

Submission
No 29

**INQUIRY INTO CURRENT AND POTENTIAL IMPACTS OF
GOLD, SILVER, LEAD AND ZINC MINING ON HUMAN
HEALTH, LAND, AIR AND WATER QUALITY IN NEW
SOUTH WALES**

Name: Name suppressed

Date Received: 31 August 2023

Partially
Confidential

30/08/2023

The Secretary,
Portfolio Committee No. 2, Health,
Legislative Assembly of NSW,
Parliament House,
Macquarie Street,
SYDNEY< NSW 2000

Dear Sir,

**Written Submission to Portfolio Committee No. 2, Health, on the inquiry into
'Current and potential impacts of gold, silver, lead and zinc mining on human health, land, air
and water quality in New South Wales'**

I declare that I have never made a donation to any politician, prospective politician, nor any political party in my life and I never intend to. I am also not a shareholder in SVL nor any of its known competitors.

In addition I declare that

as above. Rylstone is downwind of the proposed mine site. I understand many of the issues in that during my time of employment

My comments I hope to be general and pertinent but they are notably derived from my experiences in objecting to a proposed Silver, Lead and Zinc mine at a site some 20 kilometres from Rylstone at the village and locality called Lue. Referred to in the attached submission it is 'Bowdens'. (Proposal : Bowdens Silver Mine proposal, SSD 5765).

Terms of Reference I will not address all of the terms of reference but I have commented on "Current and potential impacts of.....lead and zinc mining on human health....airquality in New South Wales'.

My submission is attached. I have presented my submission as a two page list of issues and assertions (Part A) and I have included and attached to that several pages of explanations (Part B). Part B justifies the assertions and may be accessed at your will.

It has been clear that processes and standards for the EIS and subsequent reports and in the approval and conditions are far from comfortable. Loopholes and the approving agency's acceptance of all data and data left unchallenged and the endorsed ability by proponents to avoid presenting essential data and plans only leads to resultant damage to health and the environment.

Human health based on the poor and discredited dust distribution modelling is personally pointed. Bowdens publish in the EIS that there will be large amounts of dust emitted (about 170 tonnes per year) and there will be wind distribution, they also admit that there will be 3200 ppm of Lead compounds in that dust. My blood level last week was measured as HIGH, 5.7 micrograms per decilitre. If the Bowdens lead dust reaches me, and that's likely, it will probably kill me.

Yes, I'm looking for sympathy but I am also seeking objectivity.

Yours sincerely,

Part A Submission to Legislative Council (NSW) Portfolio Committee No 2 inquiry into Human Health, Land, Air and Water Quality impacts by Metaliferous mining activities.

1 **No shut down trigger** for mining or processing has been proposed at Bowdens; including issues like terrorism, lack of water, earthquake, major structural failure and death of workers. No shut down strategy.

2 One of the best documents for mine site rehabilitation is produced by **NSW Minerals Council**, "Rehabilitation by Design" It has not been referenced in the Bowdens proposal.

3 At Cadia Mine the company (Newcrest) argues that the dust causing illnesses in the community may not come from Cadia Mine. Therefore Collection, Analysis and storage by a **Forensic Geological Laboratory** is required at all stages.

4 At the Bowdens proposed project there is **no Rehabilitation Plan** presented nor approved but the proponents are specific that it will take exactly 7 years to do. This has to be a joke or a ruse..

5 NSW does not have a public health policy on the intrusive nature of **low frequency noise**. It has been shunned by Health NSW and DPE and also IPC and they rely on poor science using dB(A). It is a major potential human health risk.

6 **Local Government participation** says they are at arms length and not the approving authority. In the case of the Bowdens proposal MWRC will obtain \$4.7 million fees.

7 There is no obligation for the LGA to spend any of the derived funds in support of the immediately local affected communities (ratepayers). Funds will go to a Council pet project eg the sports stadium.

8 When a LGA Councillor is remunerated by both the Mining Company and the LGA which organisation gets his greatest loyalty? This conflict should never happen but it has at Bowdens.

9 **NSW Health** is not a public ally, they produced a mere one quarter page submission to the DPE. It supported the proposal, and excused any poor public health outcomes by saying that the Central West population was unfit. Their attitude seems to be 'WHO CARES'!

10 Graphics (maps, plans, sections and elevations are used as obfuscations. They are used and composed to avoid review and scrutiny. Tricks such as **diverse and unreadable scales**, hiding context, altering orientation, using unreadable colours (grey lines on grey backgrounds).

11 **Omissions** are rife in the EIS eg poison gas as Blast Fume is noted, only. as an issue but Bowdens refuses to quantify volumes. In fact the volume is 20 million cubic metres per year.

12 Changing Standards not addressed. The human health-based dust standards are dictated by Australian Government standards which as **NEPM (Ambient Air Quality)** will reduce PM 2.5 in 2025 to 7 micrograms per year (from 8, currently) and 20 micrograms per day (from 25 currently). DPE, IPC and the proponent (Bowdens) have not altered their approvals and plans to comply.

13 Compliance by the approving Authority (DPE) is a secret. At the IPC presentation Mr Clay Preshaw from DPE suggested that compliance and approvals would be undertaken according to available **Departmental resources**. If there is no staff or fundswork ceases. Human health and environmental conditions will suffer.

14 **DPE proposes a Design Review** system for DAs will be introduced. It is worthy concept but may be limited by those DPE Resources and a proponent's available funds.

15 Alterations without review are dangerous. IPC requires that the **Waste Rock pile is now used to encapsulate the PAF** so that as an unconforming ugliness in the landscape it can never be reshaped to appear like the adjacent hills because that would expose AMD-forming material for runoff to catchment.

16 Preparation of **SEARS needs to be realistic**. For Bowdens the DPE had a fixation on the visual impact of the proposed mine on the Village of Lue. This is almost irrelevant.

17 **'Critical Minerals'** is a cry used by DPE and IPC and Bowdens for Silver. It's a ploy for leniency in approval. **Silver is NOT a critical mineral** in Federal Terms (Intergenerational Report 2023) nor at NSW level. In the Strategy document it appears only once as Ag on a diagram, not in the text. Bowdens is not truthful when they claim it is critical.

18 Our region is rich in resource potential. The coal projects of Macdonald/Obeid/Kepeco and Hawkins/Rumker have been stopped. Politics is now to be played Bowdens has been chosen to get a **Macquarie Street rationing** approval accordingly DPE and IPC have been instructed to approve it. That is notably after providing a NSW Government Grant of \$150,000 to the Bowdens company.

19 As a corollary of item 18 comes my recall of a public meeting held in **Mudgee at the Country Comfort Motel**. The meeting was arranged and chaired by officers of DPE or whatever it was called. The DPE staff member said 'It is our job to get this mine approved'. It suggests political expediency not objectivity will prevail in approval processes.

20 Data presented can be wrong but DPE does not accept local knowledge preferring the **science of sub-consultant 'experts'**. At Bowdens only one wind map is shown and it is wrong by 180 degrees. It has not been questioned by DPE and yet it forms part of climate modelling data.

21 Tailings dams are the source of the **finest particles** that grinders and mills can make. It dries, a crust forms and blows away as micro crystalline silica to be inhaled by mammals. Contrary to calls that the Bowdens project is not like Cadia, in the area the micro crystalline silica emissions it is very similar.

22 Tailings dams can fail and need specific **containment and rehabilitation designs**. The liner and its slip joint design (along the fault) and the end of life breaching etc and all design issues need intensive detailing and to be committed.

Part B Further Detail on Main Submission Items

1 **No shut down trigger** for mining or processing has been proposed at Bowdens; including issues like terrorism, lack of water, earthquake, major structural failure and death of workers. No shut down strategy or procedure is presented.

In addition at Bowdens among the 15 (yet to be prepared) plans and strategies there is no Emergency Response Plan nor a Disaster Management Plan.

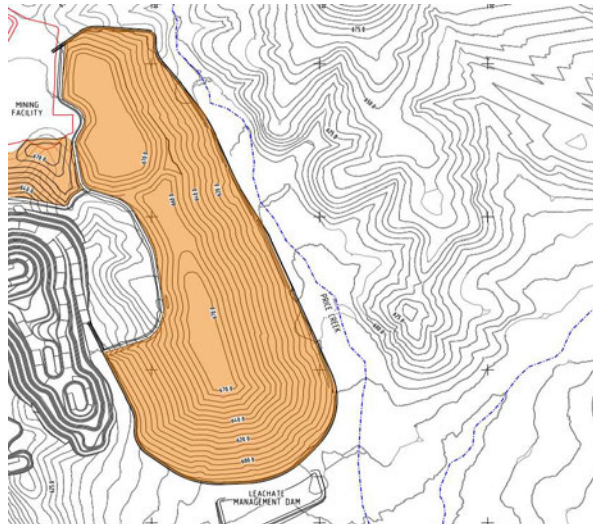
At one point in the EIS a pause in processing is offered should there be a lack of water on the Bowdens site..

2 *One of the best documents for mine site rehabilitation is produced by NSW Minerals Council, "Rehabilitation by Design" It has not been referenced in the Bowdens proposal.*

Upon reading the NSW Minerals Council document it is clear that it would be the optimum for the Bowdens site. It does come with cost which the proponents clearly don't want to bear.

The stand-out feature at the Bowdens site is the Waste Rock Emplacement. The proponents claim that it as a man-made landform it 'conforms' with the shape, scale etc of the adjacent natural landscape. Thus as shown in this map portion of the proposal, the shaded mass is the WRE with its clearly visible even and equidistant contours, and its mainly geometric form. As it stands the WRE is 1600metres long (one mile), it has a ridge one kilometre long, the ridge is effectively horizontal (dominating a natural landscape noted for its varied ridge forms), it is 90 metres high (taller than Sydney Opera House). It will obscure the existing hills behind it.

Those are the natural existing sandstone hills. They are not at all similar in actual form and the proponent who claims similarity is dreaming and/or deliberately misleading.



Natural water relations in the locality (rainfall intensity and frequency) have derived a need for drainage creeks and swales every 200 metres (as seen in the hills to the east). The proposed WRE has none. This must be a formula for massive future erosion and the silting consequences etc.

A revised design has not been prepared. Now that the WRE will be used for 40 million tonnes of PAF (that is additional volume) it will be considerably more massive. The visual impact will be significantly greater but there is no design. The existing WRE is extremely impactful and by adding

more material it can only get worse but the outcome has not been has not been modelled nor presented.

3 *At Cadia Mine the company (Newcrest) argues that the dust causing illnesses in the community may not come from Cadia Mine. Therefore Collection, Analysis and storage by a **Forensic Geological Laboratory** is required at all stages.*

There are many tools and skills available to such specialists to identify individual samples of rock and minerals but the process must be implemented from the beginning. The mineral composition (proportions of minerals, chemistry, crystallography etc) identified with microscopes, spectrophotometers, chemical reagents etc can be specific. Doubt about origin must be eliminated because Cadia's tricks can be repeated.

This identification work could be coordinated with baseline and subsequent health studies (blood metals etc).

4 *At the Bowdens proposed project there is **no Rehabilitation Plan** presented nor approved but the proponents are specific that it will take exactly 7 years to do. This has to be a joke or a ruse.*

Two observations concerning supposed 'rehabilitation' at Bowdens can be made. Firstly the three large elements will NOT BE amended. The main pit will remain with a '100 year plan' by the proponent to allow it to allow it to fill with water.

The Waste Rock Pile will not be reshaped because it will progressively be used to encapsulate Potentially Acid-Forming (low grade sulphides) Rock; disturbance will encourage AMD.

The tailings dam will remain; ideally it should integrate with natural hydrology (water tables etc) but it is not proposed. Finally in admission of creating an eyesore in a quite fine landscape the proponent will plant tree screens to HIDE THE UGLINESS FROM VIEW. This is such a primitive way of treating bad mining visuals it should be forbidden. Screening is not a natural characteristic in this landscape.

5 *NSW does not have a public health policy on the intrusive nature of **low frequency noise**. It has been shunned by Health NSW and DPE and also IPC and they rely on poor science using dB(A).*

Noise impact on human health is recognised. A local medico, Dr Peter Roberts presented to the IPC in Mudgee known and documented cases of Wollar residents admitted to Mudgee Hospital suffering from NOISE-CREATED clinical conditions as a result of impacts from the Willpinjong coal mine operations. This Hospital is within the administration of LHD Western NSW and they (LHD) have chosen to ignore these recorded incidents.

Wollar is topographically shielded from straight-line transmission from mining plant and equipment. Therefore dB(A) is largely not the culprit. Transmission through the geology is most likely; in other words LFN (low frequency noise) which is measurable on the dB(C) or dB(Z) scales. An abstract of a report to the Journal; of the Acoustic Society of America says:

"Low-frequency noise is common as background noise..... The effects of low-frequency noise are of particular concern because of its pervasiveness due to numerous sources, efficient propagation, and reduced efficacy of many structures (dwellings, walls, and hearing

protection) 'Intense low-frequency noise appears to produce clear symptoms including respiratory impairment and aural pain. Although the effects of lower intensities of low-frequency noise are difficult to establish for methodological reasons, evidence suggests that a number of adverse effects of noise in general arise from exposure to low-frequency noise:judgments and annoyance reactions are sometimes reported to be greater for low-frequency noise than other noises for equal sound-pressure level''

In addition the WHO states

'...The evidence on low frequency noise is sufficiently strong as to warrant immediate concern'

WHO also says:

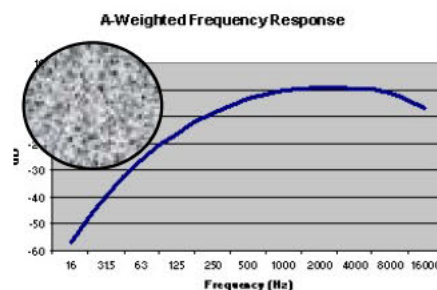
"Since A-weighting underestimates the sound pressure level of noise with low frequency components, a better assessment of health effects would be to use C-weighting", and

"It should be noted that a large proportion of low frequency components in a noise may increase considerably the adverse effects on health"

Recent (2023) seismic testing by Bowdens creates large low frequency thuds by dropping a steel plate on the ground. It is reported as LOUD by local residents from a distance of over 6 kilometres from the tests.

It is exactly why this technique is used; low frequencies travel long distances through the geology. Transducers or microphones measure and record the speed of response which relates to underlying formations.

There appears to be no lip service to amelioration of noise. (Even Sydney's eastern suburbs train is mounted on neoprene pads and the light rail's tracks are embedded in epoxy (to limit LFN transmission to AGNSW and adjacent offices and apartments.) These noise absorbing pads are used because concrete sleepers and base structure are like Bowden's geology they are the best transmitters of LFN. And. Even at Wilpinjong the Haulpacks have suspended trays lined with neoprene sheets. Bowdens propose nothing and ignore the issue.



The curve shows dB(A) response and recording. Low frequency noise (that made by mining equipment) is shown as the circle. DPE and the proponent only use dB(A) because IT DOES NOT RECORD OR REPORT OR PREDICT LOW FREQUENCY (MINING) SOUNDS. They hide the reality.

6 **Local Government participation** says they are at arms length and not the approving authority. In the case of the Bowdens proposal MWRC will take \$4.7 million in fees.

Money at the local government level is one component, at **NSW Government level** the game is different.

IPC's deliberations may have appeared a superficial sham but the timing was highly questionable and show how much a sham it was. December 2022 saw DPE was referring the Bowdens case to the IPC. On 22 December 2022, their political bosses had clearly (notionally and secretly) APPROVED THE PROJECT. Less than 6 months before the IPC hearing (and before their report or determination) approval was announced for two NSW Government Grants which were awarded to Bowdens (SVL):

\$100,000	Expanded exploration drilling, and
\$50,000	Additional Seismic Surveying

Awarded under NSW Governments New Frontiers Exploration Programme. Even at \$150,000 of public funds given to a dead project would require investigation. It was not dead (it was secretly approved in Macquarie Street) and the IPC was told what to doIPC is NOT INDEPENDENT.

In addition we must forget about human health, environmental, cultural sensitivities which are ensured by the Planning System (DA conditions after Sears and EIS etc). The current drilling etc and this expanded development work are carried out under an EL (Exploration Licence) where there are almost no environmental etc controls and compliances.

7 *There is no obligation for the LGA to spend the derived funds in support of the immediately local affected communities (ratepayers). Funds will likely go to Council's pet project ...**the sports stadium, or even road maintenance.***

The local community gets domestic water from roof collection in tanks. These are collecting and concentration vessels for the airborne dust including lead dust (at 3200 ppm) from the mine. The funds provided by Bowdens to Council would ideally go towards a town water supply but it is not proposed.

8 *When a LGA Councillor is remunerated by both the Mining Company and the LGA, which organisation gets his greatest loyalty? This conflict should never happen but it has at Bowdens.*

Public published comments of that Councillor's behaviour and language in dealing face-to-face with the public are described it as anything but temperate.

9 **NSW Health** is not a public ally, they produced a mere one quarter page submission to the DPE. It supported the proposal, and excused any poor public health outcomes by saying that the Central West population was unfit. Their attitude seems to be 'WHO CARES'!

A couple of follow-up request letters have been issued to Health NSW but there has been no response therefore no explanations.

Under SEARS NSW Health had a mere two requirements.

1 'Consider potential impact of dust suppression process and chemicals used on river catchment and drinking water' and

2 'Ensure dust control on site and during processing of materials meets appropriate criteria'

One was that the proposal should not include chemical stabilisation (suppressants) of surfaces. The Ammended AQA includes tables of the outputs of modelling and these clearly show wide use of 'suppressants' to achieve acceptable emission standards. NSW Health chose to object no further!

A critical examination would have seen that the biggest dust emitter on site (the TSF surface) is not included in the Best Management Practice claimed by Bowdens for dust control. No alarm bells have rung in the NSW Bureaucracies and one can only wonder, why not? Even the Updated Air Quality Assessment under section 2.2 claims to model dust from 'TSF Construction and Raises' BUT NOT the Surface.

Bowdens Air Quality Assessment shows modelled plots of fine particulates shown as content in micrograms per cubic metre or as deposits at micrograms per square metre. Under various parameters all show impacts of dust beyond the mine boundary. As that dust will contain respirable health-affecting compounds of lead sulphides, oxides etc and micro crystalline silica it seems remiss of LHD western NSW to not question the modelling further regarding impacts on human health.

As an aside it should be observed that the AQA shows Bowdens-owned houses will suffer high levels of toxic fallout but it doesn't matter because of their ownership. The occupying staff are presumed not to whinge because they are provided with cheap rent and toxic air!

*10 Graphics (maps, plans, sections and elevations are used as obfuscations. They are used and composed to avoid review and scrutiny. Tricks such as **diverse and unreadable scales**, hiding context, altering orientation, using unreadable colours (grey lines on grey backgrounds).*

I cannot walk into Eckersleys and buy a scale rule at 1:35,000; so I cannot analyse Bowdens proposal. So they've won; they know that. IPC, DPE and EPA seem un-troubled; they seem to believe what they are told by the Mining Company rather than checking documentation.

*11 **Omissions** are rife in the EIS eg poison gas as Blast Fume is noted, only, as an issue and Bowdens refuses to quantify volumes. (They intend to do a Blast management plan AFTER approval!) In fact the volume is to be 20 million cubic metres per year. They are largely a variety of oxides of Nitrogen (which turn into Nitric Acid in human lungs) and some hydrocarbons like Methane and also CO and CO2.*

The figure of such a large volume comes from Bowdens proposal to use 1000 tonnes of Ammonium nitrate per year and that upon explosion each kilogram produces 20 cubic metres of the poisonous gas.

There may be a blast management plan to be prepared. At this stage there is not even a policy statement to acknowledge the need for care for human health nor is there any distribution

modelling or maps but there should be as these gases will move well beyond the site boundary. Refer to NSW Health's. Fact Sheet on Blast Fume.

The proposed mine would also use 190 tonnes per year of NaCN (Sodium cyanide) which when combined with a base such as Caustic soda it will form and release Hydrogen Cyanide, a lethal gas.

By Bowdens own claim fugitive Hydrogen Cyanide at the flotation plant is 0.03 grams per second. This converts to 2.9 kg per 24 hours. With a density of 1.454 cu m per gram this is the equal of about 1.6 million cubic metres of Hydrogen Cyanide released to the atmosphere per year. DPE for some reason ignore it, in writing. And yet Bowdens is not prepared to model or ameliorate its distribution; there is no presentation of the impacts. The gas is to be released to the atmosphere. There will also be 'fugitive' HCN from the TSF.

As poison expert officer at DPE seems to think that there will be no problem with the Hydrogen cyanide.

As the floatation plant is shown to be housed in a shed and therefore all of those 1.6 million cubic metres of HCN p.a. will be contained in a partially enclosed shed space to be ingested by workers. Clearly there would be a human health impact.

*12 Changing Standards is not addressed. The human health-based dust standards are dictated by Australian Government standards which as **NEPM (Ambient Air Quality)** will reduce PM 2.5 in 2025 to 7 micrograms per year (from 8, currently) and 20 micrograms per day (from 25 currently). DPE, IPC and the proponent (Bowdens) have not altered their approvals and plans to comply.*

The EPA may have an interest in enforcing compliance. If the standards change as proposed DPE, IPC and EPA need to require that Bowdens adjust all of the modelling including dust contours, emission and deposition standards to comply.

At a recent public meeting with the EPA their representatives claimed that contrary to the Bowdens proposal to spread dust they (EPA) will shut down operations if dust violates the property boundary.

*13 Compliance by the approving Authority (DPE) is a secret. At the IPC presentation Mr Clay Preshaw from DPE suggested that compliance and approvals would be undertaken according to available **Departmental resources**. Ie if there is no staff or fundswork ceases. Human health and environmental conditions will suffer.*

It appears that the powers of EPA to fine and to order cessation of operations may save the day. That is in the area of dust emissions and gases, contaminated water etc. There are other aspects of the DA such as rehabilitation landforms, EPBC, heritage etc which are beyond the EPA.

*14 **DPE proposes a Design Review** system for DAs will be introduced. It's a good concept but may be limited by those DPE Resources and the applicant's funds.*

Currently the proposal for Bowdens is done on the 'cheap'. Take the TSF for instance if more concern was shown by the project team it may attract less criticism. It is the tailings dam at Cadia where the

white dust arises and drifts. It will be the same at Bowdens. Three glaring design issues are problems waiting for correction:

A Located literally metres from Lawson Creek the dam in the event of overflow or even structural failure will put toxic waste into the catchment. There is no room for an adequate catch dam downstream so the danger is not to be corrected by the current proposal. Macquarie Marshes is a Ramsar wetland and is downstream from this TSF.

B It is well known that a geological fault crosses the site of the TSF. This needs to be designed as a properly engineered movement joint so the waterproof integrity is maintained even with a tectonic event.

C At over 100 hectares of Decant Pond and drying powdered surface there is no proposal to eliminate wind erosion. Some waffly wording talks of a portion of it having a degree of topographic shelter!. A sprinkler system could be designed and constructed but it hasn't.

15 *Alterations without review are dangerous. IPC requires that the **Waste Rock pile is now used to encapsulate the PAF** so that as an unconforming ugliness in the landscape it can never be reshaped to appear like the adjacent hills as it will expose AMD-forming material for runoff to catchment.*

16 *Preparation of **SEARS needs to be realistic**. For Bowdens the DPE had a fixation on the visual impact of the proposed mine on the Village of Lue. This is almost irrelevant.*

The majority of properties in the village have tree canopies intervening view lines. On top of the shielding the proposed mine and most of its components are topographically shielded. The outcome of the silly SEARS item is a lot of report pages wasted as a distraction from something, perhaps, more relevant.

More relevant is the visual impact of the WRE from the MWRC's Number TWO tourist drive. Tourism will last for ever, well beyond the mine life, but SEARS, DPE, IPC and MWRC seem not to want that distraction to be put onto the agenda.

17 *'**Critical Minerals**' is a cry used by DPE and IPC and Bowdens for Silver. It's a ploy for leniency in approval. **Silver is NOT a critical mineral** in Federal Terms (Intergenerational Report 2023) nor at NSW level. In the Strategy document it appears only once as Ag on a diagram, not in the text. Bowdens is not truthful when they claim it is critical.*

In the federal government's Intergenerational report however Zinc IS a Critical Mineral and it appears that for profitability reasons Bowdens choose to promote Silver output over Zn.

18 *Our region is rich in resource potential. The coal projects of Macdonald/Obeid/Kepeco and Hawkins/Rumker have been stopped. Politics is now to be played Bowdens has been chosen to get a **Macquarie Street rationing** approval accordingly DPE and IPC have been instructed to approve it. That is notably **after** providing a NSW Government Grant of \$150,000 to the Bowdens company.*

As indicated above those \$150,000 of government grants were poorly timed and therefore were the giveaway to the backroom approval..

19 *As a corollary of item 18 comes my recall of a public meeting held in **Mudgee at the Country Comfort Motel**. The meeting was arranged and chaired by officers of DPE or whatever it was called. The staff member said 'It is our job to get this mine approved'. It suggests political expediency not objectivity will prevail.*

20 *Data presented can be wrong but DPE does not accept local knowledge preferring the **science of sub-consultant 'experts'**. At Bowdens only one wind map is shown and it is wrong by 180 degrees. It has not been questioned by DPE and yet it forms part of climate modelling data.*

Met 1 and Met 2 the Bowdens weather stations are another cheap, nasty and unreliable part of the DA.. When for modelling wind distributed dusts and gases for approval presentation the planners need to work with regional winds directions and speeds not simply local and ground level micro observations.

A Danish consultant undertook the wind and FPM distribution modelling on the discredited data which they acknowledge! Only a specialist in the use of these tools could comment on the reliability and validity of the inclusion of the parameters and their values. Several pages of mathematical numbers, symbols and formulae are published. To a layman they are gobbledygook. A couple of the 4 or 5 page of extremely specialised parameters could hide atrocities.

Bowdens anemometers etc (of Met 1 and Met 2) are close to the ground surface and measure local turbulence and NOT REGIONAL WINDS. For compliance with standard measuring they are meant to be 10 metres from ground level; they are significantly less than that.

21 *Tailings dams are not particularly toxic (although every chemical from flotation ends up in the TSF) but they are the source of the **finest particles** that grinders and mills can make (very fine particulate like talcum powder). It dries, forms a crust and blows away as micro crystalline silica to be inhaled by mammals. Contrary to calls that the Bowdens project is not like Cadia (in mining technique and main lodes), in the area micro crystalline silica emissions it is very similar.*

Bowdens avoid mention of the dust emissions from the surface (Table 2.1) they refer only to the raises of the dam wall causing dust emissions. Yet elsewhere in the EIS they admit to the TSF Surface as being the biggest individual source (by Area) for wind erosionTable 5.6. Furthermore that table shows that never more than 40% of the site will have dust stabilised.

Dust emissions have been modelled and EIS Table 6.1 tells some of the story. It presents the Bowdens-selected four scenarios and the amount of annual PM 10 emissions from project components and the means of generation. Firstly it is not for TSP but PM 10 only. And secondly as the TSF will not have any dust control its wind erosion of up to 28 tonnes per annum is scandalous (Table A 4-3). Up to 58% of the proposed mines entire wind erosion comes from the TSF surface.

Where is the proposal for TSF surface irrigation for dust control. It appears that of an average of 10 tonnes of uncontrolled wind erosion per year; much of the eroded material is respirable crystalline silica. LHD has not questioned the feasibility of control and yet NSW Health has a publication on SILICOSIS AND ITS PREVENTION.

In the AQA Table A4.3 (Best Management Practice Determination) for Wind Erosion of Exposed Areas Bowdens are in complete denial of the TSF Surface Wind Erosion because for wind erosion the BMP is surface stabilisation. They claim it will be done achieving 95% control. Their language is

confusing (deliberately) saying that "Controls are applied.....rehabilitation areas and soil stockpiles." It appears that as established they plan to do nothing with fine white silica blowing off the crust of the TSF.

The Air Quality Assessment Section 2.2 '....Pollutants Considered for Assessment.'" Does NOT include the Tailings Dam Surface yet in the same document Table 6.1 shows dust as wind erosion at between 7.4 tonnes and 28 tonnes per year. Total dust (as PM 10) emitted from the whole site is between 268 tonnes and 147 tonnes per year; even at the maximum proposed 40% suppression that means Bowdens will release 107 tonnes to 58 tonnes of dust per year. These figures don't include larger fractions of dust because TSP is not modelled.

The EPA picked up the fact that the proponent simply referred to the dust, they sought analysis of the dust components. Arising from the crushed and broken Ore the Lead component is 3200 ppm. The point being that LEAD WILL BE PUT INTO THE AIR. It will be consumed by the community one way or another and in these days of medical science saying that lead consumption at any level is a physiological danger.

22 *Tailings dams can fail and need specific **containment and rehabilitation designs**. The liner and its slip joint design (on the fault) and the end of life breaching etc need to be committed.*

The TSF at the bottom where the flimsy coated geotextile resides the head pressure is around 80 psi. That is higher than the average town water supply. Failure is certain.