United Wambo Open Cut Coal mine Project
Dr. John Van Der Kallen

Doctors for the Environment
Rheumatologist
Newcastle Bone Density
Conjoint Lecturer, University of Newcastle

"Healthy Planet, Healthy People"

Doctors for the Environment Australia

DEA Doctors for the Environment Australia
www.dea.org.au

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.

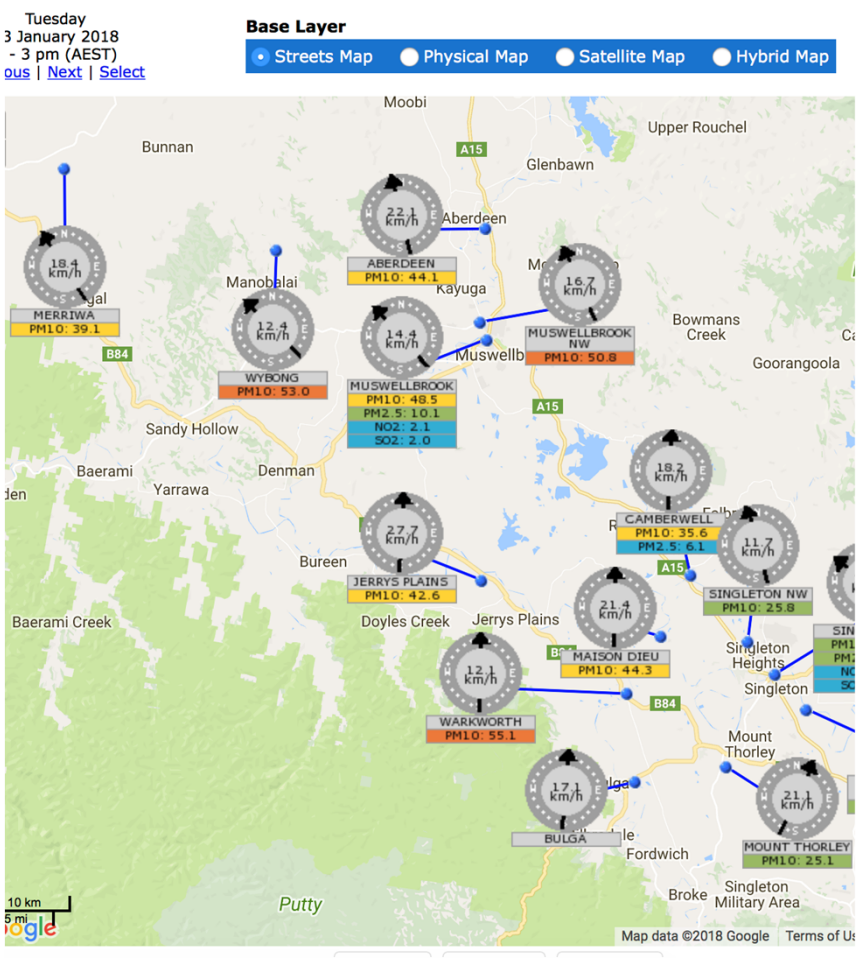
- Scientific committee:
  - Prof. Stephen Boyden AM
  - Prof. Peter Doherty AC
  - Prof. Bob Douglas AO
  - Prof. Frank Fenner AC
  - Prof. Michael Kidd AM
  - Prof. Steve Leeder AO
  - Prof. Ian Lowe AO
  - Prof. Tony Mc Michael
  - Prof. Peter Newman
  - Sir Gustav Nossal AC
  - Prof. Hugh Possingham
  - Prof. Lawrie Powell AC
  - Prof. Fiona Stanley AC
  - Norman Swan
  - Prof. David Yencken AO

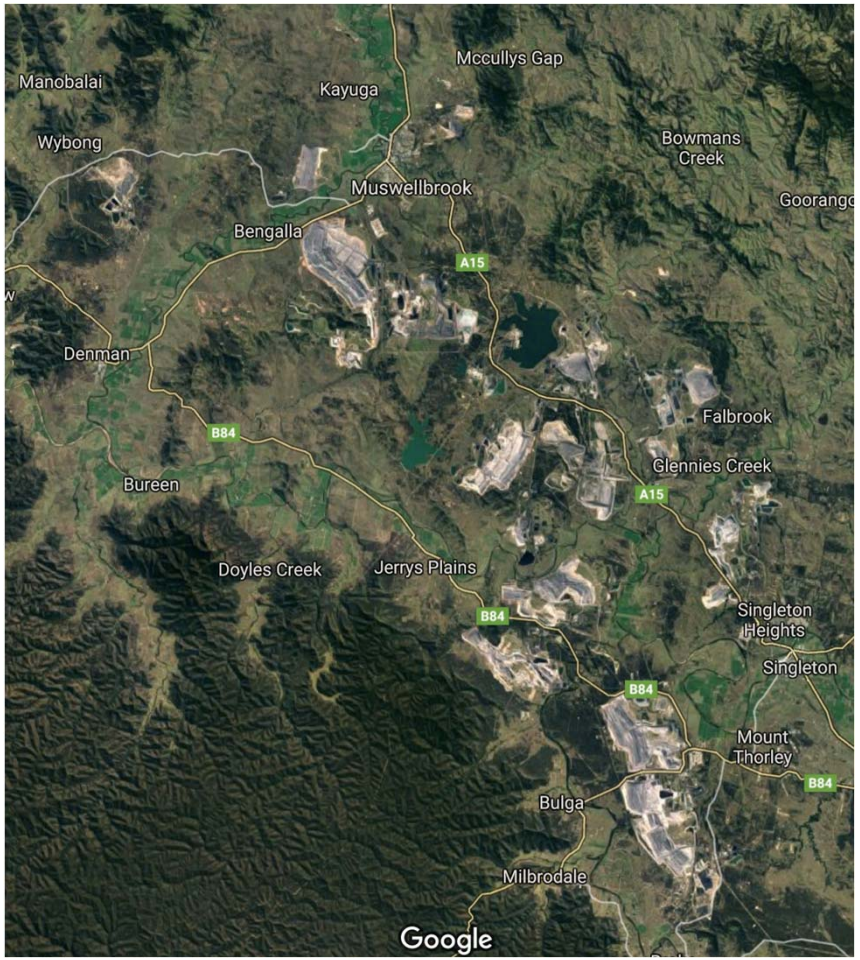
DEA

DEA rejects the proposed United Wambo Open Cut Mine Project and associate modifications

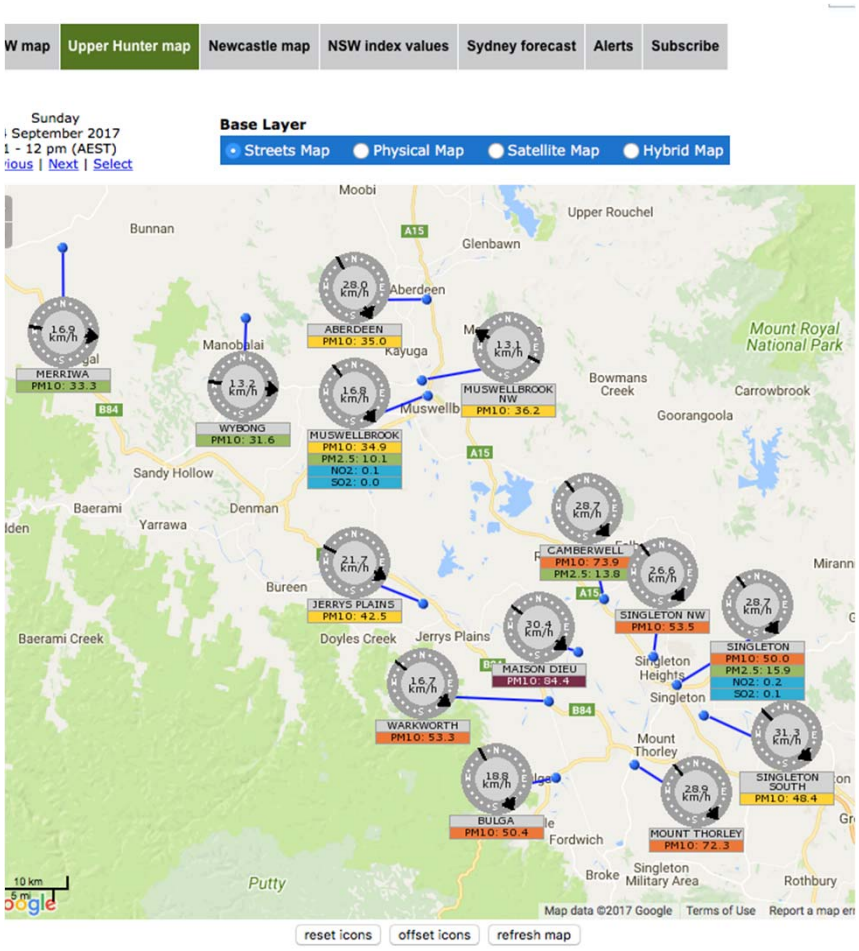
- Air quality
- Blast plumes
- Noise pollution
- Psychological impacts on the community
- Effects on Indigenous heritage
- Effects on those along the “coal path”
- Increase in greenhouse gases and worsening of climate change
- Loss of Intergenerational Equity

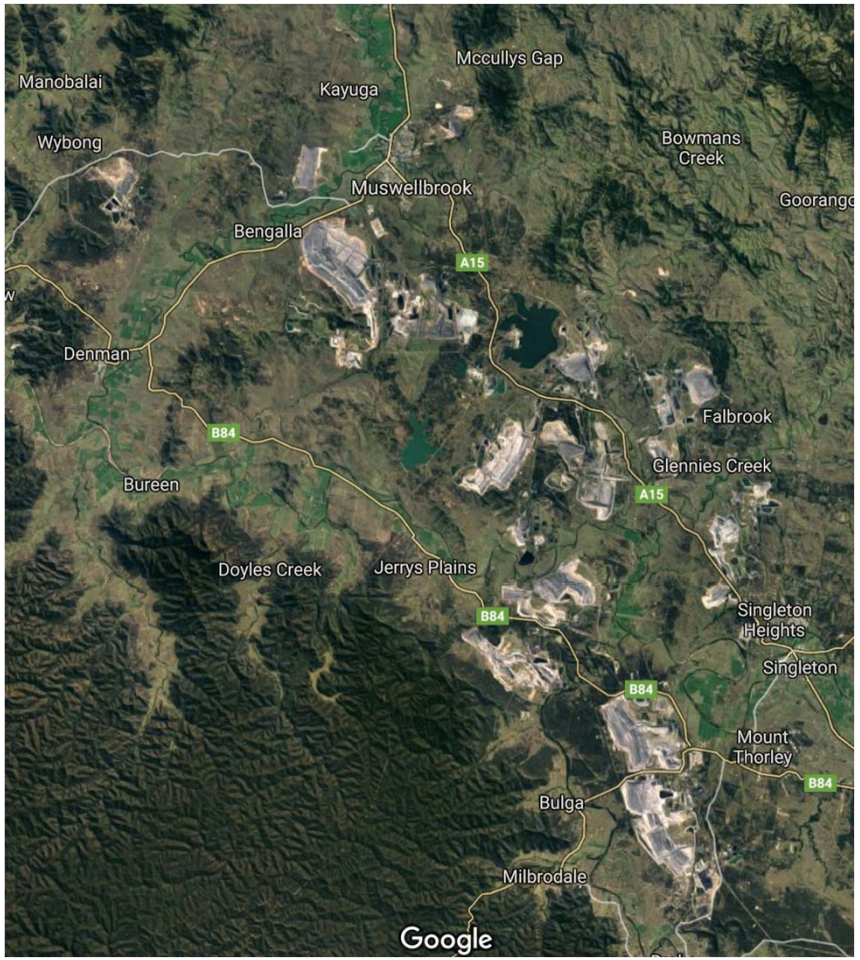
Air Quality near open cut mines



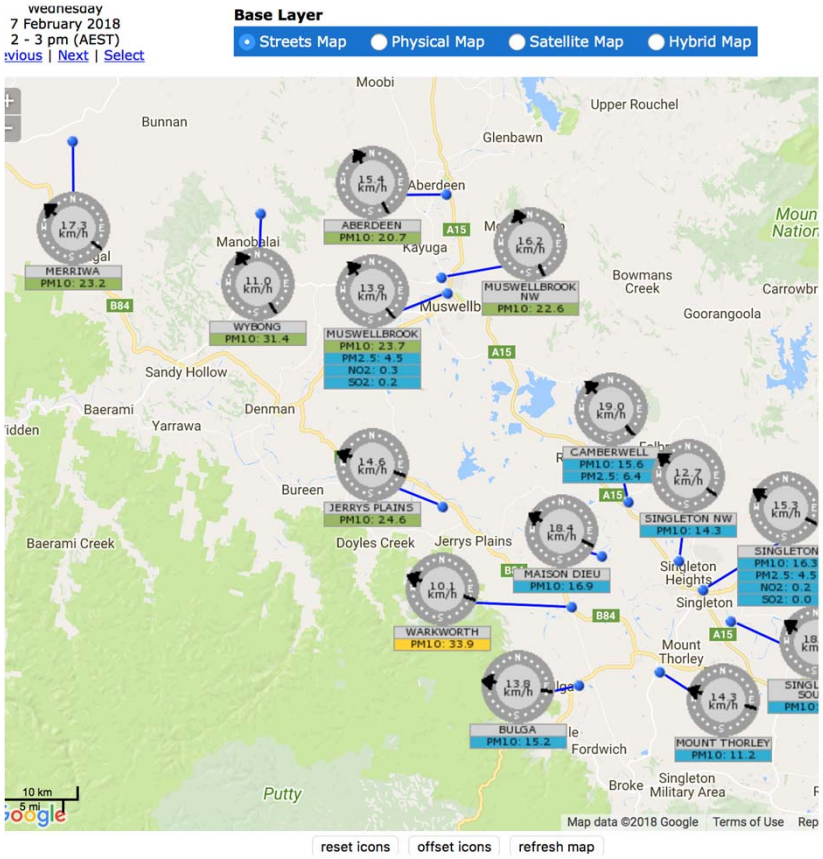


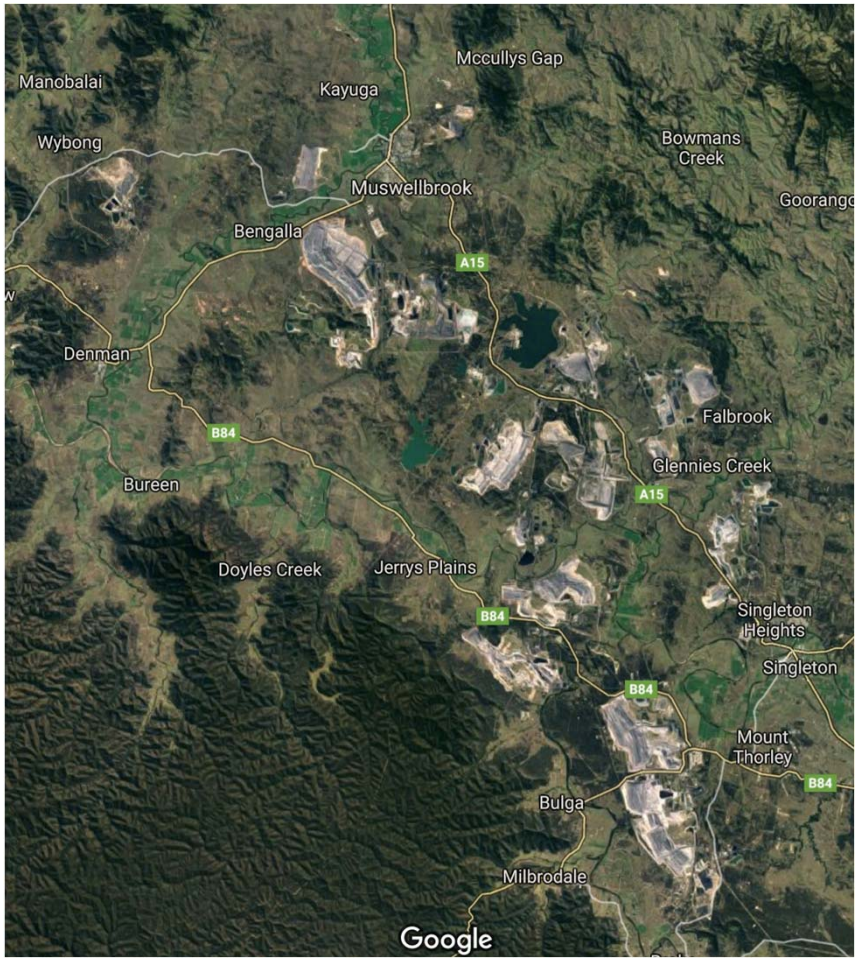
Air Quality near open cut mines





Air Quality near open cut mines





Emergency Department data
July-Sept 2017

Change in admissions compared with similar period 12 months earlier

	Emergency (triage 2)	Urgent (triage 3)
Singleton	28.6% increase	13.6% increase
Maitland	8.5% decrease	3.3% increase
John Hunter Hospital	No change	6% decrease
NSW state average	10% increase	8.3% increase

Bureau of Health information

Singleton air quality July-Sept

Monthly Averages

01/07/2017 30/09/2017 1 Day

Date	SINGLETON SO2 monthly average derived from 1h average [pphm]	SINGLETON PM10 monthly average derived from 1h average [µg/m³]	SINGLETON PM2.5 monthly average derived from 1h average [µg/m³]
07/2017	0.1	23.7	11.2
08/2017	0.1	24.3	9.5
09/2017	0.1	30.4	8.0

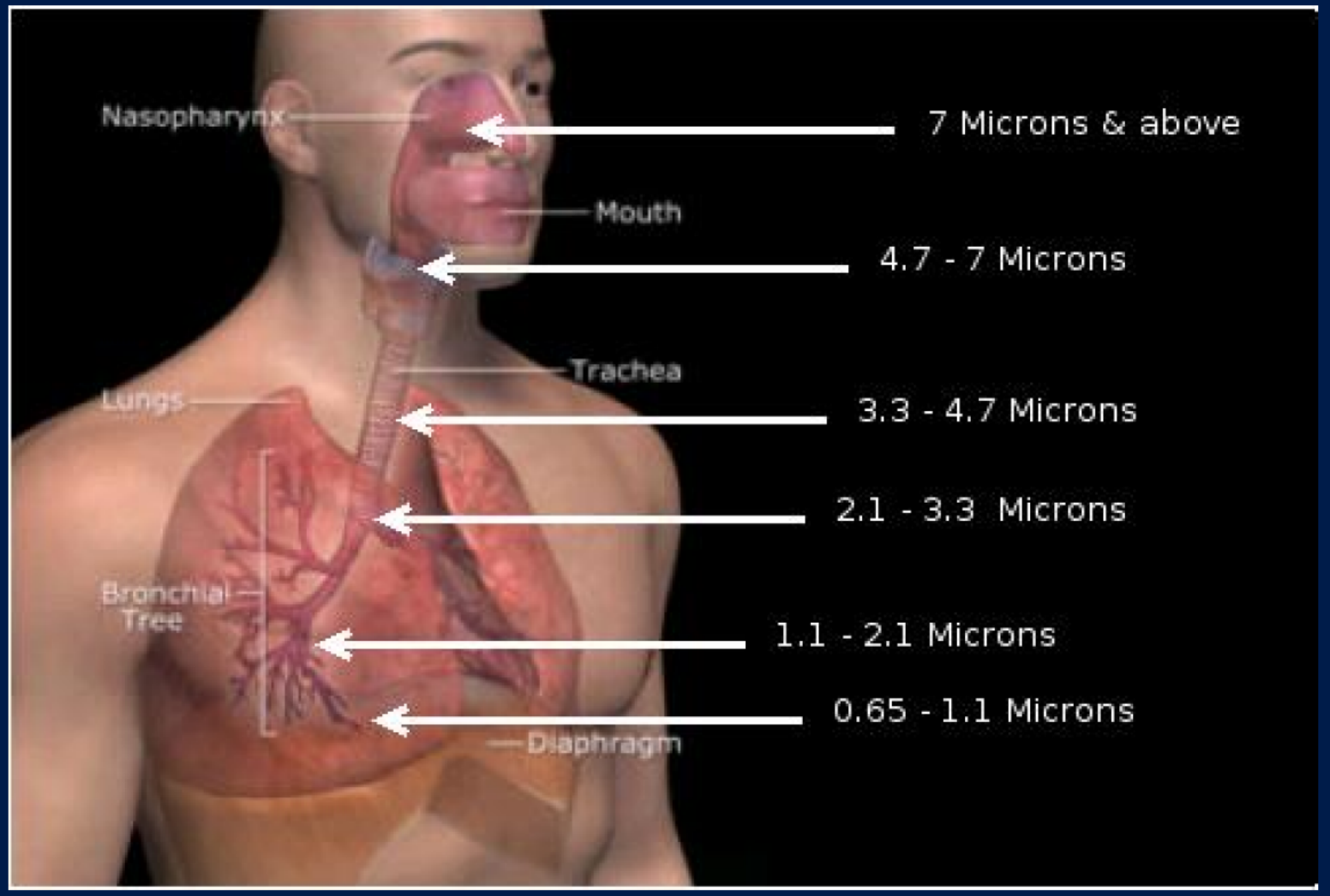
Monthly Averages

01/07/2016 30/09/2016 1 Day

Date	SINGLETON SO2 monthly average derived from 1h average [pphm]	SINGLETON PM10 monthly average derived from 1h average [µg/m³]	SINGLETON PM2.5 monthly average derived from 1h average [µg/m³]
07/2016	0.2	16.4	7.6
08/2016	0.2	19.2	8.9
09/2016	0.2	16.4	6.9

NSW EPA

Particle size



Source: http://en.wikipedia.org/wiki/Respiratory_system

Singleton Sept 2017
Correlation weather conditions and PM10

- Worst days for air quality (ave. PM10 over 25ug/m^3 with a maximum 57 ug/m^3) associated with wind from the NW/WNW
- Worst days also associated with highest temperatures (max 35.6 ^oC).
- Best day was a calm day and only 20.1 ^oC (PM10 - 12 ug/m^3)

Singleton rainfall July – Sept 2017

Monthly Rainfall (millimetres)

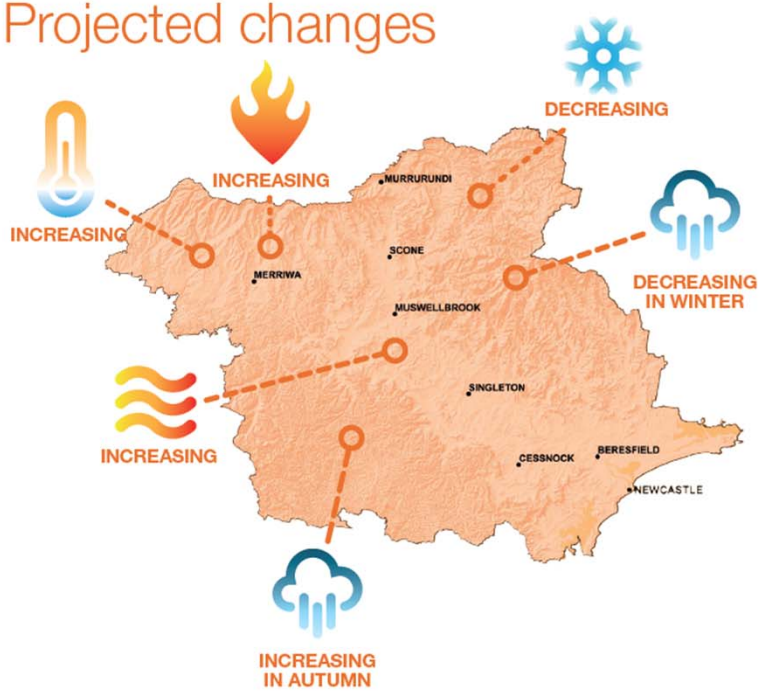
SINGLETON STP

Station Number: 061397 · State: NSW · Opened: 2002 · Status: Open · Latitude: 32.59°S · Longitude: 151.17°E · Elevation: 45 m

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2002											20.0	121.0	
2003	*4.6*	*77.1*	*39.9*	*45.5*	*43.4*	*22.0*	*30.0*	*55.6*	*0.4*	52.8	123.8	*63.8*	*558.9*
2004	108.8	150.8	45.0	9.8	23.8	9.6	14.0	29.2	29.6	72.2	69.2	76.2	638.2
2005	59.0	172.3	100.8	12.4	39.2	51.6	13.4	4.9	50.6	102.9	89.0	11.6	707.7
2006	29.6	21.8	41.0	16.6	3.0	45.1	32.0	16.6	113.8	1.0	54.8	48.4	423.7
2007	15.0	34.2	59.9	55.4	24.8	249.3	7.6	69.7	26.2	15.6	143.4		
2008	69.5	137.8	34.2		2.8	84.2	23.7	30.1	64.8	56.3	78.1	61.0	
2009	1.6	178.0	53.6	101.5	35.8	39.5	24.2	0.5	23.2		26.1	107.2	
2010	77.5	58.9	48.6	29.6	45.9	46.1	75.7	23.0	30.2	61.3	115.8	69.4	682.0
2011	37.8	20.0	43.4	63.8	69.8	134.4	26.2	60.5	71.6	63.3	156.1	69.8	816.7
2012	50.4	163.9	91.5	30.2	12.1	70.3	35.7	10.6	9.0	2.6	30.4	58.0	564.7
2013	142.8	176.8	86.6	34.1	23.8	56.8	12.8	8.4	25.6	28.0	162.1	14.2	772.0
2014	13.2	70.0	148.9	65.1	10.0	29.0	26.0	58.4	27.5	36.2	22.8	143.2	650.3
2015	160.4	15.4	31.6	294.8	65.0	30.6	17.4	45.2	19.0	19.2	83.2	117.5	899.3
2016	208.2	10.0	7.9	55.4	15.4	98.1	40.4	35.8	79.2	52.2	50.5	75.0	728.1
2017	47.8	19.9	*129.7*	*37.6*	*19.8*	*39.6*	*2.0*	*10.8*	*13.4*	*59.8*	*24.2*	*56.8*	461.4
2018	*3.3*												

Bureau of Meterology

Projected changes



Projected **temperature** changes	
Maximum temperatures are projected to increase in the near future by 0.4–1.0°C	Maximum temperatures are projected to increase in the far future by 1.6–2.6°C
Minimum temperatures are projected to increase in the near future by 0.5–0.9°C	Minimum temperatures are projected to increase in the far future by 1.5–2.5°C
The number of hot days will increase	The number of cold nights will decrease
Projected rainfall changes	
Rainfall is projected to decrease in spring and winter	Rainfall is projected to increase in autumn
Projected Forest Fire Danger Index (FFDI) changes	
Average fire weather is projected to increase in summer, spring and winter	Severe fire weather is projected to increase in summer and spring

"Adapt NSW" Environment and Heritage

Climate change

- This project will increase emissions which will worsen climate change
- In the Hunter there will be hotter and drier weather (we are already seeing this)
- These conditions are associated with a deterioration in air quality
- A deterioration in air quality poses a risk to human health
- This project will worsen air quality
- This project poses a risk to human health

Hunter New England Local Health District
Hunter New England Population Health
Direct Contact Details
Phone: (02) 4924 6477 Fax: (02) 4924 6490
Email: carolyn.herlihy@hnehealth.nsw.gov.au

NSW GOVERNMENT Health
Hunter New England
Local Health District

On 15 December 2015, the National Environment Protection Council (NEPC) agreed to vary the National Environment Protection (Ambient Air Quality) Measure (NEPM). The amending instrument took effect on 4 February 2016. The new standards are as follows:

Pollutant	Averaging Period	Maximum concentration standard	Maximum allowable exceedances
Particles as PM_{10}	1 day	50 $\mu g/m^3$	None
	1 year	25 $\mu g/m^3$	None
Particles as $PM_{2.5}$	1 day	25 $\mu g/m^3$	None
	1 year	8 $\mu g/m^3$	None

Reference: https://www.legislation.gov.au/Details/F2016C00215

The EIS explains that, at the time of preparation of the report, the Environment Protection Authority (EPA) had not yet prescribed changes to the air quality criteria for NSW following the amendment to the NEPM. However, it would be expected that the EPA will introduce the amended criteria within the foreseeable future, and the EIS should have taken this into account.

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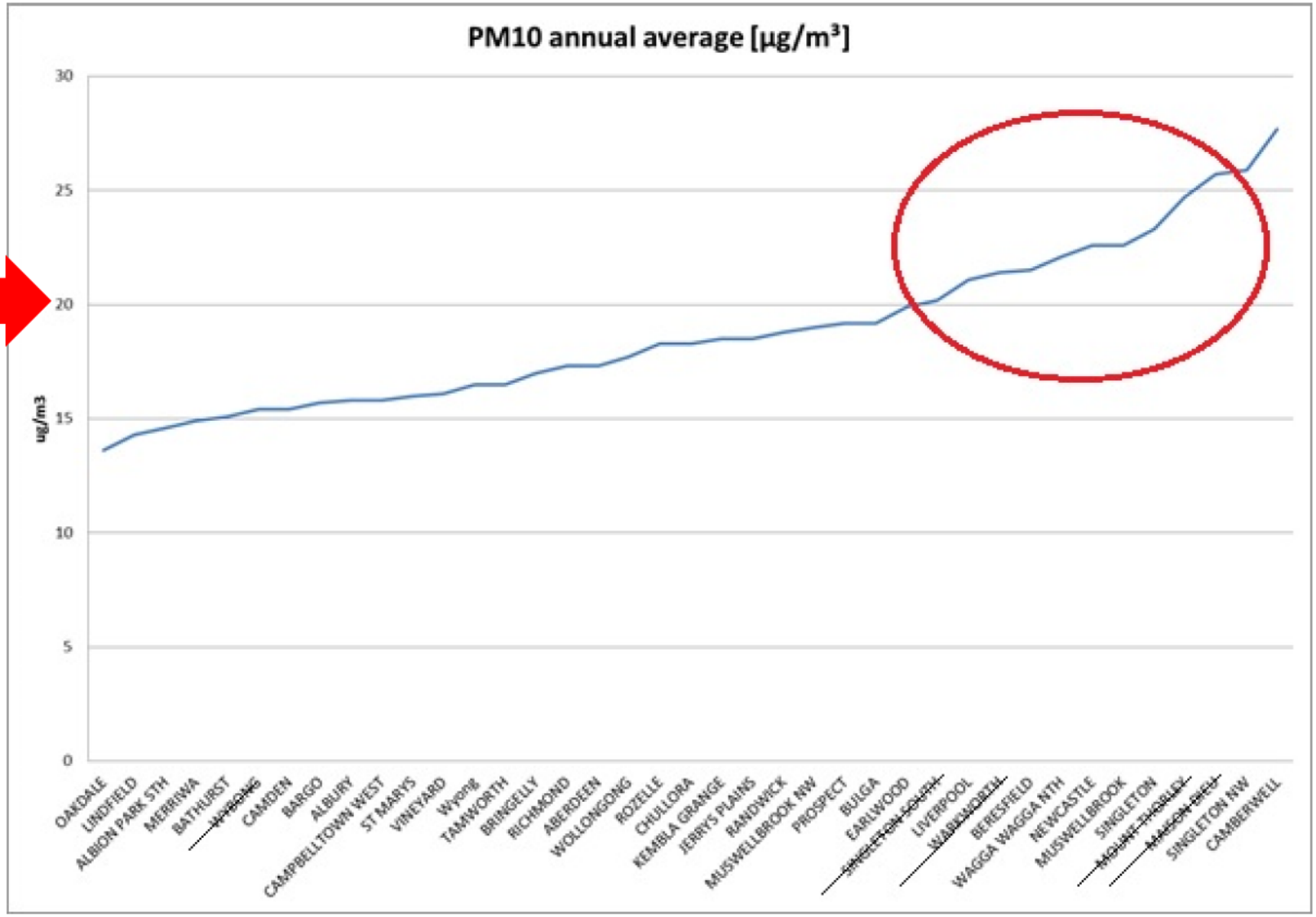
Hunter New England
Local Health District

Air Quality

There is no evidence of a threshold below which exposure to particulate matter (PM) is not associated with health effects. Therefore, it is important that all reasonable and feasible measures are taken to minimise human exposure to PM, even where assessment criteria are met.

HNE Health notes that the proponents have committed to consult with the owners, and as appropriate the tenants of the mine owned residences, in Warkworth and other areas surrounding the Project that are expected to experience exceedances of air quality assessment criteria, to appropriately inform them about the predicted impacts of the Project on air quality over the life of the mine.

2013 annual PM10 from 39 monitors across NSW.



	$PM_{2.5}$ 24 hour average	**$PM_{2.5}$ Annual average**	**PM_{10} 24 hour average**	**PM_{10} Annual average**
National standards agreed by Environment Ministers December 2015	25µg/m^3 in 2016 20µg/m^3 in 2026	8µg/m^3 in 2016 7 µg/m^3 by 2026	50µg/m^3	25µg/m^3
Guidelines referred to in the Rocky Hill EIS	25µg/m^3 (advisory only)	8µg/m^3 (advisory only)	50µg/m^3	30µg/m^3 (advisory only)

Effects on health in the Hunter
2007 ED respiratory presentations

Age group	location	n	Rate/100,000
0-14	Singleton	2026	13255
	Muswellbrook	1305	13368
	Rest of HNEAHS	41983	8806
	Sydney	114713	5981
65+	Singleton	306	5005
	Muswellbrook	235	5676
	Rest of HNEAHS	19869	5035
	Sydney	49868	3967

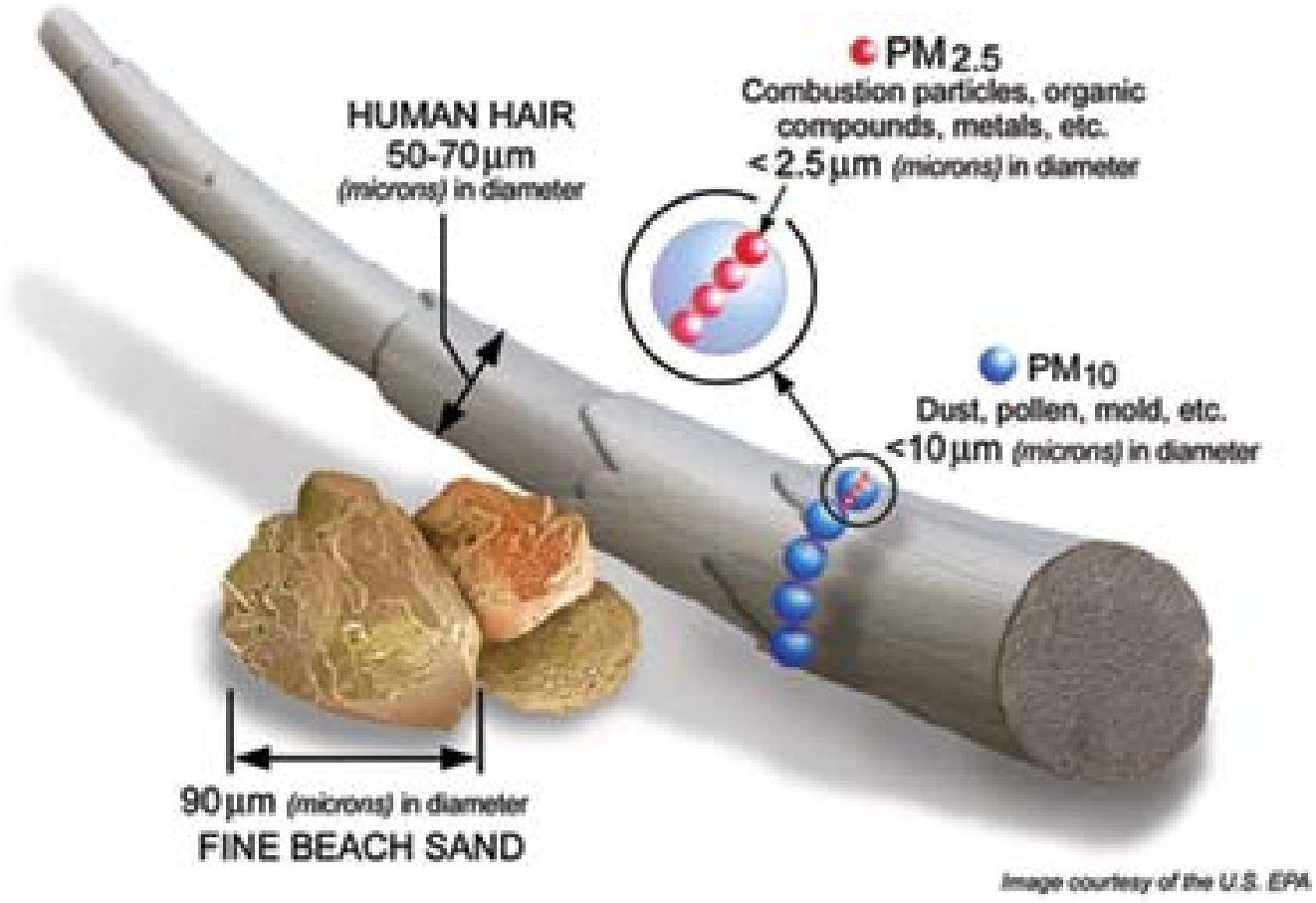
Respiratory and cardiovascular disease and cancer among residents of the Hunter New England Area Health service, 2010

All cause mortality, 2002-07

region	sex	n	Rate/100,000
Lower Hunter	M	2990	879
	F	2891	578
	total	5881	**703**
Greater Newcastle	M	8660	678
	F	8154	444
	total	16813	**547**
HNEAHS	M	21365	838
	F	19775	548
	total	41140	**677**
All NSW	M	140934	766
	F	134585	510
	total	275519	**624**

Respiratory and cardiovascular disease and cancer among residents of the Hunter New England Area Health service, 2010

Dust and Air Pollution
Particulate matter, described by size



Failure of air quality monitoring

- 181 air quality alerts in the Upper Hunter Valley from Jan-Oct 2017
- 72 alerts in September alone
- NSW air quality program is not finalised
- Need baseline and ongoing real time air quality monitoring
- There is no guarantee that the population of Hunter Valley will be protected against a worsening of air quality
- Need clear “stop work” limits on the mining and procedures in place to deal with unplanned worsening of air quality

The Precautionary Principle

- The EIS recognizing this principle and states that it will consult widely
- The principle implies that there is a social responsibility to protect the public from harm, when scientific investigation has found a plausible risk
- With this project there is a plausible risk to human health and a definite risk to the environment

Fire Hazards – Morwell 2014

Mine blast gone wrong spews toxic cloud

Joanne McCarthy

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 much stronger response from environmental regulators.

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

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

Blast Plumes

- There maybe up to 15 mine blasts per week with additional blasts if there are misfires
- Blast plumes are unpredictable and dangerous
- They can result in exposure to nitrogen dioxide (and other unknown compounds) resulting in respiratory irritation, pulmonary oedema and death

Symptoms from high level exposure

- Eye, nose and throat irritation and coughing
- Dizziness and headache
- Shortness of breath
- Wheezing or exacerbation of asthma

- Serious lung inflammation (pulmonary oedema) has been known to develop several hours after exposure to very high levels of NO_2

Previous blast plume incidents

- A number of workers at Mt Thorley were hospitalised when a blast plume travelled 3 kilometers from Warkworth mine
- A similar blast plume in QLD asphyxiated workers 6 kilometers away

Trade & Investment Mine Safety

SAFETY BULLETIN

Exposure to dust and gases

BACKGROUND

Recent incidents of exposure to dust and potentially hazardous gases from open cut mine blasting have resulted in hospital treatment for several mine employees. These incidents do not appear to have involved water and excess oxides of nitrogen as there was little, if any, orange fume produced from the associated blasts. The cause of the irritant is still being investigated.

MANAGING BLASTING DUST AND GAS

While it may not be possible to eliminate dust and gas generation from blasting, it is essential to minimise exposure of personnel to these hazards. Site blasting procedures should identify the potential to generate these products of blasting and limit their impact, not only on mine personnel, but also the public. Hot weather and strong wind can provide conditions that promote formation and dispersal of dust from surface blasting. If hazardous blasting gases are produced, these can also be spread significant distances by strong wind and cause potential health hazards.

Blasting related to dust and gas production may consider, but not be limited to, the following:

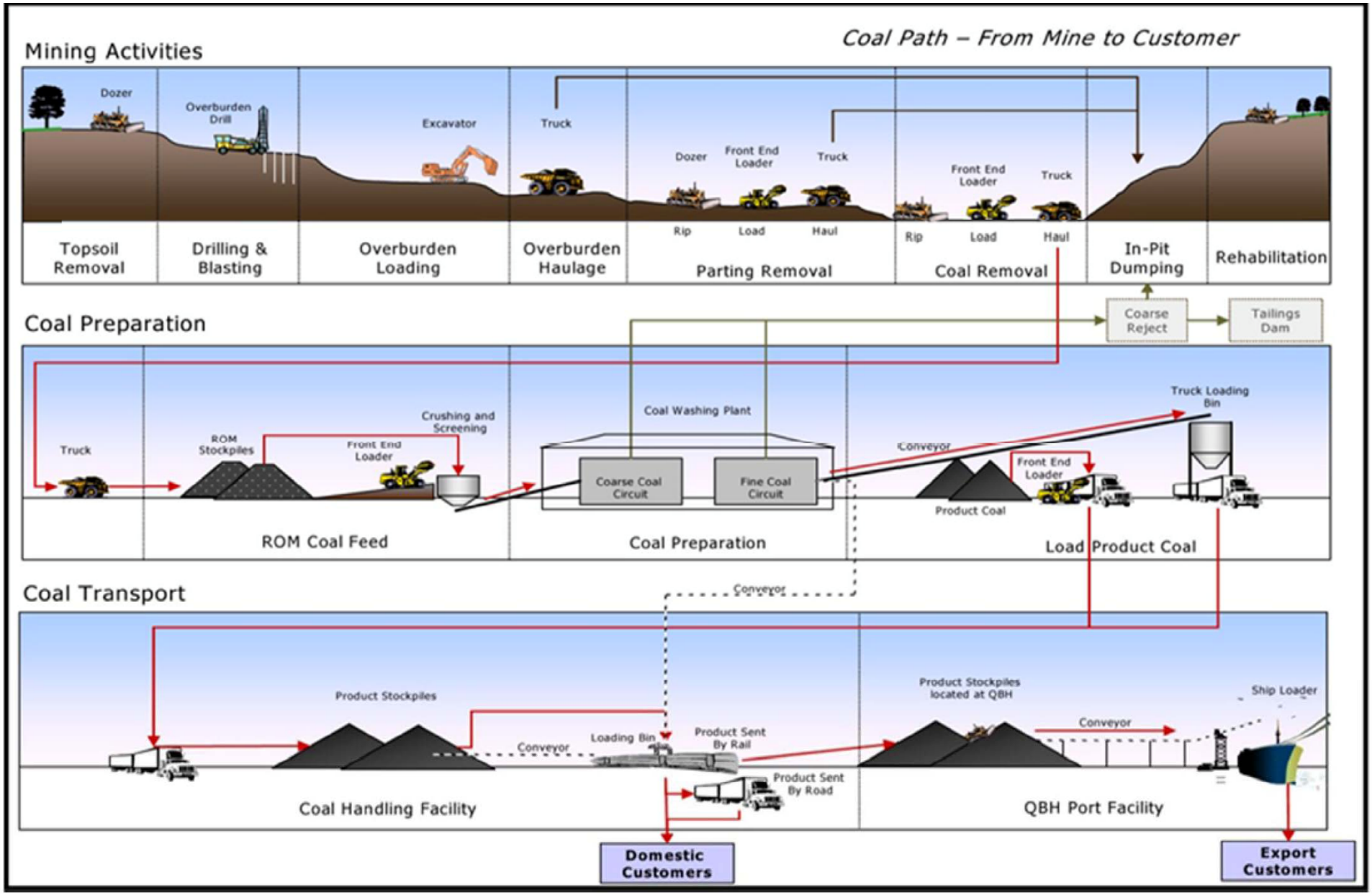
- Wind speed and direction
- Ground conditions
- Explosives selection
- Evacuation distances
- Gas monitoring
- Communication on the blast site, to surrounding operations and the public

Mine Safety Report No: SB14-01
Prepared by: Andrew Brodbeck
Phone: [redacted]
Date Published:15January 2014

Psychological aspects

Social distress and environmental injustice including

- concerns over the cumulative health effects
- impacts of mining activities
- social divisions and inequalities
- feelings of loss and disempowerment
- pollution/poor air quality,
- environmental damage and the potential to impact negatively on future generations (loss of Intergenerational Equity)


Coal Path – From Mine to Customer
Mining Activities
Dozer
Overburden Drill
Excavator
Truck
Dozer
Front End Loader
Truck
Front End Loader
Truck
Rip
Load
Haul
Rip
Load
Haul
Topsoil Removal
Drilling & Blasting
Overburden Loading
Overburden Haulage
Parting Removal
Coal Removal
In-Pit Dumping
Rehabilitation
Coarse Reject
Tailings Dam
Coal Preparation
Truck
ROM Stockpiles
Front End Loader
Crushing and Screening
Coal Washing Plant
Coarse Coal Circuit
Fine Coal Circuit
Conveyor
Truck Loading Bin
Front End Loader
Product Coal
ROM Coal Feed
Coal Preparation
Load Product Coal
Coal Transport
Conveyor
Product Stockpiles
Conveyor
Loading Bin
Product Sent By Rail
Product Sent By Road
Product Stockpiles located at QBH
Conveyor
Ship Loader
Coal Handling Facility
QBH Port Facility
Domestic Customers
Export Customers

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
[redacted]

September 26, 2017

Millennium Bulk Terminals-Longview, LLC
ATTN: Ms. Kristin Gaines
[redacted]

RE: Section 401 Water Quality Certification Denial (Order No. 15417) for Corps Public Notice No. **2010-1225** Millennium Bulk Terminals-Longview, LLC Coal Export Terminal – Columbia River at River Mile 63, near Longview, Cowlitz County, Washington

Dear Ms. Gaines:

The Washington State Department of Ecology (Ecology) has reached a decision on the Millennium Bulk Terminals-Longview request for a Section 401 Water Quality Certification for the proposed coal export terminal near Longview. After careful evaluation of the application and the final State Environmental Policy Act environmental impact statement, Ecology is denying the Section 401 Water Quality Certification with prejudice.

The attached Order describes the specific considerations and determinations made by Ecology in support of this decision to deny the Certification with prejudice. Your right to appeal this decision is described in the enclosed denial Order.

Sincerely,

[redacted]

Maia D. Bellon
Director

Multiple grounds for rejection

- “a significant increase risk of cancer risk for areas along rail lines”
- “increased cancer risk rate of up to 30 cases per million”
- “train related noise [and vibration] levels would increase” impacting on 229 residences
- Mitigation of these issues would not avoid their impacts
- The Wambo project will result in an extra 150 million tonnes of coal to be transported

Acland mine expansion rejection 2017

- Groundwater depletion
- Noise
- Economic benefits of the project were overstated
- Extension into the “food bowl”
- Loss of agricultural land being contrary to Intergenerational Equity
- Poor past performance of New Acland Coal P/L
- Prejudice to the public interest

Rocky Hill Mine rejection

- Rocky Hill open cut mine was rejected by the PAC in Dec 2017
- Grounds for rejection
  - Change in land use and loss of agricultural land
  - Incompatible with protecting the scenic amenity of the Gloucester valley
  - Not in the public interest

Jobs – but are coal mine jobs the ones we want for workers?

- There are many concerns for the health of coal mine workers
- “Black Lung” is not quick, like a mine explosion, but an insidious disease that develops over many years”
  - Jo-Ann Miller and Hon Lawrence Springborg MP
  - Queensland inquiry into the re-indentification of Coal Workers Pneumoconiosis in Queensland

Coal Workers Pneumoconiosis (CWP)

- 21 confirmed cases in Qeensland
- 2 probable cases in NSW
- 2 cases of confirmed CWP involved coal workers who exclusively worked in open-cut coal mines, proving that CWP does not occur solely in underground coal mine workers
- “Not surprisingly, the committee has found that Queensland coal miners have lost confidence in the ability of the government authorities, and the mining industry in general, to adequately protect the health of coal mine workers”

Economic benefits

- Economic benefits have been overstated as they do not include the cost of adverse health events relate to the mine
  - Coal workers health
  - Health of the local community
  - Effects of climate change due to the emissions from the mine and the subsequent burning of coal

Intergenerational Equity

- “that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations”
- Loss of 224 hectares of forest
- Large residual void
- Already clear that there are going to be many large empty voids in the hunter valley
- There will be a loss of Intergenerational Equity

DEA rejects the proposal on the following grounds

- Air quality
- Blast plumes
- Noise pollution
- Psychological impacts on the community
- Effects on Indigenous heritage
- Effects on those along the “coal path”
- Increase in greenhouse gases and worsening of climate change
- Loss of Intergenerational Equity