SUNNYSIDE COAL MINE MODIFICATION

ENVIRONMENTAL ASSESSMENT

JUNE 2015
PREPARED BY
WHITEHAVEN COAL LIMITED

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EXECUTIVE SUMMARY

This Environmental Assessment has been prepared by Whitehaven Coal Limited (Whitehaven) to support an application to modify Project Approval (06_0308) for the Sunnyside Coal Mine.

Background

The Sunnyside Coal Mine is located approximately 15 kilometres west of Gunnedah in New South Wales (NSW).

Project Approval (06_0308) was granted in September 2008, and authorises:

- mining operations until November 2015;
- the extraction of up to 1 million tonnes per annum of run-of-mine (ROM) coal; and
- transportation of coal by truck to the Whitehaven Coal Handling and Preparation Plant near Gunnedah.

Due to unfavourable economic conditions, Whitehaven discontinued mining operations at Sunnyside on 29 November 2012. Activities at the mine site since then have been limited to the clearing of remaining ROM coal stockpiles, environmental monitoring, ongoing rehabilitation and care and maintenance of the site (including spontaneous combustion management).

The Modification

Whitehaven wishes to maintain a current Development Consent at the Sunnyside Coal Mine to enable the extraction of the remaining coal within the approved open cut footprint should the current adverse economic conditions change.

Accordingly, Whitehaven requires a modification to Project Approval (06_0308) to authorise the continuation of mining of the approved coal reserves beyond November 2015 for a further period of 5 years (i.e. until the end of 2020).

In addition, the Modification would involve rehandling of out-of-pit emplaced waste rock following the completion of mining, with this material being used to partially backfill the final void to improve geotechnical stability.

With the exception of the revised final landform, the Modification would **not change** other aspects of the approved Sunnyside Coal Mine. Rather, the Modification would involve the completion of the approved mining activities.

Without the Modification the remaining coal reserves approved to be extracted would be forgone, along with the associated economic benefits resulting from the payment of State royalties, employment and direct expenditure in the NSW and local economies.

Environmental Assessment

Road Traffic

A traffic and transport review was conducted by GTA Consultants, which included a safety inspection of the coal haulage route.

The review concluded the coal haulage route was generally in a satisfactory condition. However, GTA Consultants recommends a number of minor road safety improvements be addressed, which relate to both existing issues unrelated to the Sunnyside Coal Mine or the Modification, as well as issues only required to be addressed prior to the recommencement of coal haulage from the Sunnyside Coal Mine.

Whitehaven commits to addressing those issues identified as being associated with resumption of coal haulage prior to the recommencement of coal haulage. Whitehaven has also notified the relevant regulatory authorities of the other road safety recommendations that are unrelated to the Sunnyside Coal Mine.

The Modification would not increase approved traffic movements. As such, the review concluded that, once the recommended road safety improvements are addressed, no additional improvements to the road network would be warranted. Therefore, the Modification would result in no significant impacts on the performance, efficiency and safety of the road network.

Noise, Blasting and Air Quality

A review of potential noise and blasting impacts was conducted by Wilkinson Murray and a review of potential air quality impacts was conducted by Pacific Environment Limited.

The reviews considered the previously predicted noise, blast and dust levels for the Sunnyside Coal Mine, as well as monitoring data collected during mining operations.

The review concluded that the continuation of the approved (and previously assessed) mining activities beyond 2015 could occur in accordance with the existing Project Approval (06_0308) limits for noise, blast and air quality.

Groundwater

A groundwater review was conducted by GeoTerra for the Modification. The review indicates groundwater monitoring data supports the predictions of the modelling conducted for the 2008 approval. No additional groundwater impacts are predicted for the Modification, and consistent with 2008 modelling, no pit lake is predicted to form in the final void.

Visual

A review of potential visual impacts was conducted, which concluded no additional visual impacts are expected.

Other Environmental Aspects

The Environmental Assessment has also considered other potential environmental impacts. No additional impacts to flora, fauna or heritage are expected due to the Modification.

1 INTRODUCTION

The Sunnyside Coal Mine is located approximately 15 kilometres (km) west of Gunnedah in New South Wales (NSW) (Figure 1). The mine is owned by Namoi Mining Pty Ltd, which is a wholly owned subsidiary of Whitehaven Coal Limited (Whitehaven).

Project Approval for the Sunnyside Coal Mine was granted by the NSW Minister for Planning under Part 3A of the NSW *Environmental Planning and Assessment Act, 1979* (EP&A Act) on 24 September 2008 (PA 06_0308).

1.1 OVERVIEW OF THE EXISTING SUNNYSIDE COAL MINE

The Sunnyside Coal Mine is currently approved to extract up to 1 million tonnes per annum (Mtpa) of run-of-mine (ROM) coal. The Sunnyside Coal Mine is a conventional open cut operation, with associated mine-related infrastructure including a ROM coal stockpile, on-site primary crushing facility, conveyor, coal load-out bin, and ancillary surface facilities including offices and a workshop (Figure 2). The product ROM coal is transported from the mine site to Whitehaven's Gunnedah coal handling and preparation plant (CHPP), which is located approximately 8 km to the east-northeast (approximately 16 km by road) (Figure 3).

In accordance with Condition 5, Schedule 2 of Project Approval (06_0308), mining operations may take place for 7 years from the grant of the mining lease (ML) for the Project. The Sunnyside Coal Mine ML 1624 was granted on 5 November 2008, which means that mining operations are currently approved until 5 November 2015.

Due to unfavourable economic conditions, Whitehaven discontinued mining operations at the Sunnyside Coal Mine on 29 November 2012, with stockpiled ROM coal continuing to be transported to the Whitehaven CHPP on a campaign basis until May 2013. Activities at the mine site since then have been limited to environmental monitoring, ongoing rehabilitation, and care and maintenance of the site (including spontaneous combustion management).

The approved Sunnyside mining operations are described in full in the Sunnyside Coal Project Environmental Assessment (the Sunnyside EA) (Olsen Environmental & R.W. Corkery, 2008).

1.2 OVERVIEW OF THE SUNNYSIDE COAL MINE MODIFICATION

Whitehaven wishes to maintain a current Development Consent at the Sunnyside Coal Mine to enable the extraction of the remaining coal within the approved open cut footprint (approximately 1 million tonnes [Mt]) should current adverse economic conditions change.

The proposal would extend the life of the Sunnyside Coal Mine beyond the currently approved 2015 date.

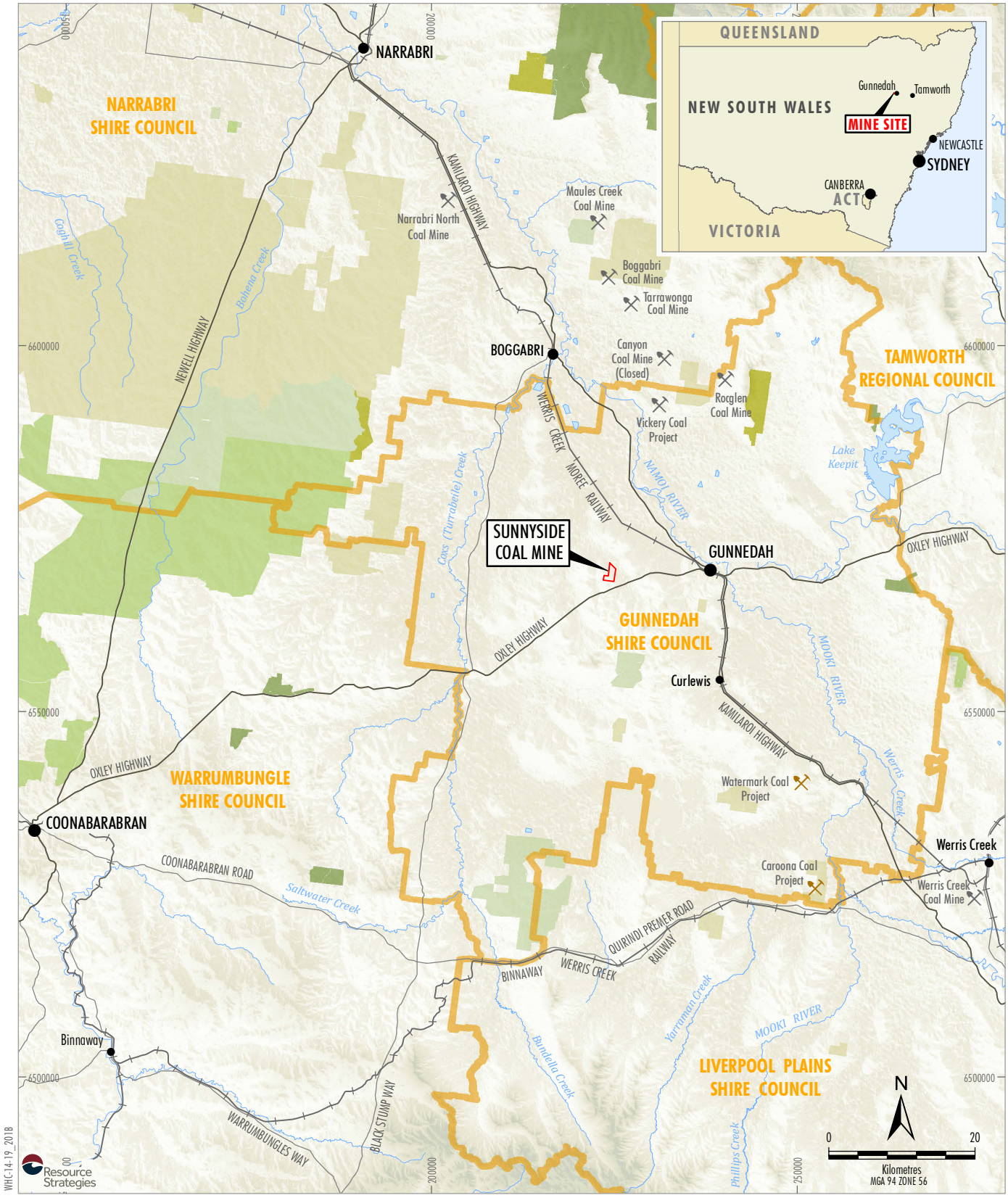
In addition, the Modification would involve rehandling of out-of-pit emplaced waste rock following the completion of mining, with this material being used to partially backfill the final void to improve geotechnical stability.

Accordingly, Whitehaven requires a modification to Project Approval (06_0308) to authorise the continuation of mining of the approved coal reserves from the existing open pit area beyond November 2015 for a period of 5 years (i.e. until the end of 2020) and obtain approval for the revised final landform.

The Modification would **not change** other aspects of the approved Sunnyside Coal Mine, including the following:

- ML 1624.
- Disturbance area (i.e. open cut mining and waste rock emplacement would continue within the approved mining areas).
- Mining method.
- Coal reserves (i.e. extraction of coal from the Hoskissons coal seam).
- Maximum annual rate of ROM coal or waste rock extraction.
- Total coal production.
- On-site infrastructure, including ROM.
- Hours of operation.
- Mining fleet.
- Transportation of crushed and screened coal to the CHPP via the coal haulage route.
- Coal transportation hours.
- Water demand, supply and management.
- Employees and deliveries.
- Rehabilitation objectives and final land use.

A summary comparison of the approved Sunnyside Coal Mine and the Modification is provided in Table 1.



LEGEND

- National Park
- Nature Reserve
- State Conservation Area
- Aboriginal Area
- NSW State Forest
- Local Government Area Boundary
- Mining Lease Boundary
- Mine Site
- Mine Project

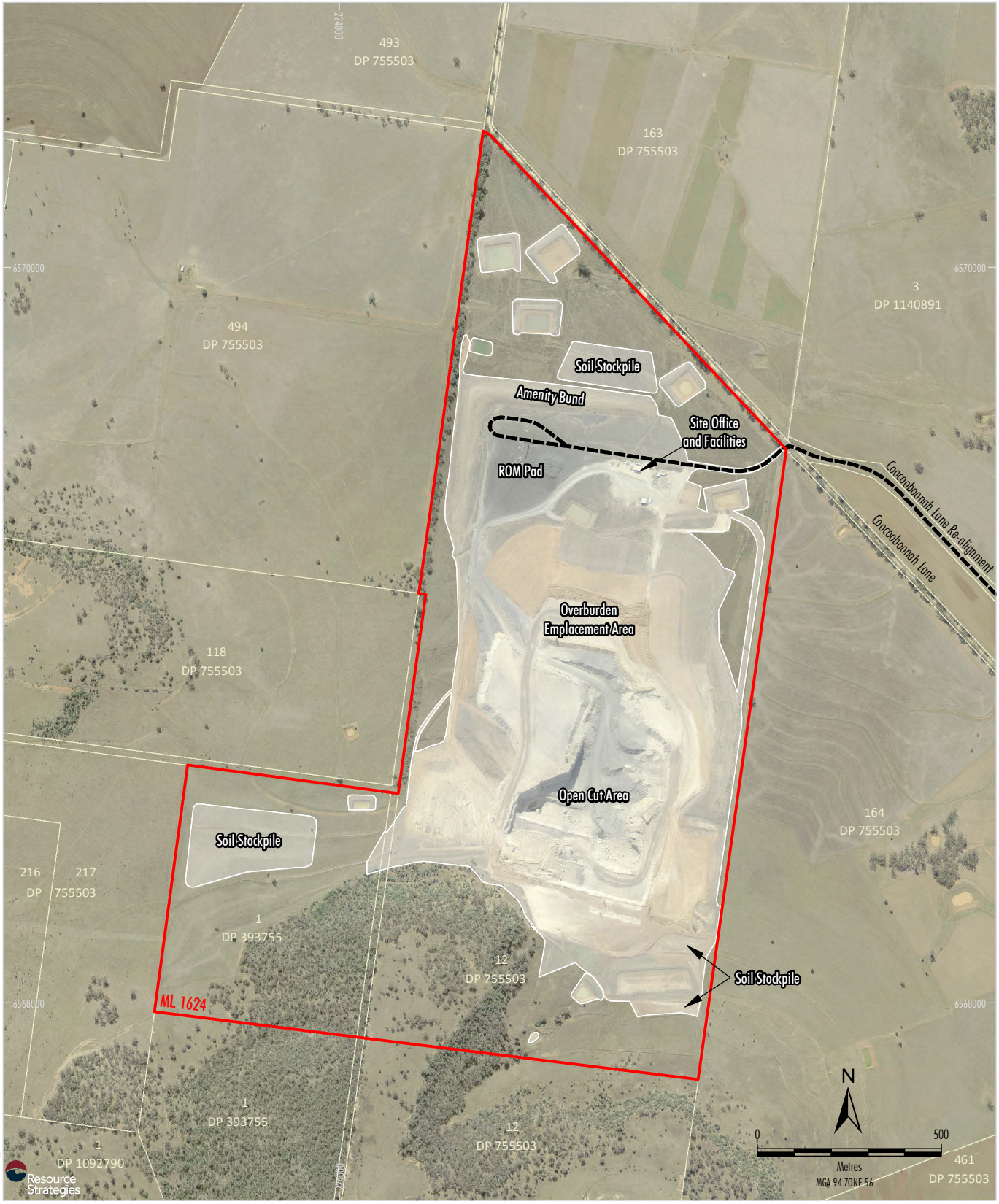
Source: Geoscience Australia (2006); NSW Department of Premier and Cabinet, Office of Environment and Heritage (2011) and Minerals NSW (2012)

WHITEHAVEN COAL

SUNNYSIDE COAL MINE

Regional Location

Figure 1



LEGEND

- Mining Lease Boundary
- Approximate Extent of Existing/Approved Disturbance
- Coal Haulage Route

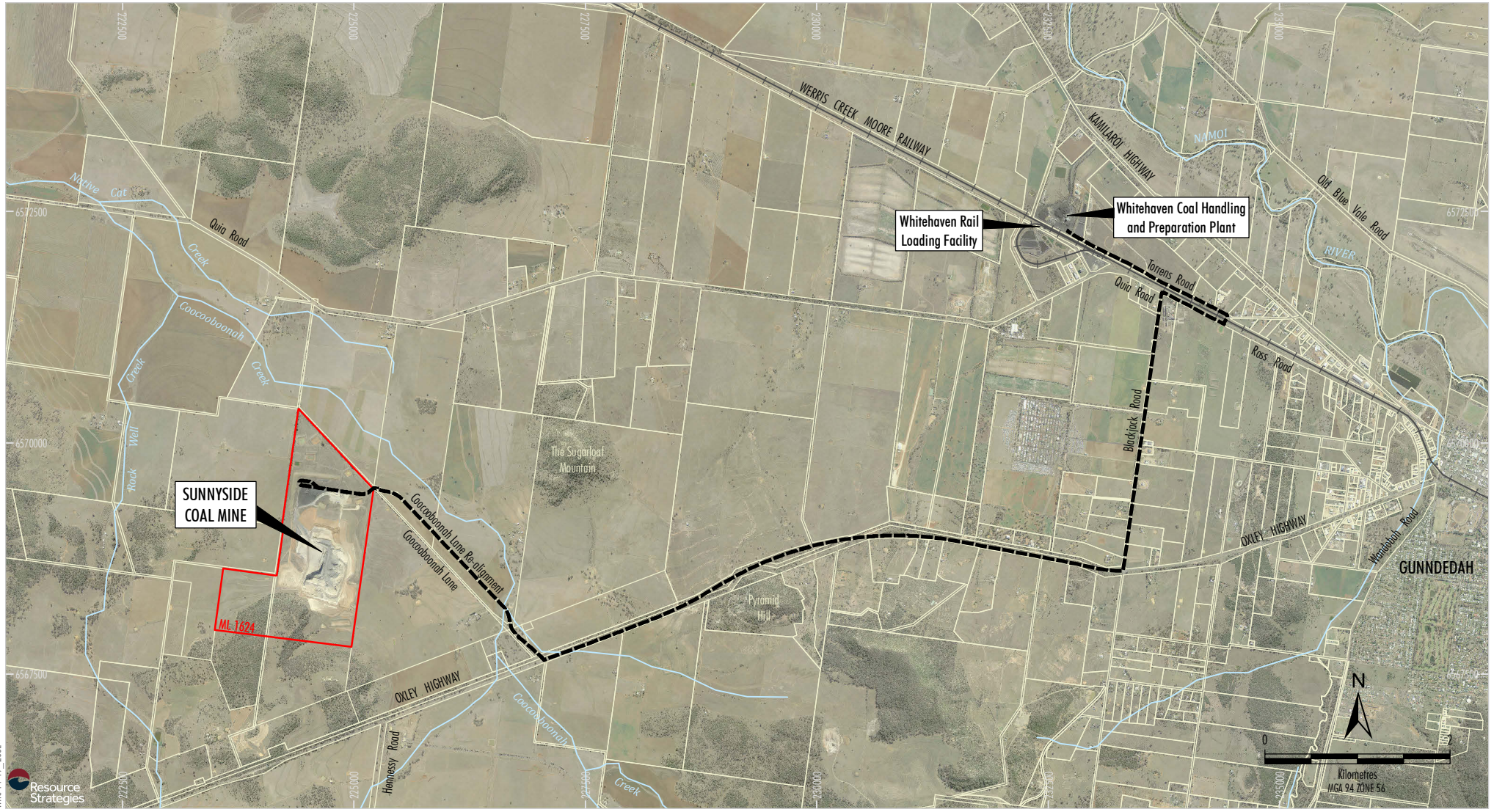
Source: OEC (2013); Orthophoto (2011)

WHITEHAVEN COAL

SUNNYSIDE COAL MINE

Project Layout

Figure 2



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LEGEND
Mining Lease Boundary
Coal Haulage Route

Source: Department of LP&I (2010); Orthophoto (2011)

WHITEHAVEN COAL

SUNNYSIDE COAL MINE

Coal Haulage Route

Figure 3

Table 1
Summary Comparison of the Approved Sunnyside Coal Mine and the Modification

Aspect	Approved Sunnyside Coal Mine	The Modification
Project Life	Mining operations approved until November 2015.	Mining operations to the end of 2020.
Mining Lease	Mining operations within ML 1624.	No change.
Disturbance Area	Total disturbance area of approximately 163 hectares (ha).	No change.
Mining Method	Mining using open cut and augering methods.	No change.
Coal Reserves	Extraction of coal from the Hoskissons coal seam.	No change.
Annual Coal Production	Production of up to 1 Mtpa of ROM coal.	No change.
Total Coal Production	Mineable reserve of 5.9 Mt over the life of the Sunnyside Coal Mine.	No change. The Modification would involve mining of the remaining approved coal reserves (approximately 1 Mt).
Waste Rock Emplacement	Maximum waste rock emplacement height of 345 m Australian Height Datum (AHD).	No change. Reduction in the height of the existing waste rock emplacement to 345 m AHD to provide material to partially backfill the final void.
Final Void	Maximum final void depth of 305 metres (m) AHD.	Maximum depth of the final void of approximately 330 m AHD following partial backfill. Highwall in the southern portion of final void.
Coal Processing	ROM coal crushed and stockpiled on-site.	No change.
On-site Infrastructure	On-site infrastructure including: • mine entrance and internal access roads; • a coal crushing facility, conveyor and coal load out bin; • ROM coal stockpile; • water management structures, including two storage facilities; • amenity bunds near the processing area and along the eastern boundary of the mining area; and • ancillary surface facilities including offices and workshop.	No change.
Hours of Operation	Mining operations between 7.00 am to 10.00 pm, Monday to Friday and 7.00 am to 6.00 pm on Saturdays. No operations would occur on Sundays or Public Holidays.	No change.
Mining Fleet	Mining fleet including excavators, scrapers, dozers, haul trucks, drills, and water trucks.	No change.
Coal Transport	Product coal would be loaded onto trucks (up to 125 laden trucks per day) and transported to the Whitehaven CHPP.	No change.
Coal Haulage Route	Coal transported along public roads (including realigned Coocooboonah Lane) on the approved coal haulage route.	No change.
Coal Transport Hours	Coal transport on the coal haulage route between 7.00 am to 6.00 pm Monday to Friday (or between 7.00 am to 8.00 pm during daylight savings time) and between 7.00 am to 4.00 pm on Saturdays. No coal transport on Sundays or public holidays. No coal transport during AgQuip.	No change.
Water Demand and Supply	Annual water demand between 75 to 100 megalitres (ML) per year (up to 0.3 ML per day), mainly for dust suppression. Water sourced from pit inflows surface run-off captured by the on-site water storage. No external water supply requirements.	No change.
Mine Water Management	Pit inflows pumped to an on-site water storage or historic Gunnedah No. 5 underground workings.	No change.
Employment	Operational workforce.	No change.
Deliveries	Approximately 10 deliveries per day.	No change.
Rehabilitation	Progressive rehabilitation of the disturbance area with the aim of returning the land to areas suitable for agricultural activities.	No change.

Further description of the proposed Modification is provided in Section 3.

1.3 LEGISLATIVE FRAMEWORK

The Sunnyside Coal Mine Project Approval (06_0308) was granted under Part 3A of the EP&A Act.

Therefore, the Sunnyside Coal Mine constitutes a transitional Part 3A project pursuant to the savings and transitional provisions in Schedule 6A of the EP&A Act.

Clause 3 of Schedule 6A provides that Part 3A of the EP&A Act continues to apply to and in respect of "transitional Part 3A projects" following its repeal. That is, Part 3A of the EP&A Act continues to apply, notwithstanding its repeal.[1]

Approval for the proposed Modification is sought as modification to Project Approval (06_0308) and under section 75W of the EP&A Act.

Section 75W of the EP&A Act relevantly provides:

> ***75W Modification of Minister's approval***
>
> *(1) In this section:*
>
> ***Minister's approval** means an approval to carry out a project under this Part, and includes an approval of a concept plan.*
>
> ***modification of approval** means changing the terms of a Minister's approval, including:*
>
> *a) revoking or varying a condition of the approval or imposing an additional condition of the approval, and*
>
> *b) changing the terms of any determination made by the Minister under Division 3 in connection with the approval.*
>
> *(2) The proponent may request the Minister to modify the Minister's approval for a project. The Minister's approval for a modification is not required if the project as modified will be consistent with the existing approval under this Part.*
>
> *(3) The request for the Minister's approval is to be lodged with the Director-General. The Director-General may notify the proponent of environmental assessment requirements with respect to the proposed modification that the proponent must comply with before the matter will be considered by the Minister.*
>
> *(4) The Minister may modify the approval (with or without conditions) or disapprove of the modification.*

State Environmental Planning Policies

Under section 75R(2)(b) of the EP&A Act, State Environmental Planning Policies (SEPPs) apply to projects to which Part 3A applies.

Given this, various SEPPs potentially of relevance were considered during assessment of the Sunnyside Coal Mine (NSW Department of Planning [DoP], 2008), including:

- Major Development SEPP;
- *State Environmental Planning Policy No. 11 – Traffic Generating Development*;
- *State Environmental Planning Policy No. 33 – Hazardous and Offensive Development*;
- *State Environmental Planning Policy No. 44 – Koala Habitat Protection*; and
- *State Environmental Planning Policy No. 55 – Remediation of Land*.

No change is required to the location of the development, land uses, materials handled or the development of infrastructure at the Sunnyside Coal Mine due to the Modification.

In addition, there would be no increase to approved coal transport movements or the coal haulage route for the Modification.

On this basis, consideration of additional SEPPs (i.e. in addition to those previously considered for the Sunnyside Modification) is not required for the Modification.

Local Environmental Plans

The Sunnyside Coal Mine ML 1624 and approved coal haulage route are located within the Gunnedah Shire Council (GSC) Local Government Area (LGA).

There would be no change to mining activities within ML 1624, or to the coal haulage route, originally assessed against GSC Local Environmental Plan (LEP).

On this basis, further consideration of the GSC LEP is not required for the Modification.

Whitehaven implements road maintenance agreements with GSC (Section 2.6), and this agreement would continue for the Modification.

[1] Part 3A of the EP&A Act (as in force immediately before its repeal) continues to apply. The references to clauses of Part 3A in this document are, therefore, as if Part 3A of the EP&A Act is still in force.

1.4 CONSULTATION FOR THE PROPOSED MODIFICATION

Consultation has been conducted with key state government agencies and the GSC during preparation of this EA.

State Government Agencies

Whitehaven provided an overview of the proposed Modification to the NSW Department of Planning and Infrastructure (now the NSW Department of Planning and Environment) on 9 April 2014.

Whitehaven provided a briefing letter to the Division of Resources and Energy (DRE) (part of the NSW Department of Trade and Investment) in September 2014 outlining the key aspects of the proposed Modification. Further, Whitehaven met with DRE representatives in October 2014 to discuss the proposed Modification and suitable approvals pathway.

Whitehaven also provided briefing letters to the Roads and Maritime Services (RMS), Transport for NSW and the NSW Environment Protection Authority (EPA) in September/October 2014 outlining the key aspects of the proposed Modification.

Gunnedah Shire Council

The Sunnyside Coal Mine is located within the Gunnedah LGA.

Whitehaven sent a letter to the General Manager of the GSC in September 2014 outlining the key aspects of the proposed Modification.

1.5 MODIFICATION REQUIREMENT AND JUSTIFICATION

The Modification is required to recover coal reserves approved to be mined at the Sunnyside Coal Mine.

Without the Modification the remaining coal reserves approved to be extracted would be forgone, along with the associated economic benefits resulting from the payment of State royalties, employment and direct expenditure in the NSW and local economies.

The Modification is justified as the continuation of mining activities at the Sunnyside Coal Mine could continue beyond the 2015 in accordance with the existing environmental performance limits of Project Approval (06_0308).

The Modification is also required to authorise a revised final landform which would improve the geotechnical stability of the final void in comparison to the existing void at the Sunnyside Coal Mine.

2 DESCRIPTION OF APPROVED OPERATIONS

A description of the approved operations at the Sunnyside Coal Mine is provided below.

2.1 APPROVALS HISTORY

Project Approval for the Sunnyside Coal Mine was granted by the NSW Minister for Planning under Part 3A of the EP&A Act on 24 September 2008 (PA 06_0308).

2.2 MINE LIFE

Operations at the Sunnyside Coal Mine commenced in 2009.

Due to unfavourable economic conditions, Whitehaven discontinued mining operations at Sunnyside on 29 November 2012 (Section 2.15).

Notwithstanding the above, mining operations are approved until 5 November 2015 in accordance with Project Approval (06_0308).

2.3 MINING ACTIVITIES

Mining at the Sunnyside Coal Mine is approved to be undertaken using open cut mining and augering methods, with a mining fleet that includes excavators, scrapers, dozers, haul trucks, drills, and water trucks.

The key mining landforms are the open cut pit and the waste rock emplacement. Figure 2 shows the existing/approved Project Site Layout for the Sunnyside Coal Mine.

Coal is approved to be extracted from the Hoskissons Coal Seam. The total mineable coal reserve is approximately 5.9 Mt over the life of the Sunnyside Coal Mine.

The maximum approved annual coal extraction rate is up to 1 Mtpa of ROM coal.

2.4 HOURS OF OPERATION

Mining operations at the Sunnyside Coal Mine are approved to be undertaken Monday to Friday between 7:00 am and 10:00 pm and on Saturdays between 7:00 am and 6:00 pm.

No operations are approved to be undertaken on Sundays or Public Holidays.

2.5 COAL HANDLING AND PREPARATION

ROM coal from the mining operations is transferred by haul truck to the coal processing area immediately north of the out-of-pit emplacement.

The coal processing area includes a ROM coal pad, a coal loading hopper, crushers, 100 tonne (t) product bin, conveyor, product coal stockpile area, a diesel generator and a fuel storage area.

The ROM coal is loaded by a front-end loader directly into the coal loading hopper. The ROM coal passes through both a primary and secondary crusher, before being transferred via conveyor to the product bin prior to truck loading.

Coal is then transported to the Whitehaven CHPP for further processing. Coal handling and processing is conducted in accordance with Development Consent (DA 0079.2002) for the Whitehaven CHPP.

2.6 COAL HAULAGE

Up to 1 Mtpa of product coal is approved to be transported from the Sunnyside Coal Mine by trucks along public roads (including realigned Coocooboonah Lane) on the approved coal haulage route to the Whitehaven CHPP (Figure 3).

Approximately 125 laden trucks per day are approved for the maximum coal production rate of 1 Mtpa using a combination of B-double trucks and articulated trucks.

The approved coal haulage route is as follows:

- Trucks exit the Sunnyside Coal Mine via the access road, and turn right onto the realigned Coocooboonah Lane.
- Trucks turn left out of Coocooboonah Lane and proceed along the Oxley Highway for approximately 6 km before turning left into Blackjack Road.
- At the northern end of Blackjack Road, trucks turn right into Quia Road.
- Trucks travel along Quia Road for approximately 750 m before turning left and passing under a rail overpass.
- After the rail overpass, the trucks then immediately turn left again and proceed along Torrens Road directly to the Whitehaven Rail Loading Facility.

Existing Road Maintenance Agreements

The approved coal haulage route is located within the Gunnedah LGA (Figure 1).

In accordance with Condition 37, Schedule 3 of Project Approval (06_0308), Whitehaven has entered into a road maintenance agreement with the GSC for the maintenance of the section of the Oxley Highway between Coocooboonah Lane and Blackjack Road.

The road maintenance agreement with the GSC requires Whitehaven to contribute to the road maintenance costs incurred by the GSC.

Approved Coal Haulage Hours

ROM coal is approved to be transported along the approved coal haulage route between:

- 7:00 am to 6:00 pm Monday to Friday (or between 7:00 am to 8:00 pm during daylight savings time); and
- 7:00 am to 4:00 pm on Saturdays.

No coal transport is approved to occur on Sundays or public holidays, or during the AgQuip Field Days held in August each year.

2.7 RAIL TRANSPORT

Following processing at the Whitehaven CHPP, product coal is transported to customers via rail in accordance with the Whitehaven CHPP Development Consent (DA 0079.2002).

2.8 WASTE ROCK MANAGEMENT

Waste rock from open cut mining activities is emplaced in the out-of-pit waste rock emplacement or in-pit (i.e. backfill of the open cut mining void).

The out-of-pit waste rock emplacement is located immediately north of the open cut pit.

The area where waste rock has been emplaced to date is shown on Figure 2.

The waste rock emplacement area is progressively shaped and rehabilitated.

2.9 INFRASTRUCTURE AND SERVICES

On-site infrastructure at the Sunnyside Coal Mine includes the following:

- mine entrance and internal access roads;
- a coal crushing facility, conveyor and coal load out bin;
- ROM coal stockpile;
- water management structures, including two storage facilities;
- amenity bunds near the processing area and along the eastern boundary of the mining area; and
- ancillary surface facilities including offices and workshop.

Access to the Sunnyside Coal Mine is off the realigned Coocooboonah Lane (Figure 3).

2.10 SITE WATER MANAGEMENT

The approved site water management system at the Sunnyside Coal Mine is designed to capture on-site runoff and pit inflows, and divert clean water away from disturbed areas.

Dirty water (or runoff from disturbed areas) is diverted to on-site sediment dams.

Groundwater inflows to the open cut pit are pumped to an on-site water storage. Excess water is also approved to be pumped to the historic Gunnedah No. 5 underground workings.

2.11 WATER DEMAND AND SUPPLY

The annual water demand at the Sunnyside Coal Mine is between 75 ML/year to 100 ML/year when operating, and is required for on-site dust suppression (e.g. haul roads).

Water requirements are preferentially sourced from pit inflows with additional water requirements sourced from surface water run-off captured on-site.

2.12 WORKFORCE

The Sunnyside Coal Mine requires an operational workforce of up to 40 full time employees and contractors.

2.13 REHABILITATION AND FINAL LANDFORM

Rehabilitation at the Sunnyside Coal Mine occurs progressively in accordance with the Mining Operations Plan.

Rehabilitation Activities

Rehabilitation includes the following activities:

- Overburden placement and shaping.
- Subsoil and topsoil replacement.
- Revegetation.

Rehabilitation success is monitored, with remedial works undertaken as necessary.

Rehabilitation Objectives

The short-term objective for rehabilitation at the Sunnyside Coal Mine is to stabilise all earthworks, drainage lines and disturbed areas no longer required for mine-related activities in order to minimise erosion and sedimentation and to reduce potential visual impacts.

The long-term rehabilitation objectives at the Sunnyside Coal Mine include the following:

- provide a low maintenance, geotechnically stable and safe landform, which is commensurate with the agricultural land uses on and around the Sunnyside Coal Mine;
- blend the created landforms with the surrounding landform; and
- revegetate with native tree, shrub and grass species and/or pasture species.

Decommissioning Activities

On cessation of mining activities, a number of structures would be decommissioned and removed including the coal processing plant, various fuel storages, workshops and roads not required to be maintained for the final land use.

Final Landform and Land Use

The approved final landform includes the rehabilitated out-of-pit waste rock emplacement, and a final void in the open cut pit.

The final in-pit and out-of-pit waste rock emplacement areas would have slopes less than 10^{o}.

The approved final land use objective is to return the majority of the rehabilitated final landform (excluding the final void) to areas suitable for agricultural activities. Native tree species would also be planted to provide wind breaks and shelter for grazing stock, and to provide native fauna species habitat and allow for the development of vegetation corridors in the local area.

2.14 ENVIRONMENTAL MONITORING AND MANAGEMENT

Environmental management at the Sunnyside Coal Mine encompasses a range of existing management plans and monitoring programs. Approved management plans and monitoring programs include:

- *Environmental Management Strategy for the Sunnyside Coal Mine* (Namoi Mining, 2008a).
- *Environmental Monitoring Program for the Sunnyside Coal Mine* (Namoi Mining, 2011).
- *Aboriginal Cultural Heritage Management Plan for the Sunnyside Coal Mine* (Namoi Mining, 2008b).
- *Air Quality Monitoring Program for the Sunnyside Coal Mine incorporating an Air Quality Monitoring Protocol* (Namoi Mining, 2013a).
- *Blast Monitoring Program for the Sunnyside Coal Mine* (Namoi Mining, 2010).
- *Sunnyside Coal Mine Project Energy Savings Action Plan* (Namoi Mining, 2009).
- *Noise Monitoring Program for the Sunnyside Coal Project incorporating a Noise Management Protocol and Noise Monitoring Program* (Namoi Mining, 2013b).
- *Sunnyside Coal Mine Rehabilitation and Landscape Management Plan* (EcoLogical Australia, 2011).
- *Site Water Management Plan for the Sunnyside Coal Mine* (Namoi Mining, 2008c).
- *Waste Management Plan for the Sunnyside Coal Project* (Namoi Mining, 2008d).

2.15 CURRENT CARE AND MAINTENANCE

Activities at the Sunnyside Coal Mine since the discontinuance of mining operations have been limited to the clearing of remaining ROM coal stockpiles, environmental monitoring, ongoing rehabilitation, and care and maintenance of the site (including spontaneous combustion management).

The Independent Environmental Compliance Audit undertaken in December 2013 (Umwelt, 2013) (approximately 12 months after the discontinuation of mining activities) concluded waste rock emplacement rehabilitation was advanced, with successful tree planting across most of the emplacement areas. The site was reported to be stable, with no evidence of erosion or sedimentation, and no visible dust.

During care and maintenance of the site, spontaneous combustion of stockpiled carbonaceous material within the pit was identified. Management of the material with the propensity for spontaneous combustion was subsequently conducted in accordance with a spontaneous combustion management plan, which was submitted to the EPA and implemented via a Pollution Reduction Program on Environment Protection Licence (EPL) 12957, version dated 17 December 2013.

3 DESCRIPTION OF THE MODIFICATION

Whitehaven wishes to maintain a current Development Consent at the Sunnyside Coal Mine to enable the extraction of the remaining coal within the approved open cut footprint should current adverse economic conditions change.

As such, the Modification is required to extend the life of the Sunnyside Coal Mine beyond the currently approved 2015 date.

In addition, the Modification would involve rehandling of out-of-pit emplaced waste rock following the completion of mining, with this material being used to partially backfill the final void to improve geotechnical stability.

3.1 MINING TENEMENTS

Mining operations for the Sunnyside Coal Mine are conducted within ML 1624.

No change to ML 1624, and no additional mining tenements, would be required for the Modification.

3.2 MINE LIFE

The Modification would extend the approved period of mining operations by a further 5 years to the end of 2020.

3.3 MINING OPERATIONS

The Modification would involve the completion of the approved coal extraction at the Sunnyside Coal Mine (approximately 1 Mt of coal remains unmined), using the approved mining methods and fleet (Section 2.3).

The mining rate would not exceed the approved rate of 1 Mtpa of ROM coal.

The Modification would not involve a change to the currently approved mining methods at the Sunnyside Coal Mine (Section 2.3).

Coal extraction would be undertaken within the southern portion of the approved open cut pit extent (Figure 2).

3.3.1 Hours of Operation

There would be no change to the currently approved operating hours at the Sunnyside Coal Mine (Section 2.4).

3.3.2 Coal Handling and Preparation

The Modification would not change the currently approved coal handling and preparation process at the Sunnyside Coal Mine. ROM coal would continue to be crushed and stockpiled on-site, prior to being transported to the Whitehaven CHPP for further processing (in accordance with the Development Consent for the CHPP) (Section 2.5).

3.3.3 Coal Haulage

The Modification would involve the continued use of the approved coal haulage route from the Sunnyside Coal Mine to the Whitehaven CHPP (Section 2.6).

In accordance with the recommendations of the Traffic and Transport Review prepared by GTA Consultants (2015), minor upgrades and improvements (directly associated with the recommencement of coal haulage) would be made to the coal haulage route prior to the recommencement of coal haulage, as described in detail in Section 4.1.

The Modification would not change the approved coal haulage movements or coal haulage hours (Section 2.6).

The road maintenance agreement between Whitehaven and the GSC would continue for the Modification.

3.3.4 Rail Transport

Rail movements from the Whitehaven CHPP to the Port of Newcastle would continue to be undertaken in accordance Development Consent (DA 0079.2002).

3.3.5 Waste Rock Management

Waste rock mined during the development of the Project would continue to be used to in-fill the mine void behind the advancing open cut mining operations, as well as being placed in the out-of-pit waste rock emplacement.

The continuation of coal mining for the Modification would not increase the extent or height of the current out-of-pit waste rock emplacement.

A Mining Operations Plan would be developed for the Modification to the satisfaction of the DRE, and would detail the progressive development of the in-pit waste rock emplacement.

3.3.6 Infrastructure and Services

The existing infrastructure and services at the Sunnyside Coal Mine would continue to be used for the Modification (Section 2.9).

Access to the Sunnyside Coal Mine would continue to be from the realigned Coocooboonah Lane.

3.3.7 Site Water Management and Supply

The Modification would not change the approved water management system (Section 2.10), and no change to water supply or water demand would be required (Section 2.11).

3.3.8 Workforce

The Modification would not change the currently approved workforce at the Sunnyside Coal Mine (Section 2.12).

3.3.9 Final Void Development

Mining operations undertaken at the Sunnyside Coal Mine to date have resulted in the development of a highwall in the southern portion of the pit. The Modification includes a partial backfill of the final void that would improve the geotechnical stability of the highwall.

A Geotechnical Stability Assessment (Lambert Geotech, 2015) of the highwall was undertaken. The assessment confirmed that the appropriate factor of safety for long term stability would be maintained, following partial backfill of the final void.

3.3.10 Rehabilitation

Progressive rehabilitation would continue to be undertaken at the Sunnyside Coal Mine including overburden placement and shaping, subsoil and topsoil replacement and revegetation.

The Modification would not change the approved rehabilitation outcomes or final land use objectives and progressive rehabilitation of the disturbance area would continue to be undertaken with the aim of returning the land to areas suitable for agricultural activities.

3.4 POST-MINING LANDFORM

The landform at the Sunnyside Coal Mine currently comprises:

- Out-of-pit waste rock emplacement with maximum elevation of approximately 352 m AHD.
- Mining void with a minimum elevation of approximately 294 m AHD and a highwall at the south end of the pit.

Upon cessation of mining activities, Whitehaven proposes to rehandle waste rock from the out-of-pit waste emplacement, reducing its existing height by approximately 7 m (to approximately 345 m AHD).

Material would be rehandled using fleet items currently approved for mining operations (e.g. dozers, excavators and haul trucks or scrapers).

Material removed from the top of the waste emplacement would be used to partially backfill the open pit. The final depth of the partially backfilled final void would be approximately 330 m AHD, compared to the current depth of approximately 294 m AHD.

The existing highwall on the southern side of the final void would remain, however, the height of the existing highwall would be reduced by approximately 38 m following the partial backfill of the final void.

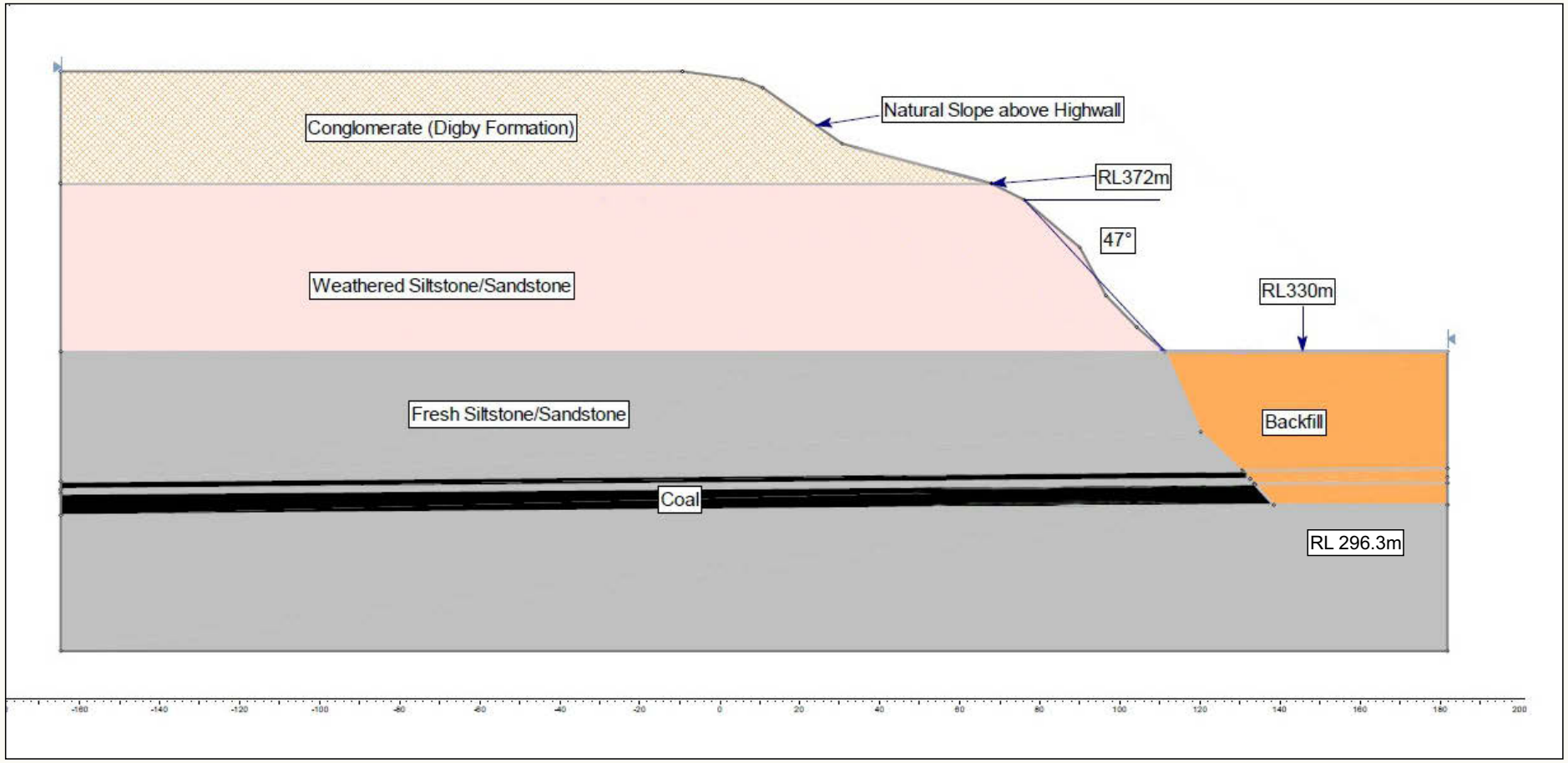
An indicative cross-section of the final landform, showing the partially backfilled void highwall and out-of-pit waste rock emplacement is provided in Figure 4.

An assessment of the geotechnical stability of the final void highwall has been conducted by Lambert Geotech (2015). The assessment concluded the final void highwall would be geotechnically stable in the long-term (i.e. a Factor of Safety design standard adopted to provide for long-term stability would be achieved) (Lambert Geotech, 2015).

Consistent with the current Project Approval for the Sunnyside Coal Mine (Section 2.13), a number of structures would be decommissioned and removed including the coal processing plant, various fuel storages, workshops and roads not required to be maintained for the final land use.

Approved rehabilitation objectives are described in Section 2.13. These rehabilitation objectives would not change for the Modification.

The final landform (excluding the final void) would be rehabilitated with the aim of returning the majority of land to areas suitable for agricultural activities, consistent with the currently approved final land use (Section 2.13) (Figure 5).



WHC-14-19 008A

Resource Strategies

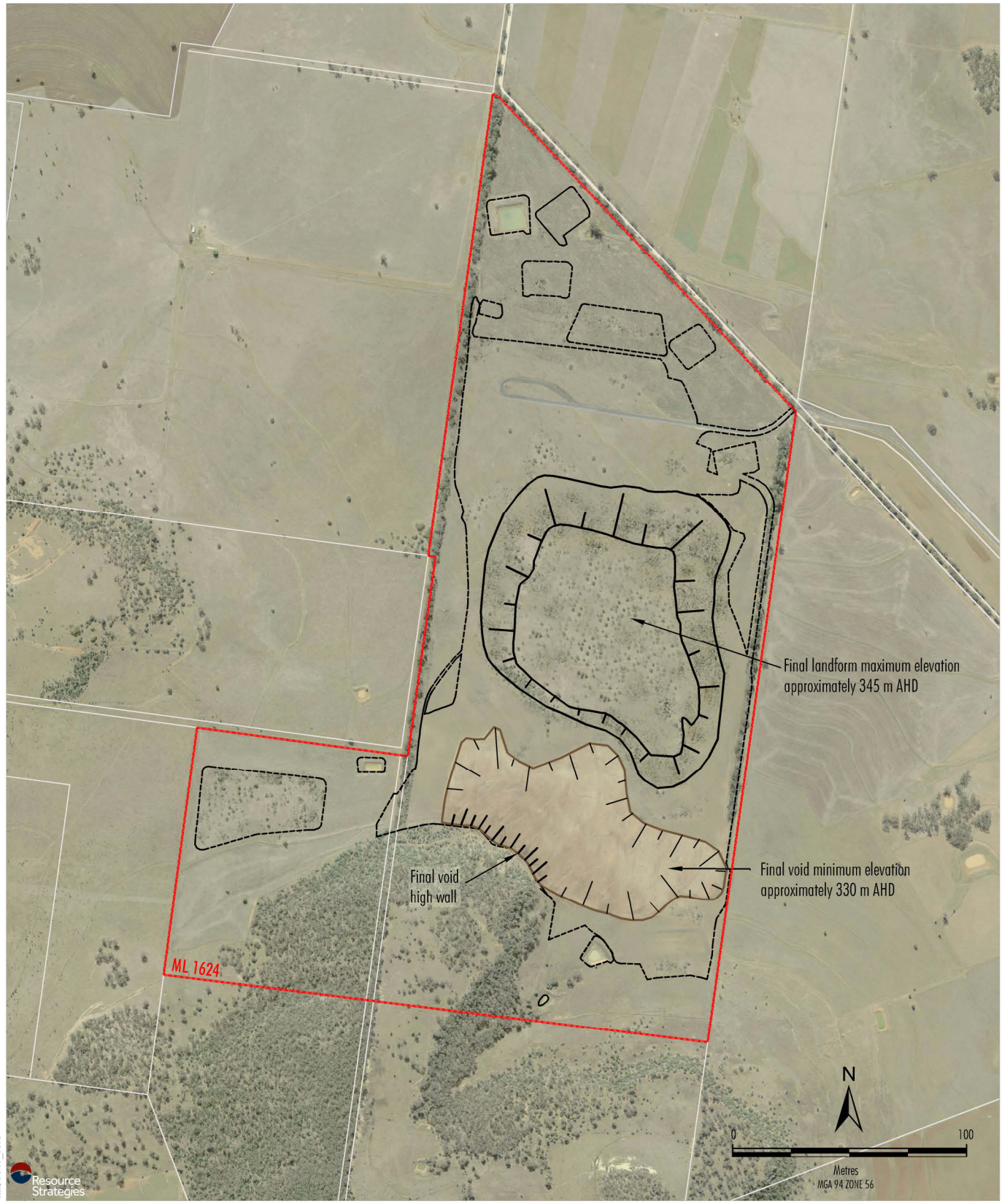
Source: Lambert Geotech (2015)

WHITEHAVEN COAL

SUNNYSIDE COAL MINE

Cross Section of Highwall Final Landform

Figure 4



LEGEND

Mining Lease Boundary

Approximate Extent of Disturbance

WHITEHAVEN COAL

SUNNYSIDE COAL MINE

Final Landform

Figure 5

4 ENVIRONMENTAL REVIEW

4.1 TRAFFIC

4.1.1 Background

Previous Assessment

A traffic and transport assessment was prepared for the Sunnyside Coal Mine by Constructive Solutions (2007).

The assessment considered the potential impacts associated with the following vehicle movements (Attachment 1):

- coal haulage using either B-doubles or articulated trucks for the maximum annual extraction rate of 1 Mtpa, comprising:
  - an average of 250 heavy vehicle trips per day using 28 t capacity articulated vehicles (125 loads per day); or
  - alternatively, an average of 176 heavy vehicle trips per day using 40 t capacity B-doubles (88 loads per day).
- employee movements; and
- other traffic, such as deliveries and visitors.

As a result of these vehicle movements, it was predicted the proportional increase in commercial vehicles as a result of Sunnyside would be significant on all roads (Constructive Solutions, 2007).

However, the expected volumes of traffic along the coal haulage route, inclusive of the Sunnyside movements, were expected to remain below the volumes associated with a Level of Service A (i.e. the best traffic conditions, with no restrictions on travel speed or overtaking for vehicles) (Attachment 1).

Notwithstanding, Constructive Solutions (2007) identified the following potential impacts associated with coal haulage from the Sunnyside Coal Mine:

- the capacity of road infrastructure (e.g. road widths and intersections) may not be sufficient to accommodate the coal haulage trucks; and
- the increased potential for interaction with other traffic.

Whitehaven subsequently committed to road works to mitigate these potential impacts, based on recommendations of Constructive Solutions (2007). These commitments were included as conditions of Project Approval (06_0308).

Project Approval

The road traffic movements assessed by Constructive Solutions (2007) were subsequently approved for the Sunnyside Coal Mine, subject to the conditions of Schedule 3 of Project Approval (06_0308). Relevant conditions are repeated below:

35. Prior to transporting any coal off-site, the Proponent shall:

a) construct a realignment of Coocooboonah Lane to the satisfaction of the landowner and Council;

b) upgrade the intersection of Coocooboonah Lane and the Oxley Highway to the satisfaction of the RTA and Council;

c) upgrade the intersection of the Oxley Highway and Blackjack Road to the satisfaction of the RTA and Council;

d) upgrade the section of Blackjack Road to be used for coal transport to the satisfaction of Council;

e) upgrade the intersection of Blackjack Road and Quia Road to the satisfaction of Council;

f) upgrade the section of Quia Road to be used for coal transport to the satisfaction of Council;

g) upgrade the intersection of Quia Road and Farrar Road to the satisfaction of Council;

h) upgrade the intersection of Quia Road and Torrens Road to the satisfaction of Council; and

i) upgrade Torrens Road to the satisfaction of Council.

...

37. Within 6 months of this approval the Proponent shall enter into an agreement with Council for the maintenance of the section of the Oxley Highway between Coocooboonah Lane and Blackjack Road.

38. Prior to transporting coal from the site the Proponent shall construct 2 bus stops on the Oxley Highway to the satisfaction of Council.

All coal haulage route upgrades were completed in accordance with the conditions of Project Approval (06_0308), including the construction of the two bus stops on Oxley Highway.

The Road Maintenance Agreement with the GSC was finalised in August 2009.

Sunnyside Coal Mine Operations

Vehicle Movements

As required by Project Approval (06_0308), Whitehaven reports annual coal haulage movements in Annual Environmental Monitoring Reports.

The average daily coal haulage movements during operations were within the number of movements assessed by Constructive Solutions (2007) (Attachment 1).

Transport Code of Conduct

Contract drivers operating Sunnyside coal haulage trucks are required to operate in accordance with the Safe Work Method Statement (SWMS), which includes driver safety protocols.

Complaints

Between 2009 and 2013 there were four traffic-related complaints.

These complaints were generally related to driver behaviour. Whitehaven responded to these complaints by instructing drivers to undergo additional driver training, consistent with the SWMS.

Road Safety Data

Crash data for the period from 2009 to 2013 (i.e. during coal haulage) indicates that four crashes were reported along the coal haulage route (Attachment 1).

None of these four crashes involved vehicles associated with the Sunnyside Coal Mine, and no crashes occurred at the intersections or locations which were upgraded as per the requirements of Project Approval (06_0308) (Attachment 1).

Coal Haulage Route Inspection – 2014

A review of potential impacts on the safety and efficiency of the road network was conducted by GTA Consultants (2015) and is presented as Attachment 1.

The inspection of the road network in July 2014 found that generally the coal haulage route is in a satisfactory condition.

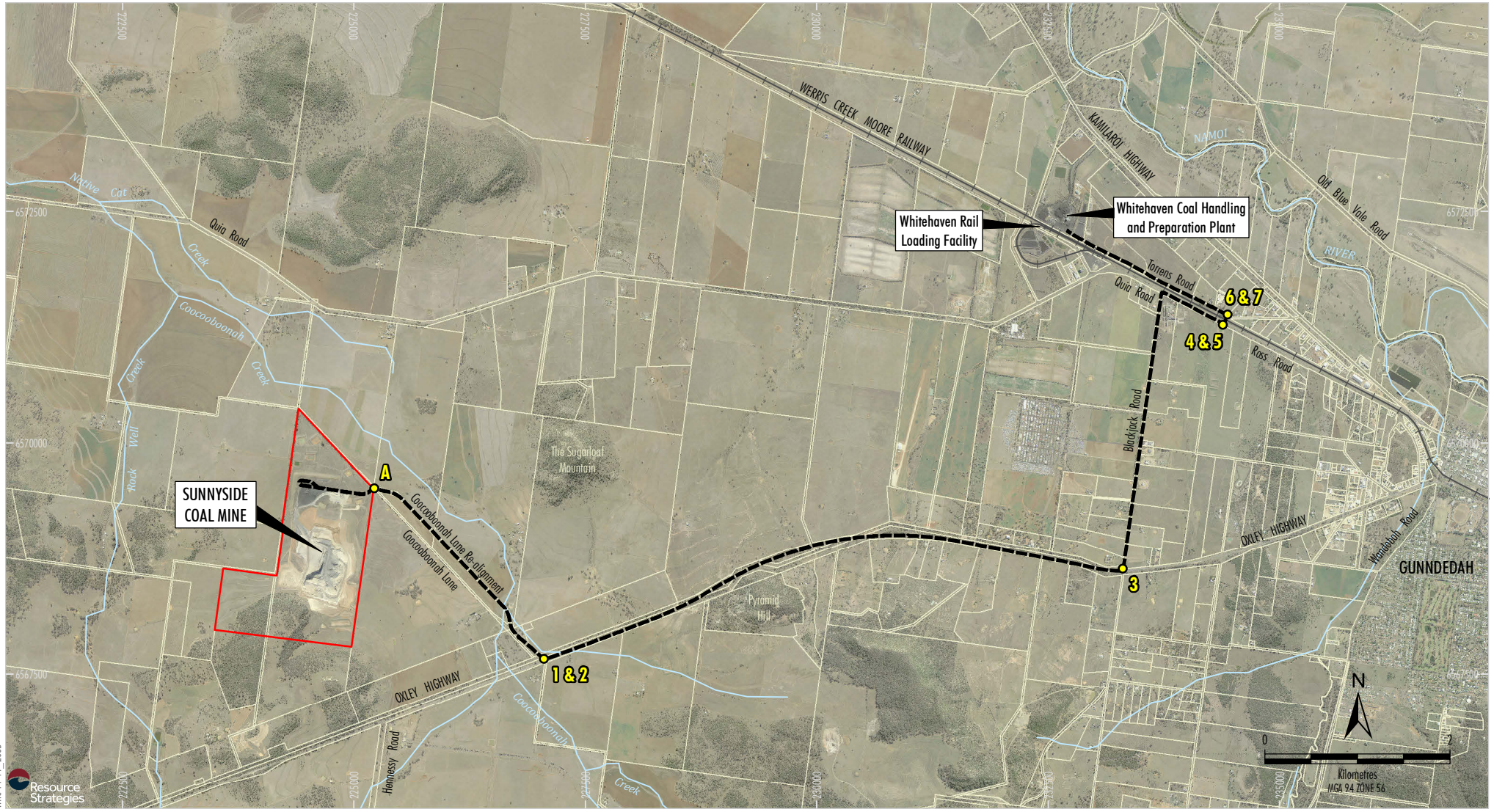
Notwithstanding, a number of current road safety matters were identified. GTA Consultants (2015) therefore recommends several actions to improve road safety on these public roads. These recommendations are relatively minor in nature and are associated predominantly with the removal of signs and the re-painting of line markings, as described below.

Non-Project Related Recommendations

The road safety improvement recommendations listed below relate to the current road conditions, and are not related to the Sunnyside Coal Mine or the Modification. As such, GTA Consultants (2015) recommends these works be undertaken by the relevant road authorities regardless of the Modification:

1. Remove sign (W2-3) on the Coocooboonah Lane approach to the Oxley Highway intersection.
2. Replace the superseded “trucks turning” (W5-205) sign with the standard graphic W5-22 sign on the Oxley Highway approach to Coocooboonah Lane.
3. Remove the two W2-1 signs on the Blackjack Road approach to the Oxley Highway intersection.
4. Provide standard “left turn only” arrows in the left turn lane in Quia Road for the turn to the railway underpass.
5. Replace the substandard “stop” road marking for southbound traffic exiting the railway underpass to Quia Road with standard “give way” linemarking.
6. Replace the missing D4-5 obstruction marker on the railway over Quia Road southbound.
7. Install a standard road safety barrier on the western corner of the intersection of Quia Road and Torrens Road between the railway underpass and Torrens Road.
8. Reinstate damaged roadside guide posts along the haulage route.

Figure 6 shows the locations of the recommended safety improvement works. Photos illustrating where these works are recommended are shown on Figures 7 to 9.



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Resource Strategies

LEGEND
Mining Lease Boundary
Coal Haulage Route
Road Recommendation Location
(Refer Figures 7,8 and 9 for Plates)

Source: Department of LP&I (2010); Orthophoto (2011)

WHITEHAVEN COAL

SUNNYSIDE COAL MINE

Road Safety Recommendation Locations

Figure 6

PLATE 1: Recommendation 1
Approaching Oxley Highway Intersection on Coocooboonah Lane
Incorrect use of warning sign for approaching tee intersection at a four way intersection.

PLATE 3a: Recommendation 3
Approaching Oxley Highway on Blackjack Road
Incorrect use of sign warning of four way intersection on the minor road, and one additional sign obscured by the "Reduce Speed" guide sign.

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PLATE 2: Recommendation 2
Approaching Coocooboonah Lane on Oxley Highway from Gunnedah
Note use of superseded "TRUCKS TURNING" sign.

PLATE 3b: Recommendation 3
Approaching Oxley Highway on Blackjack Road
Incorrect use of sign warning of approaching four way intersection on the minor road, and sign obscured on approach.

WHITEHAVEN COAL

SUNNYSIDE COAL MINE

Road Safety Recommendations
Locations 1, 2 and 3

Figure 7

PLATE 4: Recommendation 4
West Along Quia Road from Farrar Road (Ross Road) Intersection
Non-standard "stop" line and no left turn arrows on left only lane.

PLATE 6: Recommendation 6
West Along Quia Road to Railway Underpass
**Obstruction marker missing over westbound travel lane –
not required by Standard, but one provided over eastbound travel lane.**

PLATE 5: Recommendation 5
Along Quia Road from East of Farrar Road (Ross Road) Intersection
Conflicting non-standard "stop" line and "give way" sign on Quia Road.

PLATE 7: Recommendation 7
Intersection of Quia Road and Torrens Road
Note two unprotected culvert headwalls close to the edge of the carriageway.

WHITEHAVEN COAL

SUNNYSIDE COAL MINE

Road Safety Recommendations
Locations 4 to 7

Figure 8

WHC-19-14 0030

PLATE A1: Recommendation A
Exiting from Sunnyside onto Coocooboonah Lane
Poor road surface and non-standard line marking in poor condition.

PLATE A3: Recommendation E
Intersection of Coocooboonah Lane and Sunnyside Access Looking East
Poor road surface and non-standard line marking. Double centre lines on Coocooboonah Lane through the intersection have been removed but remain visible.

PLATE A2: Recommendation B
Approaching Sunnyside Access Intersection from Coocooboonah Lane Southbound
Give way sign approximately 25-30m in advance of intersection and no visible give way line for traffic approaching from Coocooboonah Lane southbound.

WHC-19-14 001E

WHITEHAVEN COAL

SUNNYSIDE COAL MINE

Road Safety Recommendation
Location A

Figure 9

In September 2014 Whitehaven notified the GSC and RMS of the road safety recommendations made by GTA Consultants (2015).

Project Related Recommendations

In addition to the above, GTA Consultants (2015) recommended the implementation of road safety improvements at the intersection between the Sunnyside Access Road and the Coocooboonah Lane.

GTA Consultants (2015) states these recommendations would only be required if the Sunnyside Coal Mine recommenced coal haulage:

a) replace the non-standard "give way" linemarking with standard "give way" linemarking;

b) relocate the "give way" sign for southbound traffic to be adjacent to the "give way" line;

c) install a W2-16(L) warning sign for northbound traffic in Coocooboonah Lane;

d) paint an unbroken edge line across the closed "stub" of the former alignment of Coocooboonah Lane;

e) repaint the double centre lines in Coocooboonah Lane along the alignment of the priority movements on Coocooboonah Lane-Sunnyside Access Road; and

f) remove remnants of previous double centre lines along the non-priority movements along Coocooboonah Lane.

Figure 6 shows the locations of the recommended safety improvement works. Photos illustrating where these works are recommended are shown on Figures 7 to 9.

Whitehaven has reviewed the recommended road safety improvements at the intersection between the Sunnyside Access Road and the Coocooboonah Lane, and commits to addressing these recommendations prior to any recommencement of coal mining and haulage at the Sunnyside Coal Mine.

4.1.2 Environmental Review

The Modification would not increase maximum annual ROM coal extraction above the currently approved 1 Mtpa, and therefore, would not change currently approved ROM coal haulage movements.

While some limited equipment mobilisation may be required to recommence operations, the Modification would not change the number of employees and no change to deliveries/visitors is expected.

As such, no increase in approved vehicle movements is expected due to the Modification.

GTA Consultants (2015) has reviewed recent traffic monitoring data provided by the Gunnedah Council and RMS to identify background traffic volumes during the proposed life of the modified Sunnyside Coal Mine.

It was concluded total traffic volumes, inclusive of background and Modification traffic, would remain below the volume of traffic associated with a Level of Service A (i.e. best road conditions).

In addition, GTA Consultants (2015) concludes that subject to the implementation of the road safety recommendations described above, no additional improvements to the road network would be warranted for the Modification.

Therefore, the Modification would result in no significant impacts on the performance, efficiency and safety of the road network (Attachment 1).

4.1.3 Mitigation Measures, Management and Monitoring

Whitehaven would address the recommended road safety improvements at the intersection between the Sunnyside Access Road and Coocooboonah Lane prior to any recommencement of coal mining activities at the Sunnyside Coal Mine.

In addition, the existing road maintenance agreement with the GSC would continue for the Modification.

Coal haulage drivers would continue to operate in accordance with the SWMS.

4.2 NOISE AND BLASTING

4.2.1 Background

Previous Assessment

A Noise and Blasting Assessment was prepared for the Sunnyside Coal Mine by Spectrum Acoustics (2008).

Spectrum Acoustics (2008) assessed the following activities for the Sunnyside Coal Mine:

- daytime and evening mining operations only;
- mobile fleet associated with ROM coal production up to 1 Mtpa;
- on-site blasting;
- on-site coal processing (size reduction and screening only); and
- the transportation of coal to the Whitehaven CHPP.

Operational Noise

Predictions and Project Approval Conditions

Spectrum Acoustics (2008) predicted there would be exceedances of the project specific noise level (PSNL) of 35 dBA $L_{Aeq(15minute)}$ at the "Lilydale", "Illili" and "Ferndale" properties (Figure 10) during adverse meteorological conditions.

The owners of the properties where exceedances of the PSNL were predicted were subsequently afforded the following rights in accordance with the conditions of Schedule 3 of Project Approval (06_0308):

- Acquisition upon request rights for the owner of the "Lilydale" property (Condition 1). Whitehaven has since purchased the "Lilydale" property.
- Mitigation upon request rights for the owners of the "Illili" and "Ferndale" properties (Condition 5).

Project Approval (06_0308) specifies a noise impact assessment criterion of 35 dBA $L_{Aeq(15minute)}$ (i.e. consistent with the PSNL) for the day and evening for all other privately-owned receiver locations (Condition 3).

As the Sunnyside Coal Mine was approved to operate during the day and evening only, no night-time noise impact assessment criteria is specified in Project Approval (06_0308).

Complaints

Two complaints relating to operational noise were received between 2009 and 2012 (i.e. during mining operations) by a single complainant.

The complainant was offered a private agreement by Whitehaven, however, the agreement was not finalised.

Monitoring and Management

In accordance with Project Approval (06_0308) Whitehaven implemented a Noise Monitoring Program during operations at the Sunnyside Coal Mine.

The Noise Monitoring Program includes attended noise monitoring at the locations shown on Figure 8, which represent residences in close proximity to Sunnyside Coal Mine.

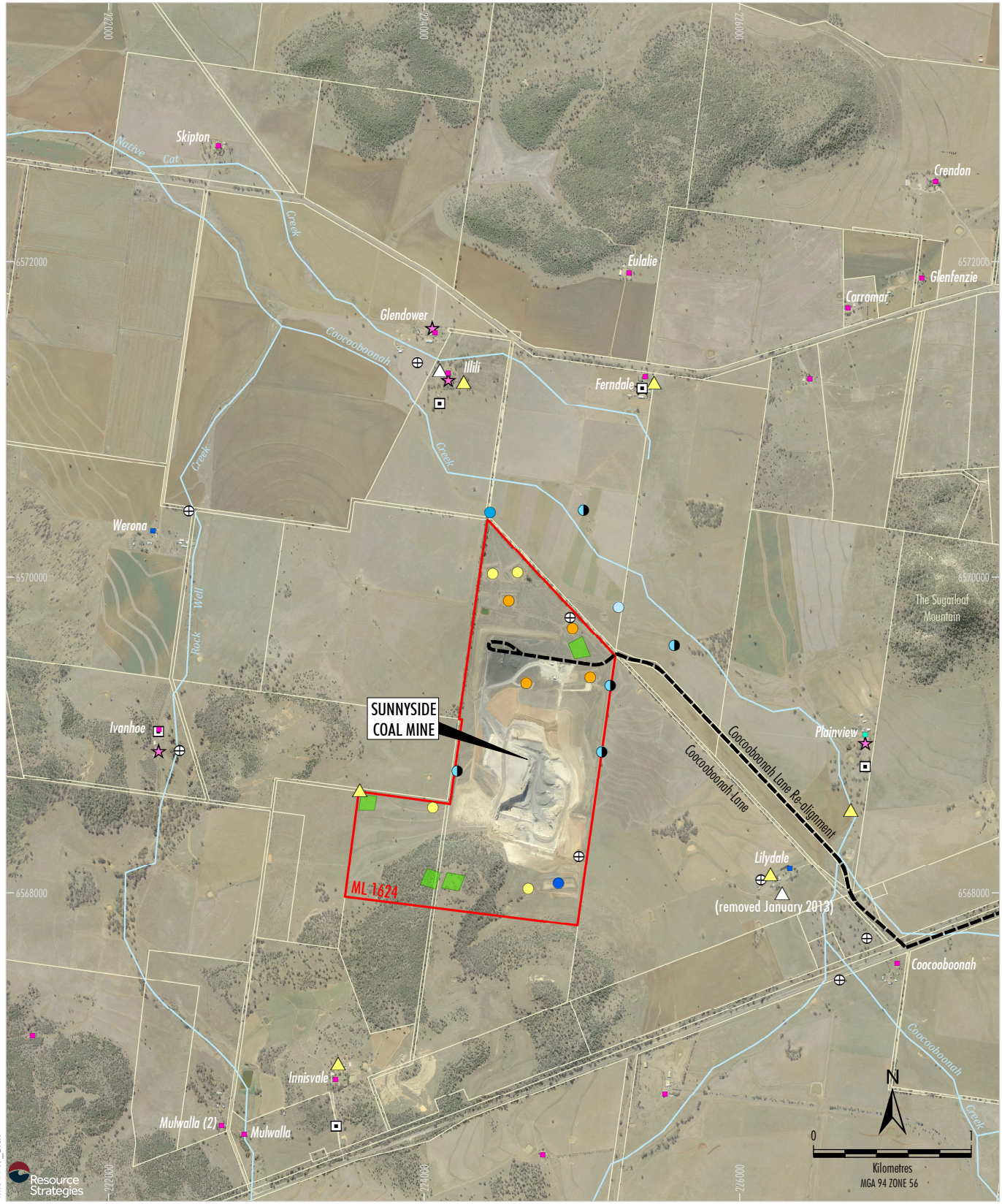
Operational noise monitoring data indicates operations at the Sunnyside Coal Mine were generally inaudible and/or compliant with the Project Approval (06_0308) noise impact assessment criteria (Attachment 2).

However, on occasions during adverse meteorological conditions, noise levels up to 38 dBA $L_{Aeq(15minute)}$ were recorded at the "Plain View" property, and noise levels of up to 37 dBA $L_{Aeq(15minute)}$ were recorded at the "Ferndale" property.

These monitoring results are generally consistent with the noise predictions of Spectrum Acoustics (2008) (Attachment 2).

Whitehaven has entered into a private agreement with the owner of the "Plain View" property and the owner of the "Ferndale" has been afforded the right to request noise mitigation works at the residence in accordance with Project Approval (06_0308).

A noise level of 36 dBA $L_{Aeq(15minute)}$ was also recorded at the "Glendower" property in May 2012. The owner of this property was offered a private agreement by Whitehaven, however, the agreement was not finalised.



LEGEND

- Mining Lease Boundary
- Proposed Coal Transport Route
- Privately Owned Dwelling
- Dwelling Subject to Private Agreement
- Whitehaven Owned Dwelling

Monitoring Types

- Blast
- Deposited Dust
- PM_{10} Dust
- Noise
- Upstream Water
- Downstream Water
- Pit Water Storage
- Sediment Basin
- Storage Dam
- Groundwater Piezometer
- Water Bore
- Fauna/Vegetation Monitoring Area

Source: OEC (2013); Department of LP&I (2010); Orthophoto (2011)

WHITEHAVEN COAL

SUNNYSIDE COAL MINE

Receivers and Monitoring Locations

Figure 10

Blasting

Predictions and Project Approval Conditions

No exceedances of blast and overpressure criteria were predicted by Spectrum Acoustics (2008), although it was noted blast sizes would need to be appropriately modified to achieve compliance with the overpressure criterion when mining progresses to within 1,500 m of the nearest residence.

Whitehaven has purchased the nearest residence to the Sunnyside Coal Mine (i.e. "Lilydale" property) (Figure 10).

Blast overpressure and ground vibration limits were specified in Project Approval (06_0308) (Conditions 10 and 11 of Schedule 3).

In addition, Project Approval (06_0308) requires Whitehaven to commission property inspections and property investigations at the request of any private landowner within 2 km of the Sunnyside Coal Mine (Conditions 14, 15 and 16 of Schedule 3).

Should the inspections and investigations identify damage to the property as a result of blasting activity at the Sunnyside Coal Mine, Condition 16 of Schedule 3 of the Project Approval (06_0308) requires Whitehaven to repair the damage to the satisfaction of the Director-General.

Complaints

Five blasting-related complaints were received between 2009 and 2012 (i.e. during mining operations).

Investigations for four of the complaints indicated that, based on blast monitoring data, blasting overpressure and ground vibration levels were compliant with the Project Approval (06_0308) blast limits.

One complaint occurred following a blast design fault, which was confirmed to exceed the Project Approval (06_0308) blast limits. Whitehaven notified the complainant and relevant regulators at the time (i.e. DoP and NSW Department of Environment, Climate Change and Water). An investigation was undertaken to identify the cause of the fault by the blasting contractor in order to prevent future faults.

Monitoring and Management

In accordance with Project Approval (06_0308) Whitehaven implemented a Blast Monitoring Program during operations at the Sunnyside Coal Mine.

The Blast Monitoring Program includes blast monitoring at the locations shown on Figure 10, which represent residences in close proximity to Sunnyside Coal Mine.

The blast monitoring indicates blasting operations were compliant with the Project Approval (06_0308) blasting limits at all privately-owned receivers during mining operations, with the exception of three blast events in 2011 and one blast event in 2012, resulting in blast overpressure limit exceedances at the closest receivers (i.e. the "Innisvale", "Illili", "Ferndale" and "Plainview" properties). It is noted that Whitehaven has entered into a private noise agreement with the owner of the "Plainview" property.

The blast design fault described above also resulted in an exceedance of blasting limits. The subsequent blast monitoring data showed blasting was compliant with the Project Approval (06_0308) blast limits, indicating the investigation undertaken following the blast fault successfully prevented further blast faults during mining operations. However it is noted that during 2014 there was an exceedance of the 120 decibel criteria during spontaneous combustion remediation works.

Traffic Noise

Predictions and Project Approval Conditions

Spectrum Acoustics (2008) assessed potential traffic noise impacts associated with coal haulage on public roads from the Sunnyside Coal Mine to the Whitehaven CHPP.

It was predicted there would be no exceedances of the relevant road traffic noise criteria at the time of the assessment (i.e. the criteria specified in the NSW Environmental Criteria for Road Traffic Noise [ECRTN] [EPA, 1999]).

Project Approval (06_0308) specifies traffic noise criteria consistent the criteria in the ECRTN (Condition 6 of Schedule 3).

Complaints

Two complaints were received during 2009 to 2013 (i.e. during coal haulage to the Whitehaven CHPP). Investigations indicated both complaints were due to exhaust brake noise from haulage trucks. In both cases, the relevant haulage truck driver was instructed to limit the use of exhaust braking.

Monitoring and Management

Road traffic noise monitoring is conducted at part of the Noise Monitoring Program.

Monitoring data indicates no exceedances of the Project Approval (06_0308) road traffic noise criteria (Attachment 2).

4.2.2 Environmental Review

A review of potential noise and blasting impacts was conducted by Wilkinson Murray (2015) and is presented as Attachment 2.

Operational Noise

In comparison to the approved Sunnyside Coal Mine, the Modification would involve the following relevant to potential operational noise impacts:

- No change to the number of mobile or fixed equipment.
- No change to the location of noise sources relative to privately-owned receivers.
- No change to operational hours (i.e. day and evening mining operations only).

The predicted noise levels of Spectrum Acoustics (2008) for the approved operations were approved subject to the conditions of Project Approval (06_0308), which include noise impact assessment criteria.

The review of the operational noise monitoring data by the Wilkinson Murray (2015) indicates the noise monitoring data collected during operations supports the predictions of Spectrum Acoustics (2008).

Wilkinson Murray concludes that, given the Modification would not change aspects of the approved operations relevant to potential noise impacts, the Sunnyside Coal Mine could continue to operate in accordance with the existing Project Approval (06_0308) noise impact assessment criteria for the Modification.

In addition, it is noted Whitehaven has purchased two of the closest residences (i.e. “Lilydale” and “Werona” properties) to the Sunnyside Coal Mine, and has entered into a private agreement with the owner of another property (i.e. “Plain View”).

Blasting

There would be no change to approved blasting parameters (e.g. blast size) or the locations of blasts in relation to privately-owned receivers for the Modification.

As such, Wilkinson Murray (2015) concludes that, based on review of blast monitoring data, blasting could continue at the Sunnyside Coal Mine in accordance with the existing Project Approval (06_0308) blast limits for the Modification.

Road Traffic Noise

The current Project Approval (06_0308) traffic noise criteria are consistent with the criteria of the ECRTN, which has been replaced by the NSW Road Noise Policy (RNP).

In accordance with the RNP, the relevant road traffic noise criteria for the approved coal haulage route is 60 dBA $L_{Aeq(15hour)}$, compared to the existing criteria of 55 dBA $L_{Aeq(1hour)}$ (Attachment 2).

There would be no change to the approved coal haulage movements or hours of operation for the Modification.

As such, Wilkinson Murray (2015) concludes coal haulage could continue in compliance with the road traffic noise criteria specified in the NSW Road Noise Policy for the Modification.

4.2.3 Mitigation Measures, Management and Monitoring

The Noise Monitoring Program and Blast Monitoring Program would continue to be implemented for the Modification, including during the rehandling of material to partially backfill the final void, and are considered to be suitable for purposes of confirming compliance with noise and blasting criteria during the Modification.

The Noise Monitoring Program and Blast Monitoring Program would be reviewed and revised, where appropriate, to incorporate the Modification.

4.3 AIR QUALITY

4.3.1 Background

Previous Assessment

An Air Quality Assessment was prepared for the Sunnyside Coal Mine by Heggies (2007).

The Air Quality Assessment considered potential impacts associated with the maximum annual extraction rate of 1 Mtpa, and in consideration of mitigation measures such as the watering of internal haul roads.

Dispersion modelling was used to predict potential air quality impacts at the closest sensitive receiver locations, and considered both mine-only emissions and cumulative impacts inclusive of other dust sources.

Heggies (2007) predicted the Sunnyside Coal Mine would comply with relevant air quality criteria at all sensitive receiver locations.

Monitoring and Management

The potential impacts described in Heggies (2007) were subsequently approved for the Sunnyside Coal Mine, subject to the Sunnyside Coal Mine being managed in accordance with the relevant conditions of Schedule 3 of Project Approval (06_0308), including:

- Impact assessment criteria for Total Suspended Particles (TSP), PM_{10} and dust deposition (Condition 18); and
- Preparation and implementation of an Air Quality Monitoring Program (Condition 19).

The Air Quality Monitoring Program implemented for the Sunnyside Coal Mine during its operations comprised six dust deposition gauges, two PM_{10} High Volume Air Samplers[2] and a meteorological station at the locations shown in Figure 10.

Review of the air quality monitoring data by Pacific Environment Limited (2015) indicates air quality levels were below the impact assessment criteria during all years the Sunnyside Coal Mine was operation, with the exception of periods of regional dust events (e.g. dust storms and bushfires).

As such, the monitoring data supports the predictions of Heggies (2007).

4.3.2 Environmental Review

A review of potential air quality impacts was conducted by Pacific Environment Limited (2015) and is presented as Attachment 3.

As the Modification involves the completion of approved mining activities, there would be no increase in the approved annual ROM coal or waste rock production rates, and operations would not move closer to private receivers.

Similarly, the rate of rehandling of waste rock to partially backfill the final void would not exceed the previously assessed waste rock and coal mining rate.

Therefore, consistent with the conclusions of Heggies (2007) and air quality monitoring data collected during operations, the Modification is unlikely to result in any exceedance of the existing annual average Project Approval air quality criteria for PM_{10}, TSP or dust deposition, or any additional exceedances of the 24-hour average Project Approval air quality criteria for PM_{10} (PA 06_0308) (Attachment 3).

Pacific Environmental Limited (2015) concludes the modified Sunnyside Coal Mine could continue to operate in accordance with current Project Approval (06_0308) air quality criteria.

4.3.3 Mitigation Measures, Management and Monitoring

The Air Quality Monitoring Program would continue to be implemented for the Modification, including during the rehandling of waste rock to partially backfill the final void, and is considered to be suitable for purposes of confirming compliance with air quality criteria for the Modification.

The Air Quality Monitoring Program would be reviewed and revised, where appropriate, to incorporate the Modification.

4.4 WATER RESOURCES

4.4.1 Surface Water

Background

A Surface Water Assessment was prepared for the Sunnyside Coal Mine by the Soil Conservation Service (2007).

[2] Note that only one High Volume Air Sampler is currently in operation following approval of a revised Air Quality Monitoring Program (Namoi Mining, 2013a) by the then NSW Department of Planning and Infrastructure in January 2013.

The Sunnyside Coal Mine is located within the Coocooboonah Creek Catchment. The Coocooboonah Creek is a tributary of the Namoi River (Olsen Environmental Consulting Pty Limited and R.W. Corkery & Co. Pty Ltd, 2008).

Based on the assessment of Soil Conservation Service (2007) it was concluded that with the implementation of the surface water management system (Section 2.10), there would be negligible impact on water quality or volumes in local surface watercourses as a result of the Sunnyside Coal Mine (DoP, 2008).

Sunnyside Coal Mine Operations

Condition 22, Schedule 3 of Project Approval (06_0308) requires the preparation of a Water Management Plan for the Sunnyside Coal Mine, which must describe surface water impact assessment criteria.

The surface water management system separates "clean" and "dirty" water to manage potential impacts to surface water. The surface water assessment criteria developed for the Sunnyside Coal Mine define clean water specifications based on water quality limits for pH, suspended solids and total oil and grease. These criteria are monitored in accordance with the *Site Water Management Plan for the Sunnyside Coal Mine* (Namoi Mining, 2008c).

Condition 21, Schedule 3 of Project Approval (06_0308) requires that no mine water may be discharged from site unless in accordance with an EPL. EPL 12957 is applicable to the Sunnyside Coal Mine and allows for wet weather discharge from Storage Dams 3 and 4. Water discharged from these dams is not mine water.

Independent Environmental Audits of the Sunnyside Coal Mine undertaken in 2011 and 2013 describe the operations were compliant with the Project Approval (06_0308) conditions relevant to surface water, including surface water assessment criteria and wet weather discharge.

The Modification

The Modification would not change the existing surface water management system, which has been successfully implemented to date to minimise potential impacts to surface water.

Therefore, the Sunnyside Coal Mine could continue to operate in accordance with Project Approval (06_0308) conditions relevant to surface water management for the Modification.

Monitoring and management of potential surface water impacts would continue to be undertaken in accordance with the Site Water Management Plan, inclusive of the surface water assessment criteria. The Site Water Management Plan would be reviewed and revised, where appropriate, to incorporate the Modification.

4.4.2 Groundwater

Background

A Groundwater Assessment was prepared for the Sunnyside Coal Mine by GeoTerra Pty Ltd (2008).

The Sunnyside Coal Mine is located within the exposed Triassic and Permian basement, on the periphery of the Quaternary alluvial Zone 4 – Groundwater Management Area 4 of the Upper and Lower Namoi Groundwater Source (Olsen Environmental Consulting Pty Limited and R.W. Corkery & Co. Pty Ltd, 2008).

The Groundwater Assessment determined that four separate groundwater systems are considered to be present in region of the Sunnyside Coal Mine (GeoTerra, 2008):

- Quaternary Coocooboonah/Rock Well/Native Cat Creek Alluvium;
- Overburden above the Hoskissons Seam (including the Wondobah Seam perched aquifer);
- Hoskissons Seam; and
- Strata underlying the Hoskissons Seam (i.e. Shallow Marine Facies, Upper and Lower Melville Seam/Lower Delta Plain Facies).

GeoTerra (2008) predicted groundwater inflows to the open cut pit as well as impacts to groundwater quantity and quality in the vicinity of the proposed mine.

Based on the assessment it was concluded local groundwater users would not be adversely impacted by the Sunnyside Coal Mine, given (GeoTerra, 2008):

- No quaternary alluvial aquifers would be mined during operations.
- There would be no impacts and no observable drawdown on the alluvial aquifers associated with Coocooboonah Creek, Rock Well Creek, Native Cat Creek, Collygra Creek or the Namoi River.

- Regionally, limited groundwater depressurisation would occur, with the majority of the groundwater drawdown limited to the overburden above the confined Hoskissons Seam within the vicinity of the Sunnyside Coal Mine.
- Limited drawdown would occur at groundwater bores on neighbouring properties and standing water levels in these bores would not significantly change.
- There would be no adverse effect on water quality outside the extent of the Sunnyside Coal Mine.
- There would be no adverse impacts on the Namoi River or any Groundwater Dependent Ecosystems.

Sunnyside Coal Mine Operations

Condition 22, Schedule 3 of Project Approval (06_0308) requires the preparation of a Water Management Plan for the Sunnyside Coal Mine, which must incorporate groundwater impact assessment criteria.

The groundwater assessment criteria developed for the Sunnyside Coal Mine include trigger levels for groundwater levels and groundwater quality at nearby private bores.

The trigger for groundwater levels is a reduction in monitored groundwater levels of 3 m at private bores over a 3 month period. The triggers for water quality are consistent with the water quality parameters of the *Australian Water Quality Guidelines for Fresh and Marine Waters* (ANZECC, 2000) for primary industries (irrigation water).

The Site Water Management Plan describes contingency measures, including ameliorative actions, to be implemented in consultation with regulatory authorities should groundwater assessment criteria be exceeded.

The groundwater assessment criteria are monitored in accordance with the *Site Water Management Plan for the Sunnyside Coal Mine* (Namoi Mining, 2008c).

The Independent Environmental Audits of the Sunnyside Coal Mine describe the operations as being compliant with the Project Approval (06_0308) conditions relevant to groundwater, including the groundwater assessment criteria.

Groundwater Licensing

Whitehaven holds licence Water Licence 90WA822534 for groundwater inflow to the open pit.

Final Void

GeoTerra (2008) predicted post-mining groundwater inflow and surface runoff (i.e. direct rainfall) would be insufficient to raise the standing water level above the base of the final void (i.e. 305 m AHD). Therefore, no pit lake was predicted to form in the final void.

Monitoring

Groundwater monitoring conducted since 2008 during the operational life of the Sunnyside Coal Mine supports the predictions of the 2008 Groundwater Assessment (e.g. limited change in groundwater levels and no impacts at private bores).

The Modification

A review of potential groundwater impacts was conducted by GeoTerra (2015) and is presented as Attachment 4.

The Modification would not change the mined depth or extent of the approved open cut pit, and would not change the existing groundwater assessment criteria that have been developed to manage potential impacts to other groundwater users. As such, no additional impacts to other groundwater users are expected due to the Modification (Attachment 4).

Consistent with the predictions of the 2008 Groundwater Assessment, no pit lake is predicted for the revised final landform associated with the Modification, and therefore, no outflow of water captured in the final void is anticipated.

Monitoring and management would continue in accordance with the Site Water Management Plan, inclusive of the groundwater assessment criteria and associated contingency measures. The Site Water Management Plan would be reviewed and revised, where appropriate, to incorporate the Modification.

Whitehaven would continue to hold licences to account for groundwater inflow to the open pit.

4.5 SURFACE DISTURBANCE

There would be no change to the approved extent of surface disturbance as a result of the Modification, as mining operations would be conducted entirely within the approved mine footprint (Figure 2).

Flora and Fauna

A Fauna Survey and Assessment was undertaken for the Sunnyside Coal Mine by Kevin Mills and Associates (2008) and a Flora Assessment was undertaken by Geoff Cunningham Natural Resource Consultants (2007).

No threatened flora or fauna species were recorded within the approved Sunnyside Coal Mine disturbance area, however threatened fauna species (including the koala) were found in the surrounds.

As the Modification would not involve additional surface disturbance, there would be no additional impacts to flora and fauna habitat.

A koala fence has been installed in the southern section of the site.

In accordance with Condition 28, Schedule 3 of Project Approval (06_0308) a *Koala Management Plan* was prepared for the Sunnyside Coal Mine, and would continue to be implemented for the Modification.

Aboriginal Heritage

An Aboriginal Heritage Assessment was undertaken for the Sunnyside Coal Mine by Archaeological Surveys & Reports Pty Ltd (2007).

Four Aboriginal heritage sites were recorded during the field survey, including an axe-grinding groove, an artefact scatter and two isolated artefacts. All of these sites were assessed as being of low significance (Archaeological Surveys & Reports Pty Ltd, 2007).

All four of the Aboriginal heritage sites are located outside of the approved disturbance areas, and accordingly there would be no direct impacts on these sites as a result of the Modification.

It is noted however, that due to the proximity of the axe-grinding groove to the open cut pit the site may experience potential impacts from fly rock during blasting activities. In accordance with the *Aboriginal Cultural Heritage Management Plan for the Sunnyside Coal Mine* (Namoi Mining, 2008b) a "straw bale" blanket was placed over the site to minimise any potential impacts. This has now been replaced with a more durable length of conveyor belt.

Any previously unrecorded Aboriginal heritage sites identified during works associated with the Modification would continue to be managed in accordance with the Aboriginal Cultural Heritage Management Plan.

4.6 OTHER ENVIRONMENTAL ASPECTS

Greenhouse Gas Emissions

There would be no increase in annual direct and indirect greenhouse gas emissions from the Sunnyside Coal Mine as a result of the Modification.

As required under Condition 42, Schedule 3 of Project Approval (06_0308), on-site greenhouse gas emissions would continue to be managed in accordance with the *Sunnyside Coal Mine Project Energy Savings Action Plan* (Namoi Mining, 2009).

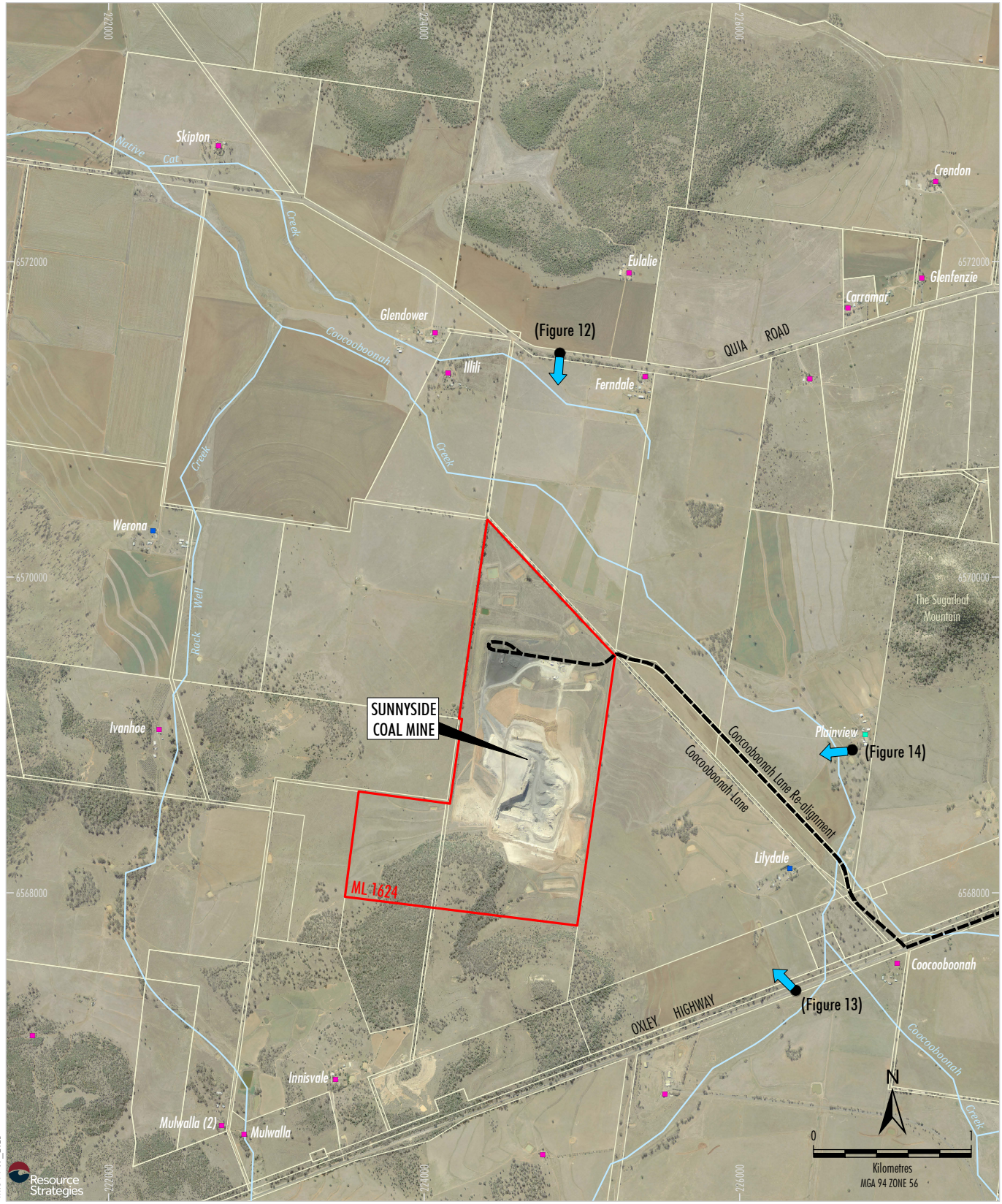
Visual Amenity and Lighting

A review of potential visual impacts has been undertaken for the Modification.

Visual simulations have been prepared at three sensitive locations (e.g. dwellings and public roads) (Figure 11) identified as having views of the existing Sunnyside Coal Mine. The visual simulations, along with existing views from the sensitive locations, are presented in Figures 12 to 14.

The Sunnyside Coal Mine is a feature of the existing visual landscape (Figures 12 to 14). The Modification would result in a change in the existing visual landscape due to the reduction in the elevation of the out-of-pit waste emplacement and backfilling of the void against the highwall.

As shown by the visual simulations (Figures 10 to 13), the level of visual modification associated with the reduction in elevation of the out-of-pit waste emplacement is low when compared to the existing landscape. In addition, rehabilitation of the final landform with trees and grass cover would improve the compatibility of the Sunnyside final landform with the surrounding landscape, which is predominantly used for agricultural purposes (Figures 12 to 14).



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Resource Strategies

LEGEND

- Mining Lease Boundary
- Proposed Coal Transport Route
- Privately Owned Dwelling
- Dwelling Subject to Private Agreement
- Whitehaven Owned Dwelling
- Photo Location

Refer Figures 12 to 14 for Photos.

Source: Department of LP&I (2010); Orthophoto (2011)

WHITEHAVEN COAL

SUNNYSIDE COAL MINE

Photo Locations

Figure 11

PLATE 1: Existing View from Quia Road

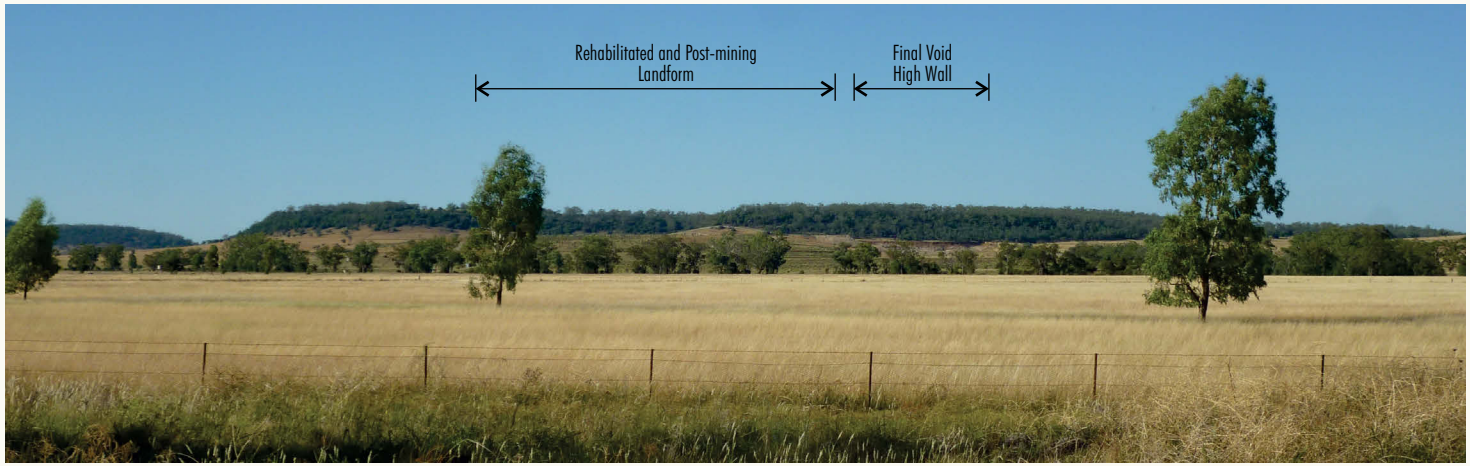

PLATE 2: Visual Simulation from Quia Road (Final Landform)

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Resource Strategies

WHITEHAVEN COAL

SUNNYSIDE COAL MINE

Existing View and Visual Simulation - Quia Road

Figure 12

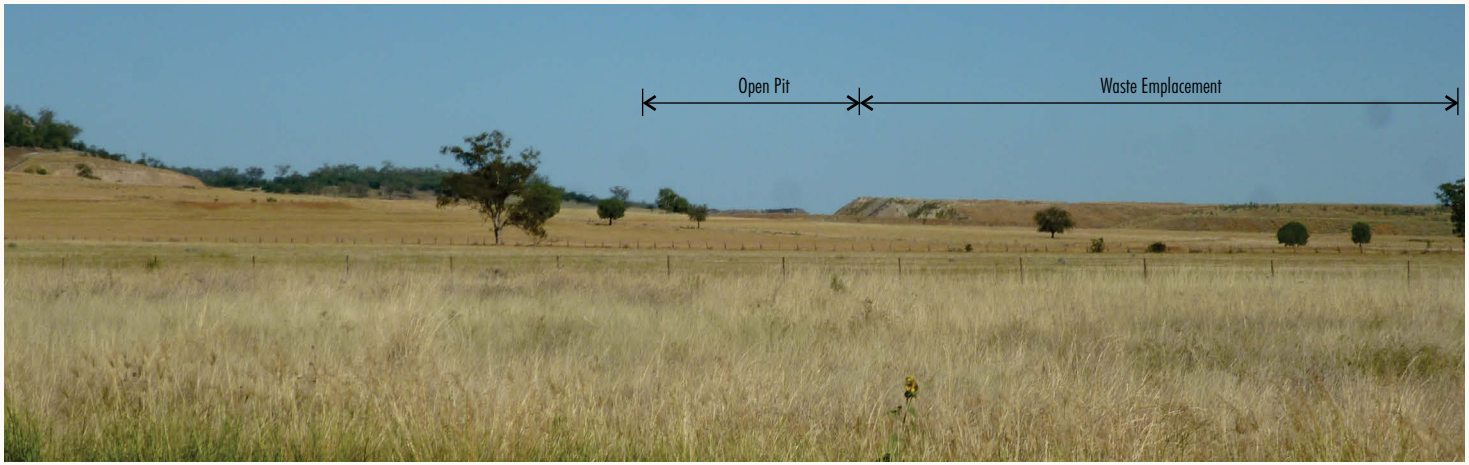

PLATE 3: Existing View from Oxley Highway

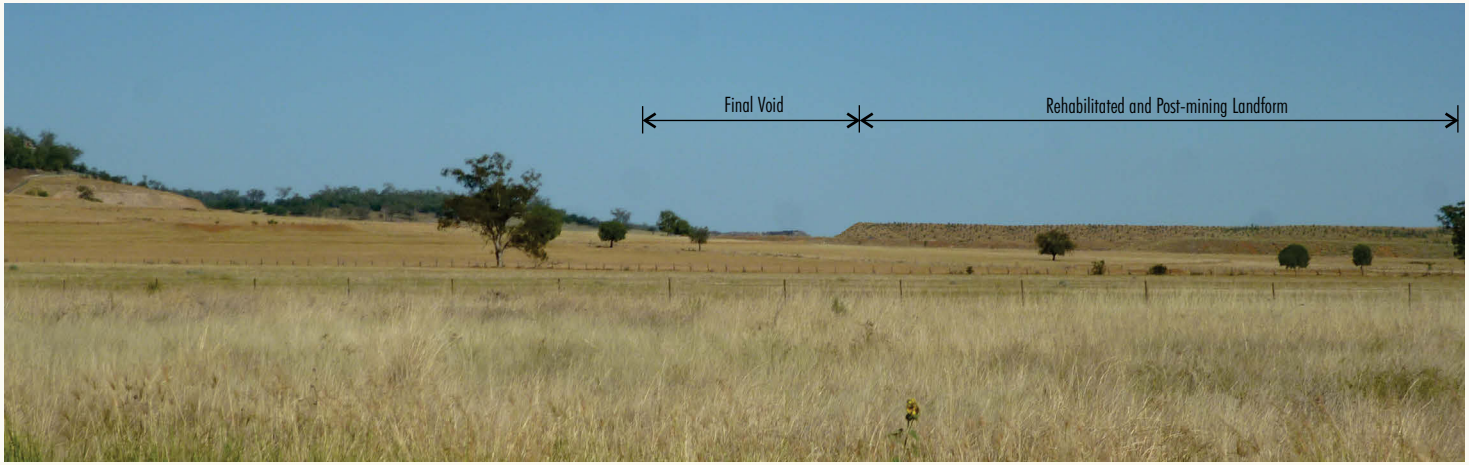

PLATE 4: Visual Simulation from Oxley Highway (Final Landform)

WHC-14-19 004A

Resource Strategies

WHITEHAVEN COAL

SUNNYSIDE COAL MINE

Existing View and Visual Simulation - Oxley Highway

Figure 13

PLATE 5: Existing View from Plainview Residence

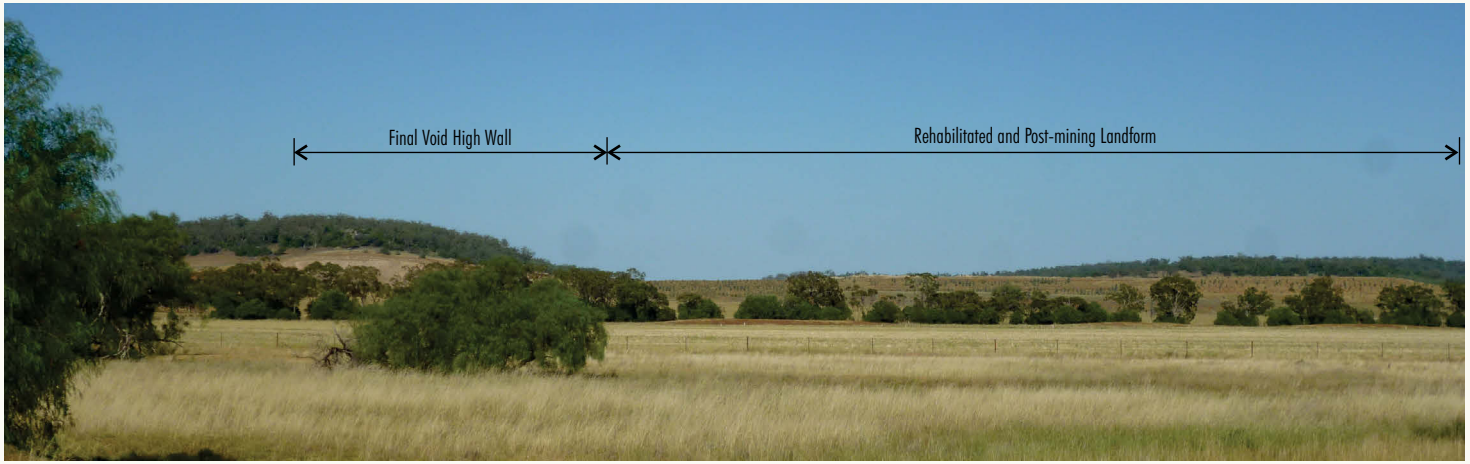

PLATE 6: Visual Simulation from Plainview Residence (Final Landform)

WHC-14-19 006A

Resource Strategies

WHITEHAVEN COAL

SUNNYSIDE COAL MINE

Existing View and Visual Simulation
- Plainview Residence

Figure 14

Given the above, the Modification would result in no additional visual impact when compared to the existing Sunnyside landform, and may result in improved views from some locations following rehabilitation of the final landform.

Non-Aboriginal Heritage

An assessment of non-Aboriginal heritage was undertaken for the Sunnyside Coal Mine in March 2007 as a component of the Sunnyside EA (Olsen Environmental Consulting Pty Limited and R.W. Corkery & Co. Pty Ltd 2008).

No listed heritage sites were identified within the Sunnyside Coal Mine or surrounds.

Accordingly, there would be no impacts on any items of non-Aboriginal heritage as a result of the Modification

Socio-economic

The Modification would provide socio-economic benefits associated with the continuation of employment at the Sunnyside Coal Mine (i.e. up to 40 employees), direct and indirect expenditure in the local and state economy, and the payment of State royalties.

5 REFERENCES

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ATTACHMENT 1

TRAFFIC AND TRANSPORT REVIEW

ATTACHMENT 2

NOISE AND BLASTING REVIEW

ATTACHMENT 3

AIR QUALITY REVIEW

ATTACHMENT 4

POST-MINING GROUNDWATER ASSESSMENT