United Wambo Open Cut Coal Mine Project

Dr Bob Vickers

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Singleton Resident

Doctors For The Environment Australia

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Doctors for the Environment, Australia (DEA) is a voluntary, doctor's organisation, formed in 2001, with members in all States and Territories. The aim of the organisation is to inform and educate the public, the medical profession and policy makers about the relationships between health and the environment. Our priority issue at the present time is the health effects of climate change. DEA is a member of the International Society of Doctors for the Environment.

Scientific committee:

Prof. Stopme Borgen AM

Prof. Letter Owerty AC

Prof. Bob Douglos AC

Prof. Bob Douglos AC

Prof. Stopme Bob Red AM

Prof. Stopme Red AA

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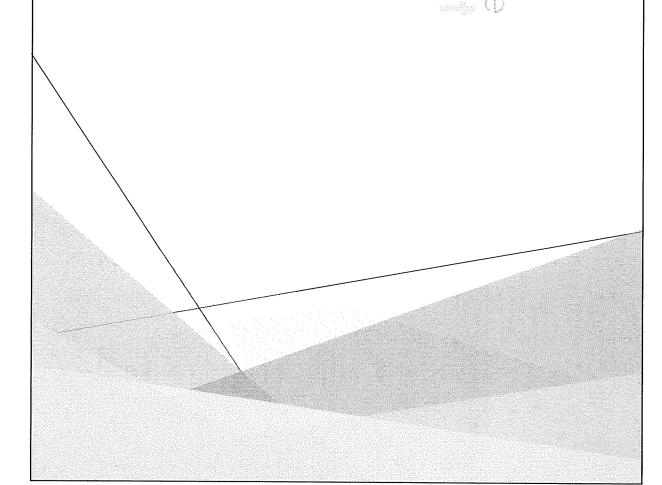
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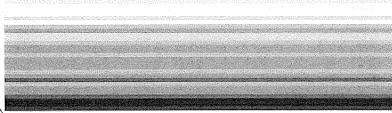
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THE LANCE

"Climate change is the biggest global health threat of the 21st century."





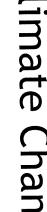
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	S	aximum Te	Maximum Temperature		dinimum T	Minimum Temperature		Mean Temperature	perature
ביים הירט ש	Rank (of 109)	Anomaly (°C)	Comment	Rank (of 109) 99	Anomaly (°C) +0.93	Comment	Rank (of 109) 92	Anomaly (°C) +0.73	Comment
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New South Wales	න ජා	+0.77		95	+1.49		H 79	+ 1. 13	
Victoria	79	+0.71		92	+0.94		82	+0.83	
Tasmania	73	+ 0.35		102	+0.90	8th highest	87 7	+0.63	
South Australia	II Š	10.55		© 4	+0.35		= 52	-0.09	
Western Australia	O1	+0.26		: <u>-</u>	+0.42		တ ဇာ	+0.34	
Northern Territory	ထ	+0.63		100	† 1.2 4	10th highest	တ	+0.94	
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Rank ranges from 1 (lowest) to 109 (nighest). A rank mar is the departure from the long-term (1961–1990) average.

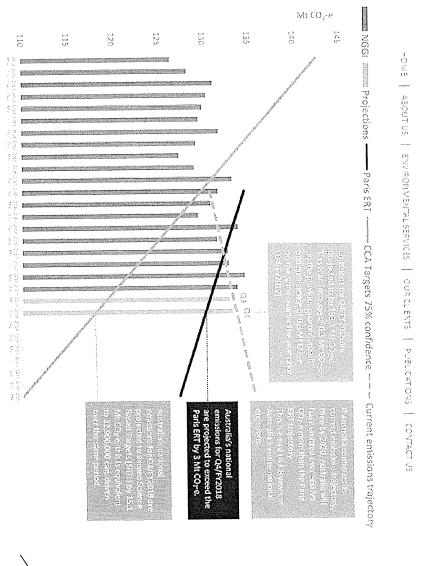


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- Higher rates of mental illness, suicidality
- Loss of income
- Reduced access to fresh healthy food



ndevr environmental



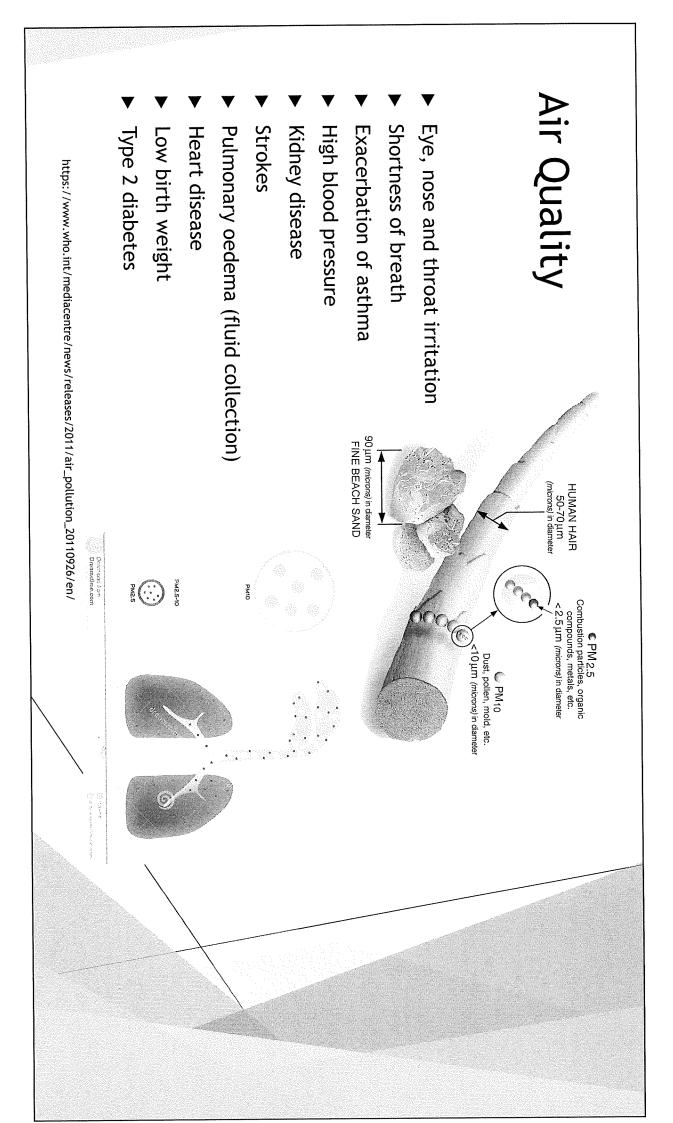
Actions

- and land contamination 16.1 Manage the risks of climate change and improve the region's resilience to flooding, sea level rise, bushfire, mine subsidence
- investigated. 16.2 Review and consistently update floodplain risk and coastal zone management plans, particularly where urban growth is being
- development. 16.3 Incorporate new knowledge on regional climate projections and related cumulative impacts in local plans for new urban
- 16.4 Review and update the Newcastle Mines Grouting Fund and investigate its relevance to other areas

Department of Planning and Environment Hunter Regional Plan - A biodiversity rich natural environment

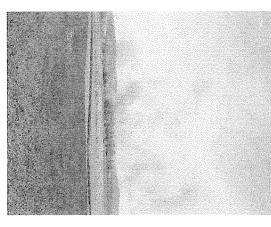
- In modelled 1.5°C pathways with limited or no overshoot, the use of CCS would allow the electricity generation share of gas to be approximately 8% (3-11% interquartile range) of global electricity in 2050, while the use of coal shows a steep reduction in all pathways and would be reduced to close to 0% (0-2% interquartile range) of electricity (high confidence).
- "The Project proposes open cut coal mining for a period of 23 years"
- "The Project will contribute to global emissions, however, the extent to which global emissions and atmospheric concentrations of greenhouse gases have a demonstrable impact on climate change will be largely driven by the global response to reducing total global emissions which includes all major emission sources and sinks."

- organisations" (EIS Appendix 8 page 2) Scope 3 emissions, as these emissions are generated by the activities of other "The majority of Scope 3 emissions will be generated by third parties who transport and consume coal products. United has no operational control over
- 150 million tonnes of coal
- Over 200 million tonnes of CO2 produced
- Estimated 210,000 premature deaths annually due to combustion of coal
- 4200 premature deaths over lifetime of United Wambo Project



Air Quality

- "for the cumulative scenario, maximum 24- hour average PM2.5 concentrations have the potential to exceed the advisory reporting goal of 25 µg/m3 in Warkworth village"
- "The blasting procedures implemented at all Glencore NSW mines and which will be implemented for the Project include a pre-blast review of weather conditions which avoid blasting in adverse conditions"



Winnerblast at 840 in Juntuary ("Physysiar Lenother proposi owned mine. This blost was reported to the PALETHS osupplied.



誠(CONCERNS: Stort that 1904 place at filt unt Thorley Wardsworth mice on Friday April 15. Photo subplied.

Blast Plumes

- Unpredictable and dangerous
- Nitrogen dioxide and other harmful chemicals
- Blast plumes at Mt Thorley has travelled 3km
- A QLD blast plume caused illness in workers 6km away

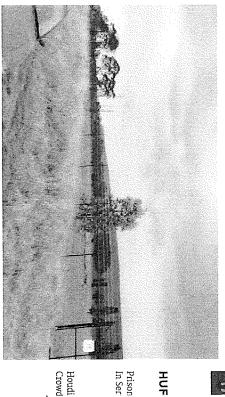
Mine blast gone wrong spews toxic cloud

Joanne McCarthy



much stronger response from environmental regulators. A toxic fume from a blast at the Mount Arthur mine in the Upper Hunter turned the sky bright orange and prompted demands for a

containing nitrogen dioxide to spread several kilometres from the Muswellbrook on Wednesday afternoon, causing poisonous fumes Ammonium nitrate and fuel oil were detonated at the mine near



Houdi Crowd

The sky above Mount Arthur mine in Muswellbrook glows orange after a blast that went wrong. Photo



Prison In Ser

Air Quality

Days above benchmark concentrations

There was were 29 days over the PM_{10} benchmark in winter 2018, with sites closer to mines recording the highest number of days. There were two days over the PM_{25} benchmark in winter 2018.

Number of days above the relevant national benchmarks – winter 2018

		PM ₁₀ daily	PM _{2.5} daily	SO ₂ hourly	SO ₂ daily	NO ₂ hourly
Station type*	Station	[50 µg/m³]	[25 μg/m³	[20 pphm	8 pphm	[12 pphm
		benchmark]	benchmark]	benchmark]	benchmark]	benchmark)
Population centre	Aberdeen	0	•		1	ŧ
Population centre	Muswellbrook	4	2	0	0	0
Population centre	Singleton	3	0	0	0	0
Smaller community	Bulga	are A	•	1	1	ŧ
Smaller community	Camberwell	19 7	0	i	,	1
Smaller community	Jerrys Plains	0		š	•	1
Smaller community	Maison Dieu	9	\$	ì	4	4
Smaller community	Warkworth		•	1		9
Smaller community	Wybong	2	*	i	•	I
Diagnostic	Mount Thorley	35 7		ŧ		
Diagnostic	Muswellbrook NW			ŧ	1	-
Diagnostic	Singleton NW	o.	ŧ	5	'	1
Background	Merriwa	ua >	,	*	1	•
Background	Singleton South	ω		1	1	1

pg/m² = microgram per cubic metre and pphm = parts per hundred million by volume (i.e. parts of pollutant per hundred million parts of air) = not monitored = * For explanation, refer to the end of the report Definitions; Upper Hunter monitoring station types

The WHO recommends targets of <20mcgm/m for PM10

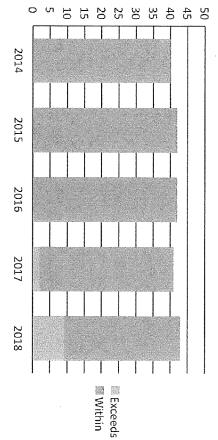
Hendryx M, Ahern MM Relations between health indicators and residential proximity to coal mining in West Virginia. Am J Public health 2008; 98;669-671

Air Quality - 2018

10.1 8.6 8.1 9.2 10.1 8.1 8.2 8.2 8.3 8.7 9.4 4 9.4 8.1 8.1 8.1		8,3	Tamworth
10.1 8.6 8.1 9.2 10.1 8.1 8.2 8.2 8.3 8.3 8.3 8.3 8.3 8.4 8.4 8.4	27.4	8.4	Wagga Wagga North
10.1 8.6 8.1 9.2 10.1 8.1 8.2 8.2 8.3 8.3 8.3 8.3 8.3 8.4 8.3 8.4 8.3 8.4 8.5 8.5 8.4 8.5 8.5 8.6 8.7 8.4 8.5 8.7 8.4 8.5 8.7 8.4 8.5 8.7 8.7 8.8 8.8 8.9 8.9 8.9 8.9 8.9 8.9			Rest of NSW
10.1 8.6 8.1 9.2 10.1 8.1 8.2 8.2 8.3 8.3 8.3 8.3 8.3 8.4 8.3 8.4 8.3 8.4 8.5 8.3 8.4 8.5 8.5 8.6 8.6 8.7 8.1 8.1 8.1 8.2 8.3 8.3 8.4 8.5 8.7 8.6 8.7 8.7 8.7 8.8 8.7 8.7 8.7 8.8 8.9 8.9 8.9 8.9 8.9 8.9 8.9	26.4		Warkworth
10.1 8.6 8.1 8.1 8.2 8.2 8.3 8.3 8.3 8.3 8.3 8.3 8.3 8.4	29.1		Mt Thorley
10.1 8.6 8.1 9.2 10.1 8.1 8.2 8.2 8.3 8.3 8.3 8.3 8.3 8.4 8.3 8.4 8.5 8.4 8.5 8.4 8.5 8.5 8.6 8.7 8.1 8.1 8.1 8.2 8.3 8.3 8.3 8.4 8.5 8.5 8.7 8.7 8.8 8.9 8.9 8.9 8.9 8.9 8.9 8.9	27.9		Maison Dieu
10.1 8.6 8.6 8.1 9.2 10.1 8.1 8.2 8.3 8.3 8.3 8.3 8.3 8.3 8.3 8.3	31.3	8.4	Camberwell
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PM 2.5 10.1 8.6 8.1 9.2 8.5		8.4	Campbelltown
PM 2.5 10.1 8.6 8.1 9.2		8.5	Prospect
10.1 8.6 8.1		9.2	Paramatta North
10.1 8.6		8.1	Richmond
PM 2.5		8.6	Chullora
PM 2.5		10.1	Liverpool
PM 2.5			Sydney Basin
)	PM 10	PM 2.5	Location

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Risks from air pollution to human health Air Quality

Effects on health in the Hunter 2007 ED respiratory presentations

		65+			Age group 0-14
Sydney	Muswellbrook Rest of HNEAHS	Singleton	Rest of HNEAHS	Muswellbrook	location Singleton
49868	235 19869	306	41983	1305	2026
3967	5676 5035	5005	8806	13368	Rate/100,000

Respiratory and cardiova stular disease and cancer among residents of the Humer New England Area Health's ervice, 2010

Social Impacts

i. West et al.

Emifreemandal Ingraet Assessment Review 72 (2018) 64-70

development Population Mining inf) ux employment due to lower salanes * Cost of Living (local inflation) → Non-mining → Housing Demand T Housing Shortage inadequate property Aldding Bulsmon 4 development = 3 Housing Prices 祖母在 Meganive health Local residents semestuo forzed out Financial Stress

published literature. († means increase. ; means decrease). Fig. 1. Causal partieway of mining development indirectly influencing health outcomes of local community residents through indirect economic factors, based on

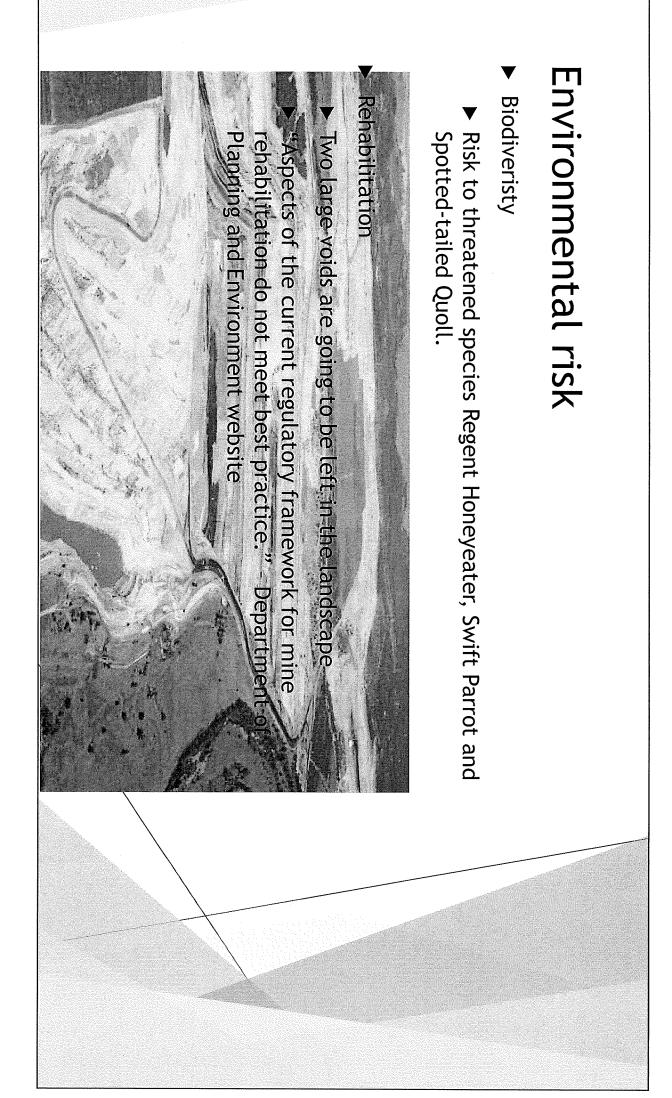
Social Impacts

- 9000 workers drive into the region daily to work in coal mining industry
- DIDO workers create negative social and economic stress on the region¹
- Significant growth in casualization of the workforce
- 82% of mining industry job advertisements on Seek.com were contractor companies
- Casual workers are paid on average 30% less than permanent workers
- pregnancy Women who are employed casually have little financial protection through
- available Anecdotal reports permanent staff being made redundant before entitlements are
- Anecdotal reports of population actively leaving town due to concerns around air quality and health risks (e.g. Dr Craig Barry)

^{1.}Housing market dynamics in resource boom towns, Haslam McKenzie et al 2009
2. Impact of Fly-In Fly out/Drive-in Drive-out work practices on local government. Report for Australian Centre of Excellence for Local Government 2012

Water Quality and Quantity

- groundwater." (EIS Appendix 12 Groundwater p103) "It is important to note that coal mining will always impact the groundwater environment are affected by changes in the quality of quantity of a consequence from this impact: that is, that groundwater users or the regime....this unavoidable impact is only considered significant when there is
- River and Wollombi Brook (EIS p103/104) Cumulative drawdown modelling shows a reduction in flow to the Hunter





- ► Climate change
- ► Air quality
- ► Social impacts
- Water quality and quanity
- ► Environmental risk

Good afternoon to the IPC chair, distinguished panel members and members of the public here today. Thank you for the opportunity to speak today about the United Wambo Open Cut Coal Mine Project.

I'd first like to acknowledge the traditional owners of the land and water that we speak on today, the Wonnarua people. I would like to pay my respects to the Elders past and present.

My name is Bob Vickers. I was born and raised in Singleton. I am now working as a GP in Singleton.

I also represent the Doctors for the Environment Australia, a national non-profit organisation of Australian doctors and medical students.

>

My aim today is to speak on the health risks of the United Wambo Project, to both the local and global population. Most of my talk today will be focused on the health implications of climate change and air quality, which are the two more relevant issues for this project. That's not to say there isn't other health risks associated with this project. I'll elaborate on this as a go on.

The threat of climate change is going to increase the risk of heat stress, extreme weather events, changes and in some areas increases in infectious diseases, food insecurity and mental illness.

Temperature increase significantly affects vulnerable populations. These are our older and younger populations, those with chronic disease like diabetes, heart disease and kidney disease, and others at risk of dehydration.

>

We are already seeing rise in global temperatures. I would hope everyone here is aware of this now very famous visual representation of global temperatures from the National Centre for Atmospheric Science in the UK, called the warming stripe. As you can see, this visual representation of global temperature shows a clear annual progressive increase.

The International Panel on Climate Change has already accepted we are likely to have a rise in global temperature from the pre-industrial age of 1.5 degrees Celsius. This projected rise in global temperatures is already going to lead to an increased number of temperature related deaths compared to 1990 levels. If climate change continues to worsen without dramatic action to reduce global CO2 emissions, we will see a significant increase in the number of temperature related deaths.

>

This is the temperature data for Australia for November 2018. As you can see, this data shows the 4th highest mean temperature for the month of November in Queensland, who at the time were battling bushfires. We have recently been told that January 2019 was the hottest Australian January since records began. Tasmania are currently struggling to contain catastrophic bushfires in these conditions.

We know that climate change will lead to an increase in extreme weather events such as bushfires, heatwaves and drought.

Bushfires can cause direct harm from burns and deaths. I've heard children screaming in pain from severe burns. It will stay with me for the rest of my life. I can't begin to imagine the distress that

KINDE.

people who lose family members or homes as a result of bushfires suffer. There is no doubt that bushfires can lead to significant harm in both physical and mental health.

After the Ash Wednesday fires in 1983, 42% of a study of 1526 local residents were found to meet criteria for a potential psychiatric illness.

(McFarlane AC, Clayer JR, Bookless CL. Psychiatric morbidity following a natural disaster: an Australian bushfire. Soc Psychiatry Psychiatr Epidemiol 1997; 32:261–8.)

Bushfires cause significant further air pollution and PM10 particulate production and leads to increased pressure on access to basic healthcare and food security.

>

NSW last year suffered through a prolonged and devastating drought, and many parts of the country have still not broken the drought. Climate change is making drought conditions in southwest and southeast Australia worse.

(Factsheet, Climate Change and Drought June 2018 – Climate Council of Australia)

The health risks of sustained drought include higher rates of mental illness and suicidality, loss of income for producers of local agriculture, and reduced food security and access to fresh healthy food. The impact of drought on adverse mental health has recently been again shown with a study in the Medical Journal of Australia last year on NSW farmers.

(Drought-related stress among farmers: findings from the Australian Rural Mental Health Study, Austin et al, Med J Aust 2018; 209 (4): 159-165)

Loss of food security hits vulnerable populations harder as the price of remaining low yield produce is forced higher. This has long term health implications of increased rates of diabetes, heart disease and cardiovascular disease for those who can't afford the healthier fresh food.

>

This graph shows how Australia is tracking with regards to meeting its climate change emissions reduction obligations. The dark blue line is the emissions reductions targets that fall under the most recent Paris Agreement. The light blue line is the Climate Change Authority's recommendation for science-based targets for emissions reduction. If Australia continues along is current emissions trajectory, we will be moving further away from both targets.

I cannot express the urgency with which we need to act to reduce emissions to have any hope of meeting both Paris and Science Based emission reductions.

>

The Department Of Planning and Environment has a Hunter Regional Plan which makes mention of managing the risks of climate change. I make note of point 16.3.

The new knowledge from IPCC's recent report and multiple previous studies is that we must be reducing our energy usage from coal as a percentage of total energy generation if we have any hope of reduction of the cumulative impacts from global warming. To meet the Hunter Regional Plan actions, the department must not approve any more coal mining.

The top line here is the most important and relevant line from the IPCC report.

To achieve a reduction in emissions that would limit the temperature rise to 1.5C or less, use of coal would be reduced to 0% for global electricity by 2050. This mine proposes to mine 150 million tonnes of coal over the next 23 years, and even states on its EIS that it will contribute to global emissions.

Therefore, to reduce the health risks associated with climate change and temperature rise, the department should not approve this project, as it will not help us to meet the modelling set out by the IPCC report.

>

The United Project claims to only contribute 0.053% of national greenhouse gas emissions. They acknowledge that this is only 3% of emissions associated with project as the largest percentage of emissions comes from downstream scope 3 emissions.

There are an estimated 210,000 premature deaths associated with combustion of coal annually. If the lifetime of this project is planning to mine 150 million tonnes of coal, we can estimate from global levels of coal combustion that this mine would lead to 4200 premature deaths due to it's cumulative effects on climate change.

>

Air pollution has been associated with multiple dangers to human health. Most people are now aware that poor air quality contributes to upper airways disease, lower airway disease and heart disease.

PM10 and PM 2.5 particulates enter the lungs and the blood stream and can cause heart disease, lung cancer, asthma and acute lower respiratory infections.

When combustion of coal is added to the consideration, we need to look at increased levels of sulphur and nitrogen dioxide. These chemicals are known to cause airway irritation, shortness of breath, headache, asthma exacerbation and in very high level exposure to nitrogen dioxide, for example after exposure to a blast plume, dangerous levels of lung inflammation could lead to death.

A recent study by Ben Ewald, a GP and public health expert from the University of Newcastle, showed that combustion of coal in NSW could lead to 233 low birth weight babies and 369 people developing type 2 diabetes annually.

My personal concern is that this data is based primarily off the emissions from 5 key power plants, 2 of which are in close proximity to our region, Liddell and Bayswater. This could mean that a larger percentage of the health impacts for NSW are seen in the Hunter Valley.

>

Now I would like to move on to talk about air quality in the Hunter Valley.

Personally, I grew up locally out along Dyrring Road. We experienced noise pollution from explosions at Ravensworth and surrounding mines. I have personally seen blast plumes in the region happen unpredictably and without warning. Due to having asthma, I was frequently set up with a Ventolin nebuliser at home. I had multiple exacerbations of asthma as a child due to dust and blast plumes from surrounding mines.

As a GP, personally I see multiple local patients with diseases that are known to be exacerbated by poor air quality, including upper airway diseases like otitis media, sinusitis and lower airway diseases like asthma and emphysema. These patient populations suffer exacerbations in clusters, which I can attribute to spikes in air pollution.

Shown here are two examples last year of blast plumes which have caused concern to the local communities.

There have, over the last 12 months, been fines for breaches of air quality standards for local mines. Frustratingly the numerical value of the fine pales in comparison to the profits made from these projects. What assurance do we have from the United Wambo Project that residents won't be affected by blast plumes and poor air quality?

The EIS directly states that maximum average PM2.5 concentrations have the potential to exceed safe levels for the nearby Warkworth Village.

>

The primary concern with blast plumes is that they are unpredictable. This makes them dangerous. When a local population with vulnerable members of the community are given no warning as to when a possible blast plume might carry over the urban centre, the risk is severe airway illnesses in high numbers.

Our local health systems are not designed to cope with a health crisis like we saw with the thunderstorm asthma event recently seen in Sydney and Melbourne.

If a blast plume was to carry over Singleton or Muswellbrook with little warning, I have no doubt that there would critically ill patients who may not be able to access the required treatment, and we could potentially see deaths as a result.

>

This table is air quality alert data from the Upper Hunter Air Quality Monitoring Network for winter 2018. As you can see, using the benchmark of 50 micrograms/cubic metre, there were 29 days over the PM10 particulate benchmarks for the local region. If the more appropriate World Health Organisation targets are used, a benchmark of 20 micrograms per cubic metre, this number is much higher.

Note that the sites recording the highest number of days were in closest proximity to existing mine sites. This is concerning when we consider previously established data by Hendryx and associates that proximity to coal mining equates to worse health indicators.

>

This more recent data is the average concentration for both PM2.5 and PM10 particles. Despite raising our concerns about air quality earlier last year, there have been a steady increase in the number of monitoring stations recording particle levels above the recommended annual average.

Another mine project in the local area poses a health risk to local regions due to cumulative effect of increasing air pollution, and we would expect this to lead to higher rates of the previously mentioned illnesses.

We already have data that confirms this. This is particularly sobering to read, having suffered through asthma during my childhood here in Singleton.

As you can see from the graph, the rate per 100,000 of children between the age of 0-14 and respiratory presentations to ED between Singleton, Muswellbrook and other NSW area is considerably different. In 2007, a time period of significant coal mining activity, we saw a rate of asthma in this population more than double the rate of Sydney.

The earliest data we have from the Upper Hunter Air Quality Monitoring Network is from the 2012 annual report. Camberwell monitoring station had 20 days above 50 micrograms for the entire year. This indicates that air quality has worsened over time.

A local GP Tuan Au did measurements of peak flow, a marker used to diagnose asthma, of high school students a few years ago. He found that Singleton High School students had higher rates of obstructed airway disease than the national average.

This correlates with my personal practice. I speak to parents who state to me that their children suffer poorly controlled asthma in Singleton despite best available medical management. When they leave town to go away on holidays, their children have much better asthma control. Many families have decided to move away from Singleton and the region due to these concerns.

>

Shown here is the indirect action that new mining development can have on health due to social, financial and housing stressors.

Singleton is currently facing an affordable housing shortage. The average wait time for affordable public housing according to the Department of Family and Community services is 2-5 years for a 1 bedroom flat, and potentially 5-10 years for a house suitable for a family with children. New mining development is likely to exacerbate this in the absence of any planned new property development.

I see many patients with mental illness whose primary perpetuating factor and barrier to improving is financial stress directly related to cost of housing in Singleton.

>

At a recent community meeting as part of a Government inquiry, attended by Nationals MPs Barnaby Joyce and David Gillespie, we heard that 9000 workers drive into the region daily. Drive in drive out workers create stress on local population.

Drive in/drive our and fly in/fly out workforces cause an increase in demand for a community's health and emergency services. A recent report into ED presentations of all causes found that whilst Maitland and John Hunter had a reduction in their number of presentations, presentations to Singleton Hospital had increased by almost 30%. The increased pressure on our health service forces local families to travel longer distances for vital medical and allied health services.

The increased traffic congestion through town at the time of shift changeover for the local mines contributes to higher levels of air pollution. This also creates mental stress for people who work in Singleton who are stuck in traffic. It's not uncommon for someone to take 30 minutes to drive from central Singleton to the Heights during peak traffic times.

This also means that majority of drive in/drive out workers' wages goes to home communities, not the Singleton and Muswellbrook economies.

We are also seeing a skill drain on our population due to the drive in/drive out nature of employment. Many school leavers are electing to forgo skills training and further education and instead choosing to work in roles in the mining industry with skills that have limited transferable options to other industries. This further exacerbates health inequality due to financial stress.

We also heard at this community meeting that there has been an increase in the casualization of the mining workforce. Casual workers are paid less than permanent staff, further exacerbating financial stress and its effect on mental and physical health.

in these situations are unable to afford psychologists, medications and are forced to wait years on public hospital waiting lists as they can't afford private health cover.

We've even had local GPs leaving Singleton due to concerns around the health impacts of coal mining. This created a direct reduction in access to primary care.

This project should not be approved due to its likely negative impact on the social determinants of health.

>

Water quality and quantity have important health implications.

The World Health Organisation estimates that eight litres of freshwater are required to dilute every litre of polluted water order to prevent harmful contamination.

The cumulative drawdown for the Hunter River and Wollombi Brook will risk compromising this ration, leading to increased incidences of excessive pollution and infectious diseases.

For this additional reason, the Doctors for The Environment oppose the United Wambo Project, due to the risk of harm to human health and water security.

>

I will briefly discuss environmental risk today, as there are others scheduled to speak who are far more qualified than I am.

However, Doctors for the Environment Australia opposes this project on the biodiversity risk to the Regent Honeyeater, Swift Parrot and Spotted-Tail Quoll.

DEA also opposes this project based on the two large voids that planned to be left at the completion.

Personally, it is frustrating that the reason given for this plan is that backfilling the voids would make the project financially unsustainable. This shows an incredible lack of respect for our regional environment.

>

In summary, Doctors for the Environment Australia oppose the United Wambo Open Cut Coal Project due to concerns over risk to human health directly and indirectly from climate change, air pollution, social impacts, water impacts and environmental risks.

I have multiple personal objections as both a health provider for the local population and as a Singleton resident. I directly suffered health consequences as a result of open cut coal mining and I worry about the risk to my daughter. It is my personal and professional opinion that this project not be approved.