



Environmental
Justice Australia

Submission

in response to

Mangoola Coal Continued Operations Project (SSD-8642)

prepared by

Environmental Justice Australia

11 March 2021

About Environmental Justice Australia

Environmental Justice Australia (formerly the Environment Defenders Office, Victoria) is a not-for-profit public interest legal practice. We are independent of government and corporate funding. Our legal team combines technical expertise and a practical understanding of the legal system to protect our environment.

We act as advisers and legal representatives to community-based environment groups, regional and state environmental organisations, and larger environmental NGOs, representing them in court when needed. We also provide strategic and legal support to their campaigns to address climate change, protect nature and defend the rights of communities to a healthy environment.

We also pursue new and innovative solutions to fill the gaps and fix the failures in our legal system to clear a path for a more just and sustainable world.

For further information on this submission, please contact:

Jocelyn McGarity, Lawyer, Environmental Justice Australia

T: 03 8341 3100

E: jocelyn.mcgarity@envirojustice.org.au

Submitted to: Independent Planning Commission

2 March 2021

1. Objection to the Project

1.1 Environmental Justice Australia (EJA) submits that the proposed Mangoola Coal Continued Operations Project (the Project) should be rejected on the basis of air pollution impacts and the associated health impacts arising from the Project's air pollution burden.

1.2 In the event that the Project is approved, EJA makes a number of recommendation in relation to consent conditions that should be imposed by the Department of Planning, Industry and Environment (the Department) on the approval. These are covered at paragraph [5.2].

2. The Project

2.1 Glencore Coal Pty Limited (the Applicant) has applied to extend the life of the existing Mangoola Mine, an open cut coal line located 20km west of Muswellbrook. The proposed extension would involve a new mining area (the Northern Extension Area) to the north of the Mangoola Mine and would enable the extraction of an additional total of 52 million tonnes (Mt) of Run of Mine (ROM) coal (the Project). The Project seeks the continued operations within the existing Mangoola Mine and an extension of the existing life of the Mangoola Mine until December 2030.

2.2 The location of the proposal is on Wonnarua Country, within Muswellbrook Local Government Area (LGA) and adjacent to Singleton LGA. According to 2016 data, the Upper Hunter has a population of 30,658.

3. Air quality

3.1 The cumulative impact on air quality that the approval of an additional mine in the Upper Hunter will have on the community is a significant concern. There is extensive existing industry throughout the Upper Hunter and a significant burden of existing pollutants, including particulate matter. Existing sources of particulate matter in the area surrounding the Project include mining, agriculture, coal-burning power stations and their associated operations, motor vehicle exhaust and domestic wood heaters.

3.2 The Project will result in air quality impacts primarily caused by particulate matter arising from dust, from general mining activities, fumes (NO_x emissions) from blasting, and machinery exhausts.¹

3.3 We note that the Department commissioned ERM Australia Pacific Pty Ltd (ERM) to conduct an independent peer review of the Air Quality Impact Assessment (AQIA), prepared by Jacobs Group. The ERM review concluded that the methodology in the AQIA was generally sound. A copy of the ERM review cannot be found on the Project webpage on the Department's Major

¹ Air Quality Impact Assessment, p. 10.

Projects website. The conclusions reached in the ERM review and the datasets used in it cannot therefore be tested.

3.4 We note that the AQIA assesses air quality against the Approved Method 2016, which adopts the National Environment Protection (Ambient Air Quality) Measure (NEPM AAQ). The NEPM AAQ sets the following air quality assessment criteria:

Pollutant	Averaging Period	Criterion
Particulate matter (PM ₁₀)	24-hour	50 µg/m ³
	Annual	25 µg/m ³
Particulate Matter (PM _{2.5})	24-hour	25 µg/m ³
	Annual	8 µg/m ³
Total Suspended Particulate (TSP) matter	Annual	90 µg/m ³

Table 1: NEPM AAQ air quality assessment criteria

3.5 We note that Schedule 2, Table 2 of the NEPM AAQ provides a ‘Goal for Particles as PM_{2.5} by 2025’² as being 20µm for a 24 hour averaging period and 7µm for a 1 year averaging period. We make submissions with respect to this at paragraph [3.17].

3.6 With respect to air quality, we make the following submissions:

Limited extent of the data

3.7 The AQIA only uses air quality data from 2012-2018. There is therefore a clear deficit in the dataset for the period 2019-2021, a period which resulted in a number of air quality exceedances through the Upper Hunter region. At 6.3.19-6.2.21 of the Department’s Assessment Report, it summarises that between 2012 and 2018 there were:

- (a) some exceedances of the annual average PM₁₀ concentrations at the EPA monitoring station at Muswellbrook in 2018;
- (b) exceedances of the 24-hour average PM₁₀ concentrations of 50 µg/m³ at Mangoola Mine monitoring locations on several occasions;
- (c) PM_{2.5} concentrations exceedances of the annual average criterion of 8 µg/m³ at monitors near the existing Mangoola Mine, and the 24-hour average PM_{2.5} criterion was exceeded on 15 occasions at the EPA monitor at Muswellbrook.

3.8 The Department’s assessment concedes that mining would have contributed to these particulate matter level exceedances. Whilst we acknowledge that the extended dry period and regional dust

² National Protection Measure (Ambient Air Quality) Measure, Schedule 2, Table 2: Goal for Particles as PM_{2.5} by 2025.

events and bushfires of 2018-2018 is represented in the data, we submit that the Project would add to the cumulative impact of poor air quality conditions in the Upper Hunter during climatic and weather events such as these, which are projected to become more frequent and profound as climate change continues to accelerate.

3.9 Assuming that the data in the AQIA included data up to December 2018, the lack of data from January 2019 to the present is a significant deficit in the air quality monitoring data, particularly given that:

- (a) a number of additional major projects have been approved in the Hunter and Upper Hunter region since December 2018; and
- (b) there has been a significant number of PM₁₀ and PM_{2.5} NEPM AAQ exceedances since January 2019 (which are not included in the analysed data).

3.10 In relation to paragraph [3.9(a)] above, since January 2019 to November 2020, a total of 17 State Significant Development (SSD) or SSD modification projects have been approved in the Singleton and Muswellbrook Local Government Areas. Of those, the below 10 expand and/or extend mines. Table 2 below summarises the projects.

3.11 The number of projects approved in the Upper Hunter since January 2019, signals a change to, and expansion of, extractive operations in the Hunter region. The cumulative air quality impacts of these approvals since January 2019 has not been considered by the Applicant in its assessment of ambient air quality. We submit that the data used by the Applicant is therefore not representative of the current air pollution burden in the Upper Hunter.

No.	Application number	Assessment type	LGA	Decision	Determination date	Decider	Description
1.	DA49/94-Mod-10	SSD Modifications	Singleton Shire	Approved	12/06/2019	IPC-N	Rix's Creek Coal – Mod 10 – Extension of time
2.	DA231-07-2000-Mod-7	SSD Modifications	Muswellbrook Shire	Approved	09/08/2019	IPC-N	Bord and pillar mining and extension
3.	SSD-7142	SSD	Singleton Shire	Approved	28/08/2019	IPC-N	United Wambo Open Cut Coal Mine
4.	SSD-5850-Mod-2	SSD Modifications	Singleton Shire	Approved	04/09/2019	Executive Director	Mount Owen Continued Operations – Mod 2 – Southern Extension – extension of the North Pit

5.	SSD-6300	SSD	Singleton Shire	Approved	12/10/2019	IPC-N	Rix's Creek Coal Mine Extension
6.	DA80/952-Mod-4	SSD Modifications	Singleton Shire	Approved	04/03/2020	IPC-N	Modification 4 – Minor extension to Barrett Pit
7.	SSD-4960-Mod-3	SSD Modifications	Singleton Shire	Approved	17/07/2020	Executive Director	Mod 3 – Bulga Optimisation Project – extension of mining area
8.	SSD-9526	SSD	Muswellbrook Shire	Approved	22/12/2020	IPC-N	Maxwell underground coal mine project for underground mining expansion
9.	SSD-5850-Mod-5	SSD Modifications	Singleton Shire	Approved	15/01/2021	Director	Mount Owen Continued Operations Modification 5
10.	MP08_01 02-Mod-9	SSD Modifications	Singleton Shire	Approved	16/02/2021	Director	Rix's Creek North Mine – Landform & Blasting Frequency Modification – increase in blasting

Table 2: SSD and SSD-Modifications approved in the Upper Hunter since January 2019

Exceedances of NEPM AAQ limits

3.12 In relation to paragraph [3.9(b)] above, we have considered exceedances of air quality limits at two of the air quality monitoring sites used by the Applicant.

3.13 At the Muswellbrook Monitoring Station, from 1 January 2019 to 2 March 2021, based on 24 hour averages, there was a total of 73 monthly exceedances of PM₁₀ and a total of 35 monthly exceedances of PM_{2.5} recorded. This means that for the 24 hour average where an exceedance was recorded, PM₁₀ exceeded the NEPM AAQ limit of 50µm and PM_{2.5} exceeded the NEPM AAQ limit of 25µm.³

3.14 At the Wybong Monitoring Station, from 1 January 2019 to 2 March 2021, based on 24 hour averages, there was a total of 13 monthly exceedances of PM₁₀. These figures are provided in Annexure A.

³ National Protection Measure (Ambient Air Quality) Measure, Schedule 2, Table 1: Standards for Pollutants.

3.15 Whilst we do note that a portion of the exceedances at the monitoring stations occurred during the tail end of the 2019-2020 bushfire season, bushfire smoke during the fire season is a relevant background air quality condition that must be accounted for in the cumulative assessment of the Project on air quality. It should also be noted that the exceedances in Annexure A are the number of monthly exceedances over a 24 hour average, as opposed to hourly air quality exceedances, for which an alert is issued.

3.16 As was reported in June 2020, by June 2020 there had been more than 250 air quality alerts in the Upper Hunter and in 2019, there were 1000 alerts issued for the region.⁴

3.17 We further note that Schedule 2, Table 2 of the NEPM AAQ provides a 'Goal for Particles as PM_{2.5} by 2025'⁵ as being 20µm for a 24 hour averaging period and 7µm for a 1 year averaging period. Based on the Applicant's AQIA, ambient PM_{2.5} levels from the Muswellbrook monitoring station for 2012-2018 show that both the 1 year averaging period and 24 hour averaging period data frequently exceeded NEPM AAQ 2025 goal for the PM_{2.5}. From this, it can be inferred that the Project will not be likely to meet the PM_{2.5} NEPM AAQ 2025 goal during its life.

Monitoring in the Upper Hunter is inadequate and in breach of the NEPM AAQ⁶

3.18 Notwithstanding the above, we also make the following submissions with respect to monitoring, assessment and reporting under the NEPM AAQ in the Upper Hunter more generally.

3.19 Section 3 of the NEPM AAQ requires New South Wales to monitor, assess and report a range of indicators in accordance with the protocol contained in the NEPM AAQ. Section 3 of the NEPM AAQ prescribes a mandatory requirement.

3.20 Section 14 of the NEPM AAQ specifies the number of performance monitoring stations that are required for each region with a population of 25,000 or more. Section 14 of the NEPM AAQ prescribes a mandatory requirement.

3.21 The Upper Hunter region contains population centres the total population of which, as at the 2016 Australian Census Urban Centre and Locality statistical level (**the UCL statistical level**), totalled 30,658 people as follows:

- (a) Scone (4,956);
- (b) Aberdeen (2,084);
- (c) Muswellbrook (10,404); and
- (d) Singleton (13,214)

⁴ Louise Nichols, 'Record air quality alerts for the Upper Hunter in 2019 prompt renewed calls for a clean air strategy', *The Singleton Argus* (Singleton), 13 June 2020.

⁵ *National Protection Measure (Ambient Air Quality) Measure*, Schedule 2, Table 2: Goal for Particles as PM_{2.5} by 2025.

⁶ Made under s 14 of the *National Environment Protection Council (New South Wales) Act 1995 No 4*.

3.22 The UCL statistical level excludes non-urbanised persons. Consequently, the population of the Upper Hunter significantly exceeds the 25,000 population threshold to trigger the mandatory monitoring, assessment and reporting of carbon monoxide, nitrogen dioxide, ozone, sulphur dioxide, lead, particles as PM_{2.5} and particles as PM₁₀.

3.23 The New South Wales Government is obliged to monitor, assess and report in compliance with the NEPM AAQ, which is currently not occurring in the Upper Hunter. Due to non-compliance with these obligations, it is therefore unclear the extent to which the Upper Hunter population is being exposed to air pollution, and in particular PM_{2.5}.

4. Human health

4.1 We note that the Environmental Impact Statement for the Project included a risk assessment of potential impacts to public safety and health. It was concluded that the risk was either very low or within relevant assessment criteria. We note that the Department's assessment of the risk to human health of the Project is that it is unsubstantial.

4.2 The Applicant does not quantify health impacts from fine particulate pollution, except so far as it states that it is compliant with the relevant air quality criteria.

4.3 In relation to the human health impacts of air quality, we raise the following:

4.3.1 Mining for coal contributes to both PM₁₀ and PM_{2.5} pollution;

4.3.2 there is no safe threshold for exposure to air pollution. Health impacts have been studied and reported at concentrations well below the current and proposed NEPM standards;⁷

4.3.3 there is no threshold below which particle pollution does not contribute to cardiovascular and respiratory ailments. Short-term exposure to elevated concentrations of PM₁₀ trigger health responses that lead to hospital admissions. Every 10µm/m³ increase in PM₁₀ concentrations, even at levels below the national standard, causes a 1% increase in hospital admissions for respiratory disease;⁸

4.3.4 exposure to particle pollution from coal mining imposes a burden of \$47 million on the town of Singleton each year and \$18.3 million each year on Muswellbrook and communities most affected and at risk from poor air quality are the larger regional towns of Singleton and Muswellbrook, and the smaller towns of Camberwell, Warkworth, Maison Dieu, Jerrys Plains and Wybong; and⁹

⁷ Australian Government, Australian Institute of Health and Welfare, Australian Burden of Disease study: Impact and causes of illness and death in Australia, 2011 (Revised 2016).

⁸ Climate and Health Alliance, *Coal and Health in the Hunter: Lessons from one valley for the world* (2015) p.20, available at <https://d3n8a8pro7vhmx.cloudfront.net/caha/legacy_url/53/Climate-and-Health-Alliance_Report_Layout_PRINTv2.pdf?1439938112>.

⁹ Ibid, p.21.

4.3.5 Using World Health Organisation ambient air pollution death rate estimates,¹⁰ Upper Hunter General Practitioners have estimated that air pollution caused at least approximately 160 deaths in the Hunter between 2015 and 2019.¹¹ Further information on this figure is contained in the 'Questions on Notice' section of this submission.

4.4 The unfair health burden of air pollution in the Upper Hunter is shouldered by the community. The Project will further contribute to the air pollution burden and the health impacts associated with it.

5. Recommendations

5.1 EJA objects to the Project.

5.2 In the event that the Project is approved, we recommend the following conditions of consent:

5.2.1 that the Air Quality Criteria (Recommended Condition B27) that apply to the Project also includes references to NEPM AAQ 'Goal for Particles as PM_{2.5} by 2025' and that the requirements of Recommended Condition B31 also reflect the 2025 goal;

5.2.2 that Recommended Condition B19 include conditions requiring that the real-time air quality monitoring data collected by the Applicant be published in real time on a publicly accessible website. This will improve transparency for the community around air quality monitoring undertaken by industry;

5.2.3 that Recommended Condition D5(h) be expanded to require the Applicant to publish any incident, non-compliance or exceedance of any impact assessment criterion or performance criterion, complaints and failures to comply with statutory requirements on a publicly accessible website on a monthly basis to ensure the broader community has access to air quality exceedances;

5.3 We further recommend that the Department:

5.3.1 implement air quality monitoring in compliance with NEPM AAQ in the Upper Hunter;

5.3.2 provide clearer guidance around cumulative impact assessment, including by updating the Upper Hunter Cumulative Impact Study and Action Strategy 1997;

5.3.3 undertake an independent assessment of air quality in the Upper Hunter and its impact on human health.

¹⁰ Based on an average ambient air pollution attributable death rate of 16.83 per 100,000 population for Australia, Australia's death rate totals from ambient air pollution totals approximately 4,048 deaths: [https://www.who.int/data/gho/data/indicators/indicator-details/GHO/ambient-air-pollution-attributable-death-rate-\(per-100-000-population\)](https://www.who.int/data/gho/data/indicators/indicator-details/GHO/ambient-air-pollution-attributable-death-rate-(per-100-000-population)).

¹¹ Louise Nichols, We are studying the problem to death, quite literally, as particle pollution causes premature death, Singleton Argus, 19 November 2019: <https://www.singletonargus.com.au/story/6499420/campaign-totackle-air-pollution>; See: World Health Organization. Regional Office for Europe. (2006). Air quality guidelines global update 2005: particulate matter, ozone, nitrogen dioxide and sulfur dioxide – Summary of risk assessment. Copenhagen: WHO Regional Office for Europe, p.12: https://apps.who.int/iris/bitstream/handle/10665/69477/WHO_SDE_PHE_OEH_06.02_eng.pdf?sequence=1.

1. *Have you considered the recommended conditions in B30? What are your views on these?*

We have considered the recommended conditions in B30. We note that these conditions are general in nature, and do not specify how the Applicant will “minimise”, “manage” or “improve” air quality. Presumably the details of how these conditions will be specifically met will be contained in the Applicant’s ‘Air Quality and Greenhouse Gas Management Plan’.

With respect to B30(c), we submit the real time air quality monitoring data should be made publicly accessible.

With respect to B30(d), we submit that the Applicant should have a ‘stop work procedure’ to be implemented during adverse meteorological conditions and extraordinary events, that would require the Applicant to cease work on the Project and/or at the mine.

With respect to B30(g) and (h), we submit that the Applicant should be required to publish the air quality monitoring and compliance issues on a publicly accessible website to ensure the broader community has access to air quality exceedances and compliance information.

2. With reference to paragraph [4.3.4]:

What is this based on? What the percentage of deaths as a percentage of all deaths in the Upper Hunter?

This figure is based on the following reference materials and approximate calculations.

A number of studies have estimated the mortality rate in Australia from PM_{2.5} pollution:

- a. Hanigan et al. calculate the annual deaths attributable to PM_{2.5} in Australia as being approximately 2,616;¹²
- b. Vohra et al. calculate that 3.2% of total deaths are attributable to PM_{2.5}, with 6,400 annual deaths in “Australia and Oceania”;¹³

¹² Hanigan, I., Broome, R., Chaston, T., Cope, M., Dennekamp, M., Heyworth, J., Heathcote (nee Jong), K., Horsley, J., Jalaludin, B., Jegasothy, E., Morgan, G., et al (2021). *Avoidable mortality attributable to anthropogenic fine particulate matter (Pm2.5) in Australia*. International Journal of Environmental Research and Public Health, 18(1), 1-9. Available here: <https://www.mdpi.com/1660-4601/18/1/254> .

¹³ Vohra, K., Vodono, A., Schwartz, J., Marais, E., Sulprizio, M., Mickley, L. (2021). *Global mortality from outdoor fine particle pollution generated by fossil fuel combustion: Results from GEOS-Chem*. Environmental Research, 195, available here: <https://www.sciencedirect.com/science/article/abs/pii/S0013935121000487?via%3Dihub>.

- c. Begg et al. calculate the annual deaths due to air pollution in Australia total approximately 3,000.¹⁴
- d. the World Health Organisation estimates that Australia has an average ambient air pollution death rate of 16.83 per 100,000 population. This equates to approximately 4,048 deaths based on Australia's population.¹⁵

Based on the above, estimated mortality rates attributable to air pollution have ranged anywhere from 2,000-4,000 annual deaths. The total number of annual deaths in Australia is approximately 160,000. As a percentage of the total number of deaths, 3000 deaths of 160,000 deaths equals 1.8%.

Whilst there is variation in the estimates of deaths, it is not unreasonable to submit that using an average Australian air pollution mortality rate of 3,000, 1.5%-2% of all deaths annually in Australia can be attributed to air pollution, specifically PM_{2.5} and PM₁₀ pollution.

The Hunter region has an approximate population of 620,000 people. The population of the Upper Hunter at 2016 was 30,658 (see paragraph [3.21]).

Based on NSW Health Data,¹⁶ Singleton LGA has a death rate of approximately 560 deaths per 100,000 population and Muswellbrook LGA has a death rate of approximately 722 deaths per 100,000 population. This equates to a combined total number of deaths for both Singleton and Muswellbrook in 2017-2018 of approximately 180 (Singleton – 78.4; Muswellbrook 79.42).

Using the percentage mortality rate attributable to air pollution of 2%, this equates to 3.6 deaths per year in Singleton and Muswellbrook being attributable to air pollution. Therefore, between 2015-2019, Singleton and Muswellbrook can attribute 18 deaths directly to PM_{2.5}. Based on the population of the Hunter as a whole, the total number of deaths attributable to PM_{2.5} pollution is approximately between 18 and 310 (noting that the Upper Hunter has higher levels of PM_{2.5} than the broader Hunter region).

These are conservative estimates. Given the extension of the life of the mine sought by this Project, the cumulative impact that additional PM₁₀ and PM_{2.5} pollution will have on the community is not insignificant.

¹⁴ Begg, S., Vos, T., Barker, B., Stevenson, C., Stanley, L., and Lopez, A. (2007), *The burden of disease and injury in Australia 2003*. Cat no. PHE 82, Australian Institute of Health and Welfare, Canberra. Available here:

<https://www.aihw.gov.au/reports/burden-of-disease/burden-of-disease-injury-australia-2003/contents/table-of-contents>.

¹⁵ World Health Organisation, The Global Health Observatory (2016): [https://www.who.int/data/gho/data/indicators/indicator-details/GHO/ambient-air-pollution-attributable-death-rate-\(per-100-000-population\)](https://www.who.int/data/gho/data/indicators/indicator-details/GHO/ambient-air-pollution-attributable-death-rate-(per-100-000-population)).

¹⁶ NSW Health Data for each LGA is available online here: <http://www.healthstats.nsw.gov.au/>.

Monthly Exceedences Time Range: 01/01/2019 00:00 to 02/03/2021 00:00		
Initial Data	MUSWELLBROOK PM10 24h average	MUSWELLBROOK PM2.5 24h average
Date	MUSWELLBROOK PM10 monthly exceedance () [count]	MUSWELLBROOK PM2.5 monthly exceedance () [count]
31/01/2019	2	0
28/02/2019	3	0
31/03/2019	2	0
30/04/2019	0	0
31/05/2019	1	
30/06/2019	0	2
31/07/2019	0	0
31/08/2019	2	0
30/09/2019	1	0
31/10/2019	8	3
30/11/2019	17	9
31/12/2019	22	12
31/01/2020	12	7
29/02/2020	1	0
31/03/2020	0	0
30/04/2020	0	0
31/05/2020	0	0
30/06/2020	0	2
31/07/2020	0	0
31/08/2020	1	0
30/09/2020	0	0
31/10/2020	0	0
30/11/2020	1	0
31/12/2020	0	0
31/01/2021	0	0
28/02/2021	0	0
	73	35

Monthly Exceedences Time Range: 01/01/2019 00:00 to 02/03/2021 00:00

Initial Data

WYBONG PM10 24h average

Date

WYBONG PM10 monthly exceedance () [count]

31/01/2019	13
28/02/2019	0
31/03/2019	0
30/04/2019	0
31/05/2019	0
30/06/2019	0
31/07/2019	0
31/08/2019	0
30/09/2019	0
31/10/2019	0
30/11/2019	0
31/12/2019	0
31/01/2020	0
29/02/2020	0
31/03/2020	0
30/04/2020	0
31/05/2020	0
30/06/2020	0
31/07/2020	0
31/08/2020	0
30/09/2020	0
31/10/2020	0
30/11/2020	0
31/12/2020	0
31/01/2021	0
28/02/2021	0