD-5156), a proposed open cut mining operation owned by Gloucester Resources Limited (GRL), located approximately 5 kilometres (km) north of the SMC (Figure 1). The Environmental Impact Statement (EIS) and related documents for the RHCP were exhibited in August 2013.

In June 2015, GRL submitted a request that the NSW Department of Planning and Environment (DP&E) places the determination of its development application (DA) on hold as it was in negotiations regarding a potential commercial arrangement with the owner of the SMC. In December 2015, GRL and Yancoal formally advised DP&E that a commercial agreement had been reached between the two companies involving interactions relating to the processing of RHCP run-of-mine (ROM) coal using SCPL infrastructure and transportation of product coal via rail to the Port of Newcastle.

This integration would require the development of a dedicated private haul road between the RHCP and the SMC (Figure 2). The portion of the private haul road relevant to the SMC would be located within the north-eastern portion of SCPL's mining tenements (Mining Lease [ML] 1733), from which point haul trucks would use existing SMC haul roads to allow transport of RHCP coal to the SMC ROM pad.

The main changes to the operations of the SMC associated with the Modification include:

- transport of RHCP sized ROM coal through the SMC during daytime hours only (7.00 am to 6.00 pm Monday to Saturday);
- extension of the SMC ROM pad to accommodate RHCP sized ROM coal;
- extension of SMC heavy vehicle parking areas;
- processing of RHCP coal at the SMC and transportation of the resulting product coal from the SMC to the Port of Newcastle;
- extension of on-site haul roads to accommodate RHCP haul trucks; and
- an at-grade level crossing (and associated controls) constructed at the intersection of Wenham Cox Road and the private haul road.

Table 1 provides a summary comparison of the SMC (as per the originally approved Stratford Extension Project) and the Modification.

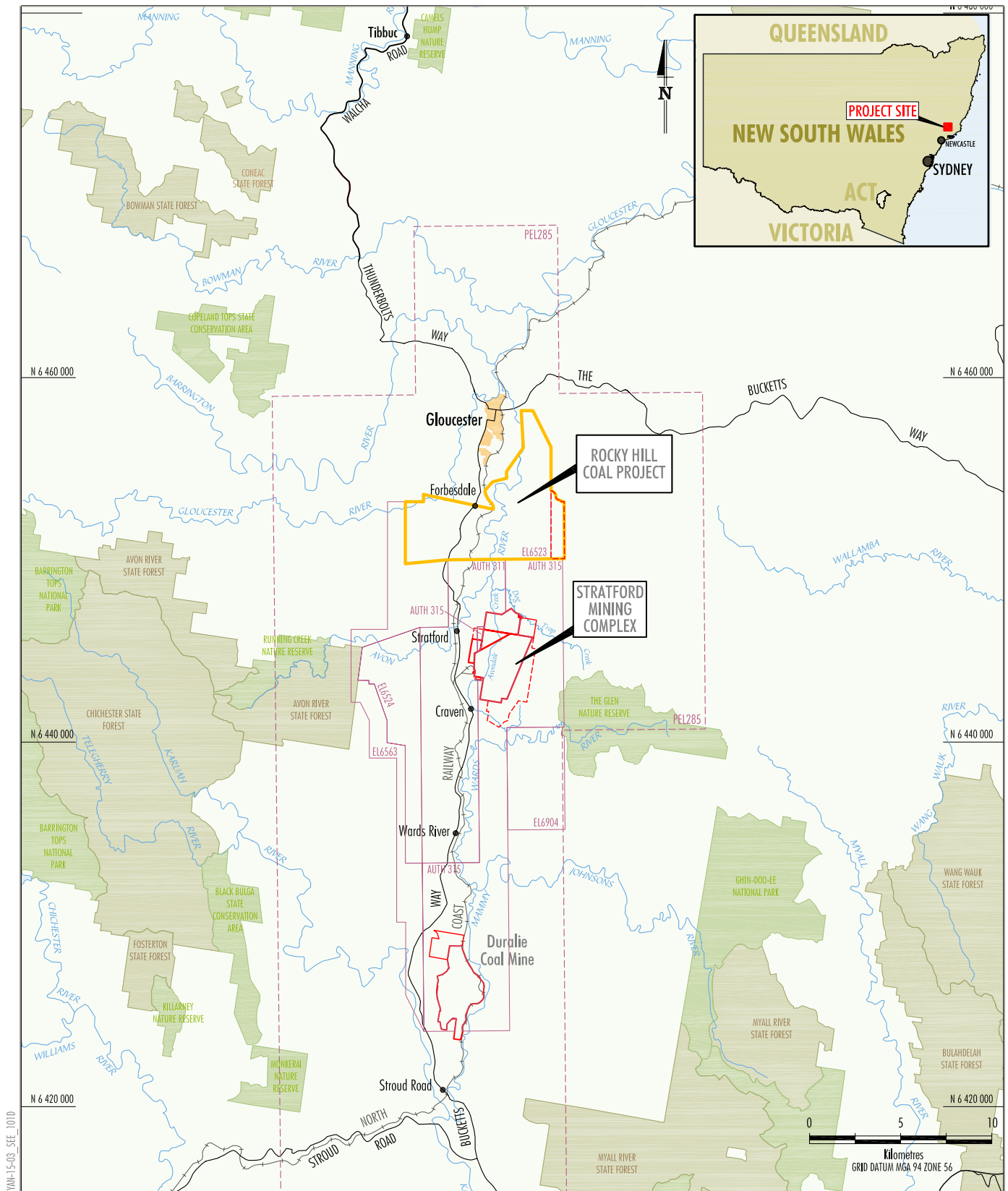
1.2 LEGISLATIVE FRAMEWORK

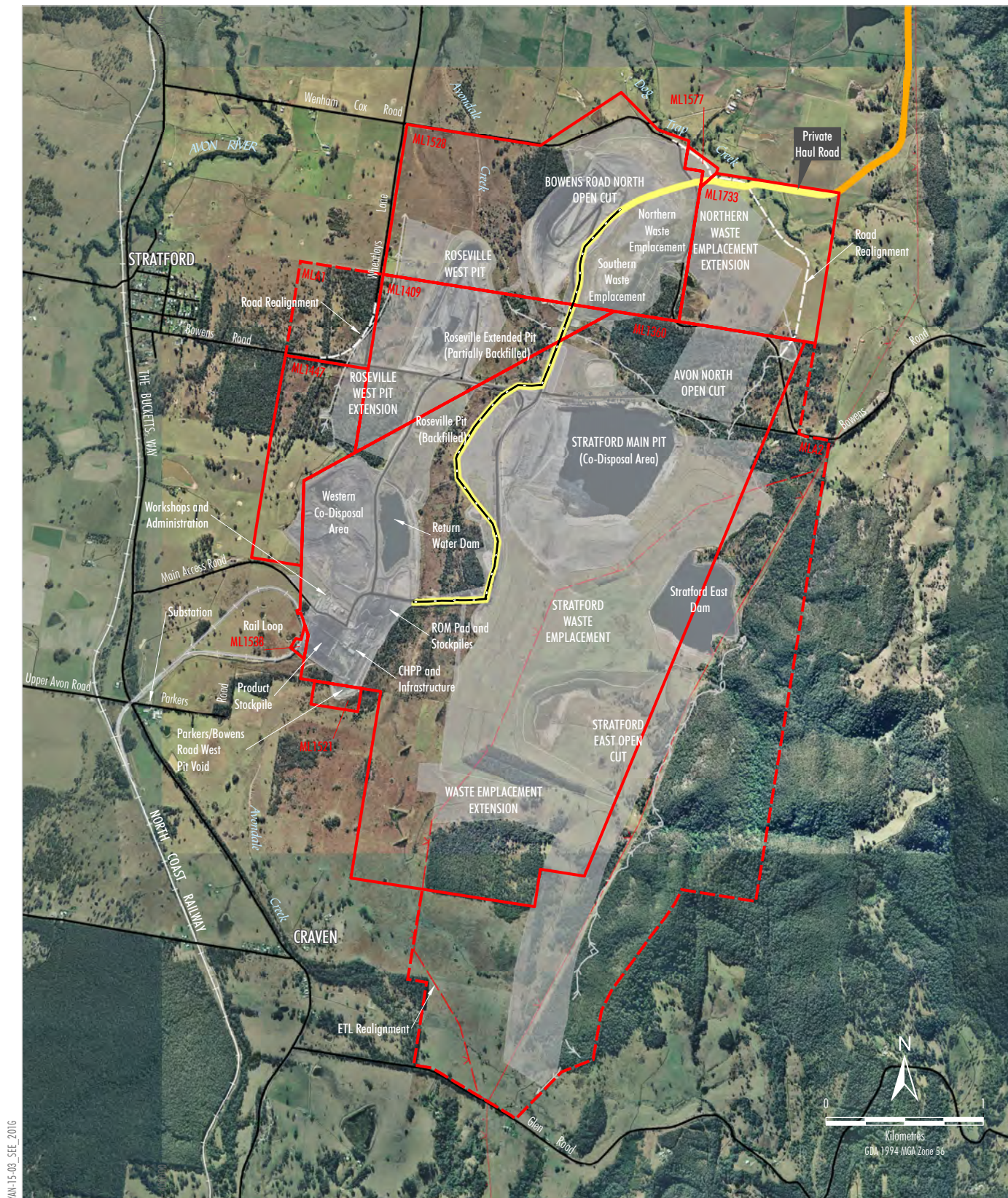
The EP&A Act and NSW *Environmental Planning and Assessment Regulation, 2000* set the framework for planning and environmental assessment in NSW. Modification of the SMC is sought under Section 96(2) of the EP&A Act.

Section 96(2) of the EP&A Act states:

A consent authority may, on application being made by the applicant or any other person entitled to act on a consent granted by the consent authority and subject to and in accordance with the regulations, modify the consent if:

- a) *it is satisfied that the development to which the consent as modified relates is substantially the same development as the development for which consent was originally granted and before that consent as originally granted was modified (if at all), and*





Source: LPI (2016); Geoscience Australia (2006); NSW Department of Industry (2016); SCPL (2016)

Figure 2

Table 1
Summary Comparison of the Stratford Mining Complex and Modification

Project Component	Summary of the Stratford Mining Complex	Modification
ROM Coal Production	Total ROM coal production of up to approximately 2.6 million tonnes per annum (Mtpa).	No change.
Mine Life	- Mining to December 2025. - Processing and export of product coal to December 2025.	- Extension of mining activities to approximately December 2028 to reflect the revised Stratford Extension Project timing (11 years from the commencement of the approved Stratford Extension Project [2018]). - Extension of processing and export of product coal to approximately December 2034 to reflect the RHCP timing (16 years from the commencement of the RHCP [2019]).
Processing Limits	Processing of coal up to a total of 5.6 Mtpa.	No change.
ROM Coal Receipt	Receipt of coal from the Duralie Coal Mine via a shuttle train.	Receipt of sized ROM coal from the Duralie Coal Mine and the RHCP.
ROM Coal Processing and Transport	Processing and transport of coal from the SMC and Duralie Coal Mine.	Processing and transport of coal from the SMC, Duralie Coal Mine and RHCP.
Hours of Operation	- Open cut mining at the SMC undertaken seven days per week during the periods specified below (except in the case of an emergency): 7.00 am to 6.00 pm (Bowens Road North Open Cut); 7.00 am to 6.00 pm (Roseville West Pit Extension); 24 hours (Avon North Open Cut); and 24 hours (Stratford East Open Cut). - Recovery of Coal Handling and Preparation Plant (CHPP) rejects for re-processing undertaken between 7.00 am to 6.00 pm. - CHPP hours of operation 24 hours per day. - Rail operations conducted 24 hours per day.	- No change for SMC operations. - Coal haulage and receipt of sized ROM coal from the RHCP during daytime hours only (7.00 am to 6.00 pm Monday to Saturday).
Waste Rock Emplacement (including backfill)	- Placement of mine waste rock to in-pit (including backfill) and out-of-pit waste rock emplacements including: - the Stratford Waste Emplacement (up to approximately 196 metres [m] Australian Height Datum [AHD]); and - the Northern Waste Emplacement (up to approximately 165 m AHD).	- No change to approved landforms. - Minor use of inert waste rock as construction fill for the haul road.
General Infrastructure	- CHPP, ROM and product storage and handling infrastructure, access roads, rail loop, train loading infrastructure, rotary breaker, workshops and heavy vehicle servicing facilities, washdown facilities, bunded fuel farm, boiler shed, stores, administration buildings and offices. - Realigned 132 kilovolt (kV) power line. - Realigned Wheatleys Lane, Bowens Road, and Wenham Cox/Bowens Road.	- No change except for: - extension of on-site haul roads to accommodate RHCP trucks, including a crossing of Dog Trap Creek; - level crossing on the existing Wenham Cox Road and haul road intersection; - level crossing on the realigned Wenham Cox Road and haul road intersection; - extension of ROM pad area; - allowance of park-up area for RHCP trucks; and - weighbridge.

Table 1 (Continued)
Summary Comparison of the Stratford Mining Complex and Modification

Project Component	Summary of the Stratford Mining Complex	Modification
Product Coal Trains	- Average of 2.5 product coal trains per day. - Up to six product coal trains per day would be required during peak periods.	No change.
Water Supply	Mine water supply obtained from runoff recovered from mine operational areas, waste rock emplacements, CHPP rejects co-disposal areas (i.e. Stratford Main Pit) and open pit dewatering.	No change.
Water Management	- Water management system including up-catchment diversions, contained water storages, sediment dams, flood levees and the on-site irrigation system. - Water management system operated such that there is no contained water storage overflow. - Development of up-catchment diversion systems in advance of open cut operations.	- Water management system unchanged, with changes to the timing of some elements of water management systems due to the addition of RHCP ROM coal processing. - Minor changes to water management to accommodate the haul road.
Tailings Management	CHPP rejects pumped as a slurry to open pits for disposal.	No change.
Operational Workforce	- At full development, the SMC operational workforce would be in the order of approximately 250 on-site personnel. - Construction/development activities during the life of the SMC would require up to approximately 30 additional people for short periods.	- No change to SMC workforce. - RHCP truck drivers would access the site.
Transport	- During the peak (construction) phase of the approved SMC there would be 668 vehicles predicted to be using the surrounding roads. - Small number of heavy vehicle movements.	- Minor change to light vehicle movements. - Minimal additional heavy vehicle movements.
Blasting	- Maximum one blast per day on site and three per week, averaged over a calendar year. - Blasting will only occur between the hours of 9.00 am and 5.00 pm, six days per week (excluding public holidays or Sundays).	No change.

b) *it has consulted with the relevant Minister, public authority or approval body (within the meaning of Division 5) in respect of a condition imposed as a requirement of a concurrence to the consent or in accordance with the general terms of an approval proposed to be granted by the approval body and that Minister, authority or body has not, within 21 days after being consulted, objected to the modification of that consent, and*

c) *it has notified the application in accordance with:*

(i) *the regulations, if the regulations so require, or*

(ii) *a development control plan, if the consent authority is a council that has made a development control plan that requires the notification or advertising of applications for modification of a development consent, and*

d) *it has considered any submissions made concerning the proposed modification within the period prescribed by the regulations or provided by the development control plan, as the case may be.*

This SEE describes the Modification and provides justification for the conclusion that it is substantially the same development as the SMC (i.e. the application of Section 96[2] of the EP&A Act is justified).

In addition, Section 96(3) of the EP&A states:

In determining an application for modification of a consent under this section, the consent authority must take into consideration such of the matters referred to in section 79C (1) as are of relevance to the development the subject of the application.

Section 79(C) (1) of the EP&A states:

In determining a development application, a consent authority is to take into consideration such of the following matters as are of relevance to the development the subject of the development application:

- (a) *the provisions of:*
 - (i) *any environmental planning instrument, and*
 - (ii) *any proposed instrument that is or has been the subject of public consultation under this Act and that has been notified to the consent authority (unless the Secretary has notified the consent authority that the making of the proposed instrument has been deferred indefinitely or has not been approved), and*
 - (iii) *any development control plan, and*
 - (iiia) *any planning agreement that has been entered into under section 93F, or any draft planning agreement that a developer has offered to enter into under section 93F, and*
 - (iv) *the regulations (to the extent that they prescribe matters for the purposes of this paragraph), and*
 - (v) *any coastal zone management plan (within the meaning of the Coastal Protection Act 1979),*

that apply to the land to which the development application relates,

- (b) *the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality,*
- (c) *the suitability of the site for the development,*

- (d) *any submissions made in accordance with this Act or the regulations,*
- (e) *the public interest.*

The environmental assessment for the Modification included in this SEE includes a description of the existing environment and an assessment of potential impacts of relevance to the matters described in section 79C(1) of the EP&A Act.

1.2.1 Environmental Planning Instruments

Local Environmental Plan

The SMC is located in the Mid-Coast Council (formerly known as the Gloucester Shire Council before the amalgamation of the Gloucester, Great Lakes and City of Greater Taree Councils to the Mid-Coast Council on 12 May 2016) Local Government Area (LGA). In the short time since this amalgamation, no planning documents in relation to Mid-Coast Council have been gazetted.

In accordance with Condition 21 of the *Local Government (Council Amalgamations) Proclamation 2016* the Mid-Coast Council continues to use the same planning instruments as the former Gloucester LGA:

21 Development control plans and contributions plans

- (1) *A development control plan or contributions plan that applied to a former area immediately before the amalgamation day continues to apply to that part of the area of the new council that consists of the former area.*

The Gloucester Local Environmental Plan (LEP) was gazetted on 11 June 2010 under the EP&A Act. The following subsections identify the provisions in the LEP which have some relevance to the Modification.

Land Use Zoning

The SMC is zoned in areas RU1 (Primary Production), IN3 (Heavy Industrial) and E3 (Environmental Management) in the LEP.

The majority of the land covered by the SMC MLs is within the RU1 zone. The objectives of this zone are as follows:

- *To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.*

- To encourage diversity in primary industry enterprises and systems appropriate for the area.
- To minimise the fragmentation and alienation of resource lands.
- To minimise conflict between land uses within the zone and land uses within adjoining zones.
- To encourage eco tourism enterprises that minimise any adverse effect on primary industry production and the scenic amenity of the area.

The Modification is consistent with the objectives of RU1 (Primary Production) as:

- the environmental assessment conducted for this SEE (Section 4) indicates that the potential environmental impacts of alterations to the SMC associated with the Modification would be within acceptable limits;
- mining is a primary industry;
- the Modification would not result in the fragmentation and alienation of resource lands;
- SCPL would continue to work in co-operation with GRL to minimise land use conflicts associated with the RHCP;
- mine landforms would be progressively rehabilitated, including areas to be rehabilitated to pasture and therefore potentially being available for agriculture in the medium/long-term (Section 3.7); and
- mining operations and nearby agricultural enterprises have co-existed since the SMC's inception and this would continue for the Modification.

Under the land use table, "mining" is permissible on lands zoned RU1 (Primary Production) with consent.

An area of Heavy Industrial zone (IN3) lands is located at the SMC CHPP, rail loop and associated land to the east of The Bucketts Way.

The objectives of Heavy Industrial Lands Zone (IN3) are as follows:

- To provide suitable areas for those industries that need to be separated from other land uses.
- To encourage employment opportunities.
- To minimise any adverse effect of heavy industry on other land uses.
- To support and protect industrial land for industrial uses.

The Modification is consistent with the objectives of IN3 (Heavy Industrial) as employment opportunities at the SMC would continue and the Modification includes mitigation measures to minimise impacts on the environment (Section 4).

Although "hazardous industries", "heavy industries" and "light industries" are all permitted with consent in IN3, since "mining" is not specifically listed as permitted, it is prohibited. However, the note preceding the land use tables in the LEP states:

A type of development referred to in the Land Use Table is a reference to that type of development only to the extent it is not regulated by an applicable State environmental planning policy. The following State environmental planning policies in particular may be relevant to development on land to which this Plan applies:

...

State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007

Clause 4 of the *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries), 2007* (the Mining SEPP) relevantly provides:

4 Land to which Policy applies

This Policy applies to the State.

Clause 5(3) gives the Mining SEPP primacy where there is any inconsistency between the provisions in the SEPP and the provisions in any other environmental planning instrument (subject to limited exceptions).

Clause 5(3) relevantly provides:

5 Relationship with other environmental planning policies

- (3) *...if this Policy is inconsistent with any other environmental planning instrument, whether made before or after this Policy, this Policy prevails to the extent of the inconsistency.*

The practical effect of clause 5(3) for the Modification is that if there is any inconsistency between the provisions of the Mining SEPP and those contained in the Gloucester LEP, the provisions of the Mining SEPP will prevail.

Clauses 6 and 7 of the Mining SEPP provide what types of mining development are permissible without development consent and what types are permissible only with development consent. In this regard, clause 7(1) states:

7 Development permissible with consent

(1) Mining

Development for any of the following purposes may be carried out only with development consent:

- (a) *underground mining carried out on any land,*
- (b) *mining carried out:*
 - (i) *on land where development for the purposes of agriculture or industry may be carried out (with or without development consent), or*
 - (ii) *on land that is, immediately before the commencement of this clause, the subject of a mining lease under the Mining Act 1992 or a mining licence under the Offshore Minerals Act 1999.*

...

- (d) *facilities for the processing or transportation of minerals or mineral bearing ores on land on which mining may be carried out (with or without development consent), but only if they were mined from that land or adjoining land,*

...

The word "mining" in the Mining SEPP is given an extended definition in clause 3(2) as follows:

mining means the winning or removal of materials by methods such as excavating, dredging, or tunnelling for the purpose of obtaining minerals, and includes:

- (a) *the construction, operation and decommissioning of associated works; and*
- (b) *the stockpiling, processing, treatment and transportation of materials extracted, and*
- (c) *the rehabilitation of land affected by mining.*

All of SCPL's works and activities which occur within the IN3 zone fall within the extended definition of "mining" contained in the Mining SEPP. Under the land use table for the IN3 zone, development for various types of industry are permissible with development consent.

Given that clause 7(1)(b)(i) of the Mining SEPP provides that development for the purposes of "mining" may be carried out with development consent on land where development for the purposes of industry may be carried out, it necessarily follows that all of SCPL's works and activities within the IN3 zone are permissible uses with development consent.

A thin strip of Environmental Management (E3) zoned land adjoins the eastern boundary of The Bucketts Way between the SMC and the North Coast Railway.

As a result, a short section of the existing approved SMC rail loop (near its juncture with the main line) is located within the Environmental Management (E3) zone. The objectives of this zone are:

- *To protect, manage and restore areas with special ecological, scientific, cultural or aesthetic values.*
- *To provide for a limited range of development that does not have an adverse effect on those values.*
- *To conserve biological diversity and native vegetation corridors, and their scenic qualities, in a rural setting.*

No works are proposed within this zone as a component of the Modification and it is considered that the Modification is generally consistent with the zone objectives.

Since “mining” is not specifically permitted within the Environmental Management (E3) zone, it is prohibited under the Gloucester LEP. However, “Extensive agriculture” is permissible without development consent within the Environmental Management (E3) zone.

As discussed above clause 7(1)(b)(i) of the Mining SEPP provides that development for the purposes of “mining” may be carried out with development consent on land where development for the purposes of agriculture may be carried out, with or without development consent.

The SMC rail loop falls within the extended definition of “mining” contained in the Mining SEPP on the ground that it is development for the purpose of transportation of materials extracted. Therefore the Modification use of the existing SMC rail loop within the Environmental Management (E3) zone is permissible with development consent.

Flood Planning Provisions

Part 6, clause 6.1 of the Gloucester LEP contains flood planning provisions with the following objectives:

- (a) *to minimise the flood risk to life and property associated with the use of land,*
- (b) *to allow development on land that is compatible with the land's flood hazard, taking into account projected changes as a result of climate change,*
- (c) *to avoid significant adverse impacts on flood behaviour and the environment.*

The flood planning provisions apply to:

- (a) *land that is shown as “Flood planning area” on the Flood Planning Map, and*
- (b) *other land at or below the flood planning level.*

The Modification is not located within the “Flood planning area” referred to in the Gloucester LEP.

Dog Trap Creek is located to the north-east of the existing Bowens Road North Open Cut and Northern Waste Emplacement. The Modification includes a crossing of Dog Trap Creek using either a pre-fabricated bridge or culvert. As discussed in Hydro Engineering & Consulting (2016) (Appendix C), the nearest private landholder is located some 1.8 km upstream of the proposed crossing. Hydro Engineering & Consulting considers that with appropriate design of the creek crossing, no material increase in flooding would occur at this property.

SCPL has demonstrated over the life of the SMC that it can operate its mining operation effectively within the floodplain of Dog Trap Creek. As discussed above, no lands would be affected by flood waters in this section of the Dog Trap Creek floodplain other than those owned by SCPL (Figures 3 to 5). Therefore it is considered that there is no potential for impacts of flooding and flood liability on individual owners, occupiers and the public resulting from the Modification.

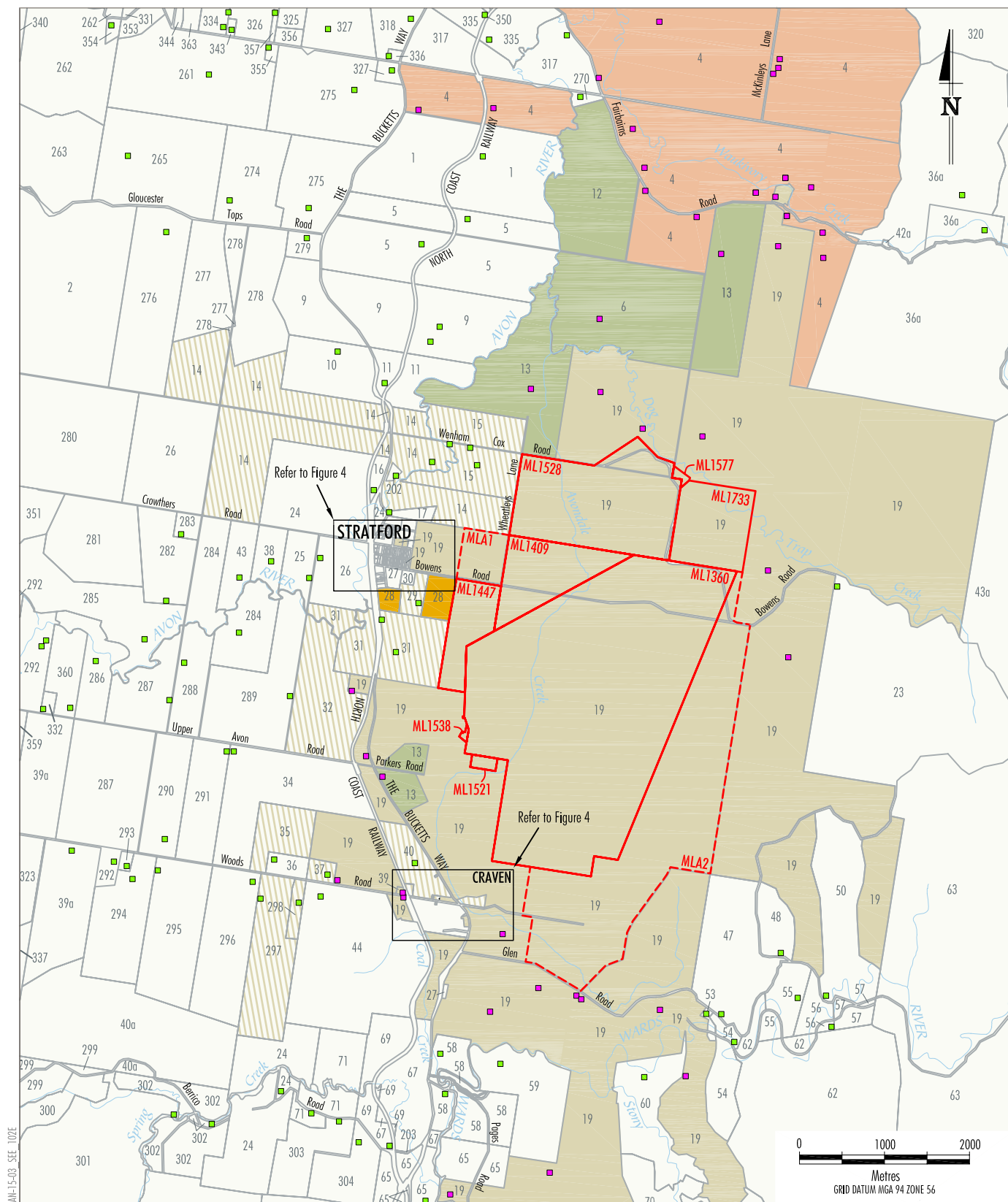
State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 (the Mining SEPP)

Clause 2 of the Mining SEPP outlines a number of aims, the following of which are relevant to the Modification:

- a) *to provide for the proper management and development of mineral, petroleum and extractive material resources for the purpose of promoting the social and economic welfare of the State, and*
- b) *to facilitate the orderly and economic use and development of land containing mineral, petroleum and extractive material resources, and*

Clause 12 of the Mining SEPP requires that before determining an application for consent for development for the purposes of mining, petroleum production or extractive industry, the consent authority must:

- a) *consider:*
 - (i) *the existing uses and approved uses of land in the vicinity of the development, and*



LEGEND

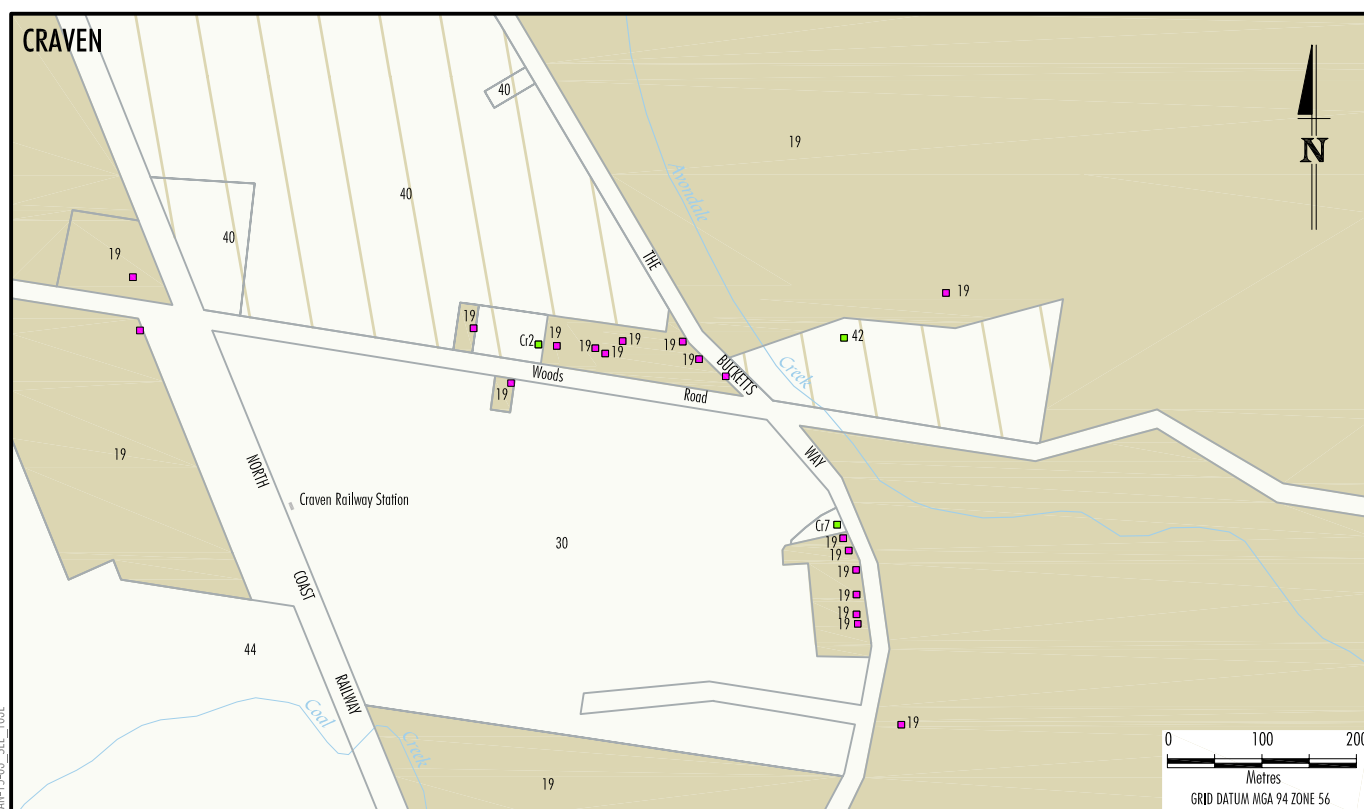
- Mining Lease Boundary
- Mining Lease Application Boundary
- Yancoal Owned Land
- GRL Owned Land or Under Option
- AGL Owned Land
- Private Landholders
- Private Landholders - Yancoal Agreement
- Crown Land

- 19 Landholder Number
- Resource Company Owned Dwelling
- Privately Owned Dwelling



STRATFORD MODIFICATION 1

Relevant Land Ownership Plan



LEGEND

- Private Landholders
- Private Landholders - Yancoal Agreement
- Crown Land
- Yancoal Owned Land
- Landholder Number
- Resource Company Owned Dwelling
- Privately Owned Dwelling



STRATFORD MODIFICATION 1

Relevant Land Ownership Plans
Stratford and Craven

1	Wendy Jane Fraser	263	Patrick Michael Ryan	357	Christopher John Rose & Sarah Jane Rose
2	Farley (Gloucester) Pty. Limited	265	Jeffrey Charles Hawkins	359	William Kilpatrick Hunter/ Kay Edith Hunter
4	Gloucester Resources Limited	270	Jason David Collins & Michelle Isobel Barrett	360	Ter Geoffrey Mason/ Sandra Joy Mason/ Valda Doreen
5	Norman Edward Bignell	274	Warren Neil Wilson & Colleen Therese Wilson	361	Helen Teresa Whelan
6	AGL Gloucester Le Pty Ltd in 70/100 Share & AGL Gloucester MG Pty Ltd in 30/100 Share as Tenants in Common	275	Pace Farm Pty Limited	363	Linda Trudgeon
9	Norman John Williams	276	Alan Luscombe & Carol Luscombe	364	Heatscape Pty Limited
10	Kenneth James Whatmore & Anne Grace Whatmore	277	John William Farley	Cr.2	Rodger Malcolm Boorer
11	Brian Keith Walker, Lesley Jane Walker, Tyson Brian Walker & Lacey Maree Walker	278	Mark Anthony Campbell & Roseleen Linette Campbell	Cr.7	David Robert Pryce-Jones
12	AGL Upstream Investments Pty Limited	279	William Alexander Tomb & Gillian Margaret Tomb	S1	Gary Owen Rees
13	AGL Energy Limited	280	Kenneth Bruce Bagnall/ Clifford John Bramley & Terri Louise Bramley	S3	Irene Myrtle Yeatman
14	Allen James Wenham & Pamela Diane Wenham	281	Colin William Lewis & Lesley Ann Lewis	S4	Belinda Maree Grady & Terry Raymond Grady
15	GS & GL Fallow Superannuation Pty Limited	282	Peter Stephen Ross	S5	Christopher James Britnell
16	Judith Helen Pickett	283	Janet Nolan	S6	Gary Wayne Threadgate & Julie Frances Threadgate
17	Darren James Fisher & Claire Louise Smith	284	Alec Gregory Perrin & Noreen Nita Jean Perrin	S7	Raymond James Cawley & Lucinda Cawley
19	Yancoal Australia Limited	285	Marshall Leon Carter & Theresa Kathleen Carter	S8	Neville Charles Forbes
23	Ross Lewis Bagnall	286	Gerard Roland Burley	S9	Peter John Greenham & Beverley May Greenham
24	Geoffrey Lawrence Harris	287	Dorothy Kay Sinderberry & Carole Martha Rinkin	S10	Louise Frances German
25	Marisa Thompson	288	Alec Gregory Perrin	S11	Adam John Glew
26	Kevin John Lowrey & Robyn Lowrey	289	Eliza Ann Ruth McIntosh	S12	Grant James Mitchell & Cecily Maree Mitchell
27	The Council of the Shire of Gloucester	290	Kelly Pickett	S13	Ian Mark Wells & Jody Ann Wells
28	Crown Land	291	Trevor Allan Crawley & Coleen Dawn Crawley	S14	Kathleen Edith Bignell
29	Edwin Dennis Ward & Rhonda Fay Ward	292	James Reginald Fisher & Rhonda Patricia Fisher	S15	Minister for Education
30	The State of New South Wales	293	Kerry Elizabeth Braunton	S19	Rodney Lawrence Carroll
31	Allan Stanley Isaac	294	Gregory Vincent Morcom & Karen Morcom	S20	Sue Ann Rastall & Peter John Rastall
32	Eliza Ann Ruth McIntosh & Ronald Keith McIntosh	295	William John Bush & Danielle Elizabeth Bush	S21	Booral Service Centre Pty Limited
34	Graham Wesley Hall & Kim Lorraine Hall	296	Peter Geoffrey Watson & Heather Irene Watson	S22	Telstra Corporation Limited
35	Leo John Dillon & Isobel Robyn Dillon	297	William Marten Bosma	S23	Marie Fay Bartlett
36	Graham Lindsay Wallace & Marion Frances Wallace	298	Eric Allan Yates	S24	Michael John Hughes & Brenda Alison Hughes
36a	Anthony Stanford Berecy	299	Malcolm Ronald Lee	S25	The Trustees of Church Property for the Diocese of Newcastle
37	Timothy James Worth	300	Bevan Douglas Hokin & Di Hokin	S26	Margaret Elaine Young
38	Paul Michael Johnson & Judith Anne Johnson	301	Folio Identifier Pty Limited	S27	Robert William Tilley
39a	Woods Road Pty Ltd	302	Edwin John Walton & Wendy Walton	S28	David Charles Morris & Yvette Marie Morris
40	Leslie Allenby Blanch	303	JSTC Newcastle Pty Limited	S29	Robert Charles Bagnall & Lyndell Joy Bagnall
40a	Howard Kerr Williams & Margaret Russell Williams	304	Ernie Danzil Abeysekera & Sharee Ann Abeysekera	S30	Kam Daryl Baker
42	Douglas John Blanch	306	Gregory Hunt & Catherine Hunt	S31	Tracey Louise Richards
42a	William Rainsford Ribbons	307	Graham John Wolfenden & Rosalind Mary Wolfenden	S32	Peter Kelly
43	Vicki Colleen Moseley	311	Paul Berthold & Carolyn Berthold	S33	Greta Alexandra Langtry, Jennifer Gilbert & Neville Bertram Gilbert
43a	Lymarm Holdings Pty Limited	312	Allen James Harrison & Darlene Marie Harrison	S34	Edward George Ashby
44	Peter Michael Cross & Kylie Jane	316	Country Rail Infrastructure Authority	S35	Mark Rodgers & Korinna Yvette Bekker
47	David Charles Digges, Carolyn Denise Digges, Timothy Charles Hart & Elizabeth Mary Hart	317	Adrian Kenneth Boorer/ Beverley Ruth Boorer	S36	David Thomas Poots
48	Marion Iris Rounsley	318	Albert Malcolm Timothy Sopher/ Gloria June Sopher	S37	Malcolm Neville Pryor & Helen Leone Pryor
50	Neil James Porter	320	Andrew Charles Vintmer/ Kevin Thomas Vintmer	S38	Stephen Russell Kirkman
53	William Charles Barnes & Cheryl Freda Barnes	323	Burmah Pastoral Co Pty Limited	S39	Lizabeth Joye Nicholls & Raymond John Husband
54	Kenneth John Hughes & Carrysong Pty Limited	325	Charles Robert Norman	S40	Peter John Curtis
55	Allan James Hancock & Lynda Margaret Hancock	326	Charnich Pty Limited	S41	Desmond Brice McClure & Coral Ann Aplin
56	Gerald McCalden & Patricia Brawley McCalden	327	Debbie Louise Wilson	S43	Deanne Donna Squire
57	Pamela Brawley Harrison	328	Daphne May Chapman	S44	Ann Elizabeth Flack
58	Douglas William Blanch & Evelyn Fay Blanch	331	Delese Ellen May Buckton	S45	Daniel John Keywood, Dale Martin Keywood, Kelly Hazel Keywood & Amanda Margaret Hawkins
59	Guy William Cassar & Cecile Elizabeth Cassar	332	Erol William Hastings/ Lorraine Hastings	S46	Stephen Thomas Parker & Jean Maree Parker
60	Graeme Healy & Philip Weston Greenwood	333	Gary Bruce Grant	S47	John Victor Potts
62	Dorothy May Beeston	334	Gary Douglas Randall/ Gai Lorraine Randall	S48	James Bryson Farley & Glenda Laurel Farley
63	National Parks and Wildlife Service	335	Graeme Harold Harris	S49	Lindy Jayne Blanch
65	Noeline Elizabeth Weismantle	336	Gregory James Channon/ Tonia Alice Edwards	S50	Sheryl Fay Vanderdrift & Lindy Jane Blanch
67	Ian Robert Bowen	337	Gregory Thomas Price/ Dianne Elizabeth Price	S51	Gregory John Trenholme
68	Julie Dawn Lyford	338	Jason Bruce Steward/ Maria Eliana Steward	S52	Ronald John Farley & Theresa Jane Barry
69	Ralph Hooper & Bronwyn Ann Bartholmew	339	John Andersen	S53	Trevor Arthur
70	Robert George Knight	340	John Robert Higgins	S54	Scott Anthony Adams
71	Anthony Douglas Burnet & Robyn Annette Burnet	343	Kerrie Banks	S55	Beryl Veronica Mostyn & Tony James Mostyn
73	Rodney John Pearce & Anne Jeanette Pearce	344	Kerry Anne Hartigan/ Antonino Virzi	S56	Graham John Collins & Elizabeth Collins
75	Geoffrey Ashton Wilson	345	Liam Woolfrey	S57	Mavis Jean Gam
87	Pacific Property Investments Ltd	346	Lorraine Bruce	S58	Marilyn Dorothy Harrigan
202	Paul Phillip Wenham	350	Raymond Keith Saunders/ Barbara Jayne Saunders	S59	Terry Raymond Grady & Belinda Maree Grady
203	Samuel Taylor	351	Roger Speaight/ Elisabeth Aili Maria Speaight	S60	Deanne Donna Squires
261	Frank Murray Hooke & Susan Elizabeth Hooke	352	Ross Sidney Edwards		
262	Mark Paroissien Johnson & Ruth Edna Johnson	353	Ryan Garth Harris		
		354	Scott Ernest Hoy/ Leanne Margaret Barrett		
		355	Sue-Ellen Margaret Kingston/ Anthony Gerard Kingston		
		356	Thelma Elaine Mott		

Source: SCPL (2016); DFS-LPI (2016) and DPI-C&I (CLO) (2012)



STRATFORD MODIFICATION 1

Relevant Land Ownership List

Figure 5

- (ii) *whether or not the development is likely to have a significant impact on the uses that, in the opinion of the consent authority having regard to land use trends, are likely to be the preferred uses of land in the vicinity of the development, and*
- (iii) *any ways in which the development may be incompatible with any of those existing, approved or likely preferred uses, and*
- b) *evaluate and compare the respective public benefits of the development and the land uses referred to in paragraph (a) (i) and (ii), and*
- c) *evaluate any measures proposed by the applicant to avoid or minimise any incompatibility, as referred to in paragraph (a) (iii).*

The Modification would involve construction and use of a private haul road within SCPL's existing mining tenements. Accordingly, the Modification is consistent with, and would not materially change, the current land use of the area.

Impact assessment for environmental aspects including land resources, noise, geochemistry, air quality, water resources, heritage, flora and fauna, hazard, risk and transport have been conducted for the Modification and indicate that the Modification would not result in significant additional impacts on adjoining land uses (Section 4).

The SMC would continue to have socio-economic benefit to the regional economy and the State of NSW (Section 4.10).

Clause 13(2) of the Mining SEPP requires that before determining any application for consent for development in the vicinity of an existing mine, petroleum production facility or extractive industry, to which this clause applies, the consent authority must:

- (a) *consider:*
 - (i) *the existing uses and approved uses of land in the vicinity of the development, and*

- (ii) *whether or not the development is likely to have a significant impact on current or future extraction or recovery of minerals, petroleum or extractive materials (including by limiting access to, or impeding assessment of, those resources), and*
- (iii) *any ways in which the development may be incompatible with any of those existing or approved uses or that current or future extraction or recovery, and*
- (b) *evaluate and compare the respective public benefits of the development and the uses, extraction and recovery referred to in paragraph (a) (i) and (ii), and*
- (c) *evaluate any measures proposed by the applicant to avoid or minimise any incompatibility, as referred to in paragraph (a) (iii).*

The amended RHCP comprises a future development that would extract minerals (coal). This modification proposes a haul road between the RHCP portion of the haul road and the SMC ROM pad. Therefore these two developments are compatible.

Clause 16, subclause (1), of the Mining SEPP requires that before granting consent for development for the purposes of mining or extractive industry that involves the transport of materials, the consent authority must consider whether or not the consent should be issued subject to conditions such as:

- a) *require that some or all of the transport of materials in connection with the development is not to be by public road,*
- b) *limit or preclude truck movements, in connection with the development, that occur on roads in residential areas or on roads near to schools,*
- c) *require the preparation and implementation, in relation to the development, of a code of conduct relating to the transport of materials on public roads.*

Clause 16, subclause (3), requires that the consent authority:

- a) *must not determine the application until it has taken into consideration any submissions that it receives in response from any roads authority or the Roads and Traffic Authority within 21 days after they were provided with a copy of the application, ...*

Whilst the private haul road would cross Wenham Cox Road, this is not considered haulage on a public road in the context of the Mining SEPP. No other material changes to operational road transport movements would occur as a result of the Modification. Product coal transport from the SMC would continue to be by rail.

Clause 17 of the Mining SEPP requires that before granting consent for development for the purposes of mining, petroleum production or extractive industry, the consent authority must consider whether or not the consent should be issued subject to conditions aimed at ensuring the rehabilitation of land that would be affected by the development. Relevantly, the consent authority must consider whether conditions of the consent should:

- a) *require the preparation of a plan that identifies the proposed end use and landform of the land once rehabilitated, or*
- b) *require waste generated by the development or the rehabilitation to be dealt with appropriately, or*
- c) *require any soil contaminated as a result of the development to be remediated in accordance with relevant guidelines (including guidelines under section 145C of the Act and the Contaminated Land Management Act 1997), or*
- d) *require steps to be taken to ensure that the state of the land, while being rehabilitated and at the completion of the rehabilitation, does not jeopardize public safety.*

Rehabilitation of the SMC is described in Section 2.12. Rehabilitation of the SMC including the Modification is described in Section 3.7 and would be consistent with the above documents.

CHPP rejects management associated with the Modification is described in Section 2.8 and an assessment of geochemical impacts (including proposed management and mitigation measures) is provided in Section 3.5.

Hazards and risk are assessed in Section 4. The ML relinquishment process is expected to provide for adequate consideration of public safety after rehabilitation works are complete.

Clause 8, subclause (2) of the Mining SEPP provides that:

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

Clause 14, subclause (1) of the Mining SEPP requires that, before granting consent for development for the purposes of mining, petroleum production or extractive industry, the consent authority must consider whether or not the consent should be issued subject to conditions aimed at ensuring that the development is undertaken in an environmentally responsible manner, including conditions to ensure the following:

- (a) *that impacts on significant water resources, including surface and groundwater resources, are avoided, or are minimised to the greatest extent practicable,*
- (b) *that impacts on threatened species and biodiversity, are avoided, or are minimised to the greatest extent practicable,*
- (c) *that greenhouse gas emissions are minimised to the greatest extent practicable.*

In addition, clause 14, subclause (2) requires that, without limiting clause 14, subclause (1), in determining a Development Application for development for the purposes of mining, petroleum production or extractive industry, the consent authority must consider an assessment of the greenhouse gas emissions (including downstream emissions) of the development, and must do so having regard to any applicable State or national policies, programmes or guidelines concerning greenhouse gas emissions.

The potential impacts of the Modification on surface and groundwater resources and measures to minimise potential impacts are discussed in Sections 4.3.2. The potential impacts of the Modification on threatened species and biodiversity and measures to minimise potential impacts are described in Section 4.5.2.

A greenhouse gas emissions assessment for the Modification, including mitigation and management measures, is provided in Section 4.2.3.

Clause 15 of the Mining SEPP requires that:

- (1) *Before granting consent for development for the purposes of mining, petroleum production or extractive industry, the consent authority must consider the efficiency or otherwise of the development in terms of resource recovery.*
- (2) *Before granting consent for the development, the consent authority must consider whether or not the consent should be issued subject to conditions aimed at optimising the efficiency of resource recovery and the reuse or recycling of material.*
- (3) *The consent authority may refuse to grant consent to development if it is not satisfied that the development will be carried out in such a way as to optimise the efficiency of recovery of minerals, petroleum or extractive materials and to minimise the creation of waste in association with the extraction, recovery or processing of minerals, petroleum or extractive materials.*

SCPL proposes to receive and process RHCP sized ROM coal using its existing and approved coal handling infrastructure. This activity is considered by SCPL to be economically efficient.

State Environmental Planning Policy No. 33 (Hazardous and Offensive Development)

Clause 13 of *State Environmental Planning Policy No. 33 (Hazardous and Offensive Development)* requires the consent authority, in considering a Development Application for a potentially hazardous or a potentially offensive industry, to take into account:

- (c) *in the case of development for the purpose of a potentially hazardous industry—a preliminary hazard analysis prepared by or on behalf of the applicant, and*
- (d) *any feasible alternatives to the carrying out of the development and the reasons for choosing the development the subject of the application (including any feasible alternatives for the location of the development and the reasons for choosing the location the subject of the application)...*

A Preliminary Hazard Analysis was conducted for the Stratford Extension Project (i.e. *Stratford Extension Project Preliminary Hazard Analysis* [SCPL, 2011a]). The Modification does not significantly alter the consequences or likelihood of a hazardous event occurring at the SMC, as the operational activities on-site would be generally unchanged. Notwithstanding, environmental management plans and procedures would be updated to include the Modification, where relevant (Section 4).

State Environmental Planning Policy No. 44 (Koala Habitat Protection)

State Environmental Planning Policy No. 44 (Koala Habitat Protection) (SEPP 44) requires the consent authority for any Development Application in certain LGAs (including the Mid-Coast Council LGA) to consider whether land subject to a Development Application is "potential Koala habitat" or "core Koala habitat".

SEPP 44 requires that any development proposals affecting one hectare (ha) or more of a property must be evaluated for potential and core Koala habitat. Potential Koala habitat is defined as *areas of native vegetation where the trees of the types listed in Schedule 2 constitute at least 15% of the total number of trees in the upper and lower strata of the tree component.*

The Stratford Extension Project EIS considered SEPP 44 and concluded that the Development Application area (which also includes the Modification area) does not constitute core Koala habitat (SCPL, 2012a).

Surface disturbance activities associated with the Modification would be limited to the construction of the private haul road within portions of ML 1528, ML 1577 and ML 1733. The extent of surface disturbance required to construct the private haul road will occur in the following MLs (Appendix F):

- ML 1528 – located mostly within revegetated mine workings and some improved pasture.
- ML 1577 – improved pasture.
- ML 1733 – improved pasture and degraded riparian vegetation (i.e. along Dog Trap Creek).

AMBS Ecology & Heritage (2016) identified a limited number of *Casuarina cunninghamii* trees within riparian vegetation on Dog Trap Creek (within ML 1733) that would be required to be cleared from the haul road extent (Section 4.5.2). However, *Casuarina cunninghamii* is not listed in Schedule 2 of SEPP 44, therefore, since activities associated with the Modification are not *Feed Tree Species* listed under Schedule 2, consent under SEPP 44 would not be required.

**State Environmental Planning Policy No. 55
(Remediation of Land)**

State Environmental Planning Policy No. 55 (Remediation of Land) (SEPP 55) aims to provide a State-wide planning approach to the remediation of contaminated land. Under SEPP 55, planning authorities are required to consider the potential for contamination to adversely affect the suitability of the site for its proposed use.

Clause 7(1) states that a consent authority must not consent to the carrying out of any development on land unless:

- (a) *it has considered whether land is contaminated, and*
- (b) *if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and*

- (c) *if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.*

Further under clause 7(2), before determining an application for consent to carry out development that would involve a change of use on any of the land, the consent authority must consider a report specifying the findings of a preliminary investigation of the land concerned carried out in accordance with the contaminated land planning guidelines.

Clause 7(2) provides that before a consent authority determines an application for Development Consent, a “preliminary investigation” is required where:

- the application for consent is to carry out development that would involve a “change of use”; and
- that “change of use” is to certain land specified in clause 7(4).

The certain land specified in clause 7(4) on which the “change of use” must relate is either:

- land that is an “investigation area” – defined in SEPP 55 as land declared to be an investigation area by a declaration in force under Division 2 of Part 3 of the NSW *Contaminated Land Management Act, 1997*; or
- land on which development for a purpose referred to in Table 1 of the contaminated planning guidelines (being *Managing Land Contamination – Planning Guidelines SEPP 55 – Remediation of Land* [NSW Department of Urban Affairs and Planning and NSW Environment Protection Agency (EPA), 1998]) is being, or is known to have been, carried out.

The Modification would not involve a “change of use” because the Modification involves the haulage of coal within SCPL’s existing MLs.

SEPP 55 is therefore not enlivened by the Modification. No preliminary land contamination investigation is required.

State Environmental Planning Policy (State and Regional Development) 2011

Clause 3 of the *State Environmental Planning Policy (State and Regional Development) 2011* (State and Regional Development SEPP) outlines the aims of the State and Regional Development SEPP, including the following of relevance to the Modification:

- (a) *to identify development that is State significant development,*

The Modification falls within clause 5 of Schedule 1 of the State and Regional Development SEPP as it represents development for the purpose of coal mining, and as it requires development consent it therefore comprises State Significant Development for the purposes of the EP&A Act (Section 1.2).

Development Control Plans

Clause 11 of the State and Regional Development SEPP indicates that development control plans (whether made before or after the commencement of the SEPP) do not apply to State Significant Development, and hence do not apply to the SMC.

Environment Protection and Biodiversity Conservation Act, 1999 (EPBC Act)

Under the EPBC Act, approval from the Commonwealth Minister for the Environment is required for any action that may have a significant impact on matters of national environmental significance. If an 'activity' is likely to have a significant impact on a matter of national environmental significance then it may be a 'controlled action' and should be referred to the Commonwealth Minister for consideration.

The Stratford Extension Project was approved under the EPBC Act in January 2016 (EPBC 2011/6176).

The Modification would not have a significant impact on matters of national environment significance as potential impacts of the Modification to water resources (Sections 4.3 and 4.11) are expected to be negligible, and in consideration of direct impacts associated with the new section of the private haul road as well potential indirect impacts, potential impacts to biodiversity (Sections 4.5 and 4.6) are also expected to be negligible.

1.2.2 Other Approvals

In addition to the modified Development Consent which is required to be obtained from the Minister for Planning, a modification or addendum to the *SMC Mining Operations Plan* (SCPL, 2015a) would also be prepared in consultation with the NSW Division of Resources and Energy (DRE).

1.3 CONSULTATION

SCPL has developed and implemented a consultation programme for the SMC. The key objectives of the programme are to:

- inform government and public stakeholders about the progress and nature of SCPL's mining operations;
- recognise and respond to local concerns or interests; and
- continue dialogue between SCPL and stakeholders that commenced during the development of the SMC.

This section describes the consultation undertaken prior to and during the preparation of this SEE.

1.3.1 State and Local Government Agencies

Consultation with State and local government agencies about SCPL development planning is ongoing. Consultation initiatives to date are discussed below.

Department of Planning and Environment

SCPL consults regularly with the DP&E regarding existing operations at the SMC. SCPL has discussed the Modification and proposed approval path (i.e. Section 96[2] of the EP&A Act) with the DP&E in meetings in December 2015 and May 2016. In addition, a briefing package (including a description of the Modification, proposed SEE content, likely environmental issues and Modification timing) was sent to the DP&E in May 2016.

Following receipt of the briefing package, DP&E wrote to SCPL confirming the proposed modification pathway and SEE content requirements. Additional specific SEE content stipulated by the DP&E are provided in Table 2

Table 2
SEE Content Required by DP&E

Requirement	Section Addressing Requirement in SEE
<i>... very clear information that sets out the potential impacts to residents reliant on the use of Wenhams Cox Road to the east of the proposed at-grade crossing with the Rocky Hill haul road. Clear information must be provided about the safety of the haul road crossing, its location and whether the location of the crossing would be affected by the implementation of the re-location of Wenhams Cox Road as approved as part of the Stratford Extension Project.</i>	Section 4 and Appendix F.
<i>The supporting documentation must provide very clear information about any potential impacts of the proposed haul road crossing of Dog Trap Creek. The design of this crossing must consider any flooding, stream flow and aquatic ecology (including fish passage) impacts.</i>	Section 4, Appendix C and Appendix E.

Other Agencies

Briefing packages were sent to representatives of the following agencies in May 2016 to provide an overview of the Modification, approval path (i.e. Section 96[2] of the EP&A Act) and a description of relevant environmental assessments:

- EPA;
- DRE;
- NSW Office of Environment and Heritage (OEH);
- Department of Primary Industries – Water (DPI Water);
- Roads and Maritime Services (RMS);
- Australian Rail Track Corporation (ARTC); and
- Hunter Valley Coal Chain Coordinator.

Mid-Coast Council

In May 2016, SCPL provided a briefing package to the Mid-Coast Council. The briefing package provided an overview of the Modification, approval path (i.e. Section 96[2] of the EP&A Act), the scope of the SEE and a summary of key potential impacts.

Senior representatives from Mid-Coast Council, GRL and SCPL met on-site in June 2016 for a joint briefing on the RHCP and this Modification.

1.3.2 Public Consultation

Consultation with the community has been conducted by SCPL since the mid-1990s.

Stratford Coal Community Consultative Committee

A Community Consultative Committee (CCC) is in place at the SMC and operates in accordance with the Development Consent for the SMC (SSD-4966).

The CCC meets biannually to discuss environmental management at the SMC and future developments when relevant. The meeting minutes are available publicly on the SCPL website. Members of the CCC were selected based on nominations from community representatives and other stakeholders and includes local residents, Gloucester Shire Council and Yancoal representatives. The CCC is regularly briefed regarding SCPL's long-term development plans for the SMC and Duralie Coal Mine and regional exploration activities, and has been informed of the Modification.

At the CCC meeting held on 12 May 2016, SCPL provided an overview of the main activities that would be associated with the Stratford Modification 1. SCPL also summarised the environmental assessments undertaken for the Modification and discussed noise and rejects management issues with CCC members.

The meeting was attended by Ms Margaret MacDonald-Hill (CCC Chair), Mr Norm Bignell (CCC Member), Mr Philip Greenwood (CCC Member), Mr Kevin Lowrey (CCC Member) and Cr Jim Henderson (Gloucester Shire Council - now Mid-Coast Council).

In addition, later in May 2016, SCPL provided the CCC with a briefing package outlining the Modification approval path (i.e. Section 96[2] of the EP&A Act) and notification of the environmental assessments undertaken for this SEE Modification.

Website and Community Call Line

SCPL maintains a website (www.stratfordcoal.com.au) for the general public to keep up to date with the operations at the SMC.

The website is a significant source of information including:

- mine operations;
- community initiatives (including community complaints line) and environmental management;
- CCC meeting minutes;
- investor details;
- career opportunities; and
- contact details.

The website provides information on the environmental management and performance of the SMC, including:

- environmental management plans;
- independent environmental audits;
- annual reviews;
- environmental monitoring results;
- SMC CCC meeting minutes; and
- complaints registers.

SCPL maintains a dedicated complaints line (1300 658 239) for residents to contact a Yancoal representative with any questions or concerns they may have regarding Yancoal operations in the Gloucester Basin, including the SMC.

Aboriginal Stakeholders

Aboriginal stakeholders were consulted throughout the preparation of the Aboriginal Cultural Heritage Assessment (ACHA) for the Modification (Appendix D). Consultation was conducted in accordance with OEH policy *Aboriginal cultural heritage consultation requirements for proponents 2010* (NSW Department of Environment, Climate Change and Water [DECCW], 2010a).

Further detail on consultation with Aboriginal stakeholders for the Modification is provided in Section 4.4.

1.4 DOCUMENT STRUCTURE

An outline of the main text sections of this SEE is presented below:

Section 1	Provides an overview of the SMC, the Modification, legislative requirements and the consultation undertaken in relation to the Modification.
Section 2	Provides a description of the existing SMC.
Section 3	Provides a description of the Modification.
Section 4	Provides an environmental assessment of the Modification and describes the existing SCPL environmental management systems and measures that would be available to manage and monitor any potential impacts.
Section 5	Presents a summary of the SEE and key findings.
Section 6	References.
Appendices A to F provide supporting information as follows.	
Appendix A	Noise Assessment
Appendix B	Air Quality and Greenhouse Gas Assessment
Appendix C	Surface Water Assessment
Appendix D	Aboriginal Cultural Heritage Assessment
Appendix E	Terrestrial and Aquatic Ecology Assessment
Appendix F	Road Transport Assessment

2 EXISTING AND APPROVED STRATFORD MINING COMPLEX

2.1 OVERVIEW

The approved mining activities at the SMC include coal extraction from the existing and approved open cut mining areas, however mining of the existing open cut pits ceased in 2014 pending commencement of the approved Stratford Extension Project.

A CHPP is operated for the processing and handling of coal. The CHPP currently processes ROM coal transported from the Duralie Coal Mine to the SMC on the North Coast Railway and small quantities of CHPP rejects recovered by excavation from the western co-disposal area at the SMC.

Blended coal products are transported by rail to the Port of Newcastle for export.

2.2 STRATFORD MINING COMPLEX APPROVALS HISTORY

2.2.1 Stratford Coal Mine

The potential environmental impacts associated with the development of the SMC were assessed in the *Stratford Coal Project Environmental Impact Statement* (the Stratford Coal EIS) (SCPL, 1994a). The Stratford Coal Project was approved by the Minister for Planning in December 1994 (Development Consent DA 73/94) which was subsequently modified under Part 2 of Schedule 3 the EP&A Act and a new Development Consent was issued (DA 23-98/99).

Construction of the SMC commenced in January 1995 and coal production began in June 1995. The SMC was originally approved to produce approximately 1.1 Mtpa of high quality coking and thermal coal over a 14 year mine life.

2.2.2 Bowens Road North Open Cut

The Bowens Road North Open Cut was assessed in the *Bowens Road North Project Environmental Impact Statement* (SCPL, 2001a) and was approved by the then NSW Minister for Urban Affairs and Planning in July 2001 (Development Consent DA 39-02-01).

Development of the Bowens Road North deposit began in March 2003.

2.3 STRATFORD EXTENSION PROJECT

The Stratford Extension Project was approved on 29 May 2015 (SSD-4966). The Stratford Extension Project is an expansion of existing mining activities at the SMC, however mining has not yet commenced. The approved general arrangement of the Stratford Extension Project is shown on Figure 2. The main activities associated with the development of the Stratford Extension Project will include:

- ROM coal production rate of up to 2.6 Mtpa, including mining operations associated with:
 - completion of the Bowens Road North Open Cut;
 - extension of the existing Roseville West Pit; and
 - development of the new Avon North and Stratford East Open Cuts;
- exploration activities;
- progressive backfilling of mine voids with waste rock behind the advancing open cut mining operations;
- continued and expanded placement of waste rock in the Stratford Waste Emplacement and Northern Waste Emplacement;
- progressive development of new haul roads and internal roads;
- coal processing at the existing CHPP including SMC ROM coal, sized ROM coal received and unloaded from the Duralie Coal Mine and material recovered periodically from the western co-disposal area;
- stockpiling and loading of product coal to trains for transport on the North Coast Railway to Newcastle;
- disposal of CHPP rejects via pipeline to the existing co-disposal area in the Stratford Main Pit and, later in the SMC life, the Avon North Open Cut void;
- realignments of Wheatleys Lane, Bowens Road, and Wenhams Cox/Bowens Road;
- realignment of a 132 kV power line for the Stratford East Open Cut;
- continued use of existing contained water storages/dams and progressive development of additional sediment dams, pumps, pipelines, irrigation infrastructure and other water management equipment and structures;

- development of soil stockpiles, laydown areas and gravel/borrow areas;
- monitoring and rehabilitation;
- all activities approved under DA 23-98/99 and DA 39-02-01; and
- other associated minor infrastructure, plant, equipment and activities and minor modifications to existing structure, plant and equipment and activities.

2.4 MINING OPERATIONS

Open Cut Mining Areas

Open cut mining at the SMC was suspended in 2014, however, it has previously been undertaken in the Roseville West Pit and Bowens Road North Open Cut. Small quantities (up to approximately 0.2 Mtpa) of CHPP rejects are also recovered by excavation from the western co-disposal area for re-processing in the CHPP when the opportunity arises.

Open cut mining has been conducted in a number of other areas at the SMC in the past, including (Figure 2):

- Stratford Main Pit;
- Roseville Pit;
- Roseville Extended Pit; and
- Parkers/Bowens Road West Pit.

The Stratford Main Pit is currently used for waste rock backfill, co-disposal of CHPP rejects and water storage.

The Roseville Pit has been backfilled and is undergoing rehabilitation. Backfilling of the Roseville Extended Pit is near completion.

The Parkers/Bowens Road West Pit void is currently used for containment of surface water runoff from the CHPP and infrastructure areas.

Open Cut Mining Sequence

Conventional open cut mining methods are used at the SMC. The general sequence of open cut mining is as follows:

1. Vegetation clearance and removal.
2. Topsoil stripping by dozers. Stripped topsoil is used directly in progressive rehabilitation or is placed in stockpiles for later re-use.
3. Removal of weathered or friable overburden by excavator and haul truck, with supporting dozers.
4. Drilling and blasting of competent overburden (and interburden).
5. Overburden (and interburden) removal by excavator and haul truck, with supporting dozers. Overburden and interburden placed in out-of-pit mine waste rock emplacements, or as infill in the mine void, behind the advancing open cut mining operations.
6. Mining of exposed coal seams by excavator and loading into haul trucks for transport to the ROM pad and ROM coal stockpiles.
7. Progressive landform profiling and rehabilitation of mine waste rock emplacements (on occasions temporary rehabilitation is undertaken to stabilise landforms until further mining operations are carried out in the future).

The existing capacity of the ROM coal stockpiles is approximately 150,000 tonnes (t).

ROM coal is delivered to the ROM pad and then transferred into a loading hopper and conveyed to the CHPP for processing (Figure 6).

Further description of the mining methods and coal handling is provided in Section 2.5.

2.5 COAL HANDLING AND PREPARATION PLANT

ROM coal from the open cut pits at the SMC would be transported via internal haul roads to the ROM pad for stockpiling and/or direct dumping to the ROM hopper and conveyed to the CHPP for processing. The CHPP and product coal stockpile are shown in Plate 1 below.



Plate 1: SMC CHPP and Product Coal Stockpile.

The existing CHPP and infrastructure area is shown on Figure 6.



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LEGEND

- Mining Lease Boundary
- Approved Additional/Upgraded Infrastructure
- Modification Additional/Upgraded Infrastructure

Source: SCPL (2016); NSW Department of Industry (2016); Orthophoto - SCPL (June 2014)



STRATFORD MODIFICATION 1

CHPP and Infrastructure Areas

Figure 6

The CHPP has a design capacity of approximately 750 tonnes per hour ROM coal feed and includes:

- coal sizing and screening; and
- coal processing plant (incorporating fine coal and coarse coal circuits).

Residual oversized ROM coal reject material (e.g. overburden roof rock and floor rock) from the coal sizing and screening in the CHPP is periodically trucked to the co-disposal area. The tailings and coarse rejects from the coal processing plant are combined for co-disposal on-site.

Coal products from the CHPP and bypass coal are conveyed to the product coal stockpiles and subsequent reclaim, and loaded onto trains for transport to domestic and export markets.

2.6 PRODUCT COAL AND RAIL TRANSPORT

Product coal produced from the CHPP at the SMC is stockpiled prior to being reclaimed and loaded to trains for transport on the North Coast Railway to Newcastle.

Transport of product coal via rail for the SMC is currently approved for up to approximately 3.5 Mtpa (including saleable thermal and coking coal).

Product coal is transported to domestic and export markets via the North Coast Railway to Newcastle. The existing approved SCPL train lengths are approximately 1,300 m. The SMC only requires an average of 2.5 product coal trains (total) per day however a peak of six per day is approved.

ROM Coal from the Duralie Coal Mine

Sized ROM coal from the Duralie Coal Mine is transported on the North Coast Railway to the SMC for processing. ROM coal is unloaded from trains at the rail unloading bin and conveyed to the ROM stacker for subsequent reclaim from the ROM pad to the CHPP (Figure 6).

Rail loading and transport services are provided by a rail contractor who operates the Duralie Shuttle Train and co-ordinates all loading, unloading and train movements. Train movements are co-ordinated with the ARTC.

2.7 WATER MANAGEMENT INFRASTRUCTURE

Existing and/or approved water management infrastructure at the SMC includes the following:

- Return Water Dam;
- Stratford East Dam;
- Stratford Main Pit;
- Parkers/Bowens Road West Pit void;
- diversion drains, flood bunds and retention dams;
- sediment dams;
- pumps and pipelines; and
- irrigation system (Plate 2).



Plate 2: Existing irrigation infrastructure at the SMC on rehabilitated land to pasture.

Overflows and controlled releases from sediment dams are licensed and monitored in accordance with Environment Protection Licences (EPLs) 5161 and 11745.

In addition and with the formal written approval of the OEH, SCPL is licensed under EPL 5161 to release water from the Stratford East Dam during drought conditions.

2.8 CHPP REJECT MANAGEMENT

CHPP rejects produced are pumped as a slurry via a pipeline to the Stratford Main Pit. CHPP rejects have also historically been placed in the western co-disposal area and backfilled into mine voids (i.e. Parkers/Bowens Road West Pit and Roseville Pit).

The Stratford Main Pit will continue to be used for co-disposal of CHPP rejects at the SMC until the existing storage capacity is exhausted. Following completion of mining in the Avon North Open Cut, this void will be used as the new co-disposal area for the SMC. The existing slurry pipeline from the CHPP will be extended to the new co-disposal area when available.

Rejects at the SMC have been previously characterised as being Potentially Acid Forming (PAF), therefore measures to manage rejects are in place. The disposal of CHPP rejects is managed in accordance with the approved Life of Mine Rejects Disposal Plan (SCPL, 2009). Rejects management measures include placement into the Stratford Main Pit where they are progressively inundated with water to prevent significant pyrite oxidation and acid generation in the long term, with monitoring of water quality undertaken during operations and provision for lime (calcium hydroxide - $\text{Ca}[\text{OH}]_2$) dosing and limestone (calcium carbonate - CaCO_3) treatment as required. These measures will continue for the Stratford Extension Project.

2.9 WASTE ROCK MANAGEMENT

Mine waste rock (including overburden and interburden) generated from the existing open cuts is either placed as infill in the mine void behind the advancing mining operations (i.e. in-pit emplacement), or placed in out-of-pit mine waste rock emplacements.

The approximate extent of existing and/or approved surface development is shown on Figure 2.

2.10 INFRASTRUCTURE AND SERVICE FACILITIES

The existing infrastructure and services at the SMC would continue to be utilised throughout the life of the SMC, with minor additions, upgrades and maintenance works.

The infrastructure and service facilities which exist at the SMC include:

- buildings;
- administration offices;
- ablution buildings;
- stores;
- workshops and heavy vehicle servicing facilities;
- washdown facilities;
- hardstand and laydown areas;
- bunded fuel farm;
- communication, power and water reticulation infrastructure;
- mine access road;
- exploration facilities and work areas;
- internal access roads; and
- parking facilities.

The majority of the other infrastructure and service facilities are contained adjacent the ROM pad and product coal stockpiles.

Minor upgrades to be completed at the SMC include car park extensions, offices, bathhouse and muster areas, warehouse, fuel bays, boiler shed, tyre storage and workshop extensions (e.g. tyre fitting bays) for the SMC mine fleet.

2.10.1 Electricity Supply and Distribution

The electricity supply and distribution system at the SMC is fed by two existing 33 kV distributor lines adjacent to The Bucketts Way. A private substation off Parkers Road near the intersection with The Bucketts Way provides an 11 kV supply, which is reticulated at variable voltages according to site requirements.

The existing infrastructure and services at the SMC would continue to be utilised throughout the life of the SMC, with minor additions, upgrades and maintenance works.

2.11 ENVIRONMENTAL MONITORING AND MANAGEMENT

The integrated environmental management systems at the SMC include various environmental management strategies, plans and programmes that have been developed, implemented and periodically revised since operations commenced at the SMC.

The Development Consent SSD-4966 was granted on 29 May 2015. Following grant of the Development Consent, a number of the existing strategies, plans and programmes were due to be revised. However, in consideration of the current status of the SMC (i.e. open cut mining operations ceased in 2014), SCPL sought to revise the timing of the required revisions to instead be required upon commencement of the Stratford Extension Project.

SCPL will continue to implement the existing strategies, plans and programmes and where necessary, review and revise them (in consultation with the relevant regulatory authorities) for the Modification. Further discussion of the existing content and/or revision of these strategies, plans and programmes for the Modification is provided under the relevant sub-sections in Section 4.

SCPL operates a community complaints line (Section 1.3) and all comments received (including complaints) are investigated and responded to.

Chart 1 shows that in recent years, SCPL has received a declining number of complaints from community members. Some 10 complaints were received in 2014, seven in 2015 and no complaints have been received in 2016 to date (i.e. May 2016). This reduction in complaints is in line with reduced activity on-site since 2014. The majority of complaints received since 2011 were in regards to noise and blasting. Other complaints included aspects such as air quality, water discharge, night-lighting and train movements.

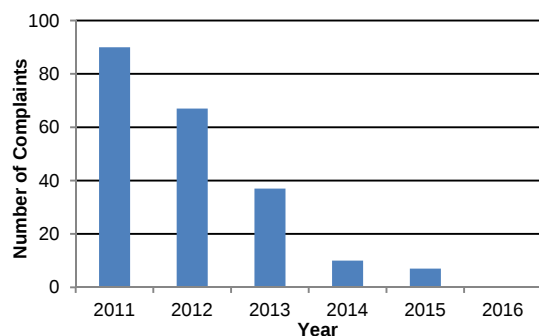


Chart 1: Complaints at the SMC from 2011 to 2016 (to date)

2.12 REHABILITATION, WILDLIFE CORRIDORS AND OFFSETS

To date, the general objectives of the SMC rehabilitation programme have been the minimisation of erosion and general reinstatement of pre-mining land capability. Section 4.4 provides a discussion on rural land capability and agricultural suitability in the SMC area and surrounds.

Other objectives of rehabilitation are (SCPL, 2012a):

- the generation of a final rehabilitated landform which is consistent with general landforms in the area and which would blend in with the hills to the east;
- to provide a landform which is suitable for the primary final land uses of grazing, forestry and fauna habitat enhancement;

- to plan mining and overburden handling operations to minimise rehandling, reshaping and contouring;
- to minimise the amount of disturbed land awaiting rehabilitation; and
- to provide for the safe and environmentally acceptable disposal of CHPP rejects.

Rehabilitation is undertaken in a progressive manner at the SMC with the initial objective to minimise erosion.

Rehabilitation of previously disturbed areas (either temporary or permanent) associated with the construction of infrastructure (e.g. noise bunds and rail loop batters) have been conducted using a variety of techniques including re-shaping, topsoil placement, direct seeding with pasture and native seed, hydraseeding, hydramulching and straw-bitumen mulching.

Rehabilitation of waste rock emplacements involves contouring of the outer emplacement batters up to an overall slope of 1 in 4, followed by drainage works (e.g. bench drains and contour banks).

Topsoil from stripped areas (as mining advances) is respread on contoured landforms to an average thickness of 100 to 200 millimetres (mm) prior to commencement of revegetation works.

Revegetation works to date on the Stratford Waste Emplacement have involved the establishment of pasture grasses and legumes with selective placement of trees and shrubs for habitat creation and wildlife corridors. Trees are also planted to achieve aesthetic/screening effects as well as providing windbreaks, woodlots and stock shelter. Areas of the revegetated Stratford Waste Emplacement are currently used for cattle agistment (Plate 3). A centre pivot irrigation system is also used to improve the land use capability of the rehabilitated landform.

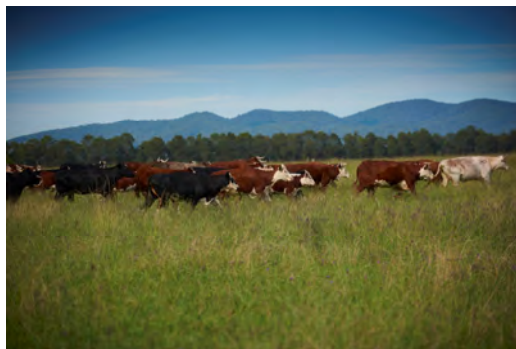


Plate 3: Revegetated Stratford Waste Emplacement used for cattle agistment (The trees in the mid-ground are also rehabilitation).

Revegetation works on the Bowens Road North Open Cut waste rock emplacements to date has involved application of an initial cover crop of millet or oats to protect the contoured emplacement surfaces from erosion, followed by establishment of native vegetation.

A substantial biodiversity offset was included as part of the Stratford Extension Project to maintain or improve biodiversity values in the region in the medium to long-term.

During the previous annual review reporting period (i.e. 1 July 2014 to 30 June 2015) approximately 40 ha of land was rehabilitated on the Bowens Road North waste emplacement.

2.13 WORKFORCE

Open cut mining at the SMC ceased in 2014, therefore current employment is around 25 persons.

At full development (i.e. for the approved Stratford Extension Project), the operational workforce would be in the order of 250 on-site personnel, including a mixture of direct Yancoal employees and contractors. The operational hours at the SMC are generally 24 hours a day, seven days a week.

Short-term construction/development activities require an additional construction workforce of up to approximately 30 people for short periods. It is expected that such construction/development activities would peak during Year 1 of the approved Stratford Extension Project, but may be required throughout the life of the SMC.

Construction/development activities would generally be restricted to daylight hours (i.e. 7.00 am to 6.00 pm).

2.14 CONSTRUCTION AND DEVELOPMENT

Construction activities which remain to be completed for the approved Stratford Extension Project would utilise existing infrastructure and supporting services at the SMC. Additional infrastructure and construction/development activities which are required to support the SMC would be progressively developed in parallel with ongoing mining operations, including:

- realignments of sections of Wheatleys Lane, Bowens Road, and Wenham Cox/Bowens Road;

- relocation of a 132 kV power line;
- installation of a new rotary breaker in the CHPP;
- noise management infrastructure upgrades and haul road bunding;
- realignment of a NSW Rural Fire Service fire trail; and
- relocation of a Telstra telephone line.

Construction/development activities would generally be restricted to daylight hours (i.e. 7.00 am to 6.00 pm) up to seven days a week.

Additional mobile equipment would be required for short periods during the Stratford Extension Project construction/ development activities. The number and type of equipment would be expected to vary depending on the activity being undertaken.

2.15 TRANSPORT

The existing access road off The Bucketts Way is the primary site access for the SMC (Figure 2). Wherever possible, existing internal roads are used to service the SMC. The approved Stratford Extension Project will include a new internal road that would be constructed across the western co-disposal area to provide heavy vehicle access to the proposed additional infrastructure areas (Figure 6).

Temporary internal roads would be constructed as required. The use of these internal access roads is restricted to mine personnel only.

ROM coal from the open cut pits at the SMC are to be transported via internal haul roads to the ROM pad for stockpiling and/or direct dumping to the ROM hopper and conveyed to the CHPP for processing.

The approved realignment of Wenham Cox Road, a 1.7 km sealed two-lane road realignment around the north-eastern extent of the proposed Northern Waste Emplacement Extension and Avon North Open Cut, will be constructed for the approved Stratford Extension Project.

3 STRATFORD MODIFICATION 1

3.1 MINE LIFE

The addition of processing sized ROM coal from the RHCP at the SMC would extend the life of the CHPP/train loading operations within the approved Stratford Extension Project by six to ten years.

In addition, adjustment of the approved mine life is sought to reflect the revised timing of commencement of the Stratford Extension Project (which is now assumed to commence in approximately 2018).

3.2 COAL PROCESSING

ROM coal from the open cut pits at the SMC would be transported via internal haul roads to the ROM pad for stockpiling and/or direct dumping to the ROM hopper and conveyed to the CHPP for processing. The Modification would require an extension of the ROM pad to accommodate the ROM coal trucked from the RHCP. Figure 6 shows the proposed ROM pad extension at the SMC.

Small quantities (up to approximately 0.2 Mtpa) of coal recovered from the western co-disposal area would also continue to be re-processed in the CHPP during the life of the Modification.

Transport of ROM RHCP coal from the RHCP to the SMC ROM pad would occur via a dedicated 'B-Double-type' (multi-combination) truck fleet during daytime hours (Monday to Saturday, 7.00 am to 6.00 pm) only. Coal from the RHCP would be hauled along a private haul road, which is separated into two portions, the northern portion would be assessed as part of the RHCP EIS and the southern portion which would be part of the SMC and is assessed in this SEE (Figure 2).

This haul route would be along the same alignment as currently approved from the Bowens Road North Open Pit to the SMC CHPP. The new section of the haul road north of the Bowens Road North Open Pit to the boundary of ML 1733 is proposed as a component of this Modification application.

An assessment of potential impacts relevant to the haul road within SCPL MLs is presented in Section 4.7. Assessment of the haul road north of ML 1733 is included within the RHCP EIS.

Based on the indicative mine schedule for the SMC and consistent with the proposed RHCP schedule, the combined coal processing and production rates for the Modification are provided in Table 3.

3.3 RAIL LOADING

Product coal produced by the CHPP at the SMC would continue to be stockpiled prior to being reclaimed and loaded to trains for transport on the North Coast Railway to the Port of Newcastle.

With the existing/approved train lengths of approximately 1,300 m, there would be no change to the average and peak rail movements. The Modification would continue to require an average of 2.5 product coal trains (total) per day and a peak of six per day.

3.4 WATER SUPPLY AND WATER MANAGEMENT

The water supply and management system for the SMC (including up-catchment diversions, contained water storages, sediment dams, flood levees and the on-site irrigation system) would be retained for the Modification.

The site water balance would be updated to reflect the changes to the coal processing schedule and changes to dust suppression requirements for the Modification.

3.5 CHPP REJECT MANAGEMENT

CHPP rejects would continue to be pumped as a slurry to the Stratford Main Pit for co-disposal, following this, pumped as a slurry to the Avon North Open Cut and Roseville West Pit Extension voids for co-disposal following completion of mining in each pit.

RHCP CHPP rejects were geochemically characterised as part of the RHCP EIS (RGS Environmental, 2013). Similar to the SMC, RHCP rejects have been characterised as PAF. Accordingly, RGS Environmental (2013) proposes similar measures to those undertaken at the SMC, including:

- disposal of rejects deep in the open cut (i.e. below the post-mining groundwater table) and prompt covering with Non Acid Forming (NAF) overburden materials;
- consideration of lime dosing; and
- encapsulation in reduced permeability NAF materials if insufficient deep pit capacity exists (in conjunction with lime dosing)

Table 3
Indicative Modification Mine Schedule

Project Year	Approved Stratford Extension Project ROM Coal (Mtpa)	Western Co-Disposal Area Coal Recovery (Mtpa)	Total SMC ROM Coal (Mtpa)	RHCP Sized ROM Coal (Mtpa)	Total ROM Coal Processed [^] (Mtpa)	CHPP Rejects (Mtpa)			Product Coal for Rail (Mtpa)		
						SMC	RHCP	Total	SMC	RHCP	Total
1*	1.8	0.2	2.0	-	2.0	0.7	-	0.7	1.4	-	1.4
2	1.7	0.2	1.9	0.2	2.1	0.5	0.03	0.5	1.4	0.2	1.6
3	1.7	0.2	1.9	0.5	2.4	0.7	0.2	0.9	1.3	0.3	1.6
4	1.7	-	1.7	0.5	2.2	0.6	0.1	0.7	1.1	0.4	1.5
5	2.0	-	2.0	1.0	3.0	0.6	0.3	0.9	1.4	0.7	2.1
6	1.8	-	1.8	1.3	3.1	0.6	0.4	1.0	1.2	0.9	2.1
7	2.1	-	2.1	1.3	3.4	0.7	0.3	1.0	1.4	1.0	2.4
8	2.2	-	2.2	1.3	3.5	0.8	0.3	1.1	1.4	1.0	2.4
9	2.4	-	2.4	1.4	3.8	0.9	0.4	1.3	1.5	1.0	2.5
10	2.6	-	2.6	1.4	4.0	1.0	0.4	1.4	1.6	1.0	2.6
11	1.5	-	1.5	1.5	3.0	0.5	0.4	0.9	1.0	1.1	2.1
12	-	-	-	1.6	1.6	-	0.4	0.4	-	1.2	1.2
13	-	-	-	1.6	1.6	-	0.4	0.4	-	1.2	1.2
14	-	-	-	1.6	1.6	-	0.4	0.4	-	1.2	1.2
15	-	-	-	1.6	1.6	-	0.4	0.4	-	1.2	1.2
16	-	-	-	0.9	0.9	-	0.2	0.2	-	0.7	0.7
17	-	-	-	1.3	1.3	-	0.3	0.3	-	1.0	1.0
Total	21.5	0.6	22.1	19.0	41.1	7.6	4.9	12.5	14.7	14.1	28.8

Note:

* The approved Stratford Extension Project is assumed to commence in approximately 2018 (i.e. Year 1 is 2018) and RHCP commencement is in approximately 2019 (i.e. Year 2).

[^] Combined ROM coal mined at the approved Stratford Extension Project, western co-disposal area coal recovery and RHCP.

Given these measures are generally consistent with the existing SMC (Section 2), rejects management would continue to be in accordance with the SMC Life of Mine Rejects Disposal (SCPL, 2009). Hydro Engineering & Consulting (2016) reviewed the Modification rejects balance (including RHCP rejects), and concludes:

- only a relatively minor volume of rejects from processing of RHCP ROM coal would be discharged into the Stratford Main Pit, with the majority discharged to the Avon North Open Cut void; and
- the volume of rejects discharged to the Avon North Open Cut void would approximately double with the processing of RHCP ROM coal but that only approximately one third of the capacity of the void would be occupied by the total planned rejects volume.

Consistent with the approved Stratford Extension Project the Stratford Main Pit, Avon North Open Cut and Roseville West Pit Extension voids would be used for storage of water/CHPP rejects to the extent that they would not spill water in the long term and they would remain as groundwater sinks.

The SMC Life of Mine Rejects Disposal Plan would be reviewed and revised for the Modification.

3.6 GENERAL INFRASTRUCTURE

The existing and approved general infrastructure at the SMC (e.g. ROM and product storage and handling infrastructure, train loading infrastructure, rotary breaker, workshops and heavy vehicle servicing facilities, washdown facilities, bunded fuel farm, boiler shed, stores, administration buildings and offices) would be retained and used for the Modification.

Apart from the extension of the ROM pad, heavy vehicle parking area and extension of on-site haul roads to accommodate RHCP trucks, no significant changes are proposed to the existing and approved general infrastructure of the SMC. Notwithstanding, minor alterations to SMC infrastructure may be required for the Modification.

3.7 REHABILITATION

The existing rehabilitation strategy has been reviewed in the context of the Modification and in particular storage of RHCP CHPP rejects at the SMC.

Given the chemistry of the RHCP rejects would warrant management consistent with the current SMC (Section 3.5), the rehabilitation strategy of the SMC would be generally unchanged for the Modification, with adjustments to reflect changes in timing of rejects disposal and water management infrastructure development. The mine closure goals for the SMC (Section 2.12) would remain unchanged.

3.8 WORKFORCE

At full development, the SMC workforce would comprise approximately 250 on-site personnel, including a mixture of direct Yancoal employees and contractors. There would be no change in peak employment due to the Modification.

3.9 CONSTRUCTION AND DEVELOPMENT

The proposed private haul road would provide a route for the transportation of sized ROM coal from the RHCP to the SMC and would have a speed limit restriction of 60 kilometres per hour (km/h). The road would be sealed along its full length from the Rocky Hill Mine Area to the eastern boundary of ML 1528.

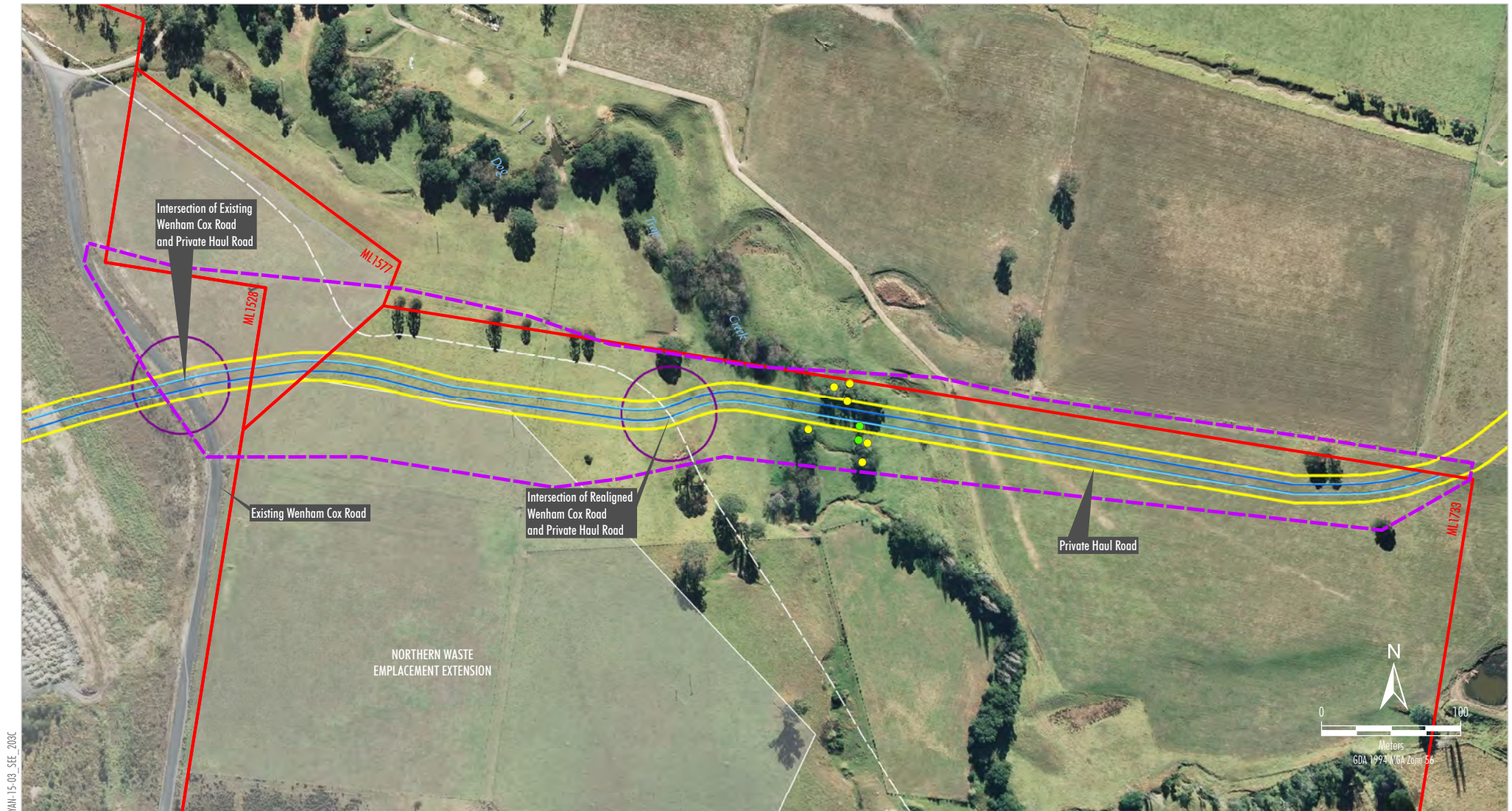
As part of the Modification, a short (800 m) length of road would be constructed from the eastern boundary of ML 1528 to the boundary of ML 1733, where it would join existing/approved SMC haul roads. Construction would be undertaken using typical road construction fleet items in conjunction with the adjoining RHCP haul road. Construction of the Modification haul road would take in the order of four to five months.

A small amount of inert waste rock would be used as construction fill for the haul road.

A level crossing would be constructed at the intersection of the haul road and realigned Wenham Cox Road (Figure 7). Controls required to be implemented on this intersection include:

- boom gates installed on Wenham Cox Road;
- boom gates installed on the private haul road to prevent public access; and
- signage for haul truck drivers to reduce speed around the level crossing.

A similar level crossing with controls would also be required at the intersection of the haul road and existing Wenham Cox Road (i.e. before the new alignment of Wenham Cox Road is constructed).



- LEGEND**
- Mining Lease Boundary
 - ACHA Survey Area
 - Type of Tree
 - Casuariana with hollow
 - Casuariana without hollow
 - Indicative Proposed Private Haul Road Boundary
 - Indicative Private Haul Road Alignment including Road Shoulders
 - Approved Wenham Cox Road Realignment (Indicative)



STRATFORD MODIFICATION 1

Private Haul Road and
Wenham Cox Road Intersections

Source: LPI (2016); Geoscience Australia (2006); NSW Department of Industry (2016); SCPL (2016); GTA (2016); AMBS (2016); Niche Environment & Heritage (2016)

Figure 7

Additional information is provided in Appendix F (GTA Consultants, 2016).

3.10 TRANSPORT

There would be minimal change to approved vehicle movements at the SMC. Changes would include:

- Minimal additional heavy vehicle movements for the delivery of heavy machinery to the RHCP via the private haul road.
- Access for a number of the RHCP haul truck drivers prior to and following a coal haulage shift (where trucks are parked-up at the SMC overnight).

The proposed haul truck movements for transporting sized ROM coal from the RHCP to the SMC is listed in Table 4. The haul trucks would be a multi-combination unit comprising a road registered Euro 5 standard compliant prime mover, two 10 m triaxle trailers and a dolly, having a nominal carrying capacity of 60 t of coal. There would be a maximum of 10 haul trucks used during peak production years.

A number of the haul trucks (Plate 4) from the RHCP may be parked in a designated park-up area at the SMC overnight. The park-up area would be nearby the haul road for ease of access. Figure 6 shows the heavy vehicle parking area at the SMC.



Plate 4: Typical configuration of sized ROM coal haul truck (GRL, 2016).

A weighbridge would be constructed on the haul road for haul trucks transporting ROM coal from the RHCP to the SMC ROM pad. The weighbridge would be located before the ROM pad and stockpile to determine the amount of ROM coal received daily.

Table 4
Proposed ROM Coal Truck Fleet

Year	RHCP ROM Coal (Mtpa)	RHCP Sized ROM Coal (Mtpa)	Maximum Number of Trucks
1	-	-	-
2	0.2	0.2	2
3	0.5	0.5	4
4	0.5	0.5	4
5	1.1	1.0	7
6	1.4	1.3	9
7	1.4	1.3	9
8	1.4	1.3	9
9	1.6	1.4	9
10	1.6	1.4	9
11	1.7	1.5	10
12	1.8	1.6	10
13	1.8	1.6	10
14	1.8	1.6	10
15	1.8	1.6	10
16	1.0	0.9	7
17	1.4	1.3	8

Source: GRL (2016)

3.11 MANAGEMENT OF DANGEROUS GOODS

Various chemicals including process reagents are used in the CHPP. Given the maximum (approved) rate of coal processing of 5.6 Mtpa would not change (Table 1), there would be no change in the quantity of chemicals used or stored at the CHPP. The management and storage of chemicals at the SMC would continue to be conducted in accordance with the existing management procedures, Australian Standards and codes.

4 ENVIRONMENTAL ASSESSMENT

4.1 NOISE

A Noise Assessment for the Modification was undertaken by SLR Consulting Australia Pty Ltd (SLR Consulting) (2016) and is presented in Appendix A.

The operational noise assessment was conducted in accordance with the:

- NSW *Industrial Noise Policy* (INP) (EPA, 2000); and
- *Interim Construction Noise Guideline* (Department of Environment and Climate Change, 2009).

Consideration was also given to the NSW Government (2014) *Voluntary Land Acquisition and Mitigation Policy For State Significant Mining, Petroleum and Extractive Industry Developments* (Voluntary Land Acquisition and Mitigation Policy).

As described in Table 1, there would be no change to the approved blasting practices at the SMC as part of the Modification (i.e. average or maximum number of blasts, time of blasting), therefore blasting has not been assessed as part of the Modification. Similarly, no material changes to road transport movements associated with the Modification are anticipated (Section 4.7), therefore road noise impacts are not considered further.

A description of the existing environment relating to noise and SMC noise management and monitoring is provided in Section 4.1.1. Section 4.1.2 describes the potential noise impacts of the Modification and Section 4.1.3 outlines the Modification noise mitigation measures, management and monitoring.

4.1.1 Existing Environment

Noise Management and Monitoring Regime

Noise management at the SMC is currently undertaken in accordance with the SMC Noise Management Plan (NMP) (SCPL, 2012b) which outlines:

- noise mitigation measures and controls;
- the noise monitoring and reporting regimes; and
- procedures for the management of exceedances and complaints.

The NMP describes general noise management and mitigation measures including:

- contractor environmental training on noise control and awareness of noise issues;
- consideration of sound power levels in equipment selection, and maintaining equipment in good order;
- real-time monitoring and an associated protocol for real-time management of noise emissions;
- management of complaints received;
- attended monitoring to verify compliance with noise criteria; and
- direct measurement of temperature inversion strength.

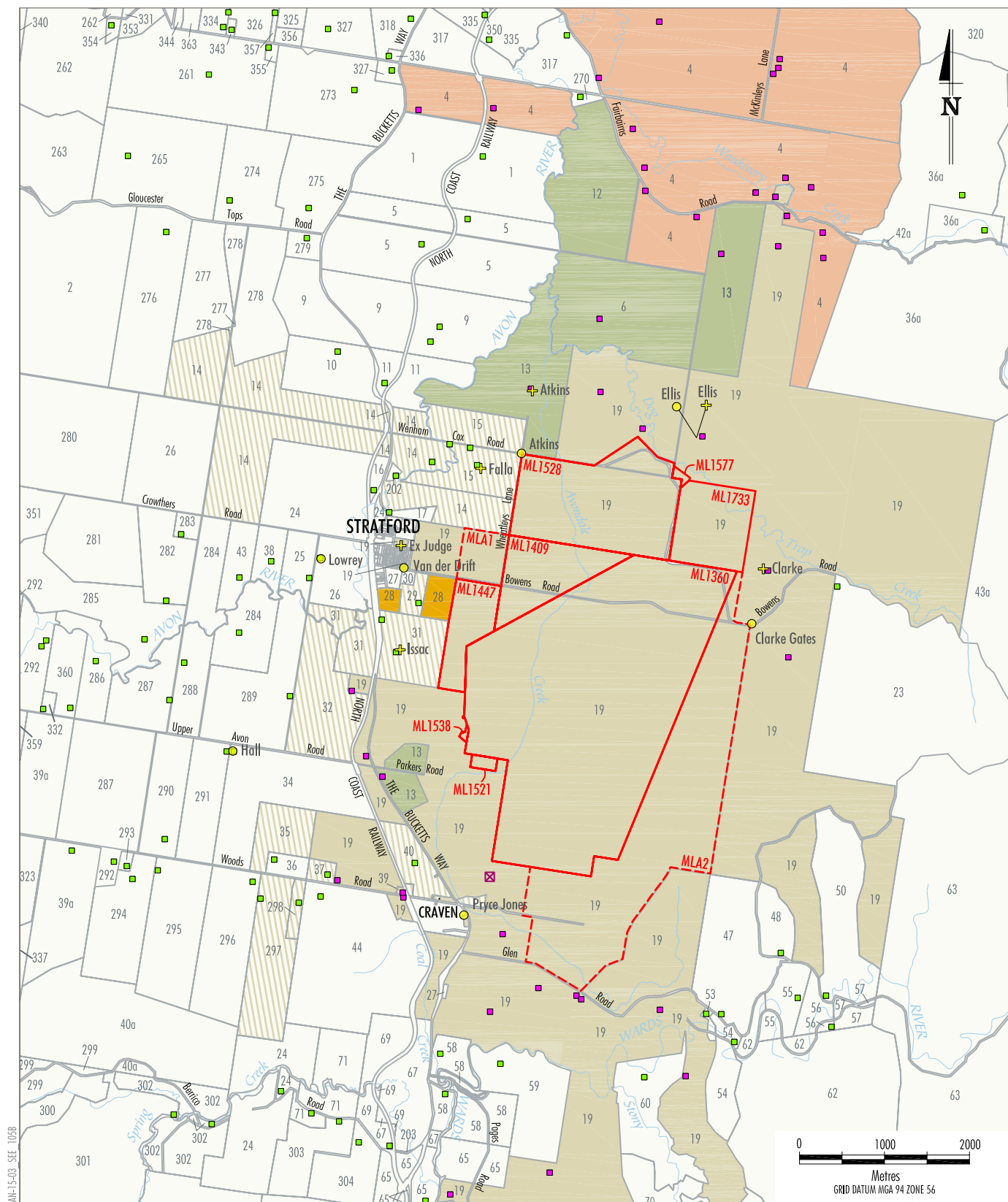
In addition, the NMP details the reasonable and feasible noise mitigation measures that are currently in-place or are proposed for implementation at the SMC.

A mobile real-time noise monitor is operated by SCPL and is located east of Craven.

Compliance and Complaints

Attended noise monitoring has been undertaken at the SMC since 1995. Monitoring is currently undertaken at the locations shown on Figure 8.

SLR Consulting (2016) reviewed the compliance of the SMC against the relevant noise criteria between 2011 and 2016 by reviewing the available Stratford Coal Mine Annual Reviews. The Annual Reviews highlight general compliance with the relevant noise criteria (Appendix A).



Source: SCPL (2013); SCPL (2016); DFS-LPI (2016) and DPI-C&L (2012)

Figure 8

SCPL manages complaints in accordance with the NMP (SCPL, 2012b). A summary of noise-related complaints is provided in Appendix A. Consistent with the general trend of reduced complaints at the SMC (Section 2.11), a review of complaints received in recent years indicates that the number of complaints received has declined since 2011/12 (Appendix A).

Noise Measurement and Description

The assessed noise levels presented in Appendix A and summarised in this section are expressed in A-weighted decibels (dBA). The logarithmic dBA scale simulates the response of the human ear, which is more sensitive to mid to high frequency sounds and relatively less sensitive to lower frequency sounds. The equivalent continuous noise level (L_{Aeq}) refers to the steady sound level, which is equal in energy to the fluctuating levels recorded over the sampling period.

Background Noise Levels

The Rating Background Level (RBL) is the background noise level determined without the subject premises in operation, in accordance with the INP.

Given the SMC operations are ongoing, SLR Consulting referred to previous background noise surveys (Appendix A).

Review of these background levels indicated that RBLs in Stratford and Craven are 32 dBA during daytime, 31 dBA during the evening and 30 dBA during night-time periods. Rating Background Levels in all other areas are 30 dBA during all periods. These RBLs have been adopted for the Modification (Appendix A).

4.1.2 Potential Impacts

The Noise Assessment (Appendix A) included assessment of the following potential impacts:

- on-site operational noise; and
- construction noise associated with the proposed private haul road.

These aspects are discussed further below and in Appendix A.

Operational Noise Criteria

The Stratford Extension Project Development Consent (SSD-4966) includes intrusive noise limits resulting from assessment of the Stratford Extension Project EIS (Condition 4, Schedule 3). As this is a Modification to the SMC, noise impacts are compared with the existing criteria (Table 5).

In addition, Appendix A provides an assessment against the INP Project-specific noise levels and the amenity criteria.

Table 5
SEP Development Consent Daytime Noise Criteria

Land	Day $L_{Aeq}(15 \text{ min})$
40/51/Cr1 – L. Blanch	43
Cr7 – Pryce-Jones	43
42 – D. Blanch	42
Cr 2 – Boorer	41
31(1) – Isaac	40
36 – Wallace	39
44 – Cross / Jane	
60 – Healy / Greenwood	39
37 – Worth	38
29 – Ward	38
23 – Bagnall	37
31(2) – Isaac	
296 – Watson	
297 – Bosma	
298 – Yates	36
15(3) – Falla	39
15(2) – Falla	36
Stratford Village	37
All other privately-owned residences	35

Source: Appendix A.

1 Daytime 7.00 am to 6.00 pm.

Operational Noise Modelling

The acoustic model developed by SLR Consulting for the Stratford Extension Project was used to assess the Modification. The model uses noise source information (i.e. sound power levels and locations) to predict noise levels at relevant receiver locations.

The model considers meteorological effects, surrounding terrain, distance from source to receiver and noise attenuation.

The locations of modelled receivers (i.e. dwellings), including where relevant multiple dwellings on a single landholding, are shown on Figures 3, 4 and 5.

Noise Modelling Scenarios

The Modification would include the following changes to the approved operations relevant to noise emissions relative to that considered for the Stratford Extension Project (Appendix A):

- changes to the ROM processing schedule to incorporate processing of sized ROM coal from the RHCP; and
- transport of RHCP coal to the CHPP on the SMC portion of the private haul road (daytime only).

The following noise modelling scenarios developed for the Stratford Extension Project were updated for the Modification (i.e. haulage of sized ROM coal from the RHCP was included):

- Project Year 2 – Representative of initial mining at the Roseville West Pit Extension, Avon North Open Cut and Stratford East Open Cut. Includes placement of waste rock on the Northern West Emplacement Extension. Representative of northern-most operations during the Modification.
- Project Year 7 – Representative of production from the continuation of the Roseville West Pit Extension operation, and the operation of the Stratford East Open Cut. Includes placement of Stratford East waste rock on the maximum elevated area of the Stratford Waste Emplacement.
- Project Year 10 – Includes maximum Stratford Extension Project ROM coal and waste rock production rates. Representative of southern-most operations during the Modification.

The above scenarios were augmented to include haulage of sized ROM coal along the private haul road, with the number of trucks relevant to the modelled years shown in Table 4. The sound power level of each truck was assumed to be 108 dBA (Appendix A).

Predicted Noise Emissions

In summary, the operational noise assessment (Appendix A) indicates no exceedances of the daytime approved noise limits at any privately-owned receivers (i.e. predicted daytime intrusive noise levels remain lower than, or equal to, the approved noise limits for the Stratford Extension Project).

Vacant Land Assessment

SLR Consulting (2016) also reviewed potential intrusive noise impacts on private vacant land and concluded that no vacant land would be affected by noise associated with the Modification (Appendix A).

Cumulative Noise Emissions

Proposed coal mining in the vicinity of the SMC that may potentially be a source of cumulative noise emissions is limited to the amended RHCP. AGL Upstream Investments Pty Ltd (AGL) announced in February 2016 that it will not proceed with the Gloucester Gas Project and that it will relinquish its Petroleum Exploration Licence to the NSW Government, therefore, this proposal is not considered further for cumulative assessment in this SEE.

Cumulative noise impacts resulting from the concurrent operation of the Modification and developments listed above were assessed against the INP amenity criteria (Appendix A).

In summary, the daytime cumulative $L_{Aeq(11\text{ hour})}$ noise amenity criteria were not exceeded at any privately-owned receivers or other land use types (Appendix A).

Construction Noise

Daytime construction works associated with the Modification would be minor earthworks and road installation activities associated with construction of the private haul road. As these activities are similar in nature and location to the approved Wenham Cox Road realignment and that there are no nearby private receivers, the results of modelling conducted for the Stratford Extension Project EIS are considered relevant. This assessment showed that there would be no exceedances of construction noise criteria (SCPL, 2012). Therefore, potential construction impacts are considered by SLR Consulting (2016) not to warrant further assessment and compliance with criteria is expected for Modification construction works.

Transport Noise

No changes to the approved average and peak rail movements are proposed (Section 3.3), therefore, there would be no change to potential rail noise impacts. Similarly, minor changes to off-site road transport movements are anticipated, therefore road noise implications are not anticipated.

4.1.3 Mitigation Measures, Management and Monitoring

Noise management would continue to be undertaken in accordance with the SMC NMP (SCPL, 2012b), which would be reviewed and revised to incorporate the Modification.

As the results of the noise modelling show no material changes to predicted impacts associated with the Modification, updates to the NMP would be minor (e.g. to describe noise management during the Modification construction activities).

4.2 AIR QUALITY AND GREENHOUSE GAS EMISSIONS

An Air Quality and Greenhouse Gas Assessment for the Modification was undertaken by Pacific Environment Limited (Pacific Environment) (2016) and is presented as Appendix B. The assessment was conducted in accordance with the *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (Approved Methods) (Department of Environment and Conservation [DEC], 2005a).

A description of the existing environment relating to air quality and SMC air quality management and monitoring is provided in Section 4.2.1. Section 4.2.2 describes the potential air quality impacts of the Modification, including cumulative impacts, and Section 4.2.3 outlines the Modification air quality mitigation measures, management and monitoring.

Greenhouse gas emissions associated with the Modification are described in Section 4.2.4.

4.2.1 Existing Environment

Air quality mitigation and management measures currently employed at the SMC are described in the Air Quality and Greenhouse Gas Management Plan (AQGHGMP) (SCPL, 2011b). The AQGHGMP includes management and mitigation measures, air quality monitoring requirements and a complaints response protocol.

Six complaints relating to dust or air quality have been received at the SMC since 2013 (SCPL, 2015b).

Air Quality Criteria

Concentrations of Suspended Particulate Matter

The Modification activities described in Section 3 have the potential to generate particulate matter (i.e. dust) emissions in the form of:

- Total Suspended Particulate (TSP);
- particulate matter with an equivalent aerodynamic diameter of 10 micrometres (μm) or less (PM_{10}) (a subset of TSP); and
- particulate matter with an equivalent aerodynamic diameter of 2.5 μm or less ($\text{PM}_{2.5}$) (a subset of TSP and PM_{10}).

Relevant health based air quality criteria (i.e. criteria set at levels to reduce the risk of adverse health effects) for PM_{10} and TSP concentrations, as specified by the EPA in the Approved Methods (DEC, 2005a).

The EPA does not have specific criteria for $\text{PM}_{2.5}$. In the absence of EPA criteria, Table 6 also contains $\text{PM}_{2.5}$ criteria that are based on the National Environment Protection (Ambient Air Quality) Measure (NEPM – Ambient Air) (Department of the Environment, 2016) reporting standard.

Table 6
Criteria for Particulate Matter Concentrations

Pollutant	Averaging Period	Criteria ($\mu\text{g}/\text{m}^3$)
TSP	Annual mean	90
PM_{10}	24-hour maximum	50
	Annual mean	30
$\text{PM}_{2.5}$	24-hour maximum	25
	Annual mean	8

Source: Appendix B.

$\mu\text{g}/\text{m}^3$ = micrograms per cubic metre.

Dust Deposition

Particulate matter has the potential to cause nuisance (amenity) effects when it is deposited on surfaces. The amenity criteria for the maximum increase in dust deposition and maximum total dust deposition, as specified by the EPA in the Approved Methods (DEC, 2005a) are provided in Table 7.

Table 7
Criteria for Dust Deposition (Insoluble Solids)

Pollutant	Averaging Period	Maximum Increase in Deposited Dust Level (g/m ² /month)	Maximum Total Deposited Dust Level (g/m ² /month)
Deposited dust	Annual	2	4

Source: Appendix B.

g/m²/month = grams per square metre per month.

Existing Air Quality

PM₁₀ and dust deposition data are collected at the SMC. Figure 9 shows the air quality monitoring sites, the SMC air quality monitoring network consists of:

- seven dust deposition gauges;
- five high volume air samplers (HVASs);
- one Tapered Element Oscillating Microbalance (TEOM) analyser; and
- a meteorological monitoring station.

A summary of PM₁₀ and PM_{2.5} monitoring results is provided below. TSP concentrations and dust deposition levels are discussed in Appendix B.

Table 8
Annual Average PM₁₀ Concentrations

Year	HVD1 (µg/m ³)	HVD2 (µg/m ³)	HVD3 (µg/m ³)	HVD4 (µg/m ³)	HVD5 (µg/m ³)	TEOM (µg/m ³)
2001	8	9	N/A	N/A	N/A	N/A
2002	13	15	N/A	N/A	N/A	N/A
2003	13	13	16	13	N/A	N/A
2004	12	11	13	10	N/A	N/A
2005	13	11	15	9	N/A	N/A
2006	8	8	12	6	N/A	N/A
2007	11	11	16	9	N/A	N/A
2008	11	10	12	8	19	N/A
2009	13	14	16	12	13	N/A
2010	10	10	11	9	9	N/A
2011	9	10	10	8	9	N/A
2012	10	10	9	8	9	N/A
2013	12	11	15	10	9	14.6
2014	10	11	15	9	9	13.3
2015 ¹	8	6	10	7	6	12.2
Average	11	11	13	9	10	13.4

Source: Appendix B.

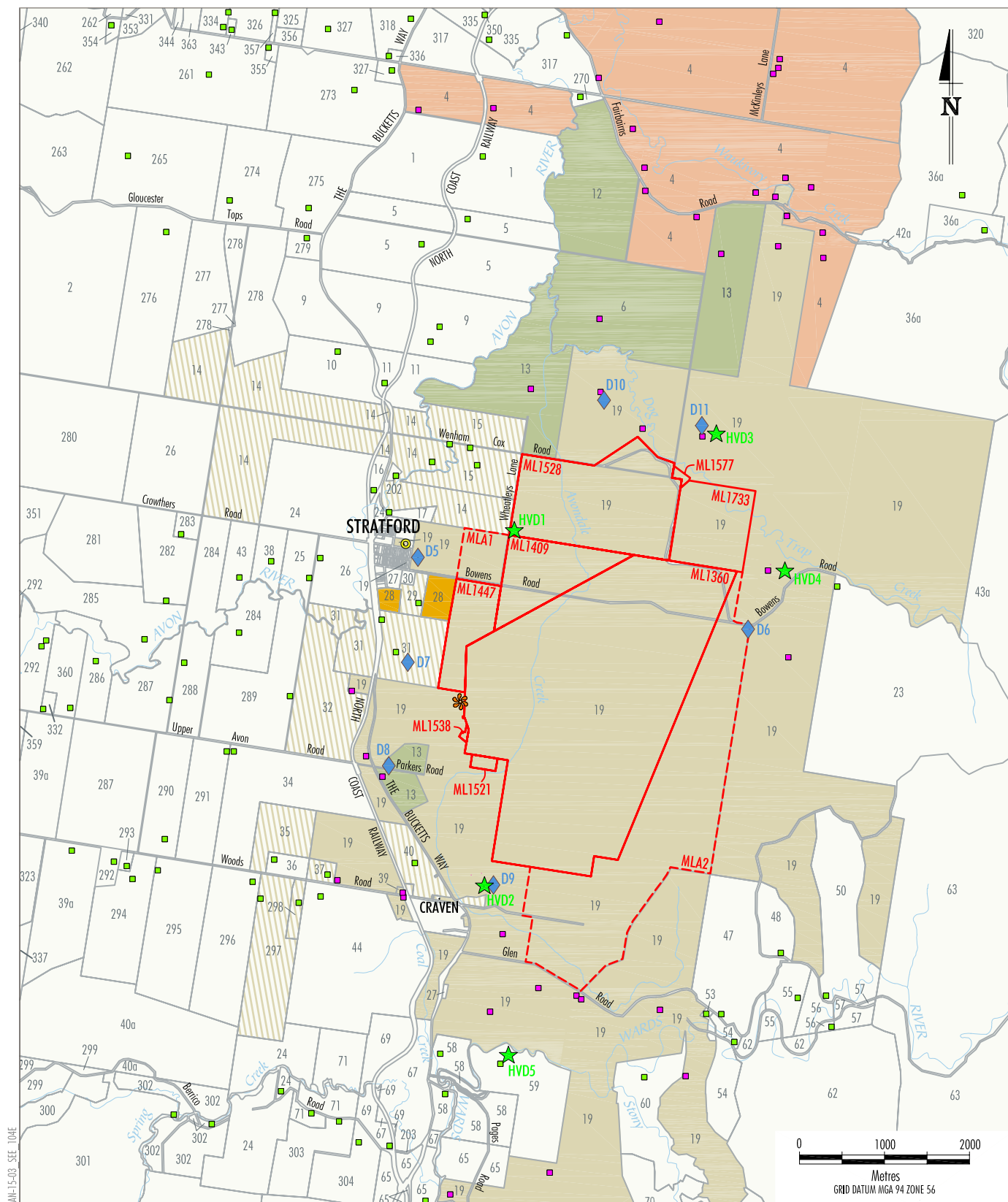
N/A = Not available.

¹ 2015 data available up to 25 November.

PM₁₀

Long-term PM₁₀ monitoring data have been collected by SCPL since 2011 (Figure 9) using HVASs (at up to 5 locations). PM₁₀ monitoring data have also been collected by SCPL using a TEOM analyser since August 2012. The monitoring captures particulate matter from sources including current mining operations, other localised particulate matter sources (e.g. vehicles using unsealed roads, stock movements, cropping and other exposed areas) and regional particulate matter sources (e.g. bushfires and dust storms).

Recorded annual average PM₁₀ concentrations in the period 2001 to 2015 are provided in Table 8.



LEGEND

- Mining Lease Boundary
- Mining Lease Application Boundary
- Yancoal Owned Land
- GRL Owned Land or Under Option
- AGL Owned Land
- Private Landholders
- Private Landholders - Yancoal Agreement
- Crown Land

- 19 Landholder Number
- Resource Company Owned Dwelling
- Privately Owned Dwelling
- Monitoring Sites
- ✿ Meteorological Station
- ◆ Static Dust Gauge
- ★ High Volume Air Sampler
- TEOM



STRATFORD MODIFICATION 1

Relevant Meteorological and
Air Quality Monitoring Sites

PM₁₀ monitoring results show that since monitoring commenced in 2001, there have been no exceedances of the EPA annual average criterion of 30 µg/m³. The average across all sites for the monitoring period is 11 µg/m³ (Appendix B).

PM₁₀ monitoring data collected at the SMC indicate that there have been some occasional elevated recordings above the EPA 24-hour average criterion of 50 µg/m³ across all sites over the period of record (Appendix B).

A more detailed review conducted by Pacific Environment (2016) shows that the worst-case 24-hour PM₁₀ concentrations are strongly influenced by regional-scale phenomena, such as bushfires and dust storms (Appendix B).

PM_{2.5}

PM_{2.5} monitoring data have been collected by SCPL using a TEOM since August 2012. The monitoring captures particulate matter from sources including current mining operations, other localised particulate matter sources (e.g. vehicles using unsealed roads, stock movements, cropping and other exposed areas) and regional particulate matter sources (e.g. bushfires and dust storms).

Recorded annual average PM_{2.5} concentrations in the period 2013 to 2015 are provided in Table 9.

PM_{2.5} monitoring results show that since monitoring commenced in 2013, there has been one elevated record in comparison with the NEPM – Ambient Air annual average reporting standard of 8 µg/m³. It is noted that widespread bushfire activity in eastern NSW in 2013 contributed to the elevated record. The average concentrations across all sites for the monitoring period is 7.3 µg/m³ (Appendix B).

Table 9
Annual Average PM_{2.5} Concentrations

Year	Concentration (µg/m ³)
2013	8.2
2014	6.8
2015	6.9

Source: Appendix B (µg/m³).

4.2.2 Potential Impacts

Operational Scenarios

The Modification would include the following changes to the approved operations that are relevant to air quality emission estimates (Appendix B):

- changes to the ROM processing schedule to incorporate processing of sized ROM coal from the RHCP; and
- transport of RHCP coal to the CHPP on the SMC portion of the private haul road (daytime only).

The operational scenarios assessed for the Stratford Extension Project were consistent with the noise modelling scenarios (Section 4.1.2). These were revised to incorporate the above changes.

Emission Inventories

Pacific Environment (2016) updated the emission inventories prepared for the Stratford Extension Project to incorporate the changes proposed for the Modification, as described above.

In summary, the air quality assessment indicates:

- there would be a reduction in total TSP emissions in Year 2 by approximately 4.7%;
- there would be a reduction in total TSP emissions in Year 6 by approximately 0.9%; and
- there would be an increase in total TSP emissions in Year 10 by approximately 4.1%.

The differences in emissions are generally related to changes in CHPP processing rates relating to the addition of processing coal from the RHCP (Appendix B).

Pacific Environment (2016) notes that while total TSP emissions are predicted to increase by approximately 4.1% in Year 10, peak emissions would still occur in Year 6 and therefore the maximum predicted impacts would not change due to the Modification (Appendix B).

Cumulative Impacts

Pacific Environment (2016) reviewed the quantitative cumulative impact assessment undertaken for the Stratford Extension Project and noted the following:

- there are no new or proposed industrial sources that should be added to the assessment;
- Consideration of the RHCP in the Stratford Extension Project cumulative assessment was conservative (i.e. the emissions assumed were larger than for the amended RHCP); and

Based on the above, Pacific Environment (2016) concluded that no further cumulative impact assessment for the Modification is warranted.

Potential Construction/Development Impacts

Construction/development activities would potentially be sources of short-term particulate matter emissions.

Particulate matter emissions from construction activities (e.g. road diversions) would typically be contained to specific areas, and would be of limited duration. Construction dust emissions would be effectively managed through best practice mitigation measures, as described in Section 4.2.3.

4.2.3 Mitigation Measures, Management and Monitoring

Air quality management would continue to be undertaken in accordance with the AQGHGMP, which would be reviewed and revised to incorporate the Modification.

Dust suppression measures to be implemented during Modification construction/ development activities (e.g. construction of the private haul road) would include measures such as minimisation of disturbance areas and watering of trafficked areas.

As the results of the air quality assessment show no material changes to predicted impacts associated with the Modification, updates to the AQGHGMP would be minor (e.g. to describe air quality management during the Modification construction activities).

4.2.4 Greenhouse Gas Emissions

Greenhouse Gas Protocol Emission Scopes

The Greenhouse Gas Protocol (GHG Protocol) (World Business Council for Sustainable Development [WBCSD] and World Resources Institute [WRI], 2004) defines three 'scopes' of emissions (Scopes 1, 2 and 3). Scopes 1 and 2 have been defined such that two or more entities would not account for the same emissions in the same scope. Scope 3 emissions are addressed in Appendix B.

Scope 1: Direct Greenhouse Gas Emissions

Direct greenhouse gas emissions are defined as those emissions that occur from sources that are owned or controlled by the entity (WBCSD and WRI, 2004). Direct greenhouse gas emissions are those emissions that are principally the result of the types of activities undertaken by an entity that are listed below:

- Generation of electricity, heat or steam. These emissions result from combustion of fuels in stationary sources (e.g. boilers, furnaces and turbines).
- Transportation of materials, products, waste, and employees. These emissions result from the combustion of fuels in entity owned/controlled mobile combustion sources (e.g. trucks, trains, aeroplanes, buses and cars).
- Fugitive emissions. These emissions result from intentional or unintentional releases (e.g. methane emissions from coal mines [WBCSD and WRI, 2004]).

Scope 2: Electricity Indirect Greenhouse Gas Emissions

Scope 2 emissions are a category of indirect emissions that account for greenhouse gas emissions from the generation of purchased electricity consumed by the entity.

Purchased electricity is defined as electricity that is purchased or otherwise brought into the organisational boundary of the entity (WBCSD and WRI, 2004). Scope 2 emissions physically occur at the facility where electricity is generated (WBCSD and WRI, 2004). Entities report the emissions from the generation of purchased electricity that is consumed in its owned or controlled equipment or operations as Scope 2.

Greenhouse Gas Emissions Estimation Methodology

Direct and indirect greenhouse gas emissions from the Modification have been estimated by Pacific Environment (2016) (Appendix B) using the same National Greenhouse Accounts emission factors as used for the Stratford Extension Project, to provide a direct comparison (*National Greenhouse Accounts Factors July 2011*) (Department of Climate Change and Energy Efficiency, 2011).

Modification Greenhouse Gas Emissions

In summary Pacific Environment (2016) found that, when compared with the total life of mine greenhouse gas emissions estimated for the Stratford Extension Project, the Modification would:

- increase Scope 1 emissions by approximately 1.2%;
- increase Scope 2 emissions by approximately 18% (due to the additional electricity use associated with the additional years of processing of RHCP coal); and

Pacific Environment (2016) determined that greenhouse gas emissions on an annual basis for the Modification would be similar to those estimated for the Stratford Extension Project.

Greenhouse Gas Mitigation

SCPL would continue to assess energy usage in the SMC and identify opportunities for reduced consumption; and report annually under the National Greenhouse and Energy Report System.

4.3 SURFACE WATER

A Surface Water Assessment for the Modification was undertaken by Hydro Engineering & Consulting (2016) and is presented in Appendix C.

The existing SMC and proposed Modification water management systems are described in Sections 2.7 and 3.4, respectively.

4.3.1 Existing Environment

Regional Hydrology

The SMC is located approximately 3 km south-east of the Avon River (Figure 2). The Avon River has a catchment area of some 290 square kilometres (km²) and is one of approximately 30 tributary rivers contributing to the greater Manning River system. The Manning River system drains some 8,000 km² and extends from the Great Dividing Range to the coast near Taree (Figure 1).

Local Hydrology

Local hydrology comprises a number of drainage lines and creeks flowing west and north-west towards the Avon River (Figure 2). Avondale Creek is a tributary of Dog Trap Creek and drains the SMC area, joining Dog Trap Creek approximately 1 km north of the SMC.

As the drainage lines within the SMC area have small catchments, they typically exhibit low to zero flow for extended periods during dry weather, while heavy rainfall events result in short duration, high flow events. Groundwater seepage provides minor contributions to flows in Dog Trap Creek and Avondale Creek during periods of elevated groundwater levels that follow extended rainfall events.

No streamflow information is available for Dog Trap Creek. Hydro Engineering & Consulting (2016) report that anecdotal evidence suggests the creek has similar flow patterns to Avondale Creek, but may be regarded as ephemeral with less flow persistence, given its catchment comprises a higher proportion of timbered area and less flat, swampy terrain than the lower reaches of Avondale Creek (Appendix C).

A transect of shallow alluvial drill holes in the vicinity of Dog Trap Creek were conducted as part of the Stratford Extension Project. This programme revealed local alluvial thickness of 1.5 m to 4 m (median of 3 m) (SCPL, 2012b). In addition, a transient electromagnetic (TEM) survey was also conducted, which showed that Dog Trap Creek alluvium is resistive, intermittent and scant (SCPL, 2012b).

Surface Water Management

Surface water management at the SMC is conducted in accordance with the Water Management Plan (WMP) (SCPL, 2012c). The WMP incorporates the Site Water Balance, Surface Water Management Plan (including erosion and sediment control) and Groundwater Management Plan.

4.3.2 Potential Impacts

Site Water Balance

The Modification would include the following changes to the approved water management regime relative to that considered as part of the Stratford Extension Project (Appendix C):

- changes to the ROM coal processing schedule to incorporate processing of sized ROM coal from the RHCP; and
- an increase in the volume of coal rejects deposited over the life of mine in the Stratford Main Pit and Avon North final void, with consequent changes in their storage capacity.

Hydro Engineering & Consulting (2016) updated the existing site water balance for the SMC to incorporate these changes (Appendix C). Hydro Engineering & Consulting (2016) concluded that:

- No simulated releases of mine water were predicted by the model.
- There were no water supply shortfalls simulated for either the CHPP make-up supply or for haul road dust suppression.
- The site water management system would continue to be operated with the option to store water in active open pits if required.
- SCPL has reviewed the operational risk associated with storing mine water in the open pits as a contingency and is satisfied with the risks.

Dog Trap Creek Crossing

Hydro Engineering & Consulting (2016) has reviewed potential impacts associated with the proposed private haul road crossing of Dog Trap Creek Crossing, namely:

- potential for the crossing to impede creek flow and result in increased flooding on privately-owned land; and
- potential for the creek crossing and construction of the private haul road in its vicinity to result in additional erosion and sedimentation impacts.

Hydro Engineering & Consulting (2016) has identified that the nearest privately owned land occurs some 1.8 km upstream of the proposed Dog Trap Creek crossing. All land downstream of the crossing up to the confluence with the Avon River is owned by SCPL or AGL. Given the significant length of the creek upstream, it is anticipated that discernible afflux at this location would be mitigated by appropriate crossing design (Appendix C). In addition, for comparative reference the elevation Relative Levels (RL)s of key points along and in the vicinity of Dog Trap Creek are:

- At haul road crossing – 124 m (RL).
- Property 23 dwelling – 163 m (RL) (1.8 km from crossing).
- Property 23 Boundary – 192 m (RL) (3.5 km from crossing).
- Upstream source of Dog Trap Creek – 231 m (RL) (4.1 km from crossing).

From review of the above elevations, it is noted that upstream private land holding is significantly higher in elevation than the haul road crossing, which further emphasises that any afflux at these upstream privately owned locations would not be expected.

4.3.3 Mitigation Measures, Management and Monitoring

Surface water management (including erosion and sediment control) would continue to be undertaken in accordance with the WMP (SCPL, 2012c), which would be reviewed and revised to incorporate the Modification.

In accordance with Hydro Engineering & Consulting (2016), the design of the crossing would also include appropriate armouring downstream of the crossing location in order to mitigate the effects of increased flow velocities through and over the crossing in high flows, in accordance with accepted road design practice.

Measures to minimise potential for construction of the private haul road to exacerbate erosion and sediment potential would include the following (Appendix C):

- appropriately sized roadside sediment basins (including monitoring of suspended solids in captured water) (i.e. generally consistent with *Managing Urban Stormwater: Soils and Construction* [Landcom, 2004]);
- roadside table drains including stabilised (armoured) outfalls;
- the use of straw bale filters or sediment fence;
- grassed filter strips; and
- regular monitoring and maintenance.

In addition to the above the private haul road surface would be sealed in the vicinity of Dog Trap Creek, which would reduce potential sediment migration during operations.

Details of mitigation measures proposed for potential aquatic ecology are provided in Section 4.6.3.

4.4 ABORIGINAL CULTURAL HERITAGE

An Aboriginal Cultural Heritage Assessment (ACHA) was prepared for the Modification by Niche Environment and Heritage (Niche) (2016) and is presented in Appendix D.

The ACHA for the Modification was undertaken in accordance with the following guidelines and regulations relevant to Aboriginal cultural heritage:

- *Aboriginal cultural heritage consultation requirements for proponents 2010* (Consultation Guidelines) (DECCW, 2010a).
- *Aboriginal Cultural Heritage: Standards and Guidelines Kit* (National Parks and Wildlife Service, 1997).
- *Ask First: A guide to respecting Indigenous heritage places and values* (Australian Heritage Commission, 2002).
- Clause 80C of the *NSW National Parks and Wildlife Regulation, 2009*.
- *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW, 2010b).
- *Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation* (DEC, 2005b).
- *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (DECCW, 2010c).
- *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH, 2011).
- The Australian International Council on Monuments and Sites (ICOMOS) *Burra Charter* (Australia ICOMOS, 2013).

A description of Aboriginal heritage in the vicinity of the SMC is provided in Section 4.4.1. Section 4.4.2 describes the potential impacts of the Modification on Aboriginal heritage, including cumulative impacts, and Section 4.4.3 outlines mitigation measures, management and monitoring.

4.4.1 Existing Environment

Aboriginal Cultural Heritage Assessment

The ACHA (Appendix D) incorporates relevant information from previous assessments, the results of Modification field surveys and associated consultation with the Aboriginal community, including:

- results from extensive fieldwork and archaeological investigations undertaken previously by archaeologists and representatives of the Aboriginal community at the SMC and surrounds;
- search results from the Aboriginal Heritage Information Management System (AHIMS) database and other heritage registers;
- results from extensive consultation with the Aboriginal community regarding archaeological and cultural heritage values at the SMC and surrounds;
- results from field work and archaeological investigations undertaken for the RHCP (Archaeological Surveys and Reports, 2016); and
- a detailed description of the methods implemented and the results of archaeological and cultural surveys conducted by archaeologists and representatives of the Aboriginal community for the Modification in 2016.

The key steps involved in the preparation of the ACHA and associated consultation are described below.

Previous Archaeological Investigations

A number of Aboriginal heritage surveys and assessments have previously been undertaken in the Modification area (i.e. the portion of the new private haul road to be constructed within ML 1733) and surrounds, including:

- Brayshaw (1984) for the SMC lease area.
- Brayshaw McDonald Pty Ltd (1994) for the Stratford Coal Project EIS.
- Heritage Search (2000) for the Bowens Road North Project.
- Kayandel Archaeological Services (2012) for the approved Stratford Extension Project.

Heritage Register Searches

Searches of the following heritage registers and planning instruments were undertaken:

- AHIMS database.
- State Heritage Inventory.
- Gloucester LEP.

No Aboriginal heritage sites were identified within the Modification area.

Aboriginal Community Consultation

The ACHA included consultation with 111 Registered Aboriginal Parties (RAPs), in general accordance with the requirements of the Consultation Guidelines (DECCW, 2010a) and the NSW *National Parks and Wildlife Regulation, 2009*.

Aboriginal stakeholder groups had been previously identified as having an interest in the management of Aboriginal heritage at the SMC (in accordance with the requirements of the Consultation Guidelines). These stakeholder groups included those parties and individuals who registered an interest in the consultation process associated with the Stratford Extension Project.

All existing RAPs for the SMC were registered for the consultation process associated with the Modification. In addition, on the basis that the registration process for the RHCP (including the public notice) incorporated the Modification area, all Aboriginal stakeholder groups who registered an interest in the consultation process associated with the RHCP (Archaeological Surveys and Reports, 2016) were also registered for the consultation process associated with the Modification.

Consultation with the Aboriginal community regarding the Modification has been extensive and involved various methods of communication including public notices, written and verbal correspondence, archaeological survey attendance and review of relevant draft reports and methodologies.

A list of the RAPs and a detailed description of the consultation undertaken for the Modification is provided in Appendix D.

Archaeological Findings

Field surveys within the Modification area were undertaken by Niche (2016) on 5 May 2016 in consultation with the representatives of the RAPs. The ACHA study area is shown on Figure 7, with the Modification area indicated by the 'Indicative Proposed Private Haul Road Boundary' shown on this figure.

No Aboriginal heritage sites were identified within the Modification area, despite the intensive nature of the survey (Appendix D). No specific areas or places of cultural value were identified by RAPs during the archaeological survey undertaken for the Modification.

A portion of the Modification area (i.e. the portion of the haul road alignment within the Craven and Craven Variant A soil landscapes in the vicinity of Dog Trap Creek) has been assessed by Niche (2016) to have a high likelihood of containing sub-surface archaeological deposits.

The relevant soil landscapes have the potential for buried and intact soil horizons below past land use disturbance and are considered by Niche (2016) to be likely to provide evidence of Aboriginal occupation, including material that may be dated to provide a chronology of Aboriginal occupation in the local area.

4.4.2 Potential Impacts

While the Modification would have no impact on known Aboriginal heritage sites or cultural values within the Modification area or immediate surrounds, Niche has identified the potential for sub-surface archaeological deposits within a portion of the haul road alignment.

Although the Modification would have a direct impact on the portions of the Craven and Craven Variant A soil landscapes present within the haul road alignment, the significance of any sub-surface archaeological material (should it be present) is predicted by Niche (2016) to be moderate.

Niche (2016) therefore considers that no further investigation is required to inform the impact assessment. Notwithstanding, subsurface testwork would be undertaken prior to construction to verify whether subsurface artefacts may be present in alluvial soil landscapes (Section 4.4.3).

As no Aboriginal heritage sites have been identified in the Modification area or immediate surrounds, the Modification is not expected to cause a loss of heritage resources that could be viewed as being very rare or unique or unlikely to exist elsewhere (Appendix D). Therefore the Modification would not result in any significant cumulative impact on Aboriginal heritage in the region.

4.4.3 Mitigation Measures, Management and Monitoring

The Heritage Management Plan (HMP) for the SMC would be revised to incorporate the Modification, in consultation with the OEHL and the relevant RAPs (in relation to the management of Aboriginal heritage values).

The HMP would also include the following management and mitigation measures relevant to the Modification:

- Ongoing consultation would be undertaken with relevant RAPs over the life of the SMC.
- Prior to construction of the haul road and in consultation with the RAPs, SCPL would engage a suitably qualified archaeologist to undertake test excavations (consistent with the methodology provided in Appendix D) to identify the potential for sub-surface archaeological deposits in the Craven and Craven Variant A soil landscapes within the Modification area.
- A series of three to five initial test pits would be undertaken. These initial pits would inform the need to conduct additional excavation pits (i.e. based on the findings of the initial pits and advice of the archaeologist).
- If any sites or deposits of moderate or high scientific significance are identified during the test excavations, then salvage of a sample selection of the identified archaeological material would be undertaken.
- Should any skeletal remains be detected during the course of the Modification, work with the potential to impact the remains would cease immediately and the find would be reported to the relevant authorities (including the Police, the OEHL and RAPs). Subject to the Police requiring no further involvement, the management of any Aboriginal skeletal remains would be determined in consultation with the DP&E, the OEHL and the RAPs.
- Any additional Aboriginal heritage sites which may be identified during the development of the Modification would be recorded and registered with the OEHL in consultation with the RAPs. Should additional Aboriginal heritage sites be identified, they would be managed in accordance with the measures described in the HMP. The notification to AHIMS would be undertaken as part of the annual review/reporting requirements at the SMC.

4.5 TERRESTRIAL ECOLOGY

A Terrestrial & Aquatic Ecology Assessment has been prepared for the Modification by AMBS Ecology & Heritage (AMBS) (2016) and is presented in Appendix E.

4.5.1 Existing Environment

The existing SMC is located in a rural area characterised by cattle grazing on native and improved pastures, with these broad areas flanked by timbered escarpments. Land use in the area is dominated by cattle grazing, mining associated with the SMC and proposed biodiversity conservation associated with the SMC.

The proposed haul road extension passes through three disturbed vegetation types (Appendix E):

1. Revegetated mine workings - provides minimal habitat features for fauna with no trees established and few shrubs occurring (i.e. rehabilitation objectives on the relevant portion of Bowens Road North Open Cut rehabilitation has been rehabilitation to improved pasture).
2. Improved pasture - not native and contains little or no features that would provide suitable habitat for the majority of the threatened fauna likely to occur in the locality (Plate 5).
3. Degraded riparian vegetation - Vegetation associated with Dog Trap Creek within the study area consists of a few remnant River She Oak (*Casuarina cunninghamii*) trees with an understorey of exotic and some native species.



Plate 5: Typical improved pasture vegetation that characterises the majority of the Modification area (Source: Appendix E).

In total, two River She Oak (*Casuarina cunninghamii*) trees occur within the Modification area in proximity to Dog Trap Creek and may be affected by the Modification (note: however may not be removed entirely).

4.5.2 Potential Impacts

No threatened plant species or populations were considered likely to occur within the Modification area (Appendix E) and the study area does not contain any threatened ecological communities. Habitat for threatened fauna within the study area is either absent, or is extremely limited in extent and in poor condition.

The Modification would have no impact on most threatened species, populations or ecological communities or their habitats (Appendix E).

AMBS (2016) describes that threatened species that may utilise the study area on more than an occasional basis are the Grey-crowned Babbler (eastern subspecies) (*Pomatostomus temporalis temporalis*) and Southern Myotis (*Myotis macropus*). Potential habitat for these species occurs in the degraded riparian vegetation along Dog Trap Creek (one or two trees in the Modification area) (Figure 7).

AMBS (2016) reports that potential impacts on these species are negligible because:

- only one or two trees and some potential foraging area around and between these trees would be removed;
- the habitat for these species within the Modification area is limited in extent and in poor condition; and
- there are extensive areas of potential habitat for these species which would remain outside of the study area.

4.5.3 Mitigation Measures, Management and Monitoring

The existing Vegetation Clearance Protocol developed for the approved activities at the SMC (Australian Museum Business Services, 2012) would be implemented during clearance activities undertaken for the Modification. The Vegetation Clearance Protocol would include (where applicable):

- pre-clearance surveys for fauna;
- presence of a suitably trained and qualified person(s) to manage animals that may be encountered during land clearing; and
- management of fauna post-vegetation clearing.

Trees in the degraded riparian vegetation along Dog Trap Creek which occur within the Modification area would be replaced by planting new trees as close to the proposed haul road as possible.

4.6 AQUATIC ECOLOGY

A Terrestrial & Aquatic Ecology Assessment has been prepared for the Modification by AMBS (2016) and is presented in Appendix E.

4.6.1 Existing Environment

Local and regional hydrology is described in Section 4.3.1. Because potential aquatic ecology impacts associated with the private haul road crossing would be limited to Dog Trap Creek, this subsection has a focus on Dog Trap Creek.

The downstream portion of Dog Trap Creek, in the vicinity of the Modification area, is heavily impacted by cattle grazing. Dog Trap Creek is characterised as being ephemeral in nature (Section 4.3.1 and Appendix C).

The aquatic ecology assessment of Dog Trap Creek has included:

- Stratford Extension Project Aquatic Ecology Assessment (frc environmental, 2012) which included aquatic flora and fauna surveys of a site on Dog Trap Creek approximately 700 m downstream of the Modification area.
- Aquatic ecology surveys (water quality, macroinvertebrates and fish) have been undertaken at this site from 2000-2010 (frc environmental, 2012).
- Water quality, habitat and fish data collected in the Modification area (Plate 6) from two locations at the creek crossing by Cardno (2016) was analysed by AMBS (2016).



Plate 6: Pool of standing water in Dog Trap Creek in Modification area (Source: Appendix E).

The habitat assessment for Dog Trap Creek by AMBS (2016) showed:

- Water sampled in Dog Trap Creek at the location of the Modification area, has water quality levels that fall outside the ANZECC (2000) aquatic ecosystem guidelines for all variables.
- Previous surveys identified the exotic Eastern Gambusia (*Gambusia holbrooki*) comprised 100% of the community sampled at Dog Trap Creek (frc environmental, 2012). Eastern Gambusia is declared as noxious under the *Fisheries Management Act, 1994* (FM Act), and is considered a pest by DPI Fisheries (DPI Fisheries, 2016). The recent surveys undertaken by Cardno (2016) identified Gambusia as being present at the creek crossing in addition to the commonly occurring Striped Gudgeon (*Gobiomorphus australis*) and an introduced Goldfish (*Carassius auratus*).
- Dog Trap Creek is associated with cleared pasture land use with a narrow (<5 m) riparian buffer composed of exotic and native trees and shrubs that shade some sections of the creek. The in-stream habitat upstream, downstream and at the creek crossing on Dog Trap Creek is composed of a benthic substrate, dominated by silt, with no flow conditions. Two large deep pools of standing water occur in the vicinity of the crossing.
- No aquatic species listed under the *Threatened Species Conservation Act, 1995*, EPBC Act or FM Act have been recorded during previous surveys of Dog Trap Creek or its surrounds.

4.6.2 Potential Impacts

Potential impacts on aquatic ecology would include (Appendix E):

- impacts on adjacent riparian vegetation; and
- impacts on *in situ* stream bed and bank flow regimes associated with the crossing (either a prefabricated bridge or culvert);
- erosion and sedimentation during construction.

Loss of riparian habitat would be limited to approximately 0.1 ha of degraded riparian vegetation (Appendix E).

Impacts associated with construction of the Dog Trap Creek crossing would be limited to the extent of construction works required to form the crossing. The design of the crossing would include appropriate armouring downstream of the crossing location in order to mitigate the effects of increased flow velocities through and over the crossing in high flows, in accordance with accepted road design practice. In addition elements of aquatic habitat would be included in the detailed design of the crossing (Section 4.6.3).

Potential erosion and sediment impacts would be managed by implementing best practice construction erosion controls.

4.6.3 Mitigation Measures, Management and Monitoring

As discussed in Appendix C and Section 4.3.3, impacts on the flow regime associated with the crossing would be minimised by appropriate crossing design.

Section 4.3.3 describes measures to control erosion during construction works. These would be described in a revised WMP.

Construction and Design of Creek Crossings

The Dog Trap Creek crossing would be constructed consistent with the approved creek crossing of Avondale Creek and would follow the NSW *Policy and Guidelines for Fish Friendly Waterway Crossings* (DPI, 2004) and *Policy and Guidelines for Aquatic Management and Fish Conservation* (DPI, 1999).

Design principles would be adopted as listed below:

- Creek crossings to be located at least 100 m from any other creek crossing in order to minimise cumulative effects.
- Culverts would be as short (i.e. along the length of the stream) and as wide (i.e. across the stream channel) as practicable, to allow the passage of anticipated flood volumes and associated debris, and to allow enough water depth within the culvert to facilitate fish movement.
- Culverts would be open-bottomed, where practicable, to retain the natural morphological features of the stream. If this is not practical, culverts should be countersunk below the stream bed and natural materials such as rocks secured to the base of the culvert to increase roughness and reduce water velocity.
- Native vegetation would be planted around the culvert after construction to stabilise banks, provide food and habitat for fauna and prevent predation of aquatic fauna by birds.

Culverts would be checked and maintained annually for debris or plant growth that impedes fish passage.

4.7 ROAD TRANSPORT

A Road Transport Assessment for the Modification was undertaken by GTA Consultants (2016) and is presented as Appendix F. The assessment was prepared in accordance with the *Guide to Traffic Generating Developments* (NSW Roads and Traffic Authority [RTA], 2002), and where relevant, makes reference to the RTA's (1996) *Road Design Guide* and Austroads standards.

4.7.1 Existing Environment

Road Hierarchy and Conditions

Regional Roads

The Bucketts Way (Main Road 90) provides access to the SMC. It extends from the Pacific Highway (State Highway 10) at Karuah in the south, to Gloucester in the north and then to the Pacific Highway at Nabadig in the east. The Pacific Highway provides access to Newcastle and Sydney from the SMC.

Local Roads

Bowens Road is a public road that extends eastwards from The Bucketts Way to the south of Stratford (Figure 2). It is separated into two sections, the western section terminates at its intersection with Wheatleys Lane and the eastern section commences at its intersection with Wenham Cox Road to the east of the Bowens Road North Open Cut.

The eastern section of Bowens Road (east of Wenham Cox Road) initially has a sealed surface which then changes to an unsealed surface. The width of the eastern section varies and typically has a single lane width with opportunities for vehicles to pass at low speeds (Appendix F).

Wenham Cox Road is a public road that extends eastwards from The Bucketts Way to the north of Stratford (Figure 2) and provides access to a limited number of private properties. It is sealed for approximately 5 km east of The Bucketts Way and has a minimum width of 6 m (Appendix F). It has adequate sight distances and opportunities for vehicles to pass at speed (Appendix F).

The SMC access road is a private road that extends eastward from The Bucketts Way (Figure 2). It has a single lane in each direction and is typically 7 to 7.5 m wide (Appendix F).

The Stratford Extension Project includes two approved road realignments, namely:

- a 400 m sealed two-lane road realignment of Wheatleys Lane and Bowens Road around the western extent of the proposed Roseville West Pit Extension and upslope diversion; and
- a 1.7 km sealed two-lane road realignment of Wenham Cox/Bowens Road around the north-eastern extent of the proposed Northern Waste Emplacement Extension and Avon North Open Cut.

In accordance with Condition 44, Schedule 3 of SSD-4966, the above road realignments will be undertaken to the satisfaction of Mid-Coast Council.

4.7.2 Potential Impacts

Potential impacts associated with the Modification on the road transport network include:

- minor changes to road movements on The Bucketts Way associated with proposed interactions with the RHCP; and
- potential interactions with limited traffic flow on Wenham Cox Road in relation to the proposed intersection with the private haul road (pre and post realignment of Wenham Cox Road).

As discussed in Section 3.10, the Modification would involve some additional road transport movements, including:

- Minimal additional heavy vehicle movements for the delivery of heavy machinery to the RHCP via the SCM access road.
- Access for a number of the RHCP haul truck drivers prior to and following a coal haulage shift (where trucks are parked-up at the SMC overnight).

GTA Consultants (2016) has reviewed key road transport thresholds in consideration of these additional movements and has concluded that there would be no change to the levels of service at local roads and intersections.

In addition, the Modification would result in potential interactions between the private haul road and traffic on Wenham Cox Road.

Use of Wenham Cox Road has declined in recent years, with a daily usage of 156 vehicles/day measured during surveys for the Stratford Extension Project (Halcrow, 2012) to 57 vehicles/day in April/May 2016 (Appendix F).

GTA Consultants (2016) proposes that the private haul road would form the major road at the intersection and that Wenham Cox Road would form the minor road. In accordance with Ausroads standards, several design features have been incorporated into the proposed intersection, namely (Appendix F):

- the speed of haul trucks on the private haul road would be limited to 60 km/h;
- boom gates would be installed on Wenham Cox Road; and
- boom gates would also be installed on the private haul road (to prevent access by the public).

The conceptual intersection layout, including these controls is shown on Figure 10. This layout is shown for the approved Wenham Cox Road realignment, however should this realignment not be required prior to construction of the private haul road, the same controls would be put in-place at the intersection with the existing Wenham Cox Road.

With the above measures incorporated, the delay experienced by each vehicle on Wenham Cox Road would be minor (Appendix F), and the road would continue to operate at a good level of service.

4.7.3 Mitigation Measures, Management and Monitoring

Several design features would be included in the intersection design as described in Section 4.8.2 and Appendix F. SCPL would construct both the intersections of the existing Wenham Cox Road and the private haul road, and the realigned Wenham Cox Road and the private haul road, to the satisfaction of Mid-Coast Council.

4.8 VISUAL CHARACTER

A Visual Assessment was undertaken for the Stratford Extension Project by Resource Strategies Pty Ltd (Resource Strategies) (2012).

4.8.1 Existing Environment

Views of the SMC from the surrounding area are generally screened by topography and vegetation, except for some areas to the north and west (Resource Strategies, 2012).

The SMC and surrounds comprise a number of distinct land use types and landscape units, including the existing SMC, reserved lands, agricultural lands and topographic features. Land use and key landscape features that contribute to visual character and scenic quality are described below in the context of the regional, sub-regional and local settings.

The SMC is located within the Stroud Gloucester Valley Incorporating the Vale of Gloucester area which was registered by the National Trust of Australia (NSW) for its historical and scenic values.

Resource Strategies (2012) conducted a visual impact assessment for changes associated with the Stratford Extension Project. Visual impacts for dwellings and roads within the vicinity of the SMC were identified to be moderate to low, reducing to low after rehabilitation (Resource Strategies, 2012).

4.8.2 Potential Impacts

Potential visual impacts associated with the Modification are limited to views of the private haul road. Views of the private haul road would be available from Wenham Cox Road, however, given the infrequent use of this road, potential impacts would be limited.

Since changes to visual impacts associated with the Modification would be linked to the private haul road, the visual impacts assessed by Resource Strategies (2012) are not expected to change.

As haulage associated with the Modification would be conducted during daytime hours only, the Modification would not change the lighting impacts associated with the SMC.

Stroud Gloucester Valley Incorporating the Vale of Gloucester

The Modification is not anticipated to contribute to scenic values, rural values or cumulative impacts as the changes to existing operations will be minor. As the Modification does not involve night-time haulage operations, it would not contribute to cumulative night-lighting impacts.

4.8.3 Mitigation Measures, Management and Monitoring

Given the limited change in visual impacts associated with the Modification, no additional specific mitigation and management measures are proposed.

4.9 NON-ABORIGINAL HERITAGE

A Non-Aboriginal Heritage Assessment was undertaken by Heritage Management Consultants Pty Ltd (Heritage Management Consultants) (2012) for the Stratford Extension Project.

4.9.1 Existing Environment

Heritage Items of Relevance to the SMC

Heritage Management Consultants (2012) completed historical and archival research and review of heritage registers prior to survey of the SMC.

No heritage items were identified within the Modification area. One site (the Stratford Timber Railway Remnant) is located 400 m east of the Avon North Open Cut and would not be impacted by the Modification.

Landscapes

The SMC is located within the Vale of Gloucester Landscape Conservation Area which was registered by the National Trust of Australia (NSW) in 1976. The listing was revised and extended by the National Trust in 1981, and revised and extended again as the 'Stroud Gloucester Valley Incorporating the Vale of Gloucester' in March 2011 (i.e. the SMC was operational during the recent listing revision) (Heritage Management Consultants, 2012). The listing is not recognised in any State heritage registers or either the Gloucester LEP or the *Great Lakes Local Environmental Plan 2014*.

4.9.2 Potential Impacts

As the Stratford Timber Railway is located outside the SMC and Modification area, it would not be impacted by the Modification.

The Modification would not have an adverse affect on the Stroud Gloucester Valley Incorporating the Vale of Gloucester that has been considered by the National Trust to have some cultural landscape value (Heritage Management Consultants, 2012). Potential visual impacts of the Modification on the Stroud Gloucester Valley Incorporating the Vale of Gloucester are considered in Section 4.8.2.

Cumulative Impacts

Given there would not be any material Modification effects on non-Aboriginal heritage values, the Modification would not materially contribute to local or regional cumulative impacts on non-Aboriginal heritage.

4.9.3 Mitigation Measures, Management and Monitoring

No specific mitigation and management measures are proposed as there would be no material impacts associated with the Modification on non-Aboriginal heritage sites.

4.10 SOCIAL AND ECONOMIC ASPECTS

The Socio-Economic Assessment undertaken for the Stratford Extension Project indicates that the Project would generate total royalties to the state of NSW in the order of \$130 million over the life of the Stratford Extension Project. These economic benefits would continue to be realised with the Modification.

Current employment at the SMC is around 25 persons. The Stratford Extension Project, including the Modification, would provide for the continuation of the SMC and direct employment of 250 on-site personnel at maximum production, including a mixture of direct Yancoal employees and contractors (SCPL, 2012a). No change to these employment levels are anticipated for the Modification.

In addition, the Modification would assist GRL to realise the direct and indirect social and economic benefits associated with the RHCP.

4.11 HYDROGEOLOGY

The Stratford Extension Project EIS documents extensive baseline geological and groundwater data in the SMC area and surrounds, including a project-specific groundwater investigation programme and groundwater monitoring programmes and investigations undertaken at the SMC and surrounding projects (e.g. AGL's Gloucester Gas Project and GRL's amended RHCP). The EIS Groundwater Assessment was undertaken by Heritage Computing Pty Ltd (2012) (Dr Noel Merrick).

Geological and groundwater data supports the presence of two groundwater systems (SCPL, 2012a):

- Hard rock groundwater system – including shallow rock aquifer and coal measures; and
- Alluvial groundwater system – including alluvial (narrow channel) sediments associated with Dog Trap Creek, Avondale Creek and the Avon River.

Locally there is little reliance on groundwater bores as a source of water for agricultural enterprises, as they predominantly rely on surface water sources which are more abundant and generally better quality (SCPL, 2012a).

Detailed numerical modelling was undertaken as a component of a Groundwater Assessment to quantify the likelihood and magnitude of potential impacts from the Stratford Extension Project and other developments in the region (Heritage Computing, 2012).

As mining operations progress, groundwater accumulates in the open cuts. The average inflows to the open cuts (combined) over the life of the SMC were predicted to be about 1.1 megalitres per day, with the majority (approximately 98.5%) derived from the fractured rock groundwater system (SCPL, 2012a).

As the Modification does not change physical aspects associated with approved open cut pit dewatering, the assessment of groundwater inflows to approved open cuts is not expected to change. Therefore, detailed groundwater modelling for the Modification is not considered to be warranted and the results of modelling conducted by Heritage Computing (2012) are considered to remain relevant.

As the geochemistry of RHCP rejects are consistent with those of the SMC (Section 3.5), rejects management measures would be consistent with those currently implemented at the SMC. Therefore, no groundwater quality implications are anticipated as a result of the Modification.

5 CONCLUSION

The Modification would facilitate:

- the haulage of RHCP ROM coal via a private haul road through SCPL's existing mining tenements; and
- the processing of RCHP coal using existing infrastructure at the SMC and transportation of product coal via rail to the Port of Newcastle.

The SMC component of the private haul road would use existing haul roads and a short (800 m) section of new, sealed haul road.

The Modification would allow for the more efficient use of SMC's existing infrastructure and is substantially the same as the original SMC because the Modification would not change the existing/approved:

- open cut mining operations;
- operational hours;
- waste rock production and emplacement areas;
- ROM coal processing rate;
- average or maximum daily number of product coal trains dispatched from the SMC;
- coal handling and processing infrastructure; and
- water supply, water management infrastructure and CHPP rejects storage areas and management.

Environmental assessments have been conducted to assess the potential impacts associated with the Modification. These reviews concluded:

- Haulage operations associated with the Modification would be daytime only and would not occur on Sundays. Operational noise was modelled to include haulage of RHCP coal through the SMC mining tenements. Daytime noise levels from the SMC would not change due to the Modification.
- Potential air quality impacts associated with the Modification would be limited to haulage of coal and handling of sized ROM coal at the SMC CHPP. No change to the maximum emissions inventory is anticipated due to the Modification.

- The Modification area (i.e. the portion of newly constructed sealed private haul road) would include a crossing of Dog Trap Creek. This crossing would be constructed using a pre-fabricated bridge or series of culverts. The crossing would be designed to minimise effects on the flow regime and flooding impacts and best practice erosion controls would be used during its construction.
- No discernible flooding impacts are anticipated upstream or downstream of the crossing and the crossing would be designed to continue to facilitate fish passage and incorporate aquatic habitat elements.
- An Aboriginal heritage survey and assessment of the Modification area was undertaken. No Aboriginal heritage sites were found during the survey. Subsurface testwork would be undertaken prior to construction to verify whether subsurface artefacts may be present in alluvial soil landscapes. If found, a representative sample of artefacts would be salvaged and documented for research purposes.
- The majority of the Modification area consists of pasture used for cattle grazing with limited ecological value. Potential effects on fauna habitat is limited to a single tree hollow. Its removal would not affect the overall ecological function of the remaining riparian vegetation. Therefore, impacts on threatened fauna species would be minimal.
- The private haul road would include an intersection with Wenham Cox Road (a rural access road which provides access to one private property). The intersection design would include boom gates on Wenham Cox Road for the safety of road users, and also on the private haul road to prevent access into the SMC and RHCP.

Based on the above and comparative analysis of the key elements (Table 1), it is concluded that the Modification is substantially the same as the originally approved Stratford Extension Project and is justified as it would facilitate increased utilisation of existing infrastructure at the SMC.

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