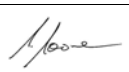
ENVIRONMENTAL ASSESSMENT

Section 75W Modification Application
Moolarben Coal Project – Stage 1
(05_0117 MOD 8)

April 2010

Moolarben Coal Operations Pty Ltd ABN 59077939569
4250 Ulan Road Ulan NSW 2850 Australia
T (+61) (2) 6376 1500 F (+61) (2) 6376 1599
www.moolarbencoal.com

Version:	Details:	Approved:	Date:
Version 1	Submission to Department of Planning		26/4/2010

CONTENTS

Tables

Figures

Appendices

This page is left intentionally blank.

1. INTRODUCTION

This report constitutes an application made pursuant to Section 75W of the *Environmental Planning and Assessment Act 1979* (EP&A Act), seeking modification of the Major Project Approval for Stage 1 of the Moolarben Coal Project (MCP), issued on 6 September 2007 and as modified on 26 November 2008 (05_0117 MOD 1), 18 December 2008 (05_0117 MOD 2), 30 June 2009 (05_0117 MOD 4), 5 October 2009 (05_0117 MOD 5) and 11 January 2010 (05_0117 MOD 6).

This modification (05_0117 MOD 8) seeks approval to establish and operate a ROM coal stockpile adjacent to the ROM coal dump hopper. The project as originally approved included ROM coal stockpiling. However, ROM coal stockpiling was not carried forward in a prior modification (05_0117 MOD 5) which sought to relocate ROM coal facilities away from sensitive receivers. The reinstatement of ROM coal stockpiling will ensure that a continuous supply of ROM coal is available to the coal handling and preparation plant (CHPP) during interruptions in coal delivery from the open cut mines.

The proposed changes are minor and will not alter the size of approved mines; the methods of approved mining; the rate of approved coal extraction and production; or the method and frequency of approved off-site coal transport. Further, the proposed changes will not radically alter or transform the existing approved project or result in additional impacts to that already approved. The project as modified will be substantially the same development as approved by the Minister.

Moolarben Coal Mines Pty Limited (MCM), the proponent for the MCP, is a wholly owned subsidiary of Yancoal Australia (Yancoal). Yancoal owns and operates the Austar coal mine, has a 60% share in the Ashton coal mine and is a capital venture partner in the Newcastle Coal Infrastructure Group (NCIG).

2. BACKGROUND

2.1 Project Location

The MCP is located in the Western Coalfields of New South Wales, east of the village of Ulan and approximately 40 km northeast of Mudgee, in the Mid Western Region local government area (see Figure 1).

Stage 1 is situated within the Moolarben Creek valley, in the headwaters of the Goulburn River catchment. The dominant land uses are grazing, rural residential, conservation and mining. The Ulan village west of the mine comprises a small rural primary school, two churches, a hotel and mine-owned residential dwellings and vacant land. A rural residential development is located approximately 4 km to the southwest of the mine. A small number of farms and scattered homesteads occupy the rest of the surrounding freehold land.

The locality is serviced by the Ulan–Cassilis Road (linking Mudgee and Cassilis), Cope Road (linking Gulgong and Ulan) and Ulan–Wollar Road (linking Wollar and Ulan). The Gulgong–Sandy Hollow Railway provides the transport link for delivery of coal to domestic and export markets (via Muswellbrook).

2.2 The Moolarben Coal Project

On 6 September 2007, the Minister for Planning granted project approval (05_0117) for Stage 1 of the MCP.

Since gaining approval for Stage 1, MCM has made seven separate applications under S75W of the EP&A Act to modify the Minister's approval for the project:

- In August 2008, an application was made to the Department of Planning (DoP) to make administrative changes and to rearrange specific items of approved infrastructure so as to improve operational efficiency and provide improved conservation outcomes. The application (05_0117 MOD 1) was approved on 26 November 2008.

- In December 2008, an application was made to the DoP to allow preliminary construction activities to commence prior to completion of required mine access road works. The application (05_0117 MOD 2) was approved on 18 December 2008.

- In February 2009, an application was made to the DoP to allow Stage 1 to receive and process run-of-mine (ROM) coal from the proposed Stage 2 project (see below); increase throughput of processing, handling and rail loading to 17 Mtpa ROM coal and 13 Mtpa product coals; increase off-site transport of product coal to 13 Mtpa; and extend the approved operating life of Stage 1 infrastructure so that Stages 1 and 2 of the MCP will be fully integrated. The application (05_0117 MOD 3) is currently being assessed by the DoP.

- In April 2009, an application was made to the DoP to change the configuration of the rail loop from a figure-8 to a balloon loop layout. The application (05_0117 MOD 4) was approved on 30 June 2009.

- In June 2009, an application was made to the DoP to relocate the ROM coal facility and develop a water sharing pipeline from the Ulan coal mine. The application (05_0117 MOD 5) was approved on 5 October 2009.

- In December 2009, an application was made to the DoP to make a minor adjustment to the location of the rejects bin and to increase its throughput. The application (05_0117 MOD 6) was approved on 11 January 2010.

- In March 2010, an application was made to the DoP to enable the development and operation of a dewatering and water supply borefield. The application (05_0117 MOD 7) is currently being assessed by the DoP.

The approved project, as modified, entails the construction and operation of three open cut mines (OC1, OC2 and OC3), one underground mine (UG4); coal handling, processing and rail load out infrastructure; and associated surface facilities. At full production, Stage 1 will produce up to 10 million tonnes per annum (Mtpa) of product coal for export and domestic markets, and will employ in excess of 300 permanent full time workers.

A summary of the approved Stage 1 project is provided in Table 1.

Table 1 Stage 1 project summary

Aspect		**Description**
Project life		21 years, to 20 December 2028.
Mining operations	Open cut	Three open cut mines (OC1 – 302 ha, OC2 – 150 ha and OC3 – 550 ha) will be mined at a combined rate of up to 8 Mtpa ROM coal. Overburden (30 m average depth) will be blasted where necessary and be removed using excavator and truck operations. Coal will be blasted and recovered using excavator and truck operations.
Mining operations	Underground	One underground mine (UG4 – depth 70 to 140 m) will be mined at up to 4 Mtpa ROM coal. Coal will be recovered by longwall mining and transferred to surface by conveyor. UG4 mine drift entries in the Stage 1 Main Infrastructure Area.
Blasting		Up to 2 blasts a day and 9 blasts a week over any 12 month period, between the hours of 9:00 a.m. to 5:00 p.m. Monday to Saturday.
Coal handling, preparation, and processing		Coal from OC1, OC2 and OC3 will be transferred by truck to the ROM coal facility, prior to transfer via conveyor to the CHPP or raw coal stockpile. Coal from UG4 will be transferred to the CHPP or raw coal stockpile by conveyors. Crushing and sizing facilities will be included at both the ROM coal facility and CHPP. Up to 12 Mtpa of ROM coal will be processed. Coal will be transferred from the CHPP to the product coal stockpile via conveyors.
Coal production, loading and rail transport		Product coal will be produced at up to 10 Mtpa. Product coal will be loaded onto trains via a rail loop and rail load out facility, and railed to market on the Gulgong-Sandy Hollow rail line in up to four trains a day (four trains during any 24 hour period).

Table 1 Stage 1 project summary (cont'd)

Aspect	Description
Water demand and supply	Water demand at peak production will be about 6.9 ML/day (2,520 ML/year). Water will be supplied from mine inflows, surface water capture, recycled process water, water sharing with adjoining mines and groundwater bore field, where required.
Waste rock, coarse rejects and tailings management	Excavated overburden initially used to form environmental bunds through out-of-pit emplacement on the western side of OC1 and OC2, around the OC3 facilities and along the haul road between OC3 and OC1. Remaining overburden will be placed within open cut mine voids. Coarse rejects and tailings will be emplaced with overburden in open cut mine voids. An emergency tailings dam will be established adjacent to the CHPP.
Mine access	Access to OC1, OC2 and OC3 from Ulan-Wollar Road. Access to UG4 and the CHPP from Ulan-Cassilis Road, north of Ulan-Wollar Road junction.
Support facilities and utilities	Support facilities including offices, bathhouses, workshops and fuel storages (where required), will be established at the Main Infrastructure Area (to service UG4 and the CHPP), and at OC1 and OC3. Power will be supplied from the 66 kV Ulan to Wilpinjong transmission line, via an on-site 66/11 kV substation.
Hours of operation	Construction during daylight hours, 7 days a week. Some noisy activities will be conducted outside of school hours to minimise noise impacts on Ulan Public School. Civil works in the Main Infrastructure Area will occur 24 hours a day, 7 days a week. Mining operations will occur 24 hours a day, 7 days a week.
Employment	220 construction and 317 full time positions.
Rehabilitation	All disturbed areas will be progressively rehabilitated.

The approved Stage 1 infrastructure layout is shown in Figure 2.

On 14 July 2008, MCM lodged a Major Project Application for Stage 2 of the MCP, Major Project 08_0135. Stage 2 will consist of one open cut mine (OC4); two underground mines (UG1 and UG2); ROM and raw coal stockpiles; and support facilities. Stage 2 ROM coal will be handled and processed using the approved Stage 1 ROM coal facilities and CHPP. The application (08_0135) is currently being assessed by the DoP.

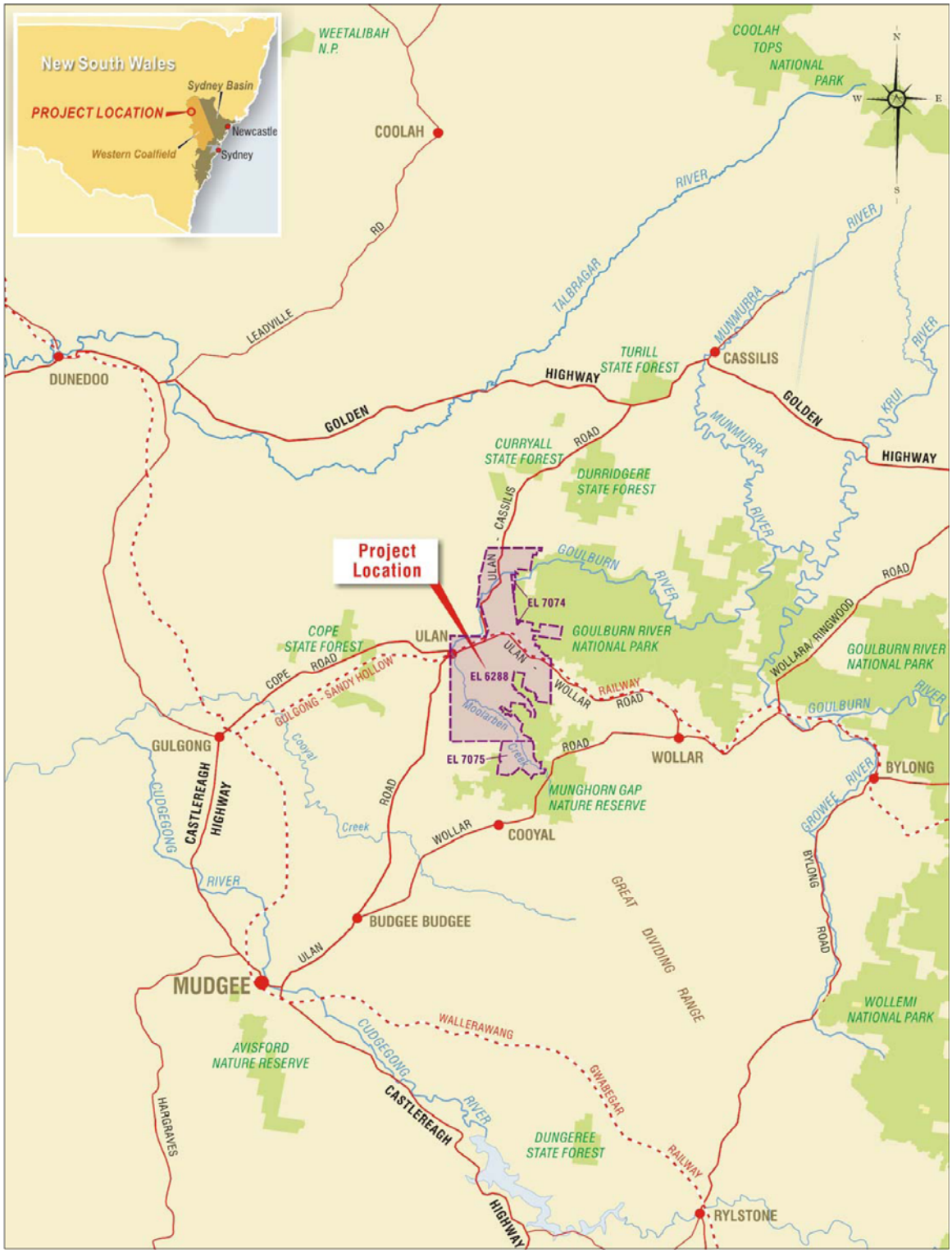


Figure 1 Project location

3. PROPOSED MODIFICATION

3.1 Summary of Proposed Modification

The proposed modification involves establishing a 100,000 tonne ROM coal stockpile adjacent to the ROM coal dump hopper, at the ROM coal facility.

No other changes will be made and construction and operation of the project will occur in accordance with the conditions of the Minister's approval, as modified.

The proposed modification will not affect the extent or timing of the mining activities or any other aspect of the approved project.

3.2 Need for Modification

3.2.1 Purpose of the ROM Coal Stockpile

ROM coal stockpiling is required to ensure that a continuous supply of ROM coal is available to the CHPP during potential interruptions in the delivery of ROM coal from the open cut mines to the ROM coal facility.

The EA for Stage 1 (Wells, 2005) described a 100,000 ROM coal stockpile located adjacent to ROM coal facilities in the proposed and originally approved open cut ROM coal facilities location west of OC1.

In October 2009, the Stage 1 approval was modified (05_0117 MOD 5) to enable the relocation of ROM coal facilities to a central location, nearer the CHPP and mine infrastructure area (Figure 2). The relocation of ROM coal facilities has enabled MCM to rationalise the design of Stage 1 infrastructure and to further reduce the mines' environmental footprint by relocating noise and dust generating activities further away from sensitive receivers (Coffey, 2009). The relocated ROM coal facilities will also enable the future integration of Stage 1 and Stage 2 coal handling.

In relocating ROM coal facilities, it was anticipated that ROM and raw coal stockpiling proposed for Stage 2 would also be used for Stage 1 (Coffey, 2009). Consequently ROM coal stockpiling was not included in the relocated ROM coal facilities. There have been significant delays in finalising the assessment and approval for Stage 2, which has meant that there is now no ability for Stage 1 ROM coal to be stockpiled at the relocated ROM coal facilities.

This modification seeks to reinstate the originally approved ROM coal stockpile at the relocated ROM coal facilities.

3.2.2 Location and Description of the ROM Coal Stockpile

The ROM coal stockpile will be located on the ROM coal facilities pad, behind and to the east of the ROM coal dump hopper (Figure 3). When direct dumping of ROM coal into the ROM coal dump hopper is not available, ROM coal will be placed on this stockpile. The ROM coal stockpile will have an operating capacity of 100,000 t. Coal will be reclaimed from the stockpile by front end loader and fed into the ROM coal dump hopper.

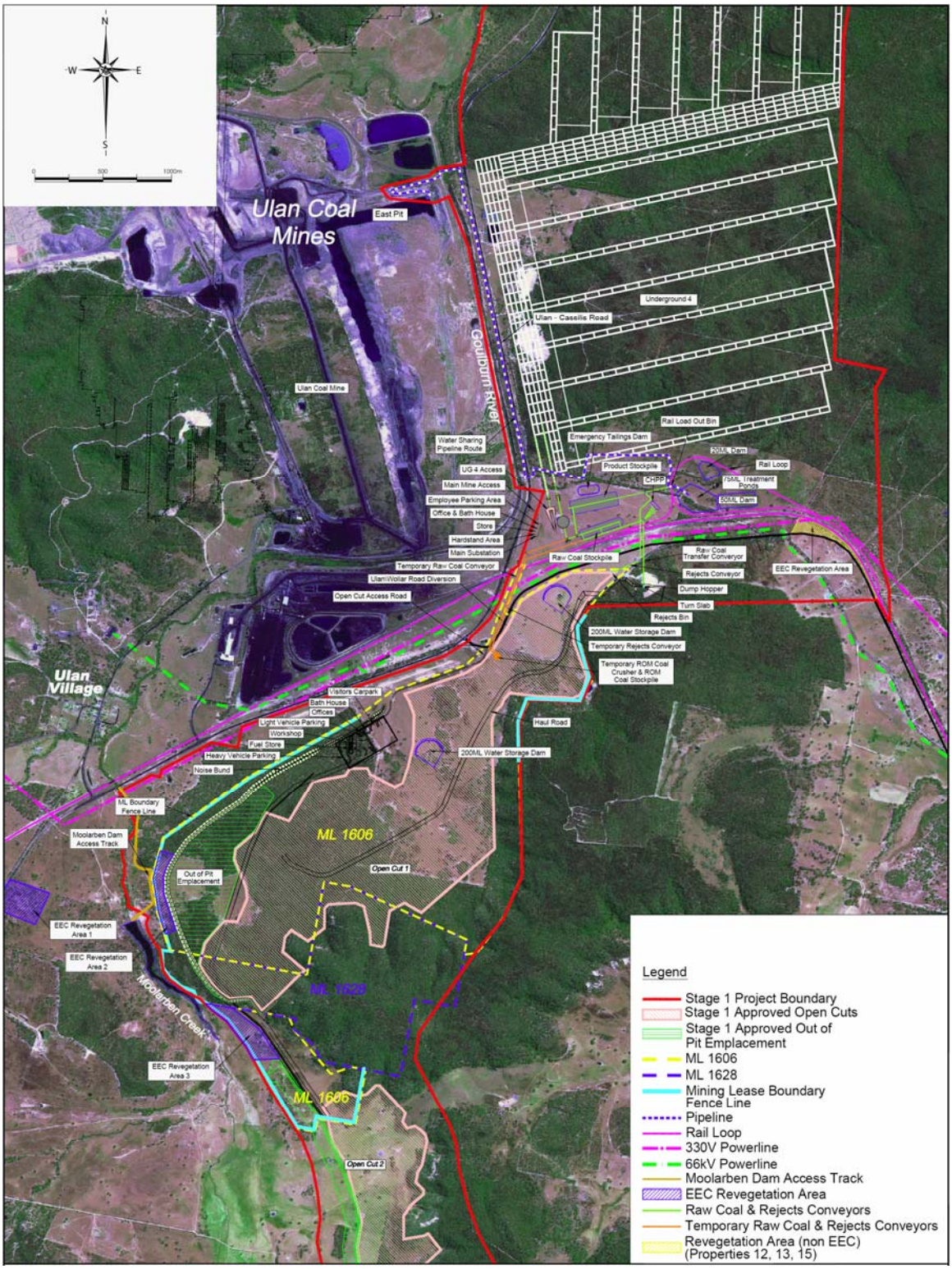


Figure 2 Approved layout

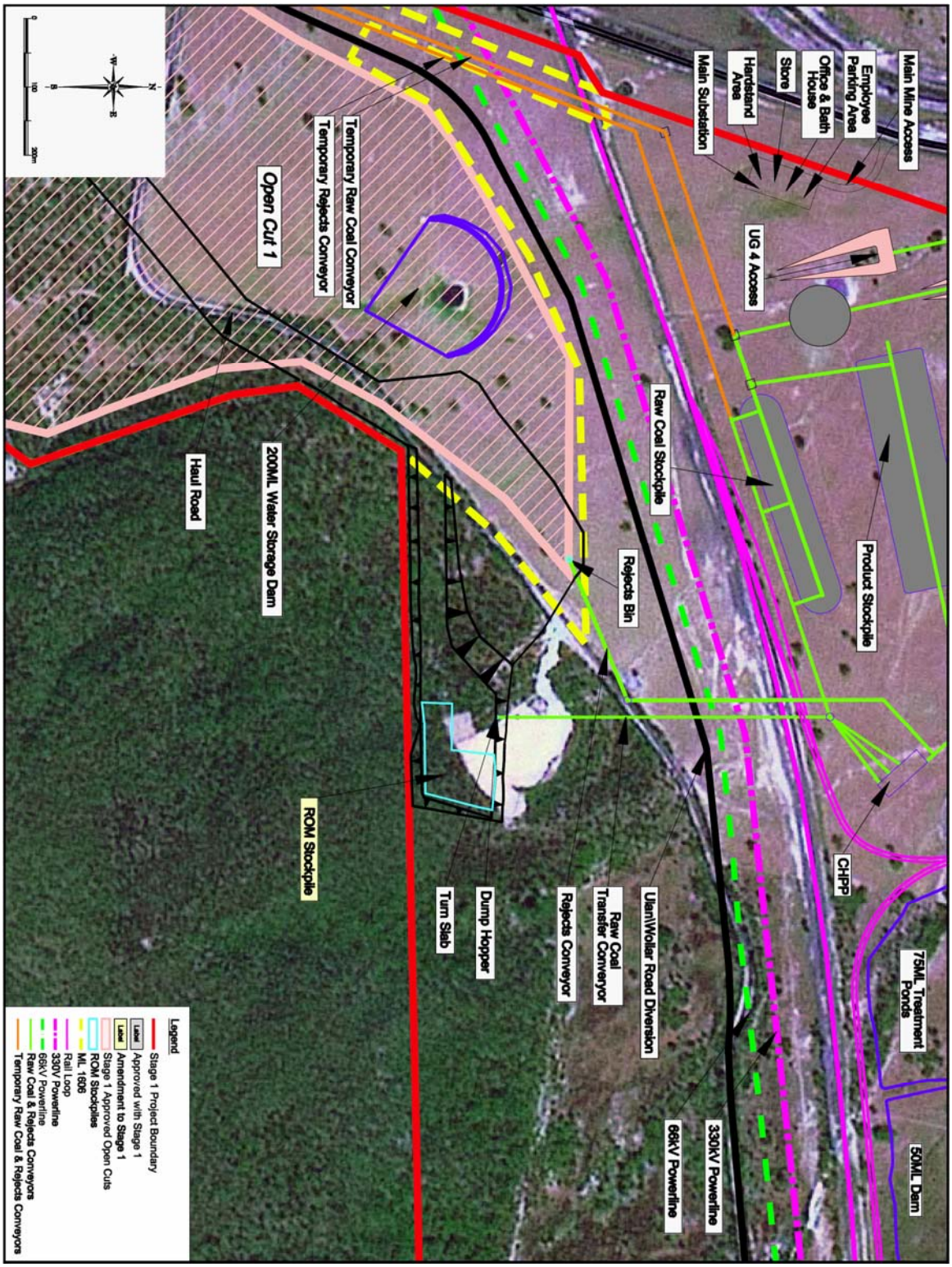


Figure 3 Proposed ROM coal stockpile location

4. PLANNING FRAMEWORK

4.1 S75W EP&A Act

Under Section 75W of the EP&A Act, the proponent may request the Minister's approval for a project to be modified.

The terms of the Minister's approval can be modified by revoking or varying a condition of the approval or by imposing an additional condition of the approval, and by changing the terms of any determination made by the Minister under Division 3 in connection with the approval.

This application (05_0177 MOD 8) to modify the Minister's approval for the Stage 1 project will not alter the size of approved mines (OC1, OC2, OC3 or UG4); the methods of approved mining; the rate of approved coal extraction and production; or the method and frequency of approved off-site coal transport. Further, the proposed changes will not radically alter or transform the existing approved project and the Stage 1 project will be substantially the same development as approved by the Minister, that being three open cut and one underground coal mines producing up to 10 Mtpa product coals, with supporting infrastructure, including a CHPP and rail loop.

Therefore, the proposed amendments sought for approval come under the power of the Minister to modify the Stage 1 approval, in accordance with the provisions of Section 75W of the EP&A Act.

4.2 Section 147 EP&A Act

Moolarben Coal Mines has disclosed reportable political donations, as required under Section 147 of the EP&A Act.

5. ENVIRONMENTAL ASSESSMENT

5.1 Potential Impacts

The proposed modification does not require any additional clearing of, or disturbance to, existing native vegetation, fauna habitat, heritage sites (Aboriginal and non-Aboriginal), soil or water than already approved for Stage 1. Further, it will not result in off-site noise or dust emissions above that already predicted and approved for Stage 1, or substantially change the visual character of the locality. A brief consideration of noise, dust and visual amenity for the ROM coal stockpile is presented below.

5.1.1 Noise

The noise impacts of ROM coal facilities in the currently approved location were assessed in the Stage 1 MOD 5 EA (Coffey, 2009). This included noise emissions from the operation of ROM coal facilities as originally approved, which included ROM coal stockpiling, in the relocated location. Spectrum Acoustics concluded that the ROM dump hopper and primary crusher were the dominant noise sources associated with the ROM coal facilities. Further, that relocating ROM coal facilities would reduce the Stage 1 predicted noise levels at the nearest sensitive receivers by at least 2 dB(A). Spectrum Acoustics assessment for the Stage 1 MOD 5 EA is attached as Appendix 1.

Reinstating ROM coal stockpiling at the ROM coal facilities will not alter the noise impacts associated with the operation of the ROM coal facilities.

5.1.2 Air Quality

The dust impacts of ROM coal facilities in the currently approved location were assessed in the Stage 1 MOD 5 EA (Coffey, 2009). This included dust emissions from the operation of ROM coal facilities as originally approved, which included ROM coal stockpiling, in the relocated location. PAE Holmes concluded that the only significant effect of this change from an air quality perspective is to increase the length of the haul distance from the open cut pits to the coal dump hopper and that emissions will occur in a different (albeit not very different) location, which would have some bearing on air quality effects. Further, that use of larger trucks and increased dust control on haul roads will result in lower dust impacts, in particular in areas where private residences are located. PAE Holmes assessment for the Stage 1 MOD 5 EA is attached as Appendix 2.

Reinstating ROM coal stockpiling at the ROM coal facilities will not alter the dust impacts associated with the operation of the ROM coal facilities.

5.1.3 Visual

The ROM coal stockpile will be located behind and to the east of the ROM coal dump hopper on the ROM coal facilities pad. The general area is now characterised by mining infrastructure.

There are no privately-owned residences that have a direct view of the ROM coal stockpile and it will only be visible to vehicles travelling along Ulan–Wollar roads. The majority of this traffic is

associated with mine workers travelling to and from the Wilpinjong coal mine. Further, views from the Ulan village and nearest sensitive receivers toward the ROM coal facilities are obscured by natural landscape features, Ulan coal mine infrastructure and the OC1 environmental bund.

Reinstating ROM coal stockpiling at the ROM coal facilities will not alter the visual character of the ROM coal facilities.

5.1.4 Other

There will be no additional impacts on biodiversity, heritage, soil, water or other environmental or social aspect to that already approved.

5.2 Management and Mitigation

Moolarben Coal Mines will manage and mitigate the impacts of Stage 1, including ROM coal handling and stockpiling, in accordance with its approved environmental management plans.

6. CONCLUSION

This application seeks to modify the MCP Stage 1 Project Approval to enable the stockpiling of ROM coal at the ROM coal facilities, as originally approved.

The proposed modification will not cause any additional impacts to approved Stage 1 activities, and overall the impact of ROM coal stockpiling at the ROM coal facilities will be negligible.

This report demonstrates that the proposed modification is generally consistent with the terms of the Minister's approval for the MCP (as modified). Further, that there will be no substantive environmental impacts as a result of reinstating ROM coal stockpiling at the ROM coal facilities. Finally, all other aspects of the MCP will remain consistent with the project approval.

7. REFERENCES

Coffey (2009). Environmental Assessment Section 75W Modification Application Moolarben Coal Project Stage 1 (05_0117 MOD 5). Report prepared for Moolarben Coal Mines Pty Ltd by Coffey Natural Systems Pty Ltd.

Wells (2006). Moolarben Coal Project Environmental Assessment Report. Report prepared for Moolarben Coal Mines Pty Ltd by Wells Environmental Services.

Appendix 1

Noise Assessment

This page is left intentionally blank.

7 July 2009

Ref: 07289/3125

Mr Michael Moore
Coffey Natural Systems Pty Ltd
Level 1, 3 Rider Boulevarde
Rhodes NSW 2138

MODIFICATION TO APPROVED MCP STAGE 1

Dear Sir,

This letter provides information relating to the potential noise impact from proposed changes to the approved Moolarben Coal Project (MCP). We understand this letter will be included with information to be sent to the Department of Planning for their consideration.

Noise modelling for the early stages of the approved MCP, conducted by Spectrum Acoustics, had mining occurring in Open Cut 1 (O/C1) and ROM coal being transported by trucks to a ROM hopper and primary breaker immediately north of O/C1. From there, coal is approved to be transferred via a conveyor network to the north of Ulan-Mudgee Road and the rail line and then to the northeast to the coal handling area. Coal rejects would return along the same conveyor network to a reject bin near the ROM hopper.

It is understood that MCM proposes to transport ROM coal by truck along a haul road south of Ulan-Mudgee Road to a ROM hopper to the south of the approved surface facilities, approximately at the site of a small unused quarry. This proposal would incorporate construction of the alternate ROM hopper and rejects bin, deletion of the O/C1 primary breaker and conveyor system and an extension of truck movements beyond the approved O/C1 ROM bin to reach the new ROM bin. Coal and rejects would also be transferred to and from the surface facilities via a relatively short conveyor that would pass under the existing infrastructure.

The proposal also includes an application to allow some construction activities to occur on a 24-hour basis. This is an extension of the approved daytime construction hours. Only relatively minor (in terms of noise generation) activities are proposed for the night time period. These include preparation of concrete formwork at the ROM hopper, train load-out bin and product reclaim tunnel and would require the use of small plant items such as a Franna crane, forklifts and light vehicle movements. No concrete pouring is proposed for the night time period and no metal fabrication works involving the use of rattle guns would occur.

The original noise model incorporated 170t capacity coal trucks terminating at the approved ROM hopper. A revised model was generated in which the trucks continued a further 2km to the northeast to arrive at the new ROM hopper. (The revised model assumed use of 240t capacity haul trucks fitted with grid box silencers and modified exhausts as modelled in the Stage 2 EA). A 15m high reject bin was also modelled, as was the new conveyor to the surface facilities, and the bulk of the approved overland conveyor was deleted.

The modelling confirmed the original predictions that noise from the ROM hopper/primary crusher in its approved location would be the dominant source. Of the total predicted 39 dB(A),$L_{eq(15minute)}$ in Ulan village, 37 dB(A) was from the ROM area. This value included the influence of a noise barrier to be constructed along the western side of the hopper.

Moving the ROM hopper to the proposed location, and removing any noise attenuation, resulted in a total predicted level of 37 dB(A) in the village, with 25 dB(A) contribution from the combined ROM hopper/reject bin and the bulk of the remaining noise from the extended coal haulage route. The net acoustic impact of the proposed modification at the nearest potentially affected receiver is therefore predicted to be negative.

Inspection of the ranking of noise sources also shows contributions of 29 dB(A) from the washery and 20 dB(A) from the new conveyor, received in Ulan village. The sound power levels of these sources are 116 dB(A) and 109 dB(A), respectively. The modelled sound power level of the ROM hopper/reject bin is 115 dB(A). These levels are significantly, ie at least 10 dB, greater than the sound power level of proposed night time construction of these items. The noise level from night time construction activities would therefore be less than 30 dB(A) in Ulan village, which is 8 dB below the night time operational noise criterion.

In summary, the proposed modification to the O/C1 coal transport route and ROM hopper is predicted to reduce predicted noise levels by 2 dB and night time construction activities are expected to produce noise levels 8 dB below the night time operational noise criterion at the nearest potentially affected receiver. In light of these findings, we advise that the proposed modifications could be approved without adversely impacting on the amenity of any residential receiver.

Please call our office on 4954 2276 if you require further information.

Yours faithfully,

SPECTRUM ACOUSTICS PTY LIMITED

Neil Pennington
Principal/Director

Appendix 2

Air Quality Assessment

This page is left intentionally blank.

9 June 2009

Michael Moore
Coffey Natural Systems Pty Ltd
Level 1, 3 Rider Boulevard
Rhodes
NSW 2138

Air Quality Assessment – Moolarben Stage 1 revised location for coal dump hopper and associated facilities

Dear Michael,

1 INTRODUCTION

In your memorandum dated 22 May 2009 and sent to us by email, you outlined plans by the Moolarben Coal Mines Pty Ltd (MCM), to revise the arrangement made to receive coal at the Coal Handling and Preparation Plant (CHPP) for the Stage 1 of the MCM.

I understand that the need to revise the project is due to the fact that it can be developed more efficiently if the coal receiving hopper and associated facilities, that were planned to be built in Stage 2, are brought forward into Stage 1. This would eliminate the need to ever build the Stage 1 hopper. This of course changes the Stage 1 project and will change the air quality effects of Stage 1.

Your memorandum asks us to assess the effects that this change would have on air quality effects. Rather than repeat all the detailed analysis provided in the Stage 1 and 2 Environmental Assessment I have focussed on describing the main differences between the original Stage 1 air quality effects and new Stage 1 effects.

2 QUALITATIVE REVIEW OF ISSUES

The only significant effect that this change has on the project from an air quality perspective is to increase the length of the haul distance from the open cut pits to the coal dump hopper. In Year 2 the coal haul distance from Pit 1 to the coal dump hopper will increase from approximately 7 km to approximately 9.2 km. The increase haul distance will naturally increase dust emissions if all other factors remain unchanged. In addition, the new emission will occur in a different (albeit not very different) location and this would have some bearing on air quality effects, in particular on the place where these effects are experienced.

However the assessment for Stage 2 has resulted in some further changes which will

PAEHolmes

SYDNEY

Suite 2B, 14 Glen St
Eastwood NSW 2122

Ph: + 61 2 9874 8644
Fax: + 61 2 9874 8904

info@paeholmes.com
www.paeholmes.com

BRISBANE

GOLD COAST

TOOWOOMBA

A PEL COMPANY

Queensland Environment Pty Ltd
Trading as PAEHolmes
ABN: 86 127 101 642

now also be incorporated into the Stage 1 mine because these are environmentally beneficial. The relevant changes are as follows:

1. Haul roads will be treated to a higher level of control than previously assumed and MCM has committed to achieving 85% control on dust emissions on haul roads so that TSP emissions will be 0.6 kg/VKT[1]
2. Truck sizes for transporting coal from Pit 1 to the dump hopper will be 240 instead of 170 tonne thus resulting in a lower VKT count to transport a given quantity of coal (trucks used to haul coal from Pits 2 and 3 will not change in size and will still have a load capacity of 50 t or more. The assessment assumes 50 t.)
3. There are some minor changes in the locations and orientations of coal stockpiles and the layout of offices, workshops etc

These are significant changes from an air quality perspective and as will be seen later result in lower impacts from the mine in many areas, in particular in areas where private residences are located.

3 FURTHER DISCUSSION ON CHANGES IN EMISSIONS AND THE APPROACH TO THE ASSESSMENT

The approach taken in the assessment has been to recalculate the emissions inventory for Year 2 and re-allocate the sources of dust emission to match the extended haul road and changed location for the coal receiving facilities. The dispersion model has then been re-run using the same meteorological data and the same model setup parameters as used in the Stage 1 Environmental Assessment except of course for the location of the dust sources and the rate of dust emissions. The revised layout of dust sources assumed in the modelling is shown on **Figure 1**. The main difference is the relocation of the dump hopper from approximately at the red dot labelled "11" to the red dot labelled "21" (see **Figure 1**). Points 12 to 20 on **Figure 1** are additional dust sources that are caused by emissions from the increased length of the coal haul road. (Note: **Figure 1** also provides a description of some features that are not labelled on subsequent maps.)

In summary the original Year 2 emissions inventory was estimated to produce 2,612 tonnes of TSP emission. The revised TSP emissions are estimated to be 2,358 t. Thus the improved controls on the haul road and the larger trucks proposed for transporting coal from Pit 1 to the coal receiving facilities more than makes up for the increased haul distance. The most common winds over the year are from the east-southeast and these will tend to blow the dust from the new section of haul road to the east-northeast and onto land currently used for coal handling at the Ulan Mine.

4 RESULTS

Figures 2 to **5** show the predicted:

- Maximum 24-hour average PM_{10} concentrations due to emissions from the original and revised projects
- Annual average PM_{10} concentrations due to emissions from the original and revised projects
- Annual average TSP concentrations due to emissions from the original and revised projects
- Annual average dust (insoluble solids) deposition due to emissions from the original and revised projects.

[1] VKT refers to vehicle-kilometres-travelled.

Each figure shows the contours as originally shown (light grey contours) and as predicted taken account of the relocated coal receiving facilities (black contours). The differences illustrate the effects of improved haul road dust control and the larger truck sizes used.

The new arrangement results in lower impacts everywhere except for some areas to the north of the extended portion of haul road on land occupied by the Ulan Mine where there are minor increases in dust concentration and deposition rates.

No residence is predicted to experience an increase in short-term or long-term PM_{10}, TSP or dust deposition levels. The reduction in impacts is greater than one might expect based on a simple comparison of the reduction in emissions, which reduce from 2,612 to 2,358 tpa of TSP emissions. This is because the dust emissions are not only reduced but are redistributed to places where dust was not previously liberated and this area is within the Open Cut 1 and to a small extent on land used by Ulan.

5 CONCLUSIONS

This letter has examined the likely effects on air quality of modifications to Stage 1 mining at MCM. The effects are shown to be minor and when combined with more significant commitments made in Stage 2 to control dust emissions, result in a reduction in the dust levels compared with the levels predicted in the assessment for the Stage 1 project.

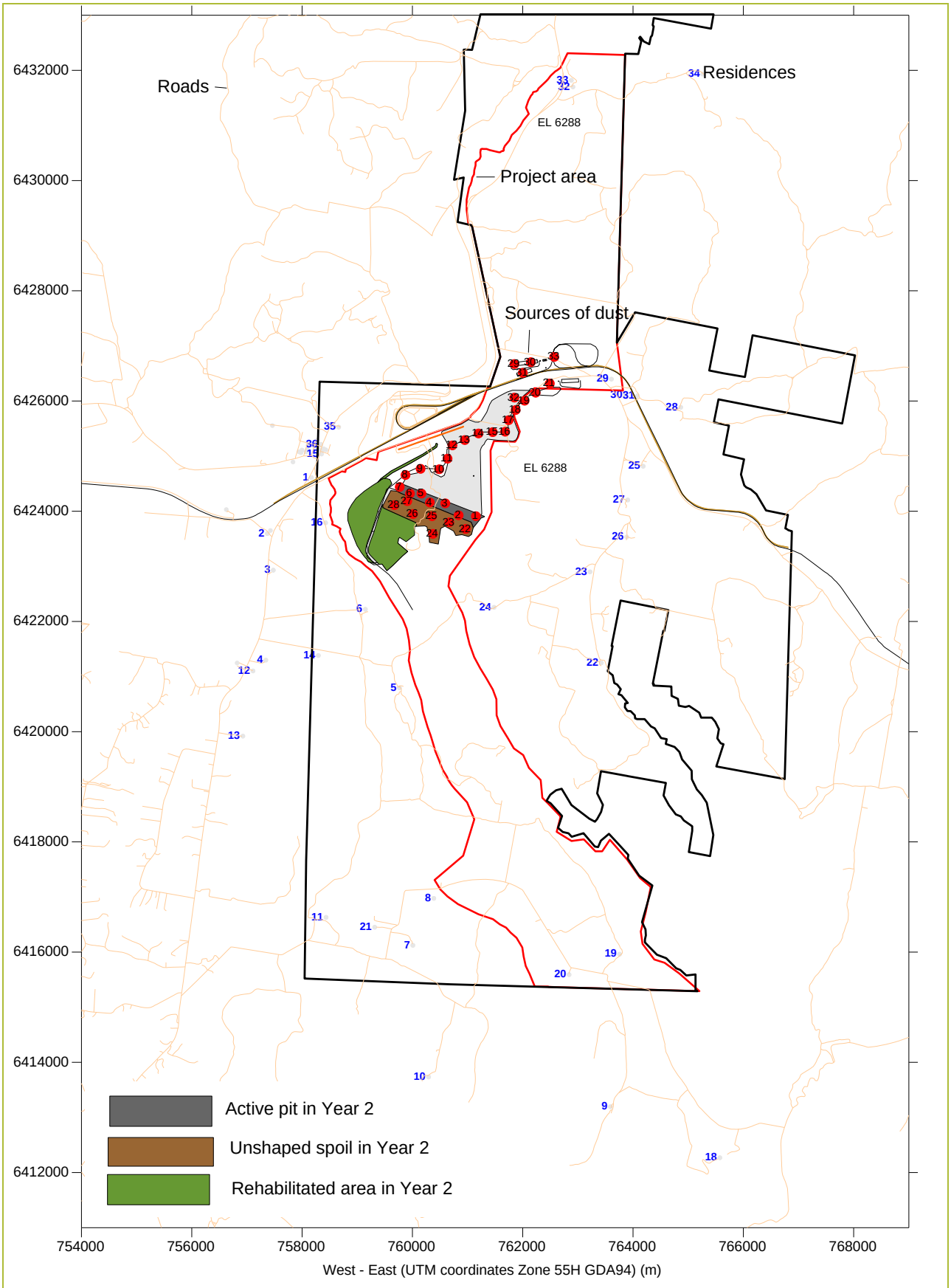
Yours faithfully
PAEHolmes

Nigel Holmes
Atmospheric Physicist

6 REFERENCES

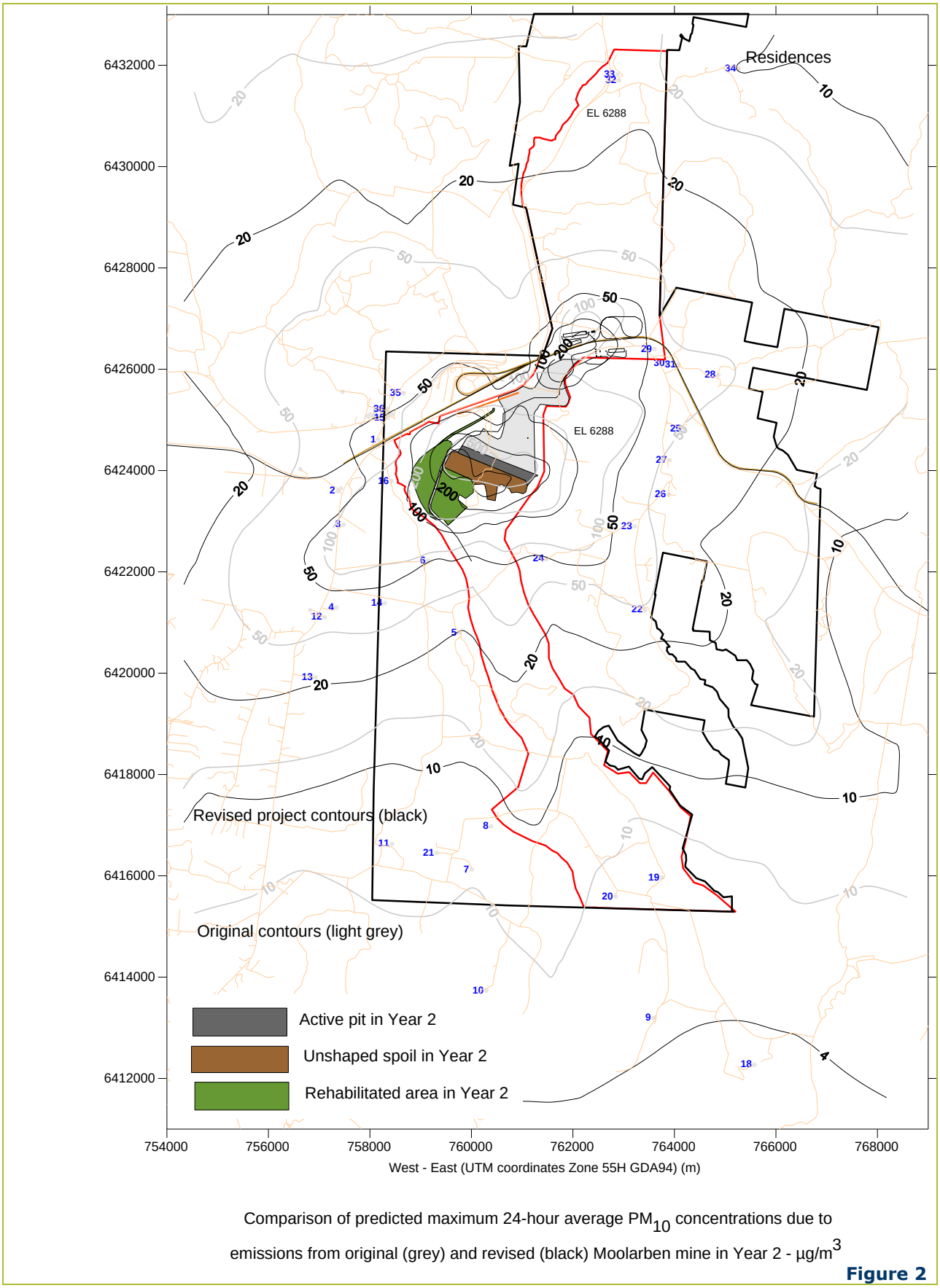
Holmes Air Sciences (2006) "Air Quality and Greenhouse Gas Assessment: Proposed Moolarben Open Cut Mine, Near Ulan NSW", Prepared by Holmes Air Sciences, Suite 2B, 14 Glen Street, Eastwood, NSW 2122.

Figures



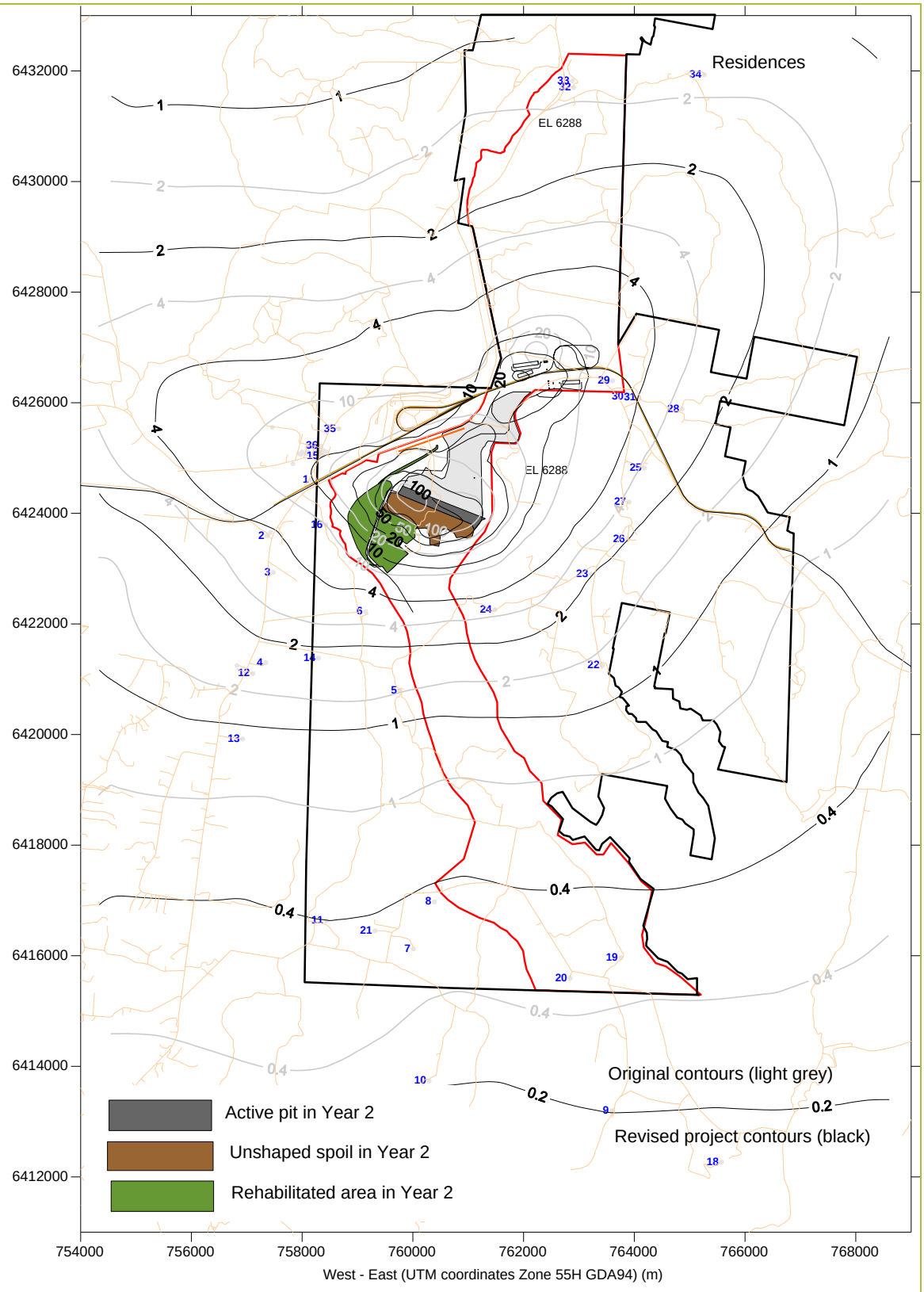
Location of dust sources as modelled for revised (June 2009) Moolarben mine in Year 2

Figure 1



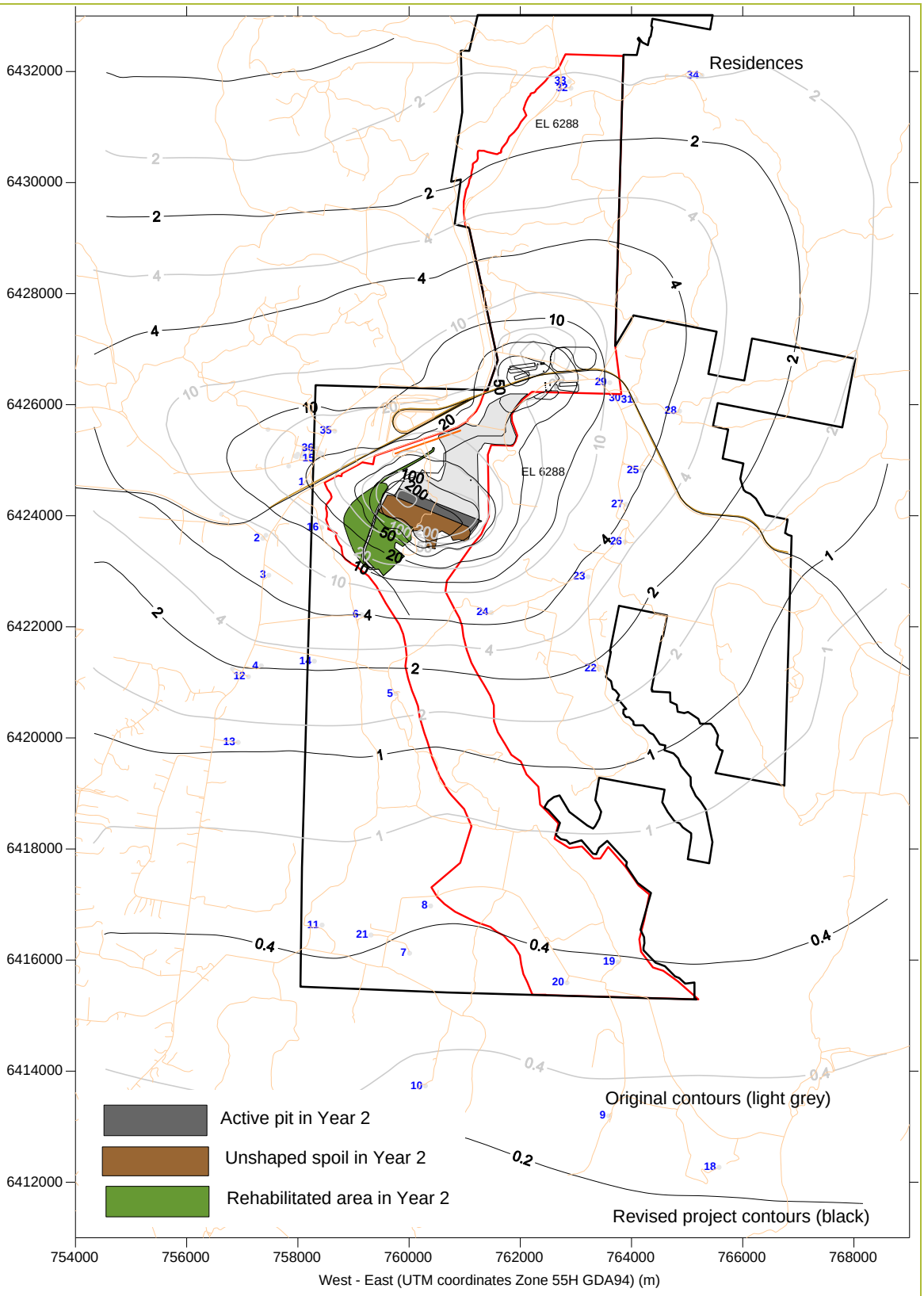
Comparison of predicted maximum 24-hour average PM_{10} concentrations due to emissions from original (grey) and revised (black) Moolarben mine in Year 2 - $\mu g/m^3$

Figure 2



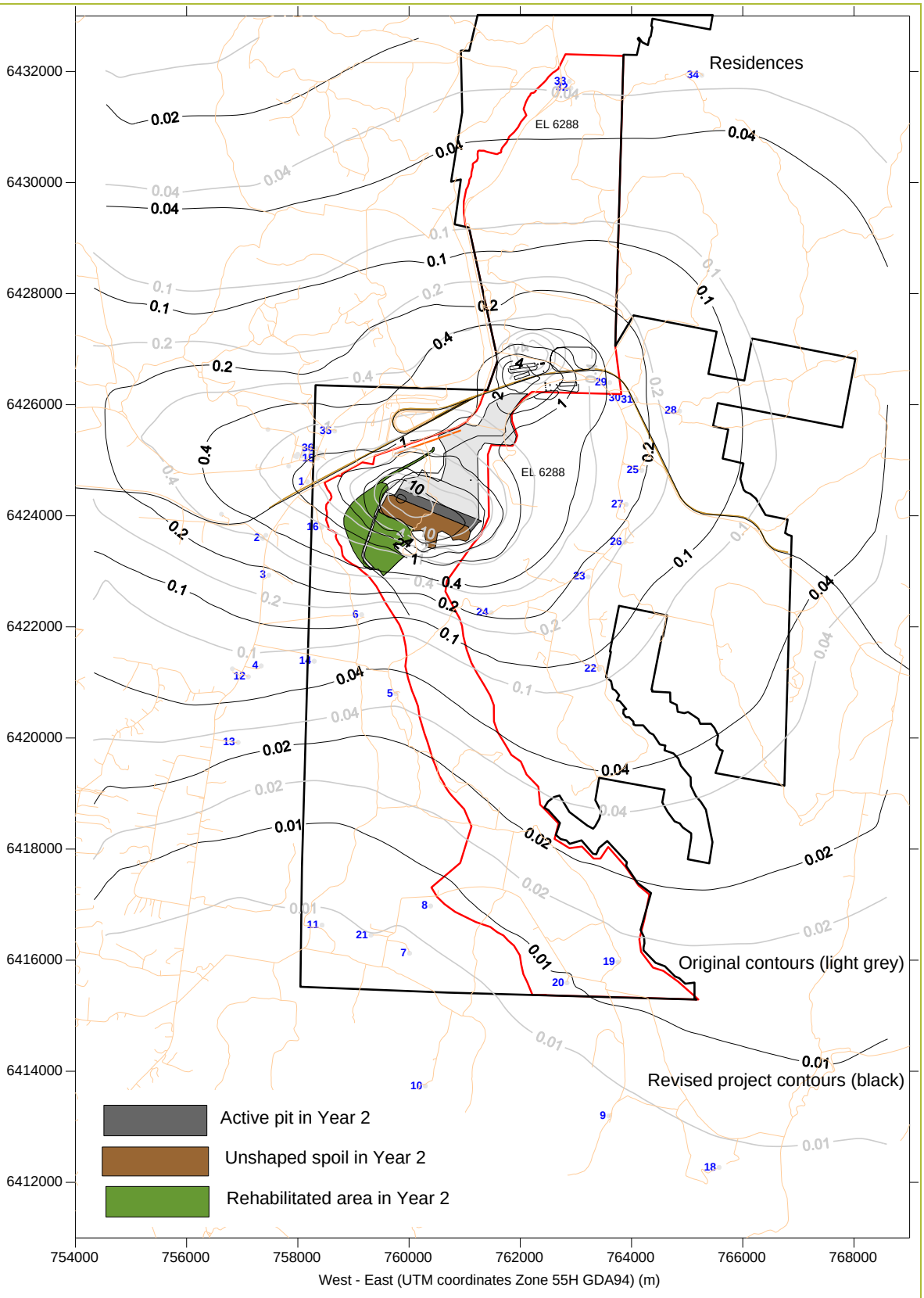
Comparison of predicted annual average PM_{10} concentrations due to emissions from original (grey) and revised (black) Moolarben mine in Year 2 - $\mu g/m^3$

Figure 3



Comparison of predicted annual average TSP concentrations due to emissions from original (grey) and revised (black) Moolarben mine in Year 2 - µg/m^3

Figure 4



Comparison of predicted annual average dust (insoluble soilds) deposition rate due to emissions from original (grey) and revised (black) Moolarben mine in Year 2 - g/m^2/month