The Wilpinjong coal mine
Air pollution & health impacts

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Health impacts of coal dust

1. There is no threshold below which coarse particle pollution (PM $_0$) does not contribute to cardiovascular and respiratory ailments. Short-term exposure to elevated concentrations of PM $_0$ trigger health responses that can lead to hospital admissions. Every 10 microgram per cubic metre (μg/m^3) increase in PM $_0$ concentrations, even at levels below the national standard, causes a 1% increase in hospital admissions for respiratory disease (CAHA p.20) and a range of other adverse health impacts.
2. Coal mining regions experience the highest particle pollution levels anywhere in NSW, contributing to an unjust distribution of the adverse impacts of coal mining. Many of the people whose health is most impacted are farmers and residents in rural communities.
3. According to the NSW EPA, 87.6% of the Hunter's coarse particle pollution (PM $_0$) is caused by coal mining. A similarly high proportion of PM $_0$ is likely to come from coal in the vicinity of the proposed mine extension – but there has not been a particle characterisation study to study this.
4. The 2014 Regulatory Impact Statement[2] prepared to guide Australia's nine environment ministers in setting new national standards for PM $_0$ recommended an exposure-reduction framework to ensure continual improvement. This recommendation was based on expert health advice that any reduction in particle concentrations, even well below national standards, leads to an improvement in community health. Despite this, polluters and most states' environment agencies manage pollution until concentrations are just below the national standards. This approach has been adopted in the Wilpinjong proposal and the Department of Planning and Environment's assessment.
5. This 'manage air pollution up to the standard' approach is starkly illustrated in the proposal to 'temporarily pause' mining in Pit 8 for two days each year when particle pollution concentrations are predicted to exceed the national standard. An 'exposure reduction' approach would, instead, ensure all available coal dust control measures identified in the coal dust minimisation 'Best Practice Benchmarking Study'[3] commissioned by the EPA in 2011. -commissioned study *NSW Coal Mining Benchmarking Study: International best practice measures to prevent and/or minimise emissions of particulate matter from coal mining*.

An independent review was highly critical of Peabody's assessment of pollution impacts

6. Peabody engaged Todoroski Air Sciences Pty Ltd to prepare an Air Quality Impact Assessment (AQIA) for the Wilpinjong Extension project.
7. As part of their consideration of the project, the Department of Planning and Environment (DPE) engaged Ramboll Environ Pty Ltd to conduct an independent review of the Todoroski report.
8. Ramboll's review (2/6/16) was highly critical of many aspects of the AQIA, highlighting inadequacies and errors in the pollution modelling, questionable assumptions in Todoroski's estimation of background (no mine) pollution levels, over-stating particle deposition and under-estimating of the coal dust predicted as a consequence of bulldozers and stockpile wind erosion.
9. Mobile mining equipment (trucks, dozers, locomotives) are significant sources of fine particle pollution ($PM_{2.5}$) but these emissions had not been factored into account the assessment. Nor had pollution from neighbouring mines.
10. Although the Todoroski report predicted pollution levels would exceed national standards in residential areas of Wollar, it failed to estimate how often this would occur.
11. Limited details of pollution mitigation measures were provided, despite clear guidance on that matter from the Office of Environment and Heritage. There were no plans for real-time monitoring to allow responsive management.
12. Todoroski neglected to quantify or model gaseous emissions (CO, SO_2, NO_2, VOCs) from blasting, diesel locomotives or onsite mobile equipment.
13. These errors, combined with "illogical and potentially misleading" data, according to Ramboll, resulted in an assessment that required significant further work before DPE could make an informed assessment.
14. Peabody's response (20/6/16) made it clear the proponent would make no change to the air quality

assessment based on the peer review. Their air pollution consultants, Todoroski Air Sciences, simply re-stated their problematic assumptions. For instance, they claimed (p.6) that fine particles associated with diesel locomotive emissions "become negligible within a few tens of metres from the rail corridor." Research on aerosol dispersal consistently demonstrates that fine particles remain suspended and can disperse far from the source, up to many kilometres.

Air pollution standards, licencing and monitoring

15. The NSW Government monitors air pollution extensively in the Hunter Valley. The Environment and Heritage network was expanded in 2011, in response to community concerns, and now comprises 14 monitoring stations that are operated by the OEH.[4] When new or expanded coal mines are assessed in the Hunter, it is possible to analyse pollution data from several nearby monitoring stations. By contrast, no independent air pollution monitoring is conducted in the vicinity of the proposed mine extension. Of the 45 monitoring stations maintained by the OEH, the closest is at Wybong in the Upper Hunter, more than 100 kilometres away and in a separate airshed. To actively monitor and manage the increased levels of air pollution caused by the proposed mine extension, and to inform the nearby communities of air pollution concentrations in an accurate and timely manner, it would be necessary to establish a comparable network of OEH air pollution monitoring stations.
16. The NSW Government, along with other state and territory governments and the Commonwealth, confirmed a national standard for PM $_0$ pollution of 50 micrograms per cubic metre (μg/m^3) for 24 hour average concentrations and a standard of 25μg/m^3 for annual PM $_0$ concentrations. Their decision to change the regulatory standards was made on 15 December 20115, one month after the Air Quality Impact Assessment. Todoroski's response (p.8) to the independent review argues that the new standards should not apply. There is no justification not to apply the new standards to the assessment of the proposed extension. As such, the annual standard for PM $_0$ should be part of the assessment.

Wilpinjong mine and the National Pollutant Inventory

17. Wilpinjong Coal Pty Ltd reports an estimate of the company's toxic emissions to air, land and water every 12 months to comply with the National Pollutant Inventory. The company's 2014-15 report makes it clear that the Wilpinjong mine is a very significant source of toxic substances that include arsenic (28kg), benzene (15kg), boron (370kg), fluoride (780kg), lead (140kg), manganese (2100kg), xylene (7.4kg), zinc (230kg). The mine is also a very significant source of coarse particle pollution (PM $_0$) and oxides of nitrogen, reporting up to 5.8 million kilograms of PM $_0$ per annum and 4 million kg of NOx. The significant health impacts of these pollutants are described on the NPI Fact Sheets.[5]
18. Wilpinjong's NPI reports in recent years have included significant errors. During the last decade, the mine's reported emissions of coarse particle matter (PM $_0$) have varied between 3.5 to 6.5 million kilograms per annum despite a relatively constant rate of production. Peabody's 2013-14 report showed an increase to more than 13 million kilograms of PM $_0$ – significantly more than the huge Mount Arthur mine which emits more PM $_0$ than any other coal mine in NSW. A year later, this entry in the NPI was adjusted to approximately 4 million kilograms.

Recommendation

To facilitate a rigorous and independent assessment of the proposal, Peabody must implement the recommendations of the Ramboll review, including the application of the current national standards for particle pollution and the 2011 EPA/Katestone Best Practice Benchmarking Study.

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[1] Senate Inquiry into the Health Effects of Air Quality, May 2013, p.55

[2] Commonwealth of Australia (2014) Impact Statement: Draft Variation to the National Environment protection (Ambient Air Quality) Measure, prepared for the National Environment Protection Council.

[3] NSW Environment Protection Authority, 2011 *NSW Coal Mining Benchmarking Study: International best practice measures to prevent and/or minimise emissions of particulate matter from coal mining*, Katestone Environmental Pty Ltd. http://www.epa.nsw.gov.au/resources/air/ke1006953volumei.pdf

[4] Upper Hunter Air Quality Monitoring Network http://www.environment.nsw.gov.au/aqms/uhunteraqmap.htm

[5] http://www.npi.gov.au/substances/fact-sheets