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Our Ref: 21076_SSD 7142 MOD 1 ROM Stockpile

13 July 2021

Aislinn Farnon
Environment & Community Manager
United Wambo Joint Venture
134 Jerrys Plains Road
WARKWORTH NSW 2330

E| Aislinn.Farnon@glencore.com.au

Dear Aislinn

Re: United Wambo Open Cut Coal Mine Project – Stockpile Modification Environmental Assessment

1. Introduction

The United Wambo Open Cut Coal Mine Project (the Project) was approved in August 2019 by the Independent Planning Commission (IPC) (SSD 7142). The Environmental Impact Statement (EIS) prepared for the Project also modified the existing Wambo mine development consent (DA 305-7-2003) and the Wambo train loading facility development consent (DA 177-8-2004). The Project commenced operation and project construction on 6 January 2020.

The United Wambo Open Cut operation, along with the Wambo Underground operations, utilises the Wambo coal handling and preparation plant (CHPP) and coal handling infrastructure (such as conveyors, stockpiles and train loading facilities) for the washing, storage and transport of coal.

The need for additional run of mine (ROM) coal stockpiling capacity has been identified to cater for the United Wambo Open Cut operations and Wambo Underground operations. To allow for more flexible operational coal handling management across the operations, United Collieries Pty Limited (United) is proposing a modification to increase the size of the existing run of mine (ROM) coal stockpile and also to allow for in-pit ROM stockpiles at both the United Open Cut and Wambo Open Cut (the Proposed Modification).

On behalf of United, Umwelt has prepared this Statement of Environmental Effects (SEE) for the Proposed Modification.

2. Proposed Modification

As outlined above, the United Wambo Open Cut operation, along with the Wambo Underground operations, utilises the Wambo CHPP and coal handling infrastructure.

ROM coal can be placed directly into the ROM bin and fed directly into the CHPP or placed onto the ROM coal stockpile. ROM coal is crushed and washed at the CHPP. A product coal stockpile is used to stockpile product coal, prior to loading onto trains for transport off site.

Newcastle | Orange | Sydney | Canberra | Brisbane | Perth

T| 1300 793 267
E| info@umwelt.com.au

www.umwelt.com.au

Umwelt (Australia) Pty Limited
ABN 18 059 519 041

To allow for greater operational flexibility in coal handling management across the United Wambo complex, United is proposing to:

- increase the ROM coal stockpile from 250,000 tonnes and approximately 6 hectares (ha) to approximately 16 ha
- allow for in-pit coal stockpiles within the open cut pits.

The Proposed Modification would not result in any other changes to the approved operations, as outlined in **Table 1**.

Table 1 Comparison of SSD 7142 and Proposed Modification

Key Project Components / Aspects	Approved Operations (SSD 7142)	Proposed Modification
Key feature of the Project	The operation of a multi-seam open cut mining operation in the Wambo Open Cut and United Open Cut	No change
Extraction Rates	Up to 10 Mtpa ROM coal	No change
Life of Mine	Approximately 23 years from the date of Project approval	No change
Operating Hours	24 hours per day, 7 days per week	No change
Number of Employees	Up to approximately 500 total operational positions (at peak production)	No change
Mining Methods	Open cut mining using a truck and excavator/shovel fleet	No change
Extent of Mining Areas	Refer to **Figure 1** for the proposed extent of open cut mining	No change
Infrastructure	Use and upgrades of existing United Mine Infrastructure Area prior to its decommissioning and demolition/removal due to the progression of the United Open Cut Construction of temporary facilities during the construction phase of the Project Ongoing use, expansion and upgrade of the Wambo Mining Infrastructure Area Use of existing Wambo CHPP and train loading facility within their currently approved annual capacities of 14.7 Mtpa ROM coal and 15 Mtpa product coal, respectively	No change
Tailings and Rejects Strategy	Decommissioning and capping of existing tailings storage facilities located in areas proposed for overburden emplacement and ongoing use of existing tailings storage facilities and storages established in other mine voids, as required Coarse rejects from coal preparation to be transported by truck to the open cut overburden areas for emplacement and subsequent covering by overburden material. Coarse rejects will continue to be co-disposed within the open cut overburden areas for the life of operations	No change

Key Project Components / Aspects	Approved Operations (SSD 7142)	Proposed Modification
External Coal Transport	Product coal transported off site via train from the Wambo train loading facility. Product coal transport of 15 Mtpa product coal tonnage transported by train, with a maximum of six to eight trains per day	No change
Water Management	Construction of mine water management controls including dams Use of the previously mined United underground voids for water storage	No change

The Proposed Modification will not require any significant construction activities. The ROM stockpile will only require some additional earthworks to prepare a pad which will be undertaken using existing mining equipment. There will be no additional equipment or construction workforce required.

ROM Stockpile

The current ROM stockpile is shown in **Figure 1**. The currently approved capacity of the ROM stockpile is nominally 250,000 tonnes and covers an area of approximately 6 ha. To allow for greater capacity and operational flexibility, United is proposing to increase the size of the ROM stockpile to approximately 16 ha (refer to **Figure 2**). It is proposed that the ROM stockpile be limited by area, rather than a tonnage capacity, with the overall production capacity and CHPP throughput already putting bounds on production at the existing approved operations.

The revised stockpile size includes roads and the ability for more flexible stockpile arrangements, including:

- the ability to stockpile different coal types to maximise blending capabilities
- allowing additional space for open cut ROM coal to be stockpiled during periods where Wambo underground coal is fed directly into the CHPP
- improved ROM configuration that provides capacity for peak production volumes
- capacity to continue mining operations during CHPP maintenance periods.

Existing stockpile environmental management controls will continue, including utilising water carts for dust suppression.

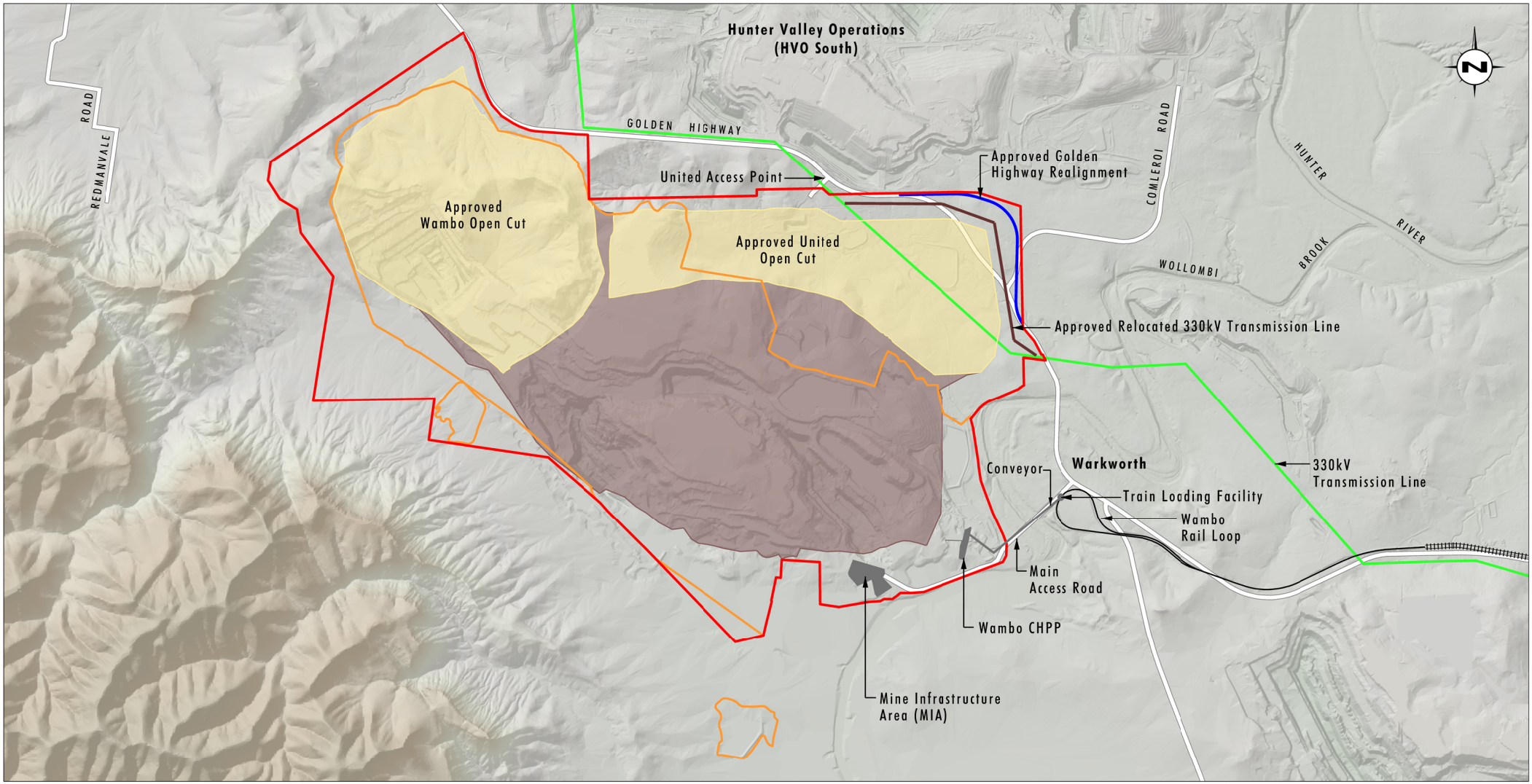

Image Source: United LiDAR (2015)
Data Source: Glencore (2015)

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Legend

- Project Area
- Approved Conceptual Extraction Area
- Active Mining Area
- Approved Wambo Surface Development Area
- Approved Golden Highway Realignment
- Existing 330kV Transmission Line
- Approved Relocated 330kV Transmission Line

FIGURE 1

Approved Operations

Image Source: Nearmap (June 2021)
Data Source: Glencore (2021)

0 100 250 500m
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Legend

- Project Area
- Proposed ROM Stockpile

FIGURE 2

Proposed ROM Stockpile

In-pit Stockpiling

In addition to the proposed increase to the ROM stockpile, it is proposed to allow for in-pit stockpiling in open cut pits. Along with the ROM stockpile capacity, in-pit stockpiling would provide flexibility for coal management across the complex which includes open cut pits and Wambo's underground operations. In-pit stockpiling would involve use of a temporary ROM coal stockpile established within the mining footprint to temporarily store coal before later moving it to the ROM coal stockpile at the CHPP or fed directly into the CHPP. The use of these temporary ROM stockpiles would provide increased operational flexibility allowing temporary placement of ROM coal near to the extraction point to provide mining efficiencies and provide additional capacity in periods where the ROM coal stockpile was nearing capacity (i.e. where operations at the complex are constrained by the available stockpiles being at full capacity for a period of time, thus impacting on the mining process). The use of in-pit stockpiles would not increase the ROM production as approved in SSD 7142.

In-pit stockpiles would be used on a temporary basis from time to time and would be located appropriately within open cut pits to suit operational constraints. It is not intended for in-pit stockpiles to be utilised as the main ROM stockpile or on a permanent basis, but rather as a contingency to suit operational needs.

Due to the changing nature of the open cut mining operations over the life of mine, it is not possible to identify the potential locations of the temporary in-pit stockpiles. However, by their nature they would only be established within the open cut pits.

3. Approval Pathway

It is proposed to modify SSD 7142 under section 4.55(1A) of *the Environmental Planning and Assessment Act 1979* (EP&A Act). A section 4.55(1A) modification is available where consent authority is satisfied that:

- the proposed modification is of minimal environmental impact, and
- the development to which the consent as modified relates is substantially the same development as the development for which the consent was originally granted and before that consent as originally granted was modified (if at all).

The proposed increase to the ROM coal stockpile and allowance for in-pit ROM coal stockpiling are located in areas that are already approved for surface disturbance. As outlined in **Section 4**, an assessment of the environmental impacts of the proposed changes, including potential noise and air impacts, have concluded that they would not be substantially different to the approved operations.

The Proposed Modification is considered to be substantially the same development as that approved under SSD 7142 as:

- the overall nature of the development remains unchanged
- there is no proposed change in annual production rates
- the majority of the key project components remain unchanged from that which is currently approved (refer to **Table 1**).

Accordingly, section 4.55(1A) is considered available for the Proposed Modification. The Department of Planning, Industry and Environment (DPIE) has confirmed that section 4.55(1A) is the appropriate approval pathway for the Proposed Modification, as per correspondence dated 13 July 2021.

4. Environmental Assessment

4.1 Preliminary Environmental Assessment

A review of environmental and social aspects has been undertaken for the Proposed Modification to identify any areas where environmental or social impacts may change with the modified activities (refer to **Table 1**). **Table 2** identifies where there is a potential change in impacts and therefore where additional assessment is required for the Proposed Modification.

Table 2 Preliminary Environmental Assessment

Aspect	Potential Impact	Further Assessment Required
Land Resources and Agriculture	The Proposed Modification will not result in any additional disturbance outside already approved ground disturbance areas. There will be no change to land resources or impacts to current or potential agricultural activities as a result of the Proposed Modification.	No
Air Quality	The Proposed Modification will result in a change to ROM coal stockpiling arrangements considered for the Project. As ROM coal stockpiling is a potential source of dust, the Proposed Modification has the potential to change the predicted air quality assessment outcomes compared to the approved United Wambo Open Cut operations. Further assessment is required to assess this potential change. The United Wambo Open Cut operations operate under an Air Quality and Greenhouse Gas Management Plan in accordance with condition B29 of SSD 7142. Air quality will continue to be managed in accordance with the requirements of the Air Quality and Greenhouse Gas Management Plan. The Air Quality and Greenhouse Gas Management Plan will be updated as necessary should the Proposed Modification be approved.	Yes, refer to **Section 4.2** The assessment concludes the Proposed Modification would represent a negligible change in the context of air emissions and modelling results.
Greenhouse Gas and Energy	The Proposed Modification will not result in any additional coal extraction, processing or transportation. There would be very limited potential for additional greenhouse gas contributions associated with rehandling of in-pit stockpiling from the Proposed Modification. The United Wambo Open Cut operations report its emissions under the NGER regime and is subject to an emissions baseline under the federal Safeguard Mechanism. The United Wambo Open Cut operations operate under an Air Quality and Greenhouse Gas Management Plan in accordance with condition B29 of SSD 7142. The operations would continue to be managed in accordance with the requirements of the Air Quality and Greenhouse Gas Management Plan.	No

Aspect	Potential Impact	Further Assessment Required
Noise	The Proposed Modification will result in a change to stockpiling arrangements considered for the Project. The Proposed Modification has the potential to change the predicted noise generated compared to the Project. Further assessment is required to assess this potential change. The United Wambo Open Cut operations operate under a Noise Management Plan in accordance with condition B5 of SSD 7142. Noise will continue to be managed in accordance with the requirements of the Noise Management Plan.	Yes, refer to **Section 4.3** The noise assessment concludes that with the Proposed Modification the United Wambo Open Cut operations will continue to comply with the existing noise limits in SSD 7142 and the EPL.
Blasting	The Proposed Modification will not change currently approved blasting activities or practices. The United Wambo Open Cut operations will continue to operate in accordance with blasting criteria outlined in SSD 7142 and the Blast Management Plan (condition B21 of SSD 7142).	No
Water Resources	The site operates under an integrated water management system. The key drivers of the water management system are to: • separate clean and dirty water • seek to prevent the contamination of clean water by mining activities • maximise water recycling and reuse opportunities • effectively managing water across the United and Wambo Complex • managing compliance with statutory obligations. The approved ROM stockpile is located within the existing water management system and the extension area is located within the overall disturbance area captured by the broader mine water management system. The stockpile area water management system will be augmented to accommodate the larger stockpile footprint, however, no other changes to the broader mine water management will be required. The proposed ROM stockpile catchment is shown in **Figure 3**. The Proposed Modification is not expected to result in a material change to the water balance for the site. The site water balance will be updated as necessary as part of the annual review to with consideration of the Proposed Modification. The United Wambo Open Cut operations operate under a Water Management Plan in accordance with condition B52 of SSD 7142, which will continue to be implemented. The Water Management Plan will be updated should the Proposed Modification be approved.	No

Aspect	Potential Impact	Further Assessment Required
Biodiversity	The Proposed Modification will not result in any additional clearing or ground disturbance beyond that currently approved. There will be no additional impacts to biodiversity as a result of the Proposed Modification. The United Wambo Open Cut operations operate under an existing Biodiversity Management Plan in accordance with condition B71 of SSD 7142, which will continue to be implemented.	No
Aboriginal Archaeology and Cultural Heritage	The Proposed Modification will not result in any additional ground disturbance beyond that currently approved. There will be no impacts to Aboriginal archaeology as a result of the Proposed Modification. The Proposed Modification is located wholly within the Project Area for which the cultural heritage values were assessed as part of the EIS for the Project (Umwelt, 2016). The United Wambo Open Cut operations operate under an existing Aboriginal Cultural Heritage Management Plan in accordance with condition B79 of SSD 7142, which will continue to be implemented.	No
Historic Heritage	The Proposed Modification will not result in any additional ground disturbance beyond that currently approved. An assessment of historical heritage items was undertaken as part of the EIS for the Project (Umwelt, 2016). The Proposed Modification will not result in any changes to operations that will impact on known historic heritage items. The United Wambo Open Cut operations operate under a Historic Heritage Management Plan in accordance with condition B82 of SSD 7142, which will continue to be implemented.	No
Visual Amenity	A detailed visual assessment was completed as part of the EIS for the Project (Umwelt, 2016). Views of the Wambo mining infrastructure area are currently available from surrounding residential areas to the northeast and south. The Proposed Modification will not substantially change the available views of the operations. One private receiver to the south has limited views of the existing ROM stockpile area. As the ROM stockpile will increase in area, there is potential for some change to visibility from the private receiver. Further assessment has been undertaken to assess this potential change.	Yes, refer to **Section 4.4** The assessment concluded that views of the ROM stockpile will be consistent with existing views. A private residence with views of the ROM stockpile has existing rights to visual mitigation measures which will provide for appropriate amelioration of the approved and proposed visual impacts.

Aspect	Potential Impact	Further Assessment Required
Rehabilitation and Final Landform	The Proposed Modification does not change the proposed rehabilitation or final landform commitments for the Project and rehabilitation objectives outlined in condition B97 of SSD 7142. The current and proposed expanded ROM coal stockpile areas will be rehabilitated upon completion of mining as part of the overall rehabilitation of the United Wambo Open Cut operations. This approach is consistent with the currently approved situation where this area is to be rehabilitated upon mine closure. The Proposed Modification does not change the timing or rehabilitation commitments of SSD 7142. There will be no change to ecological rehabilitation areas or timing resulting from the Proposed Modification.	No
Social	The Proposed Modification will not change the scale or intensity of the operations. The Proposed Modification will not result in any changes to employment, operating conditions or the life of the operations. As outlined above, there will be no construction workforce required for the Proposed Modification. Further assessment of social amenity is required in consideration of the potential change to noise and air quality impacts. The United Wambo Open Cut operations operate under a Social Impact Management Plan in accordance with condition B108. The Social Impact Management Plan will continue to be implemented for the operations.	Yes, refer to **Section 4.5** The assessment indicated there will be no increase to potential social impacts associated with the Proposed Modification.
Transport and Traffic	There will be no change to employee numbers or product transportation as a result of the Proposed Modification, including no requirement for a construction workforce. The Proposed Modification will result in no change to traffic or transport impacts.	No
Economic	The Proposed Modification will not change the economic benefits of the approved United Wambo Open Cut operations. There is no additional capital investment associated with the Proposed Modification.	No

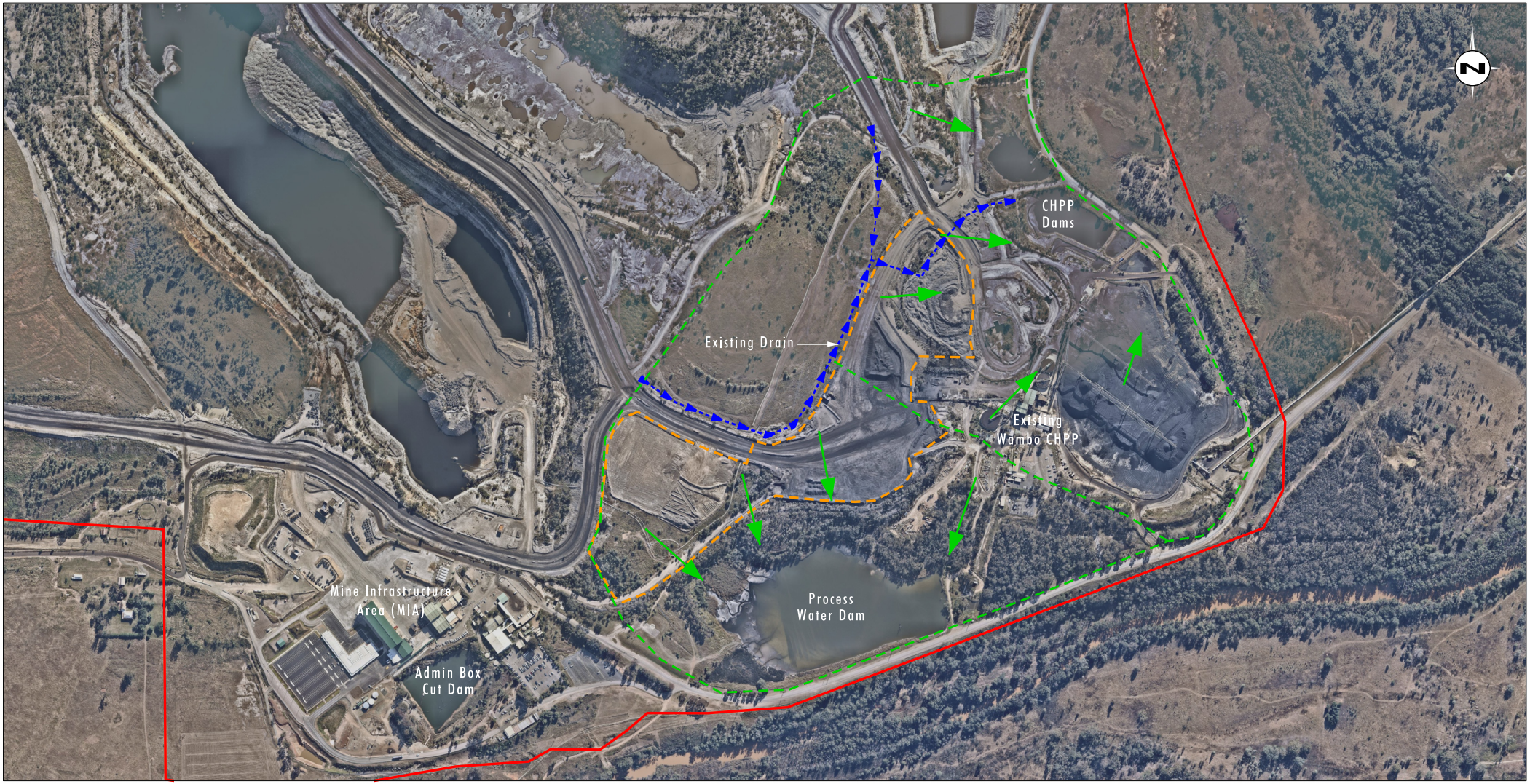

Image Source: Nearmap (June 2021)
Data Source: Glencore (2021)

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- Project Area
- Proposed ROM Stockpile
- Approximate Catchment Area
- Inferred Flow Direction Arrow
- Existing Drain

FIGURE 3

Water Management System

File Name (A4): R01/21076_003.dgn
20210708 10.19

4.2 Air Quality

A comprehensive Air Quality Assessment was completed as part of the approval process for the Project by Jacobs (Jacobs, 2016). To assess the potential air quality impacts of the Proposed Modification, Jacobs have completed an updated assessment (refer to **Attachment 1**). The assessment compared overall site emissions for the approved Project and Proposed Modification scenarios in order to determine the potential change in off-site air quality impacts.

The emissions inventories have been updated to reflect the increase in stockpile extent. **Attachment 1** shows the estimated annual TSP, PM10 and PM2.5 emissions from United Wambo for Year 2, the year with the highest calculated emissions. The changes in overall United Wambo emissions as a result of the Proposed Modification have been calculated to be less than 0.2% for all particulate matter classifications.

The assessment indicates that the Proposed Modification represents a negligible change in the context of air emissions and modelling results. As such, the assessment concludes that the air quality impacts of the approved operation will not change as a result of the Proposed Modification and that the Proposed Modification will not cause adverse air quality impacts.

The United Wambo Open Cut operations will continue to be managed in accordance with the Air Quality and Greenhouse Gas Management Plan, in accordance with condition B29 of SSD 7142.

4.3 Noise

A comprehensive Noise Impact Assessment (NIA) was undertaken as part of the EIS for the Project describing the noise impacts of the mining operations (Umwelt, 2016). To assess the potential noise impacts of the Proposed Modification and the potential for any change to the impacts of the approved operations, a review of potential noise impacts has been undertaken (refer to **Attachment 2**). The review has included completion of a noise model of the proposed expanded ROM coal stockpile.

The assessment for the Proposed Modification was undertaken following Chapter 6 of the NSW *Noise Policy for Industry* (NPfI) (EPA, 2017) which provides for the assessment of a new or modified component of an existing approved development without necessitating the reassessment of the whole site. The project noise trigger level for noise from a new or modified component of an operation is set at 10 dB or more below the existing noise levels from the whole site.

The existing noise levels from the United Wambo Open Cut operations are managed according to the requirements of SSD 7142 and Environment Protection Licence (EPL) 3141. The noise limits in the development consent and licence are provided in **Attachment 2**.

The noise assessment result in **Attachment 2** show the maximum predicted noise levels from the proposed expansion to the ROM stockpile at all sensitive receiver location are more than 10 dB below the existing approved noise limits for the United Wambo Open Cut operations. Therefore, the Proposed Modification does not trigger the requirement for any additional noise control measures and satisfies the requirement of Section 6 of the NPfI. The United Wambo Open Cut operations, with consideration of the Project Modification, will continue to comply with the existing noise limits in SSD 7142 and the EPL.

The United Wambo Open Cut operations will continue to be managed in accordance with the Noise Management Plan, in accordance with condition B5 of SSD 7142.

4.4 Visual

Limited views of the Wambo mining infrastructure area are currently available from surrounding residential areas to the northeast and south, with one residence currently having views of the ROM stockpile area. The Proposed Modification will not substantially change the available views of the operations. The proposed ROM stockpile will increase in area but will be generally the same height and position in the landscape.

As noted above, one private receiver to the south has limited views of the existing ROM stockpile. This private receiver will continue to have limited views of the expanded ROM stockpile area. The ROM stockpile will be approximately 3 km from the private residence and the views of the expanded ROM stockpile area will be consistent with existing views and are not considered to change the nature or scale of impact of the existing views from this location.

This private residence has existing rights to visual mitigation measures which will provide for appropriate amelioration of the approved and proposed visual impacts. United has consulted with the private resident in relation to the Proposed Modification and the process for implementing visual impact mitigation measures.

4.5 Social

The Proposed Modification will not change the scale or intensity of the operations and will not change employee numbers. The Proposed Modification will therefore not change the interaction of the United Wambo Open Cut operations with housing, infrastructure or services. As outlined above, there will be no construction required.

As outlined in **Sections 4.2** and **4.3**, air quality or noise impacts will remain within existing consent limits. As a result, there will be no increase to potential social impacts associated with the Proposed Modification.

The United Wambo Open Cut operations operate under a Social Impact Management Plan in accordance with condition B108. The Social Impact Management Plan will continue to be implemented for the operations.

5. Conclusion

The Proposed Modification represents a minor change to the approved United Wambo operations. With the ongoing implementation of management and mitigation measures across the complex, the increase to the size of the ROM coal stockpile and allowance for in-pit stockpiles will result in a negligible change to the environmental and social impacts of the approved operations.

Yours sincerely

Kirsty Davies
Principal Environmental Consultant

ATTACHMENT 1 - AIR QUALITY ASSESSMENT

Level 4, 12 Stewart Avenue
Newcastle West NSW 2302 Australia
PO Box 2147 Dangar NSW 2309
Australia
T +61 2 4979 2600
F +61 2 4979 2666
www.jacobs.com

15 June 2021

Ms Kirsty Davies
Umwelt (Australia) Pty Ltd
75 York Street
Teralba NSW 2284

Project Name: United Wambo ROM Coal Stockpile Modification

Dear Kirsty

Air Quality Assessment of Modification to United Wambo ROM Coal Stockpile

I have completed an assessment of the potential air quality impacts of a proposed increase to the run-of-mine (ROM) coal stockpile footprint , including in-pit stockpiling, at the United Wambo mine. From this assessmentit has been concluded that the air quality impacts of the approved operation will not change as a result of the proposed modification . Please see attached for the details.

Yours sincerely

Shane Lakmaker
Principal (Air Quality)
+61 (0) 419 239 687
shane.lakmaker@jacobs.com

1. Introduction

United Collieries Pty Ltd (United) and Wambo Coal Pty Ltd (Wambo) operate the United Wambo Open Cut Mine (United Wambo) as part of a joint venture. The mine was approved on 29 August 2019 and is operated under State Significant Development (SSD) 7142. The operations also utilise infrastructure approved under the Wambo mine development consent (DA 305-7-2003) and the Wambo train loading facility development consent (DA 177-8-2004).

United has identified the need to increase the capacity of the run-of-mine (ROM) coal stockpile and allow for in-pit ROM stockpiling to provide for greater operational flexibility (the Modification). **Figure 1** shows the location of the ROM coal stockpile at United Wambo. This report provides an assessment of the potential air quality impacts of the Modification.

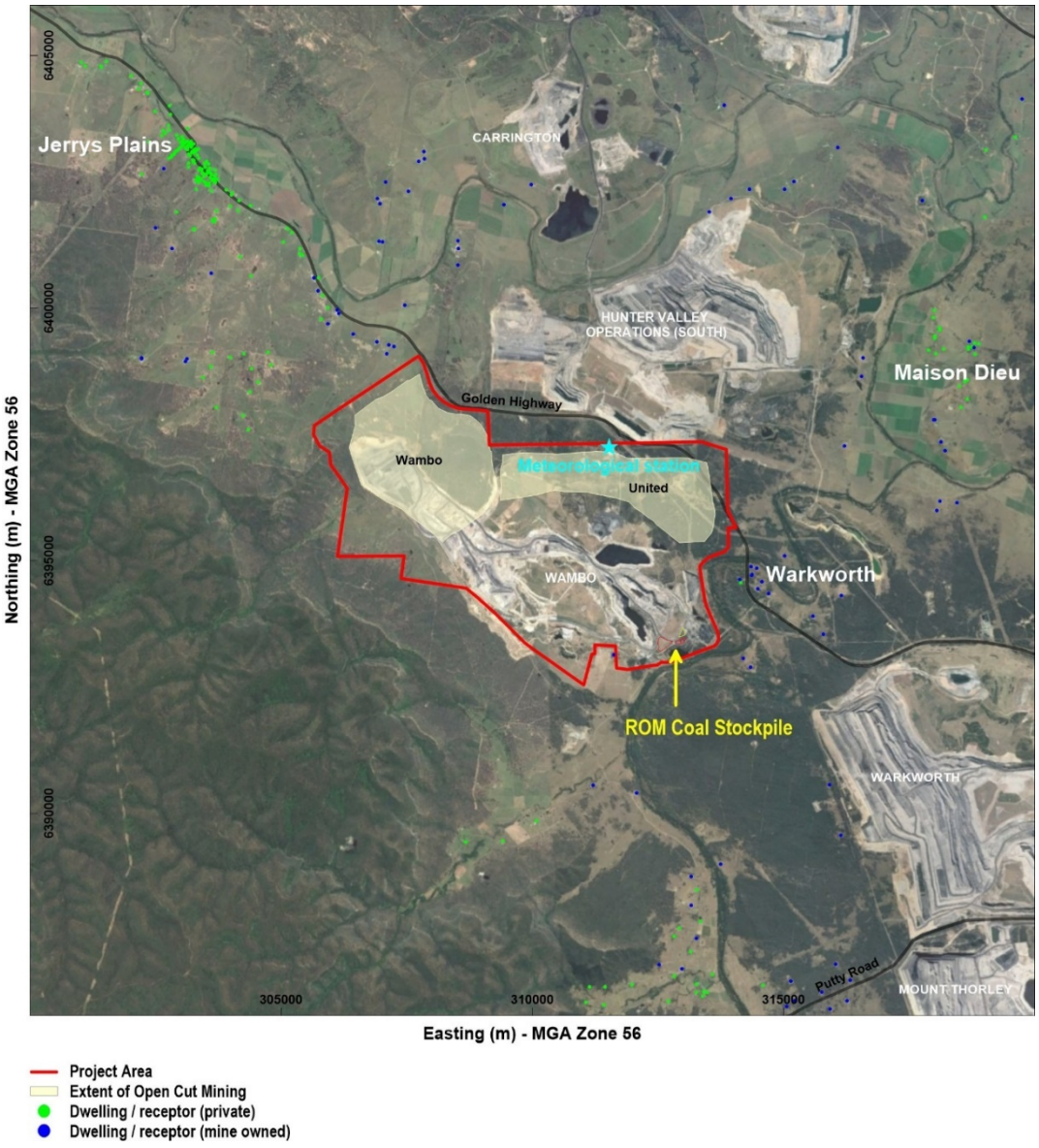

Figure 1 Location of ROM coal stockpile at United Wambo

2. Assessment Methodology

Air quality issues can arise when emissions from an industry or activity lead to deterioration in the ambient air quality. The potential air quality issues for the Modification have been identified from a review of the proposed changes. This identification process has considered the types of emissions to air and proximity of these emission sources to sensitive receptors.

Emissions to air from the operation of the stockpile could occur from dozers pushing coal and from wind erosion. The Modification does not propose any change to the way in which dozers will operate on the stockpile including hours of operation. The extent of the stockpile will however increase from the estimated area of 5 hectares (Jacobs, 2018) to 16 ha, in the same location. Changes in wind erosion emissions due to the increase in stockpile extent have been assessed.

The most significant emission to air from coal stockpiles is dust, also referred to as particulate matter. Key classifications of particulate matter include:

- Total suspended particulates (TSP);
- Particulate matter with equivalent aerodynamic diameter of 10 microns or less (PM_{10});
- Particulate matter with equivalent aerodynamic diameter of 2.5 microns or less ($PM_{2.5}$); and
- Deposited dust.

Assessment of the Modification has considered the potential change in emissions from the stockpile in the context of the overall site emissions, and the potential of any emission change to influence the currently approved off-site air quality impacts of the operation (as presented by Jacobs, 2018).

This assessment involved:

- Preparing an updated site emissions inventory (TSP, PM_{10}, $PM_{2.5}$) to reflect the increased ROM coal stockpile area;
- Comparing the updated site emissions inventory with the site emissions inventory from the Environmental Impact Statement (EIS) (Jacobs, 2018) and calculating the per cent change in overall emissions; and
- Determining the effect of the change in emissions to the modelled off-site air quality impacts, as presented in the EIS.

3. Results

The air quality impacts of the approved operation were assessed by Jacobs (2018) as part of the EIS. This assessment involved the estimation of emissions from all, then proposed, activities at United Wambo based on emission factors from:

- "Emission Estimation Technique Manual for Mining" (NPI, 2012); and
- AP 42 (US EPA, 1985 and updates).

The emission inventories were subsequently used as the basis for modelling local air quality. As noted above, the emissions inventories have been updated to reflect the increase in stockpile extent. **Table 1** shows the estimated annual TSP, PM_{10} and $PM_{2.5}$ emissions from United Wambo

for Year 2, the year with the highest calculated emissions. The changes in overall United Wambo emissions as a result of the Modification have been calculated to be less than 0.2% for all particulate matter classifications. This is a negligible change in the context of air emissions and modelling of air quality impacts.

Table 1 Estimated emissions from United Wambo with and without the Modification

Activity	Estimated annual emissions (kg/y)					
	Approved Operation			Modification		
	TSP	PM_{10}	$PM_{2.5}$	TSP	PM_{10}	$PM_{2.5}$
Stripping topsoil by scraper	2610	657	131	2610	657	131
Drilling overburden (United Pit)	18408	9572	552	18408	9572	552
Drilling overburden (Montrose Pit)	18408	9572	552	18408	9572	552
Blasting overburden (United Pit)	80893	42064	2427	80893	42064	2427
Blasting overburden (Montrose Pit)	80893	42064	2427	80893	42064	2427
Excavators loadingoverburden to trucks (United Pit)	73793	34902	5285	73793	34902	5285
Excavators loading overburden to trucks (Montrose Pit)	42099	19912	3015	42099	19912	3015
Hauling overburden from United Pit to dump	542926	160439	16288	542926	160439	16288
Hauling overburden from Montrose Pit to dump	240907	71190	7227	240907	71190	7227
Unloading overburden to dump (from United Pit)	73793	34902	5285	73793	34902	5285
Unloading overburden to dump (from Montrose Pit)	42099	19912	3015	42099	19912	3015
Dozers shaping overburden (United dump)	510866	124368	53641	510866	124368	53641
Dozers shaping overburden (Montrose dump)	320304	77977	33632	320304	77977	33632
Dozers working on overburden for rehabilitation	92352	22483	9697	92352	22483	9697
Dozers working on coal (United Pit)	6003	1914	132	6003	1914	132
Dozers working on coal (Montrose Pit)	395453	126060	8700	395453	126060	8700
Loading ROM coal to trucks (United Pit)	307518	44226	5843	307518	44226	5843
Loading ROM coal to trucks(Montrose Pit)	126673	18218	2407	126673	18218	2407
Hauling ROM coal from United Pit to hopper / ROM pad	141792	41901	4254	141792	41901	4254
Hauling ROM coal from Montrose Pit to hopper / ROM pad	131416	38835	3942	131416	38835	3942
Unloading ROM coalto ROM pad	44100	18522	838	44100	18522	838
ROM coal rehandle to hopper	14700	6174	279	14700	6174	279

Activity	Estimated annual emissions (kg/y)					
	Approved Operation			Modification		
	TSP	PM_{10}	$PM_{2.5}$	TSP	PM_{10}	$PM_{2.5}$
Transferring ROM coal by conveyor to CHPP, inc UG	751	355	54	751	355	54
Handling coal at CHPP, inc UG	3757	1777	54	3757	1777	54
Dozers on ROM coal stockpiles	71155	22682	1565	71155	22682	1565
Dozers on product coal stockpiles	30425	8767	669	30425	8767	669
Conveyer to product stockpiles	481	228	34	481	228	34
Loading product coal to trains	5880	2499	294	5880	2499	294
Wind erosion from active pits	218439	109220	16383	218439	109220	16383
Wind erosion from active dumps	531088	265544	39832	531088	265544	39832
Wind erosion from partially rehabilitated dumps	64132	32066	4810	64132	32066	4810
Wind erosion from ROM coal stockpiles	2190	1095	164	7008	3504	526
Wind erosion from product coal stockpile	2190	1095	164	2190	1095	164
Grading roads	18464	6528	202	18464	6528	202
Total	**4,256,959**	**1,417,719**	**233,795**	**4,261,777**	**1,420,128**	**234,157**

4. Conclusions

The potential air quality impacts of a proposed increase to the capacity of the ROM coal stockpile, with in-pit stockpiling, at United Wambo have been assessed. Overall site emissions for the approved and Modification scenarios have been compared in order to determine the potential change in off-site air quality impacts.

The calculations showed that emissions from United Wambo would increase by less than 0.2%. This is a negligible change in the context of air emissions and modelling results. As such, it has been concluded that the air quality impacts of the approved operation will not change as a result of the Modification and that the Modification will not cause adverse air quality impacts.

5. References

Jacobs (2018) "United Wambo Open Cut Coal Mine Project – Air Quality Impact Assessment for Independent Planning Commission". Report dated 2 July 2018.

National Pollutant Inventory (2012) "Emission Estimation Technique Manual for Mining". Version 3.1, January 2012.

US EPA (1985 and updates) "Compilation of Air Pollutant Emission Factors", AP-42, Fourth Edition United States Environmental Protection Agency, Office of Air and Radiation Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina 27711. Now a web-based document.

ATTACHMENT 2 - NOISE ASSESSMENT

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Environmental & Social Consultants

Inspired People
Dedicated Team
Quality Outcomes

Our Ref: 21076_United Stockpile Modification_Noise

13 July 2021

Aislinn Farnon
Environment & Community Manager
United Wambo Joint Venture
134 Jerrys Plains Road
WARKWORTH NSW 2330

E| Aislinn.Farnon@glencore.com.au

Dear Aislinn

Re: United Wambo Open Cut – ROM Stockpile Modification

The United Wambo Open Cut Coal Mine Project (the Project) was approved in August 2019 by the Independent Planning Commission (IPC) (SSD 7142). The United Wambo Open Cut operation, along with the Wambo Underground operations, utilises the Wambo coal handling and preparation plant (CHPP) and coal handling infrastructure (such as conveyors, stockpiles and train loading facilities) for the washing, storage and transport of coal.

The need for additional run of mine (ROM) coal stockpiling capacity has been identified to cater for the United Wambo Open Cut operations and Wambo Underground operations. To allow for more flexible operational coal handling management across the operations, United Collieries Pty Limited (United) is proposing a modification to increase the size of the existing run of mine (ROM) coal stockpile and also to allow for in-pit ROM stockpiles at both the United Open Cut and Wambo Open Cut (the Proposed Modification).

A comprehensive Noise Impact Assessment (NIA) was undertaken for the Project (Umwelt, 2016). To assess the potential noise impacts of the Proposed Modification, a review of potential noise impacts has been undertaken. The review has included completion of a noise model of the proposed expanded ROM coal stockpile.

Chapter 6 of the NSW *Noise Policy for Industry* (NPfI) (EPA, 2017) provides for the assessment of a new or modified component of an existing approved development without necessitating the reassessment of the whole site. The project noise trigger level for noise from a new or modified component of an operation is set at 10 dB or more below the existing noise levels from the whole site.

The existing noise levels from the United Wambo Open Cut operations are managed according to the requirements of SSD 7142 and Environment Protection Licence (EPL) 3141. The noise limits in the development consent and licence are provided in **Table 1**.

Newcastle | Orange | Sydney | Canberra | Brisbane | Perth

T| 1300 793 267
E| info@umwelt.com.au

www.umwelt.com.au

Umwelt (Australia) Pty Limited
ABN 18 059 519 041

Table 1 Operational Noise Criteria, dB(A)

Noise Assessment Location		Day	Evening	Night	
		LAeq (15 min)	LAeq (15 min)	LAeq (15 min)	LA1 (1 min)
Area 1 - North Bulga	R003	38	36	36	46
	R006	37	35	35	45
	R007, R379	36	35	35	45
	All other privately-owned residences	35	35	35	45
Area 2 - South Wambo	R025	39	38	38	48
	All other privately-owned residences	35	35	35	45
Area 3 - Warkworth Village	All privately-owned residences	44	44	43	53
Area 4 - Maison Dieu	All privately-owned residences	42	42	41	51
Area 5 - Moses Crossing	R039	46	46	46	56
	R016	45	45	45	55
	R017	44	44	44	54
	R043	43	43	43	53
	R050C	41	41	41	51
	R050A	41	40	40	50
	R044	41	40	39	49
	All other privately-owned residences	41	40	38	48
Area 6 - Redmanvale	R320	40	40	40	50
	R033, R343	40	40	39	49
	R042	40	40	38	48
	R029, R345	40	40	37	47
	R048	39	39	39	49
	R030, R049, R163	39	39	38	48
	R075	39	39	37	47
	R041B	38	38	38	48
	R344, R346	38	38	37	47
	R348	38	38	36	46
	R041A	37	37	37	47
	All other privately-owned residences	35	35	35	45
Area 7 - Jerrys Plains	All privately-owned residences	40	40	36	46

Noise Assessment Location		Day	Evening	Night	
		LAeq (15 min)	LAeq (15 min)	LAeq (15 min)	LA1 (1 min)
All other areas	All privately-owned residences	35	35	35	45

The ROM stockpile requires machinery to manage the stockpile and to reload trucks that transports the raw coal to the CHPP. These activities are already undertaken at the existing ROM stockpile. It is anticipated a front-end loader (FEL) (Caterpillar (CAT) 994 or equivalent) will be required to load coal trucks to transfer the raw coal to the CHPP. A bulldozer (CAT D11 or equivalent) will be required to manage the stockpiling of the raw coal.

To assess the noise contribution from the expanded ROM coal stockpile, the FEL has been modelled adjacent to the ROM stockpiles working with coal trucks. A bulldozer has been modelled on the proposed ROM stockpiles. Raw coal will be stockpiled when it cannot be processed, and when it can be processed it will not be stockpiled.

The NPfI notes that local meteorological data can be used to determine the weather conditions that would be expected to occur at a particular site for a significant period of time. Meteorological data sourced from Wambo Coal Mine was analysed to determine the prevailing meteorological conditions (frequency of occurrence of prevailing winds and temperature inversions) for the area surrounding the proposed expansion of the ROM coal stockpile.

The analysis of the meteorological data from Wambo Coal Mine identified three (3) meteorological conditions that could lead to the enhancement of noise propagation from the proposed expansion of the ROM coal stockpile. The meteorological conditions considered in this assessment are calm neutral conditions and the following noise-enhancing conditions:

- 3 m/s wind from the southeast (a vectored wind condition that can occur greater than 30% of the time during the evening and night time)
- 3 m/s wind from the northwest (a vectored wind condition that can occur up to 20% of the time during the day time)
- F Class stability modelled as 4°C/100 metre inversion 1.3 m/s drainage flow from the south (the vectored wind condition can occur greater than 30% of the time during inversion conditions during winter night times (6pm to 7am)).

The predicted noise level from the FEL and trucks, and from the bulldozer are provided in **Table 2**. The comparative criterion for assessment is the night time noise limits as this is the most stringent of the day, evening and night time criteria. Additionally, noise enhancing conditions are more prevalent during the night time. The predicted noise levels are the maximum noise levels from the two activities during the meteorological conditions that enhance noise propagation. The results predicted noise impacts for the meteorological conditions modelled are presented in **Table 2**.

Table 2 Predicted Noise Levels from the Operational Noise Criteria dB(A)

Noise Assessment Location		Noise Criterion, LAeq (15 min)	Predicted Noise Level, LAeq (15 min) Loader & Truck / Bulldozer			
			Calm	SE 3m/s	NE 3m/s	Inversion
Area 1 - North Bulga	R003	36	18/< 10	14/< 10	24/22	21/< 10
	R006	35	14/< 10	11/< 10	21/19	18/< 10
	R007, R379	35	16/< 10	12/< 10	22/20	19/< 10
	All other privately-owned residences	35	16/< 10	12/< 10	21/19	19/< 10
Area 2 - South Wambo	R025	38	22/11	21/11	22/14	23/21
	All other privately-owned residences	35	22/11	21/11	22/14	23/21
Area 3 - Warkworth Village	All privately-owned residences	43	15/< 10	15/< 10	15/< 10	16/18
Area 4 - Maison Dieu	All privately-owned residences	41	< 10/< 10	< 10/< 10	15/< 10	17/16
Area 5 - Moses Crossing	R039	46	< 10/< 10	16/14	< 10/< 10	16/14
	R016	45	< 10/< 10	16/15	< 10/< 10	15/15
	R017	44	< 10/< 10	< 10/< 10	< 10/< 10	< 10/< 10
	R043	43	< 10/< 10	< 10/< 10	< 10/< 10	< 10/< 10
	R050C	41	< 10/< 10	< 10/< 10	< 10/< 10	< 10/< 10
	R050A	40	< 10/< 10	< 10/< 10	< 10/< 10	< 10/< 10
	R044	39	< 10/< 10	< 10/< 10	< 10/< 10	< 10/< 10
	All other privately-owned residences	38	< 10/< 10	< 10/< 10	< 10/< 10	< 10/< 10
Area 6 - Redmanvale	R320	40	< 10/< 10	< 10/< 10	< 10/< 10	< 10/< 10
	R033, R343	39	< 10/< 10	< 10/< 10	< 10/< 10	< 10/< 10
	R042	38	< 10/< 10	< 10/< 10	< 10/< 10	< 10/< 10
	R029, R345	37	< 10/< 10	< 10/< 10	< 10/< 10	< 10/< 10
	R048	39	< 10/< 10	< 10/< 10	< 10/< 10	< 10/< 10
	R030, R049, R163	38	< 10/< 10	< 10/< 10	< 10/< 10	< 10/< 10
	R075	37	< 10/< 10	< 10/< 10	< 10/< 10	< 10/< 10
	R041B	38	< 10/< 10	< 10/< 10	< 10/< 10	< 10/< 10
	R344, R346	37	< 10/< 10	< 10/< 10	< 10/< 10	< 10/< 10
	R348	36	< 10/< 10	< 10/< 10	< 10/< 10	< 10/< 10
	R041A	37	< 10/< 10	< 10/< 10	< 10/< 10	< 10/< 10
	All other privately-owned residences	35	< 10/< 10	< 10/< 10	< 10/< 10	< 10/< 10

Noise Assessment Location		Noise Criterion, LAeq (15 min)	Predicted Noise Level, LAeq (15 min) Loader & Truck / Bulldozer			
			Calm	SE 3m/s	NE 3m/s	Inversion
Area 7 - Jerrys Plains	All privately-owned residences	36	< 10/< 10	< 10/< 10	< 10/< 10	< 10/< 10
All other areas	All privately-owned residences	35	< 10/< 10	< 10/< 10	< 10/< 10	< 10/< 10

The result in **Table 2** shows the maximum predicted noise levels from the proposed expansion to the ROM stockpile at any sensitive receiver location is less than 25 dB(A).

It can be concluded that the noise levels from the proposed modified activities are more than 10 dB below the existing approved noise limits for the United Wambo Joint Venture. Therefore, this assessment does not trigger the requirement for any additional noise control measures and satisfies the requirement of Section 6 of the NPfI. The United Wambo Open Cut operations, with consideration of the Project Modification, will continue to comply with the existing noise limits in SSD 7142 and the EPL.

The United Wambo Open Cut operations will continue to be managed in accordance with the Noise Management Plan, in accordance with condition B5 of SSD 7142.

Yours sincerely

Tim Procter
Practice Lead - Acoustic Environment
Lead Process and Environmental Engineer