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9 September 2016

Submission re Amended Development Application, Rocky Hill Coal Project SSD 5156 and associated Modification of Stratford Extension SSD 4966 MOD 1

I oppose both this Amended DA and associated mining Modification because of the unnecessary stress and brain pollutants imposed on a large number of residents who overwhelmingly reject the proposed Rocky Hill Mine and the further damage to the health of Stratford area residents whose health has been totally neglected.

Over the past 10 years I have witnessed many adverse psychological reactions to this mining proposal both professionally and socially. If this mine is approved it will result in substantial further psychological and physical illness.

I say this is an unnecessary mine because if Australia is to keep to its Paris Climate Change agreement we have to keep 90% of our coal reserves in the ground and there are existing mines in far less populated areas mothballed that have metallurgical coal. The State government needs to talk to the Federal government about resource extraction planning and greenhouse gas limitations. The coal is earmarked for export and the private company who will profit is controlled by foreign billionaires. Costs will exceed benefits for Australia.

I have been a resident of Gloucester Shire for 22 years and in the last 10 years of my practice as a psychiatrist I rented a room at Gloucester Medical Centre where I saw many people whose illnesses were complicated by the stress of coal mining. This involved both the effects of Stratford Mine and the exploration activities of Gloucester Resources for Rocky Hill Mine and other local licenses they hold and exploration for Coal Seam Gas by AGL. I believe I am probably the only psychiatrist in Australia who both lived and practiced in a coal mining area and I consequently have developed detailed knowledge and have provided input concerning the psychological impacts of mining to both medical and lay communities particularly in the Hunter Region. I have been a member of the Gloucester Resources Exploration Project Community Consultative Committee since its inception but I was appointed to that in my capacity as president of the Gloucester Environment Group.

The psychological impacts of coal exploration and mining, with special reference to the proposed Rocky Hill Mine and the Amended DA.

The Background The health impacts of open cut coal mining has a substantial literature but virtually all articles and pamphlets contain only token references to psychological impacts. Cardio-Respiratory and toxicological experts who are seen as the relevant medical

specialists usually have no contact with psychological expertise and so the legislation and all the government departmental procedures and consent provisions have evolved without input from mental health professionals. One bizarre consequence is that when I complain to NSW Health about mental health problems in the exploration phase I am told legislation doesn't enable them to provide input until the production phase which appears to be when the powers that be think health impacts commence.

Psychological impacts start when the community is first informed that exploration is to occur. In the case of Rocky Hill Mine this was December 2005. The impacted community has been stressed for more than 10 years in some cases. The initial psychological assessment should be in that first year or two so that 'At Risk' individuals and communities can be identified and management plans put in place.

The proximity of the exploration area to Gloucester township, population 2800, (only 3km from most parts of town) has always meant a large number of people were alerted to the possibility of being affected. Together with housing developments and rural areas south of the town about 3500 people live within 5km of the exploration area.

This Exploration Project was the first to have a Community Consultative Committee and we met first in February 2007. The CCC primarily acts as a vehicle for the company to tell community representatives about plans and progress. The Exploration CCC has no charter to investigate community reactions nor funding to take on such a task. The chairperson if they hold several such positions, as seems increasingly common, risks becoming too familiar with industry and government and antagonistic to community members critical of the status quo. Such an atmosphere does not assist discussion of emotionally sensitive community issues critical of government or the mining industry.

Community resentment was present from the start of Exploration because the closest housing development was on land zoned 'Environmental Protection' which had been seen as a plus when they purchased their property. This 'Protection' was a deception with state government over ruling local government zoning. Compensation for the breaking of this promised Protection has never been offered. Devisive company behaviour followed with some property owners in key areas being offered inflated prices by the mining company whilst nearby neighbours were unable to interest GRL in a sale and their houses devalued trapping people because they couldn't recover the value of a mortgage. It was common for solicitors for interested new residents to not discover the land was under a mining exploration license. The resulting anger/stress is every bit as damaging to the health of residents as those living near a mine with dust or noise, yet there is a total absence of charts showing zones of psychological impact.

A sham interest is shown with the commissioning of a Social Impact Study but there is no recognition that 'psycho-social stress' equates to psychological illness, time off work, family disharmony i.e. substantial community costs which need addressing.

The suicide of George Bender, who had been in dispute with coal seam gas miners in Queensland for several years, provided a red flag that such issues can occasionally literally be killers, but NSW government has not investigated the implications for the mining legislation of this state to my knowledge.

I am aware of several local marriages that have broken up where disagreement as to how they should combat this impending mine stress was a major feature of the disharmony. Where is Deloitte's costing of these very real catastrophic mental illness and psycho-social issues? Their paltry costing of health damage was both insulting and showed incompetence in that they believe the affected zone has a population density of 1.5 persons per sq km.

It is the inequitable distribution of burden and benefits that fuels much chronic anger and stress.

Typically people feel intimidated by large companies and government bureaucracy and this engenders feelings of powerlessness, and when pleas for help go unheeded there are feelings of hopelessness and helplessness, all leading to depression. People's hopes for the future are ruined or put on hold and there is a feeling of loss. The uncertainty of the situation breeds anxiety. The mental health of affected communities needs to be monitored from the start, but even now is better than never. Where is the funding for extra community health programmes to assist?

Visual Amenity Everyone in Gloucester has seen other landscapes trashed by mining with mountains of overburden (e.g. Duralie Mine from Wards River station on the Bucketts Way, or many sites in the Upper Hunter). Everyone feels pride in the beauty of the Gloucester Valley and the Bucketts as a backdrop to town features in classic paintings and we know this attracts tourists. It is therefore unsurprising that the majority of residents, regardless of whether they will or will not be affected by dust or noise, say in polls they are against the mine. It is why Gloucester council voted 6:1 to oppose the mine. A minority however, especially if they are employed in the mining industry or unemployed and hoping for a job or have a relative bringing in a high mining wage will vocally support this proposal. The result has been a polarisation in town with antagonism openly expressed between the two camps. Both sides have been shown to feel stressed in preliminary research by Professor Melissa Haswell. This state of affairs has been present for at least 5 years i.e. it is a chronic stressor.

Solastalgia

This concept has received some attention in other reviews of mining e.g. Bulga PAC hearings. It is described as being unquantifiable in this EIS but this is not the case. Many of the originators of the concept are in the Hunter Region and could advise about its measurement both in Gloucester and more generally.

Solastalgia is a pining for the comfort previously provided by a loved but now damaged landscape. It is obviously most pertinent to the production phase of mining though the corridors of trees planted to screen off future overburden heaps also screen off still pleasing views in the exploration phase. Solastalgia is particularly experienced by aboriginal people who number close to 5% in the Gloucester LGA and by multigenerational families with long ties to the land. Again it is a symptom of chronic stress, very like grief which is known to interfere with the immune response.

Differences between Acute and Chronic Stress

Stress is the emotional response when humans perceive they have insufficient coping skills to overcome the obstacle. Short lived (acute) stress e.g. an impending race or exam, activates adrenalin and can be beneficial in focussing attention and increasing effort often with increased performance until the hurdle is confronted. In chronic or toxic, long standing stress the sympathetic system never gets a chance to recover and another endocrine system (Hypothalamic-Pituitary-Adrenal axis) kicks in with cortisol being released. This cortisol reduces your immune response and leads to depression, strokes, and heart attacks. Muscular tension may lead to headaches, body pains and associated anxiety may cause sleep disturbance and a rise in blood pressure.

Epidemiologists tell us the population numbers in Gloucester are too small to produce meaningful results and so surveys of GP attendance etc have never been done. That does not mean people are not being affected.

'At Risk' groups For psychological disorders, like physical disorders, it is the very young, the elderly, the socially disadvantaged and those with past episodes of psychological disorder who are most at risk, commencing in the exploratory phase of mining. In the production phase neurotoxic pollutants further affect the brain.

Noise and mental disorder

Daytime noise is an annoyance particularly the extremes of noise:- low frequency noise, screeching high frequency and excessively loud noise (blasting). It has been shown to interfere with children's learning and contribute to behaviour problems and emotional disorders. Some people have particular noise sensitivity and there is an increased prevalence of mental disorder in these people, this seems to be a two-way relationship of either one leading to the other. Whilst some people habituate to loud noise this habituation is absent in noise sensitive individuals suggesting an underlying difference. Noise sensitive individuals are attracted to quiet rural settings hence the need to measure their prevalence in a rural setting that is going to have mining. Low frequency noise travels much further and resonance can occur in some bedrooms at very low wavelengths.

Night-time noise has the added complication that noise can interfere with going to sleep, staying asleep and a sudden noise with an increase of more than 15dB is likely to cause

wakening. Multiple awakenings leads to sleep disturbance. Noise at night is perceived even when still asleep with a rise in pulse rate and cortisol level. Sleep disturbance interferes with our cognitive functioning, behaviour, emotions as well as increasing cortisol production and increases strokes, heart attacks and hypertension. Next day sleepiness is a safety risk regarding driving and using dangerous machinery. Clearly there are considerable public health implications and baseline noise sensitivity, sleep quality and sleepiness all need measuring and regularly monitored if production mining is to occur.

Noise can be particularly difficult for people with mood disorders, schizophrenia and autism so in a baseline Health Impact Assessment appropriate warnings can be given to minimise risks of recurrence or intensification of symptoms with these illnesses.

Whilst Rocky Hill Mine production is due to cease at 10pm and associated traffic subside by 10.30pm (restarting at 6.30a.m.) this includes a significant chunk of sleeping hours for the At Risk groups of children and elderly. Children have the greatest need for sleep and immature brains that are particularly sensitive to night noise damage. A frequent loss of just an hour's sleep will impact on quality of life and mental health. Once someone is mentally disordered it doesn't take night noise to make their sleep disturbed, it is frequently a symptom of a mental disorder such as anxiety or depression.

Psychologically stressed individuals in the exploration phase have a disruption of their immune system which makes them more sensitive to any chemical pollutants.

Neurotoxic pollutants and mining

Metals Historically mercury compound problems are known from the phrase "As mad as a hatter". It is a problem particularly with coal fired electricity generation which fortunately we do not have in the Gloucester Valley but Stratford mine is estimated to emit 0.56kg of mercury dust annually. Far more likely is a problem with lead dust, of which nearby Stratford Mine emits 42kg annually. This will add to lead being leached from roofing, old paint and plumbing by mining caused acid rain water which overflows to the garden soil and into house dust and also into domestic water with those who have rain water tanks. This sequence of events has been demonstrated in a survey of 103 domestic rainwater tanks by Professor Damian Gore of Macquarie University. Lead is particularly harmful to children's brains causing cognitive damage and antisocial behaviour problems (conduct disorder, delinquency and crime) and found to be associated with aggressive crimes later in life.

Polycyclic Aromatic Hydrocarbons (PAH) These are produced in diesel emissions. (Rocky Hill will use 220,000 litres of diesel/week) and in burning reactions such as blasting. These are emitted as ultrafine particles which are both neurotoxic and carcinogenic. The particles are so small they can get inside cells. The damage therefore comes from both the chemical composition and the minute particle size (PM 1) for which a recommended upper limit has yet to be decided. For a few years we have known pregnant women need to be particularly

careful since raised levels have been shown to lower the IQ of their child by about 5 points yet no warnings are given to women locally. Recently the same research centre at Columbia University's Mailman School of Public Health (Margolis et al) has investigated self-regulating behaviours and social competency in the children of pregnant women exposed to PAH. The problems with emotional and behavioural control persisted for years. Stratford Mine reports emitting 3.7kg of PAH annually which doesn't sound a lot but as ultrafine particles this amounts to billions of particles which prevailing winds often cause them to be carried for kilometres.

Recent research reported indicated constant exposure to ultrafine particles led to brain lateral ventricular enlargement in mice, particularly male mice. This pattern of neurodevelopmental abnormality is also found in schizophrenia and autism where there are many cases without genetic predisposition and it is hypothesised ultrafine air pollution may well be a cause.

A few examples of people psychologically damaged by mining stress

- A man who I had been treating with paranoid schizophrenia had believed he was being followed and so came to live at a remote road in our area where he felt safe. The mine wanted to purchase his land and he said he wasn't interested. They parked outside his house for long periods and his illness flared up incorporating the intimidating 'parker' into his delusions.
- A 12 year old girl living in Stratford Village when a particularly strong blast shook her house and she ran into the road screaming and terrified because she believed the house was going to fall in on her.
- A 50 year old woman who moved to Forbesdale from Sydney with her husband with dreams of an idyllic time working and then retiring. They spent all their money on a dream house and then learned of the exploration license for mining and it had existed when they purchased the house but they weren't told. For the first time in her life she became progressively more depressed and had to be admitted to hospital with suicidal thoughts.
- A Vietnam veteran who had PTSD had come to the quiet of the country and was settled, but when AGL were drilling the noise reactivated memories from Vietnam and he developed a panic state with severe sleep disorder.
- Two unrelated women each of whom are in properties close to proposed mining. They have each been active in fighting the mining, become stressed, and each have had an episode of 'Transient Global Amnesia' a rare type of temporary memory loss often stress related.

There are many more cases, and psychiatrists only get to see a small fraction of the overall number of mentally disordered people in any community, but I think it helps

to give some practical examples of the casualties that follow when you decide to bring an unwelcome development into a community.

Inhumanity and Bullying The mining industry likes to foster the 'tough' image and this rubs off on the resources and planning departments with a series of ministers investigated for illegalities. It also pervades the CCC:- Three housing developments are among the closest to the mine and likely to have the greatest impacts. At the GRL CCC the last representative from those estates resigned because he couldn't take the stress of meetings any longer. Two replacements from the estates offered their services which were rejected by the chairperson. One of those residents made the point she wanted to be on the CCC because she was trapped because her house had lost more than \$100,000 in value despite owning it for seven years and keeping it in good repair. Furthermore her husband has developed cancer and is terminal so she is likely to be a widow trapped in a house for which she has painful memories. The chairperson was keen to put two community members on the CCC who don't live so close to the mine but are mining supporters. She stated the other representatives could well represent her even though there is now no longer a close resident and the only ex 'Forbesdale' resident on the CCC was bought out and stays on the CCC despite having signed confidentiality clauses for GRL. At the next meeting I was bullied at length by both the company representatives and the chairperson for writing a letter, which the chairperson hadn't read, which called attention to coal health problems in rural communities.

I mention these details because the absence of any humanity and the ever presence of bullying is the atmosphere such large enterprises with government backing bring to hapless rural communities. This pervasive atmosphere is a further community stressor.

Conclusion Government has been negligent in disregarding the clear statement from the peak medical bodies that Health Impact Assessments should be mandatory for a major development such as a new mine. 'Arms length' Health Risk Assessments are averages, a sham to pretend care is being taken. Without doing a baseline survey of each member in an affected community, which can vary greatly, appropriate management cannot occur.

Psychological problems which commence in the exploratory phase of mining have particularly been neglected and are costing an enormous personal burden and costing the country many million dollars. The Rocky Hill Mine and the associated Stratford Extension Modification are inappropriate developments due to their proximity to a large population with an inevitable high health cost burden all for a very small tonnage of coal. The company have already demonstrated their lack of credibility with their first inadequate EIS. The Rocky Hill proposal should be stopped now.

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