

Micro Valley Study of Mining coexisting with Residents, Farming, Vineyards and Horse Studs in the Hunter Valley of NSW Australia

“The Cockfighter Brook” flows between the Pokolbin and Wollomi Forests along the Bulge Mountain into the Hunter River as a picturesque Rural Valley with the Villages of Broke, Fordwich, Milbrodale and Bulga, Vineyards and Horse Studs. (Figure 1)



Figure 1 “Cockfighter Brook Micro Valley”
Showing the Resident Community distribution

This “Cockfighter Micro Valley” forms a blind ended Valley in the Bulga-Broke area which for South Drifting Air Patterns would tend to “concentrate and stagnate” Mine Pollution trapped along the Bulga Mountain Escapement into a “Pollution Rich Pocket” formed by the Pokolbin Forest blockage just South of Broke Village. The distinct Odour of Mining often permeates the area.

These Hunter Valley South Drifting Air Patterns shown on **Figure 2** first pick up Pollution from Coal Mines and two Power Stations near Muswellbrook on their way to the “Cockfighter Micro Valley” and this enriched Polluted Air then passes over a line of orientation of five Open Cut Coal Mines and two Underground Coal Mines in the Micro Valley across the Brook from the Escapement.



Figure 2 Hunter Valley South Drifting Air pollution Patterns

The Micro Valley scenario of concern relates to Meteorological conditions where this South Drifting Air is drawn along and towards the Escapement aided by the natural tendency to be drawn firstly to the south west up the Milbrodale Brook Valley and then near Broke Village drawn also up the Wollomi Brook Valley between the Pokolbin and Targo State Forest Escapements as indicated on **Figure 1**. Thus the tendency especially under light wind conditions is for Airbourne Mine Pollution to also drift West while nominally South Drifting Air, making Broke Villagers particularly vulnerable.

The complex land contours of the Bulga-Broke Micro Valley is characterised in cross section at the open Bulga end with Escapement to the West across the Wollomi Brook to the East and Saddle Ridge of Warkworth –Mt Thorley Open Cut Mines. Further South the cross section passing through Milbrodale Brook Valley and Escapement to the West across the Wollomi Brook to the East and over the Fordwich Ridge to Bulga Open Cut Mine. At the Broke Village, the cross section passes through Wollomi Brook Valley and Escapement, then across the Plains and Broke Village to the East before encountering the restriction of the protruding Pokolbin State Forest Escapement; where a gap to the Military Range Forest Ridge opens to the East North East into an open Plain Valley further to the East. **Figure 2-2 Topography** adds a 3D view of the Broke Pollution Pocket.

It is the complexity of the land contours leading into the “Broke Pollution Stagnation Pocket” that warrants consideration with respect to the Air Pollution Health Risk from the cluster of Power Station and five Open Cut and two Underground Coal Mines that feed and emit Pollution in this area.

The “*Cumulative Pollution Scenario of Concern*” is theorised for South Drifting Air entering the Hunter Valley over the Great Dividing Range to the West at around PM10 5ug/m³, which rises to 15ug/m³ on leaving Muswellbrook Pollution, where it moves over Hunter Valley Operations Open Cut Mines perhaps rising to 25ug/m³ as it enters the more concentrated Mining Zone in the Bulga-Broke Micro Valley; - firstly the Wambo Open Cut and Underground Mines, Bulga Open Cut and Underground Mines, Warkworth Open Cut Mine, Mt Thorley Open Cut Mine, Bulga Open Cut and Underground Mine, where PM10 in the Broke Village with School would tend to fluctuate as a result from 50 to 75ug/m³ or above.

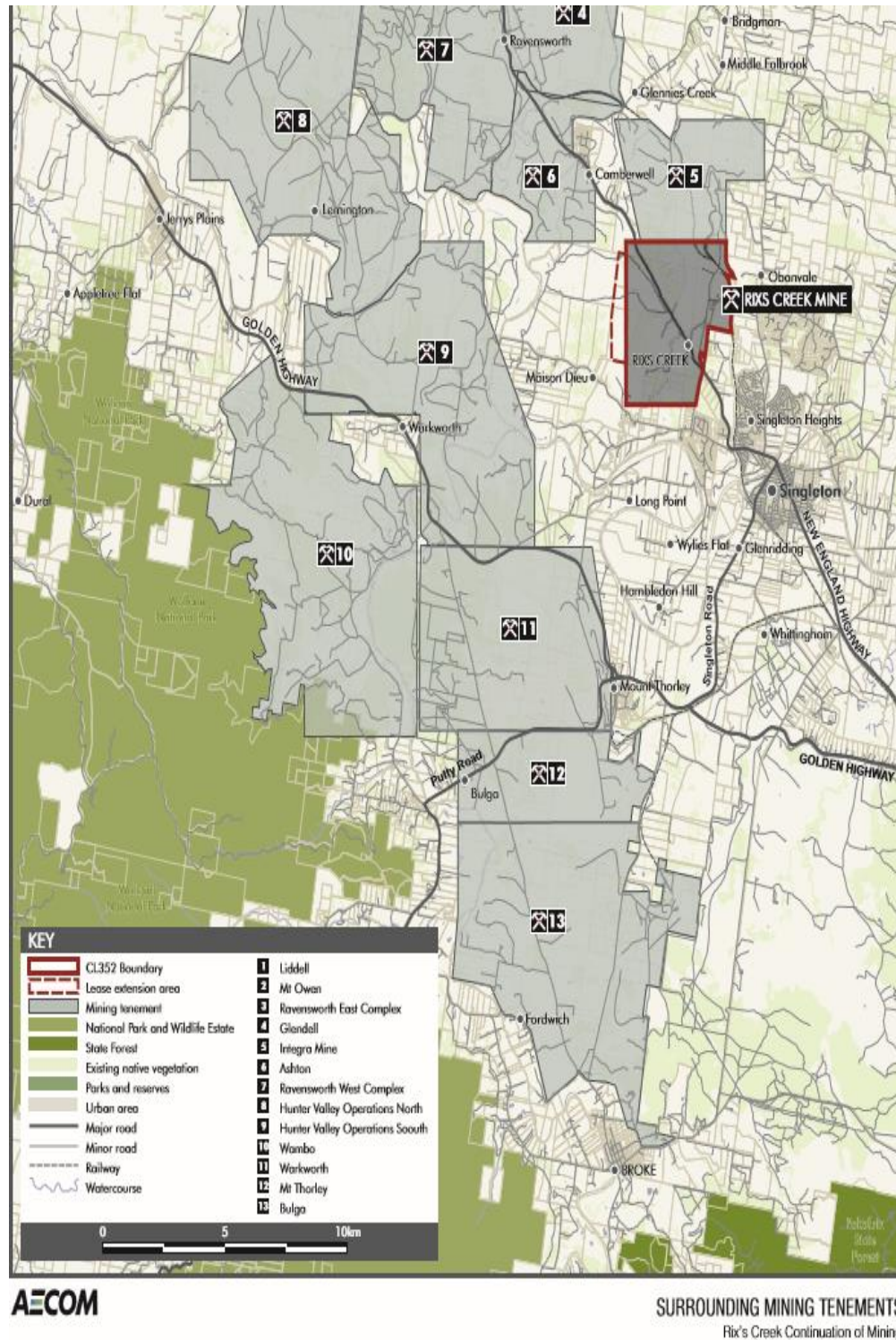
In recent years, in addition to the continuing threat of Drifting Mine Blasting Plumes, the implementation of Underground Mine “Methane” drainage, Ventillation Conversion, Flaring, and Power Generation all now along with Coal Seam Gas Flaring activities in the area introduces the added Health Risk from Products of Combustion. The Explosive Risk in Buildings, Wells etc needs also to be considered.

SSHEG therefore identifies that additional Real Time Air Pollution Monitoring (15 Minute STEL Average TSP, PM10 and PM2.5) with Gases and Particulates Matter Sampling and Analysis located in the Broke School Environs is overdue for inclusion specifically as Bulga Compliance Licence Conditions to be used for Real Time Pollution Mitigation Controls at both the Bulga Open Cut and Bulga Underground Mine Operations.

SSHEG contend that PM2.5 Real Time Monitoring at both Broke and Bulga areas is a necessary condition to understand the Residents perception that the increased pace and closeness of Open Cut Coal Mines is responsible for increased Community Sickneses particularly in children, now understood from the WHO Disease associations of Diesel Exhausts, Air Pollution and Particulate Matter.

- That is:-**
- # Coal Mining is responsible for around 90% of the PM10 of which say 5% is PM2.5.**
 - # Mine Blasting Plumes a major contributor to both PM2.5 Dust and Explosives Mix Products.**
 - # MTW Mines are a major Diesel consumer**

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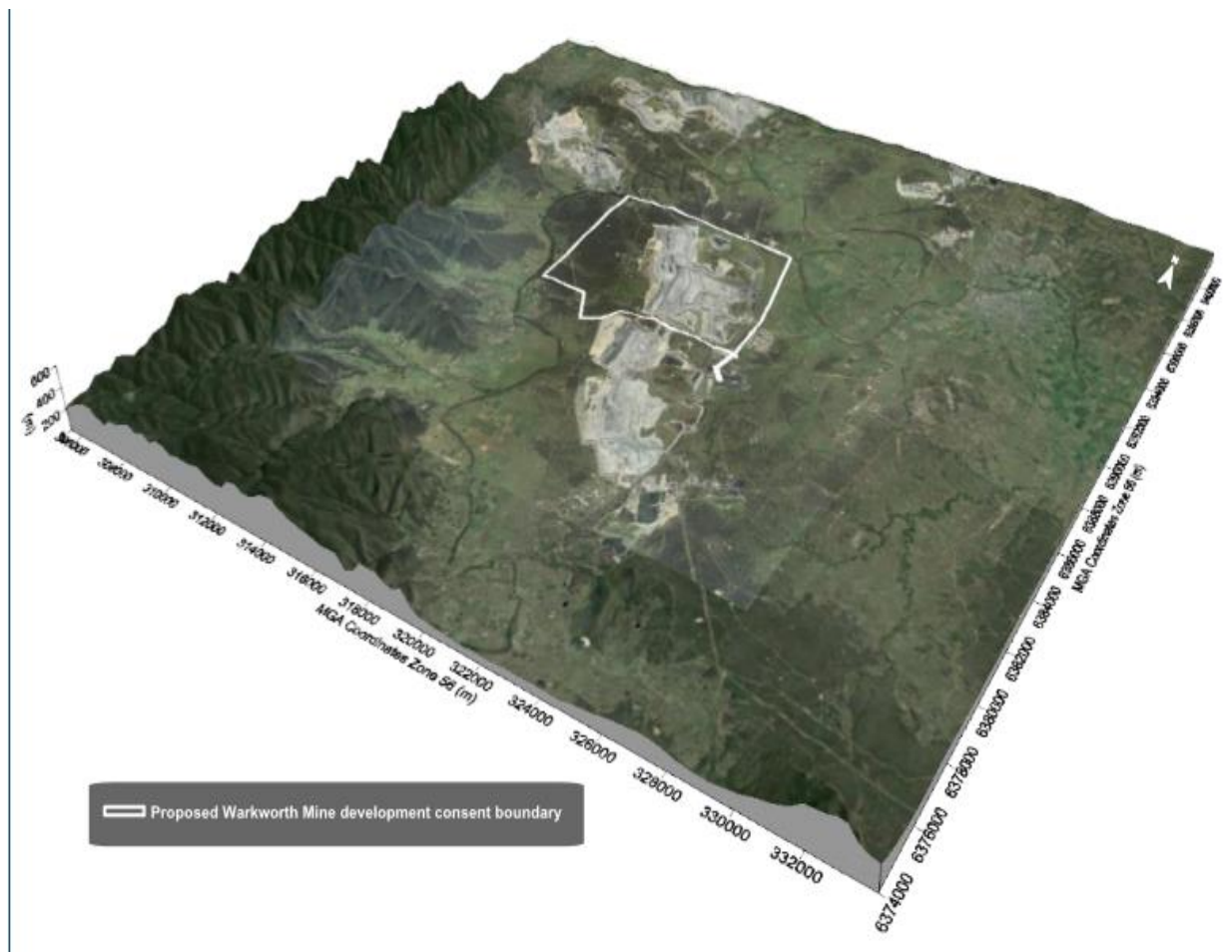


Figure 2-2: Topography surrounding the proposal

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